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NATO's Southern Flank. Problems and Perspectives.
The Military Aspect.

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I N D E X

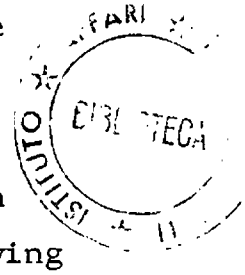
CHAPTER I: The Sixth Fleet in the Mediterranean - A Changing Mission

The main factors of change in the political and military situation on NATO's southern flank have been the deployment of a Soviet naval force in the Mediterranean, its steady quantitative and qualitative strengthening up to a significant level of "threat," and the entry of the Tu-26 Backfire bomber into active service with the Soviet naval aviation.

The presence of the Soviet naval squadron in the Mediterranean and of the Backfires in the Crimea have deeply cut into the Sixth Fleet's uncontested dominance, indirectly modifying the limits of feasibility of the operational missions assigned to the Fleet.

Such modification -whose importance is not always recognized- may not be very conspicuous in time of peace, when the Sixth Fleet's function is limited to its deterrent role and its mission consists solely in its "being present" and being a naval force of significant size and power.

The modification is apparent, however, if we consider the case of an armed clash between NATO and the Warsaw Pact, when the capability to carry out the assigned missions of course becomes essential to the achievement of its preordained objectives. (1)



In fact, very serious doubts would appear to have been cast on the Fleet's capability to carry out the task of giving support to land forces on the Italo-Yugoslav or Greek-Turkish-Bulgarian front, which the amphibious elements and the carrier air forces of the Sixth Fleet are supposed to provide from the earliest phases of conflict. As to the amphibious forces,

unless a landing is made before the outbreak of hostilities, the mission is feasible only if a high level of risk is accepted. For the carrier air forces, the mission is no longer feasible, at least until after the Sixth Fleet has accomplished what has now become its primary task, i.e. the neutralization of enemy air and naval forces. In other words, its primary task is its own defense, hence its own survival as a combat force.

This does not mean a mere shift in the timing of the land--battle support mission, nor the scaling down of that mission to a different, lower level of priority. It is something more than just the attribution of special importance - logically enough given the new situation that has come into being in the Mediterranean - to another mission (that of neutralizing enemy air and naval forces), which had in any case always been included in the "script" for the Fleet's role, linked with the goal of defending the southern flank of the Alliance.

The support mission for land forces, though theoretically still very valid and militarily necessary, is no longer feasible in the initial phase of a conflict, i.e. precisely when it would appear most indispensable (especially considering the delicate geostrategic situation in the region of the Straits). Furthermore, it could prove impossible even subsequently, if the naval battle between NATO and Warsaw Pact forces were to result in the sinking of the aircraft carriers or in an excessive deterioration of their operational capability. In particular, this means that the provision of air support by the Sixth Fleet has become so uncertain that it can no longer be counted on in the context of accurate and prudent planning of military operations.

Regarding the mission of sea control, (2) without which

support for forces engaged in land battles on the southern flank could scarcely materialize, the change has been in terms of a greater vulnerability of American surface forces, which means greater risks and difficulties. In fact it is hard to imagine a repetition of the "sanctuary" conditions that prevailed in the Gulf of Tonkin during the American presence in Vietnam.

To sum up, it appears that the Soviet Union's naval presence in the Mediterranean - understood both as a permanent presence and as a capability for rapidly and significantly increasing the size and strength of its forces - (3) and the augmented "threat" represented by the assignment of the Backfire bomber to Soviet naval aviation have forced a radical modification of the missions assigned to the Sixth Fleet, substantially reducing them to a single task: to conduct the naval battle in such a way as to emerge not only victorious but also in condition to continue to play an effective role: in other words, to reduce the Soviet threat to an acceptable level of risk, so as to be able to carry out further military operations until the attainment of its established objectives.

Presumably, this change has influenced NATO's defense plans. It is reasonable to assume that the operational planning of the countries on the southern flank of the Alliance has been adapted to this new situation. However, it does not seem to have weighed in American decisions concerning the size, composition, location, activities, and projected future of the Sixth Fleet.

Obviously, the analysis just given of the modification of the Fleet's mission (4) is not an exhaustive treatment of the problem. Rather, it implies carrying out an analysis at a

higher level, with a more pronounced political emphasis. The shift in the terms of the military confrontation in the Mediterranean (from a situation of nearly absolute U.S. dominance to one of only relative superiority vis à vis the Soviet Union, or at the very least one of much greater vulnerability of American naval forces) calls the very roles of the Sixth Fleet into question.

This does not affect the nuclear role of the aircraft carriers' attack planes, which has gradually been assumed by the Polaris and Poseidon submarines' ballistic missiles, (5) as much as it affects the conventional-warfare role of the entire fleet, including its amphibious components. The fleet is affected not only as an instrument of warfare but also as a tool for managing any possible crises in the Mediterranean area.

Moreover, if the hypothesis of the fleet's poor capacity, or even incapacity, seems valid in the case of a conflict between NATO and the Warsaw Pact, it would appear even more valid in the case of a crisis external to the two alliances leading to a situation of direct confrontation between the two superpowers alone, in defense of client-states or of interests to which the European members of NATO might feel themselves partly or totally indifferent. In fact, if those countries were to refuse their participation and support in terms of the utilization of infrastructures and installations located on their territories - as has already happened once, in 1973 - many of the favorable elements present in the case of a NATO--Warsaw Pact conflict would disappear, and the United States would find itself forced to rely solely on its own strength and its own autonomous logistical capabilities: capabilities which the American forces operating in the Medi-

t e rranean currently possess to a limited extent.

Moreover, to take this line of reasoning to its most extremes, logical consequences, accepting the validity of this hypothesis implies an overall re-examination of American military policy in the Mediterranean area, unless one whishes to accept the loss of credibility that arises from continuing to set objectives that are beyond one's own capability to attain.

Viewing the situation schematically, and certainly not exhaustively, there are at least four recognizable solutions:

1 - First: Maintain the objectives and also keep the present forces, in strength, level, composition, and deployment. Taking account of the serious doubts that exist regarding the employment and the survival of naval units in narrow maritime basins (especially for aircraft carriers and amphibious forces), this would mean accepting a high level of risk on the military plane, without any corresponding probabilities of success. However, given the complex nature of the American presence in the Mediterranean, acceptance of such risks could be justified by consideration of the political aspects of the Sixth Fleet's role.

2 - Second: Maintain the objectives and strengthen the forces quantitatively and qualitatively sufficiently to re-establish a concrete and credible balance between those objectives and the effective capability to attain them.

3 - Third: Maintain the objectives but - given the inadequate capability of the present forces to attain them within acceptable limits of risk and given the impossibility of a strengthening sufficient to re-establish the balance mentioned above - seek an alter n a.tive on the military plane, through

modification of the type, composition, and deployment of forces, the development of new strategies, the adoption of different methods of employment, etc.

4 - Fourth: To revise the objectives using several criteria: on the basis of a realistic rethinking of their validity in face of the profound changes taking place in the Mediterranean area and the foreseeable further new developments there; on the basis of an unemotional assesssment of the new elements in the political situation and in the military "threat", and on the basis of the forces that will be effectively available in case of need and their capability to play the roles and carry out the missions required by the contingency plans worked out for various confrontation "scenarios".

Of course, these solutions are not mutually exclusive, but have a certain degree of reciprocal "permeability", in the sense that it would be possible to adopt intermediate solutions, such as, for instance, maintaining the objectives and seeking a valid military alternative in terms of means and methods, while at the same time quantitatively and qualitatively strengthening the forces whose employment is projected.

Certainly, the choice is not easy. Whatever choice is made, its strategic and political consequences would end up by affecting the mechanisms of the balance of power between the United States and the Soviet Union in the Mediterranean, with probable repercussions in the Persian Gulf, the Indian Ocean, and in part even in the Atlantic.

Furthermore, a choice leading to a unilateral diminution of the American military presence in the Mediterranean - even if it did not weaken NATO's response capabilities - would very

probably be interpreted (both in the allied or pro-Western countries of the Mediterranean and in the countries of central Europe) as a reduction of the United States's commitment to defense of the southern flank.

Nor, moreover, could such a choice be made without serious internal disagreements within the United States, because of the not-exclusively-military role of the American naval forces (especially in peacetime or in case of crisis). Their great flexibility of use and their high "adaptability" to particular emergency situations must weigh in any decision, even if that flexibility of employment would now be limited in any crisis that involved a confrontation with Soviet naval forces.

Nevertheless, on the basis of some clearly perceptible emerging trends, it seems possible to draw up a frame of reference which one could usefully refer to in the search for possible options.

A Frame of Reference for Choices

The first element in the picture concerns the future of the U.S. Navy. For a number of years now, a heated debate over the "construction" of the "U.S. Navy of the Year 2000" has been going on in the United States, involving the White House, the Congress, the Pentagon, and experts from the various civilian study and research institutions. In particular, debate has focused on the new navy's employment doctrine, structure, and the number and type of units; on the role and tasks that should be assigned it; on the strategic

and tactical problems created by the enormous growth of the Soviet navy; on the debated but certainly growing vulnerability of major warships, especially aircraft carriers; on the validity, and hence the advisability, of using everything new technology can offer; on the risks and costs of excessive technical-operational sophistication; and on the amount of spending to go for naval construction. (6)

The debate has been characterized by:

- differences of opinion and uncertainty on the central question, i.e. what kind of Navy to create for the future and what to do;

- controversy over the structural make-up of the naval forces and over the number and type of units necessary for the attainment of the foreign-policy and military objectives that planners intend to assign the navy and for the maintenance of overall naval strength not inferior to that of the Soviet Union;

- skepticism about the possibility of effective use of aircraft carriers in the future, given the kind of environment (ordinarily, with a high density of threat) in which they would find themselves operating in case of conflict, particularly in closed seas;

- the awareness of the shortage of funds relative to the assumed needs and the ever-rising costs of modern weapons systems.

Although the debate cannot be considered concluded, the Carter administration's cut in the budget appropriation for naval construction in Fiscal Year 1979 (from the 30 units requested to the 15 granted); the American president's veto (subsequently upheld by Congress) of the construction of

another 90,000-ton Nimitz-class nuclear aircraft carrier; the approval of the program for building the DDG-47 class missile--carrying destroyer, with the Aegis anti-aircraft and anti--missile system; (7) and the special emphasis placed on procurement of the Oliver Hazard Perry-class FFG-7 missile frigate, also with the Aegis system (construction of another 41 units of this type is planned, in addition to the 26 already approved by Congress); (8) all seem to indicate a tendency toward a Navy somewhat reduced in size (from the 960 ships of 1969 to the predicated 510 for the end of 1979), (9) composed of a greater number of medium-tonnage combat units (destroyers and frigates), which though not massive are heavily armed and highly advanced technologically; and a smaller number of nuclear-powered craft, of heavy tonnage and an equally high level of armament and technology.

As far as aircraft carriers are concerned. Carter's 1978 veto seems to have confirmed the Defense Department's orientation toward the abandonment of 90,000-ton superships in favor of smaller aircraft carriers of the classic type, capable of carrying the most recently conceived V/STOL planes, (10) which are multi-role aircraft with performance superior to that of the Harrier AV-8B, which is in advanced stage of development. (11)

Still, according to recent studies by the American department of the Navy, it would not be possible for an aircraft carrier to carry out the tasks normally assigned it with sufficient effectiveness unless it possessed at least 60 percent of the operational capability of a Nimitz-class ship, which would mean a displacement of no less than 65,000 tons.

In any event, if the tendencies thus briefly mentioned

will lead to a rethinking of the doctrine of employment of naval forces, (12) (as seems most probable, even if only in the long run), and also to an organic restructuring of the Navy, it is logical to assume that the Sixth Fleet's presence in the Mediterranean will also be affected to some extent.

The second element in this frame of reference is the impact of new technologies on naval warfare, especially in geographically narrow seas like the Mediterranean, whose considerable East-West length (more than 2,000 miles from the coasts of Turkey to Gibraltar) is offset by its extremely reduced North-South width (just a few hundred miles from coast to coast), and where there are "choke points" (Straits of Gibraltar, the Dardanelles, the Suez Canal) which permit easy control or prevention of access to the sea, and also internal "choke points" (the Sicilian Channel, the entrance to the Adriatic, the sealanes around Crete), which restrich the full freedom of movement of naval forces by dividing the Mediterranean into "zones".

The development of cruise missiles represents a threat factor that weighs heavily on naval operations. Their further technological development, with increased range and velocity, improved accuracy (improving navigational systems, terminal guidance, and defenses against electronic countermeasures), the increased power and penetrating capability of their warheads, and the diversification of possible launch-platforms (submarines, even quite small warships, marine attack and patrol craft, helicopters, stationary or mobile land systems): all this throws serious doubt on the survival of surface units operating in the Mediterranean.

Moreover, the long range of modern combat aircraft (from the Soviet Backfire bomber to the Anglo-Italo-German MRCA Tornado fighter-bomber and the Soviet Su-19 Fencer) combined with the greater range of the new air-to-surface missiles, allows air forces to cover practically the entire Mediterranean with attack missions from bases in the territory of the countries of the region (whether Italy, Greece, Turkey, and Spain for NATO or Algeria, Libya, Syria, Bulgaria, and the southern Soviet Union for the Warsaw Pact). Such coverage can be complemented or even replaced, at least in part, by long-range cruise missiles deployed on stationary or mobile coastal bases. Reconnaissance and surveillance to determine the precise location of naval forces can be complemented and reinforced by more extensive use of satellites with real-time transmission of data to operations centers on land.

Finally, technological advances in the sector of naval mines, especially mines at great depths or with independent systems for identifying and recognizing enemy units and launching self-guided missiles, provide another unknown in the naval equation. This unknown must be carefully evaluated, especially in consideration of the above-mentioned geographical characteristics of the Mediterranean and of the fact that today minefields can be laid by aircraft, with a significant gain in the rapidity and flexibility with which they may be used.

Hence, the element of "technology," at least in the Mediterranean, seems to have given rise to a trend toward greater vulnerability of surface vessels, hence greater dif-

ficulty on their part in moving and operating within the range of land- or sea-based missiles, within the radius of action of attack aircraft, and through all those stretches of sea which, because of their narrowness, can be rendered impracticable either by minefields or by "barriers" formed by attack submarines. "Technology," moreover, has also given rise to a tendency toward greater possibilities of using long-range cruise missiles and land-based air forces to complement naval surface vessels, or even replace them entirely, in carrying out the mission of "sea denial." Given NATO's better geostrategic position in the Mediterranean and the technological superiority of the United States, this tendency would appear to grant NATO a wider range of possibilities for exploiting the various opportunities offered by the development of new weapons systems, in making basic choices about the form and nature of the American presence in the Mediterranean.

The third element in our frame of reference concerns an unconventional analysis of the real weight of the Warsaw Pact military threat on the southern flank, which goes beyond the mere balance of forces and overcomes the limits of an equilibrium seen in exclusively numerical terms.

The Military Balance 1978-1979, published by the International Institute of Strategic Studies in London, provides the following figures on the Warsaw Pact forces (in Bulgaria, Rumania, and Hungary) that would predictably be deployed on the southern fronts: (13)

Land Forces	Bulgaria	Rumania	Hungary
Armored divisions	-	2	1
Motorized infantry divs.	8	8	5
Armored brigades	5	-	-
Mountain brigades	-	2	-
Missile brigades*	3	2	1
Artillery brigades	-	2	-
Paratroop regiments	1	1	-
Artillery regiments	4	3	3
AA artillery regiments	3	2	2
Anti-tank regiments	-	2	-

In summary, taking into consideration the land forces of NATO and of the Soviet Union as well, we have:

Divisions or Equiv.**	NATO	Warsaw Pact	(of which USSR)
Armored	4	6	2
Motorized Inf'y	7	24	7
Infantry + Paratr.	26	3	2

Considering the combat manpower in all types of formations, we find: 550,000 for NATO, as against 388,000 for the Warsaw

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* Missile brigades are equipped with SS Scud missiles.

** Divisions, brigades, or similar units totalled on the basis of three brigades per division. NATO forces include the Italian, Greek, and Turkish land forces, while those of the Warsaw Pact include the land forces of Bulgaria, Hungary, and Rumania and the Category I and II Soviet divisions deployed in Hungary (4 divisions, of which 2 armored) and in southwestern URSS which are assumed to be earmarked for operations on the Southern Fronts. (14)

Pact, of which 147,000 are Soviet troops. Finally, for main battle tanks in operational service, we find that NATO has 4,300 tanks available, as against the 6,800 of the Warsaw Pact (2,500 Soviet).

Moreover, a recent report by the Western European Union (WEU), (15) gives a much more pessimistic assessment, inasmuch as it not only reports five (not four) Soviet divisions in Hungary but also, unlike the Institute for Strategic Studies (which holds that the majority of the units in the southern Soviet Union are of Category III), takes into account the six divisions in the Odessa military district (of which four or five are of Category I) and the thirteen divisions (one airborne) in the North-Caucusus and Trans-Caucasus military districts.

On the basis of unclassified information gathered from the NATO commands, the WEU's Grant report indicates the following ratios of strength between NATO and Warsaw Pact land forces on the various fronts: (16)

Italy	Hungary USSR	::	1 : 1.4
Turkish & Greek Thrace	Rumania, Bulgaria, USSR	::	1 : 1.5
Eastern Turkey	USSR	::	1 : 3.6

For air strength, The Military Balance provides the following data: (17)

Tactical Aircraft*	NATO	Warsaw Pact	(of which USSR)
Light bombers	-	50	50
Fighter-bombers	628	375	125
Interceptors	220	1,000	425
Reconnaissance	90	220	150

Grant gives the following ratios for air strength: (18)

Italy	:	Hungary USSR	::	1 : 1.1
Turkish & Greek Thrace	:	Rumania, Bulgaria, USSR	::	1 : 1.8
Eastern Turkey	:	USSR	::	1 : 3.5

In reality, however, the strength ratio between these forces is more evenly balanced than these figures indicate, with a number of elements in NATO's favor. In fact, no Soviet troops are stationed in Rumania or Bulgaria, while, as has been said, the majority of the Soviet divisions that might be used on the Eastern Turkey-Soviet front are "skeleton" units. The Hungarian, Bulgarian, and Rumanian armies are small (with 91,000, 115, 000, and 140,000 men respectively), while the Rumanian and Bulgarian land units are thought to be at a fairly low level of operational readiness and are equipped with partly obsolete weapons and equipment. Though the in-

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* American aircraft aboard aircraft carriers and medium Soviet bombers which might be used in a tactical role are excluded.

fantry is adequately motorized even if it does not have the latest model armored personnel carriers, the Bulgarian, Hungarian, and Rumanian armored forces are still equipped only with T-34 and T-54/55 tanks. (19) And, as the following table shows, technically and operationally obsolete aircraft account for quite a significant share of the total tactical aircraft available:

	Tactical Planes	Obsolete	Percent.
Bulgaria*	243	180	74%
Rumania**	337	127	38%
Hungary***	116	-	-

The Hungarian Air Force does not possess attack aircraft, but only Mig-21 interceptors, although one should not underestimate the importance of the fact that in its most recent versions that airplane is capable of playing the double role of air defense and ground attack. The Rumanian and Bulgarian naval forces are quite small and are designed above all to carry out tasks of coastal defense. Hence, it is thought that their contribution in any possible confrontation between the two Alliances in the Mediterranean would be insignificant.

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* These are Mig-15s, Mig-17s, and Mig-19s, which went into service in 1948, 1953, and 1955, respectively.

** In addition to Mig-15s, Mig-17s, and Mig-19s, there are Il-28s, which went into service in 1949-1950.

*** All Hungarian tactical airplanes are Mig-21 interceptors.

Of course, the Warsaw Pact countries are also gradually modernizing their forces--the Bulgarian airforce has already begun receiving the first Mig-23/27 Floggers from the Soviet Union--but that modernization is conditioned and hindered by serious economic problems which do not allow the allocation of large amounts of resources to the defense budget. In fact, in 1977 Hungary, Bulgaria, and Rumania devoted just 2.6%, 2.5%, and 1.7%, respectively, of their gross national product to military spending. (20)

Moreover, in the context of an overall analysis of the threat, one must consider political factors, which are especially important in the southern zone. In fact, there is no clause in the Warsaw Pact treaty which explicitly obligates the Eastern-bloc countries to fight outside the limits of the Pact itself; furthermore, it is not at all certain that if it intended to wage war against NATO the Soviet Union could count on the full and unconditional military support of its allies. If this hypothesis is true for Hungary, because of the nationalism of its armed forces, the still-vivid memories of past history, and a latent antagonism toward the Soviet Union, it is all the more true for Rumania. For many years now Rumania has not permitted Warsaw Pact military maneuvers to be held on its soil; it did not take part in the invasion of Czechoslovakia in 1968; despite its strict adherence in formal terms to the Pact, it has always demonstrated a desire to carry on an autonomous and independent policy, both internal and international, even though it has observed the limits of rigid ideological orthodoxy; and it has adopted a more and more marked stance of non-alignment with respect to Soviet positions.

Finally, the role of Yugoslavia cannot be ignored. Military assessments, which refer to the "worst case," tend to consider Yugoslavia as partially or totally aligned with the Soviet Union in case of a conflict with NATO, and therefore disposed not only to allow free passage for Warsaw Pact forces across its territory and full use of air bases and ports, but even to participate actively in combat on the Italian and Greek fronts.

At present, however, after the conclusion of the Osimo Treaty with Italy and the normalization of relations with Greece, there is a complete absence of political motivation for Yugoslavia to provoke a confrontation with the bordering countries of NATO. Moreover, such a hypothesis would seem to be in profound contradiction with the entire postwar history of Yugoslavia. It runs counter to the intense nationalism and independent spirit of its people, to their knowledge that they would be jeopardizing all the political and social gains they have achieved so far. Of course, a post-Tito situation that led to an upsetting of present structures and present equilibria, perhaps caused by internal pressures more or less openly maneuvered from outside, could insert highly destablizing factors into the military equation of the southern flank. If, on the other hand, we take the hypothesis of a substantially trauma-free Yugoslavia after Tito, and consequently of active Yugoslav resistance to any attempt to violate its neutrality and non-alignment in any way, the weight of the Yugoslav armed forces would become a factor contributing to a considerable strengthening of NATO. (21)

What emerges from our analysis so far is that on the southern flank (in contrast to the situation in central

Europe), the Warsaw Pact has a low capability for launching a surprise attack against the NATO allies. In other words, the Soviet Union does not have a military posture in the South of such power as to permit engaging in war operations without a sufficiently long period of preparation. These preparations would have to include a series of measures that could not possibly go unobserved, especially if they were to be taken in a period of growing international tension: increasing the manpower in military units of categories III and IV (probably involving calling up the reserves), replacement of the most obsolete vehicles and equipment, raising the levels of capability and operational readiness of the armed forces. Given the scale and the complexity of these measures, strategic "warning" time would be sufficiently long to enable the implementation of Western contingency plans and the consequent movement of projected reinforcements from the United States.

This consideration tends to decrease the support role of the Sixth Fleet on the Southern flank in terms of immediacy and urgency, elements which are typical of the role of the American forces in central Europe. Among other things, this means an implicit recognition that there is not necessarily a direct link between the military situation of NATO on the southern flank and the American air/naval presence in the Mediterranean area, at least at its present levels of size and continuity. Rather, this presence should be considered in the more relevant terms of an anti-Soviet counter-force, as a factor in the preservation of a global balance of power and in the defense of American interests in the area, particularly in the Middle East.

Moreover, a realistic assessment shows that the most evident and important threatening element is precisely the presence of the Soviet fleet in the Mediterranean. This remains true even if the fleet's function is not so much anti-NATO as anti-American. In other words, the Soviet fleet's presence may be justified and motivated not only by its role as an offensive anti-NATO instrument on the southern flank (or, conversely, by its function in the defense of the Warsaw Pact). It may have a primarily anti-American function: in the framework of that overall equilibrium mentioned earlier; in the context of the mission of defending Soviet territory (given the nuclear capability of the planes aboard the American aircraft carriers); and in the defense of Soviet interests in the Middle East and North Africa. The fact that in case of conflict between the Alliances, along with its other tasks the Soviet fleet would be assigned the task of interrupting Western supply lines through the Mediterranean in no way weakens the preceding statements.

It remains the case that removing the U.S. and Soviet fleets from the NATO-versus-Warsaw-Pact "scenario" and considering them in the framework of a bi-polar confrontation over the two countries' special interests in the Mediterranean area--a confrontation, by the way, which has characterized the history of the Middle East since 1945--means not only recognizing their frequently demonstrated capabilities for independent action but also admitting the continued existence of a bi-polar terrain on which the two superpowers determine the terms and conditions of their presence.

Therefore, if the WP threat does not change its present appearance, but is gradually modified in a manner that

substantially parallels the increases in the NATO countries' defense capabilities, the third element of the frame of reference seems to point toward the existence of a zone where there is some possibility of establishing a dialogue between the two superpowers over arms-control measures in the Mediterranean. Such measures, obviously, could not fail to involve the presence of the Sixth Fleet.

The fourth element in the frame of reference is represented by the strengthening and technological modernization of the navies of NATO's Mediterranean countries. Italy, Greece, and Turkey (but especially Italy) are introducing modern units into their fleets, armed with anti-ship missiles and with especially sophisticated defense and anti-submarine systems. We shall limit ourselves to citing the most important innovations, without going into too much detail.

Italy. (22) The Naval Law approved by the Italian Parliament in March 1975 calls for a special appropriation of 1,000 billion Italian lire to be spent over ten years, with annual revision of the credits to make up for whatever depreciation may take place. The naval construction program includes: one flat-top cruiser, the Giuseppe Garibaldi; two missile-carrying destroyers, based on the most modern units of the Audace class, of about 4,000 ton displacement; four 2,500-ton Lupo-class missile-carrying frigates; two 1,000-ton submarines; and a number of minor vessels. The program also includes the modernization of other units, equipping them with sensors and more advanced weapons systems; and, finally, the procurement of 40 anti-submarine helicopters and 14 BR1550 Atlantic MAP and ASW aircraft.

The new units are rendered especially fit to carry out the mission of sea control by their technical features (with speeds above 30 knots, adoption of gas turbines and supercharged diesel engines, installation of propellers with adjustable blades, through insufflation of air); by their weaponry ("Teseo" anti-ship missiles (Otomat MK-2), anti-aircraft systems with anti-cruise capability, such as the Sea Sparrow or Albatros, armed with Aspide and Dardo missiles); by their anti-submarine capabilities (SH-3D and AB-212 helicopters, hull-mounted sonars and variable-depth sonars); and by the sophistication of their support systems (second-generation gunnery-control centers, with digital elaboration of data). All these features increase the Italian navy's sea-control capability. Moreover, the availability of anti-ship missiles increases their offensive power as well. (23)

In fact, the most significant element is the advent of the Teseo-Otomat on the combat units of the Italian navy--even Sparviero-class hydrofoils will be armed with that missile--along with their strengthened defense capabilities against threats from the air. This is certain to significantly affect the balance of power in the Mediterranean.

However, there are also reasons for doubt and perplexity. The Naval Law and the normal budgets, in fact, do not seem to attribute the necessary importance to auxiliary vessels. Only one squadron replenishment tanker, the Vesuvio, is programmed for construction, to be added to the Stromboli, which went into service in 1975. This factor could adversely affect the operational capability of the fleet, especially if it were necessary, in case of conflict, to extend operations to zones other than those of prevalent deployment of forces, (24) or to

take on greater responsibilities within the ambit of NATO.

By comparison with the British Royal Navy (which has a logistical fleet of more than 320,000 tons) and the French fleet (more than 64,000 tons), (25) the logistical tonnage of the Italian fleet appears quite inadequate (about 20,000 tons, including, besides the Vesuvio and the Stromboli, the support ship Pietro Cavazzale). This assessment remains valid even bearing in mind the larger dimensions and the more demanding assignments in the international field that are entrusted to the British and French navies.

Greece. The Greek Navy is outfitting itself with missile-launching Combatan III-class fast attack craft (constructed partly by the French shipyard at Cherbourg, partly by Greek shipyards), armed with Exocet and Penguin surface-to-surface missiles. (26) In addition, it has undertaken a program to modernize some of its destroyers by equipping them with 76-mm anti-aircraft artillery and modifying them so as to permit the embarkation of an anti-submarine helicopter.

Turkey. Turkey too is oriented toward the acquisition of missile-launching fast attack craft. The first model, the Dogan, built by the Lurssen shipyard of Bremen, West Germany, was delivered in August 1977, while another three units of the same type are under construction in Turkish shipyards. These units are armed with Harpoon and Penguin anti-ship missiles.(27) In addition, the Turkish navy has decided to provide itself with an autonomous naval air force by buying several AB-204 and AB-212 helicopters, as well as American S-2A and S-2E Tracker anti-submarine planes.

The steady strengthening of the NATO navies in the Mediterranean enables them to perform their operational missions more effectively, especially in the control of the "choke-points" in the Aegean and the central Mediterranean. This tendency could affect the assessment of how big a force is considered necessary, in a scenario of NATO-Warsaw Pact conflict, to conduct a victorious naval campaign. Thus it will indirectly affect the level of American forces present. In other words, an increased capability of the southern NATO nations to carry out more incisive military actions in the Mediterranean (especially in the aero-naval sector), still connected with the Sixth Fleet but no longer as dependent upon it as in the past, could present the United States with a concrete point of reference from which to evaluate possible choices with respect to a different kind of presence.

Finally, in a long-term perspective, such choices would also be facilitated if the uncertainty over France's attitude were resolved in a way that would give France a more direct presence in the military "fabric" of the southern flank. This would involve going well beyond the shifting of the French fleet to Toulon, the present connections with the Afsouth command, and the participation of French naval forces in NATO maneuvers.

The fifth and final element in the frame of reference concerns the political and military impact of possible choices that would significantly alter the make-up and strength of United States air and naval forces in the Mediterranena. An in-depth analysis will be presented further on. For the moment, the following discussion will be sufficient. We must

bear in mind:

(1) the complexity of the Mediterranean situation and the particular characteristics of its military aspects;

(2) the importance any such choice would have, both within and outside the confines of the Atlantic alliance, and the significance which would be attributed to it, quite apart from the true reasons behind it;

(3) the peculiarity of the relations between the United States and the allied countries on the southern flank.

Given these three situations, it would seem indispensable not only that such a choice be fully coordinated in every aspect with the United States' NATO partners, but also that it be "felt" outside the Alliance to be a choice which does not leave a dangerous power vacuum in the Mediterranean. Thus, it would be appropriate for such a choice to involve the Soviet Union, either directly as the result of negotiations over arms control in the Mediterranean, or indirectly, in the sense of not giving the Soviets any more room to maneuver in or any new possibilities for pressure or intervention. In any event, even in the case of a decision to change that might result from the successful conclusion of bilateral negotiations between the two superpowers, coordination between the United States and the allied countries is essential to preserve NATO-s already-fragile connective tissue in southern Europe.

Chapter I: Footnotes

1) The military objectives of the United States in the Mediterranean area were recently reconfirmed in the Defense department's annual report completed at the end of 1977 and published in summary form by the Congressional Research Service for the House Subcommittee on Europe and the Middle East. The objectives were stated as follows:

"General Objectives:
(1) To deter Soviet armed aggression against NATO states and other nations of the Middle East.
(2) To project sufficient power to provide an effective defense should deterrence fail.
(3) To encourage peace and stability in the Middle East.

"Specific Objectives:
(1) To maintain the strength of NATO's southern flank.
(2) To maintain Free World supply lines in the Mediterranean area.
(3) To support friendly states outside of NATO, particularly Israel.
(4) To deny the Soviet Union use of the Suez Canal in time of war."

See "United States Military Installations and Objectives in the Mediterranean," report prepared for the Subcommittee on Europe and the Middle East by the Foreign Affairs and National Defense Division, Congressional Research Service, U.S. Gov't Printing Office, Washington D.C., Mar. 27, 1977, p. 5.

2) Rear-Admiral Moorer, Deputy Chief of Naval Operations of the U.S. Navy, defined "sea control" as "the control of a designated air, surface, and subsurface area in the time frame and degree necessary for accomplishing a function or specific mission." Joseph P. Moorer, "U.S. Naval Strategy of the Future, in Strategic Review, vol. 4, no. 2, 1976, p. 78.

3) As happened during the Arab-Israeli war of 1973, when the Soviet fleet reached a total of 96 units.

4) Although not mentioned in the body of this chapter, it is obvious that an important factor in the modification of the Sixth Fleet's mission, aside from the "threat" factor, has been the entirely new geo-political and geostrategic situation that has taken shape in the Mediterranean area in the last ten years.

5) It is assumed that for a number of years now the aircraft with nuclear capabilities on board the carriers of the Sixth Fleet have not been considered components of the U.S. strategic deterrent and no longer form part of the planning of U.S. strategic forces (SIOP forces).

6) For at least a partial view of the debate and the complex questions it raises, of the many works that have appeared in the last few years, see: Adm. Stanfield Turner, "The Naval Balance: Not Just a Numbers Game," in Foreign Affairs, Jan. 1977, pp. 339-354; Gary Hart, "The U.S. Senate and the Future of the Navy," in International Security, vol. 2, no. 4, 1978, pp. 175-184; Reuven Leopold, "Technologically improved Warships: a Partial Answer to a Reduced Fleet," in ibid., pp. 185-194; Aa.Vv., "Power at Sea," in Adelphi Papers, nos. 122, 123, 124, published by International Institute of Strategic Studies, London, 1975; J. William Millendorf II, "American Maritime Strategy and Soviet Naval Expansion," in Strategic Review, vol. 4, no. 2, 1976, pp. 72-80; Adm. Worth H. Bagley, "The Decline of U.S. Sea Power (through incoherence and indecision)," in Orbis, vol. 21, no. 2, 1977, pp. 211-226; E.T. Wooldridge Jr., The Gorshkov papers: Soviet Naval Doctrine for a Nuclear Age, Orbis, vol. 18, no. 4, 1975, pp. 1109-1128; Peter Vigor, "Strategy and Policy in Soviet Naval Warfare," in Strategic Review, vol. 2, no. 2, 1974, pp. 68-75; Adm. William D. Houser, "Aviation in the Modern Navy," in Strategic Review, vol. 4, no. 4, 1976, pp. 61-67; Robert G. Weinland, "A Somewhat Different View of the Optimal Naval Posture," Professional Paper no. 214, Center for Naval Analyses, Airlington, Va., June 1978; Adm. Worth H. Bagley and Adm. Gene R. Larocque, "Superpowers at Sea: a Debate," in International Security, vol. 1, no. 1, 1976, pp. 56-76.

7) For the characteristics of the Aegis anti-aircraft system see Appendix, p.

8) Harold Brown, Department of Defense Annual Report, Fiscal Year 1979, Washington, D.C., Feb. 2, 1978, p. 173.

9) ibid., p. 167.

10) The program for Fiscal Year 1979 proposed spending $53 million for the development of this aircraft (in addition to the $46 million appropriated for Fiscal 1977 and the $22 million planned for Fiscal 1978). Brown, ibid., p. 193.

11) The Fiscal Year 1979 program calls for the development of two prototypes (cost, about $40 million) and further funding for research and development of particular subsystems of the aircraft. Brown, ibid., p. 221. However in the Fiscal 1990 budget no funds have been provided for the development of the AV-8B.

12) In this case, as in many others throughout this paper, the term "naval forces" includes naval aviation and amphibious forces.

13) The Military Balance 1978-1979, International Institute for Strategic Studies, London, 1978, pp. 13-15 and 108-111.

14) As concerns the classification of the Soviet divisions: Category I divisions are fully equipped and are at manpower levels of 75% to 100%; Category II divisions have manpower levels of 50% to 75% and an equivalent proportion of combat vehicles; Category III divisions have about 25% manpower levels and probably also a proportional amount of combat vehicles (some of them technologically obsolete).

For Eastern European countries, divisions of Category I are at 75% of projected strength, those of Category II at 50%, and those of Category III are little more than "skeleton" formations. The Military Balance 1978-1979, p. 9, 13.

Lawrence and Record use a slightly different classification system by which Category I Soviet divisions are those at full manpower and equipment levels, ready for combat on M-Day (the first day of mobilization); Category II divisions are at 75% manpower but with full equipment, and are considered unusable earlier than day M + 30; Category III divisions are "skeleton" units, need both men and equipment

before they can be used, and are considered unutilizable before day M + 120. Richard D. Lawrence and Jeffrey Record, U.S. Force Structure in NATO: An Alternative. Washington, D.C., Brookings Institution, 1974, pp. 110-111.

15) Assembly of the Western European Union, 24th session, "Security in the Mediterranean," paper presented by Mr. Grant, document no. 776, May 31, 1978, p. 7.

16) ibid., p. 8.

17) The Military Balance 1978-1979, op. cit., p. 112.

18) Assembly of the WEU, document no. 776, op. cit., p. 9.

19) Rumanian, Hungarian, and Bulgarian armored units are equipped with T-54 and T-55 tanks built between 1948 and 1963 and now no longer in production, while the bulk of troop transport vehicles of the motorized units is comprised of BTR-50s, a vehicle that went into service in the Soviet army in 1955, and the BTR-60, a vehicle which appeared for the first time in the military parade in Moscow in 1961.

20) The Military Balance 1978-1979, op. cit., p. 88.

21) For the size and weaponry of the Yugoslave armed forces, see The Military Balance, op. cit., pp. 32-33.

22) Regarding the Naval Law and the naval construction program, see Défense Nationale, July 1977, pp. 166-67; also "La Marina Militare Italiana Oggi," in Aviazione e Marina Internazionale, Oct. 1978, pp. 36-45.

23) For the characteristics of the most important kinds of unit, see Appendix, p.

24) The areas where the Italian navy will carry on nearly all of its activities in time of war will be principally in the central-Western Mediterranean, into which the Italian peninsula projects, divided into the four major operational basins: the Adriatic, the Tyrrhenian, the Sicilian Channel, and the Sardinian Channel. See Libro Bianco della Difesa: La Sicurezza dell'Italia ed i problemi delle sue forze Armate, Rome, Jan. 1977, p. 131.

25) Speech of the French Naval Chief of Staff, Adm. Joire--Noulens, to the Centre des Hautes Etudes Militaires, Mar. 16, 1976, cited in Défense Nationale, July 1976, p. 30.

26) For the characteristics of the Exocet and Penguin missiles, see Appendix, p.

27) For characteristics of Harpoon missile, see Appendix, p.

CHAPTER II: The Soviet Union in the Mediterranean: The Meaning and Importance of a Naval Presence.

Within twenty years the navy of the Soviet Union has been transformed. Formerly capable only of controlling and defending exclusively those maritime zones bordering its own territory, it has now become a force capable not only of "showing the flag" in all the world's seas but also of making its presence felt concretely. Hence, it can exert political and military pressure in any region felt to be of special national interest and in all crisis areas where a naval power vacuum has been created or is being created. In case of conflict, it is a force capable of effectively opposing allied naval forces and threatening the maritime supply lines vital to the survival of the United States and Europe, while preserving its capability to defend its own coasts. It is capable of mounting amphibious operations. And while for the moment its strength is limited and its range of operations is restricted to areas close to its own territory, this amphibious force is being steadily strengthened both in size and in quality. Finally, by means of its merchant fleet, which has seen an equally impressive growth, the Soviet Union is capable of establishing and maintaining a sea bridge for resupply, fully adequate to its needs, toward countries involved in regional conflicts which have asked assistance.

On the other hand, the Soviet navy still has sectors of evident weakness. Its anti-submarine capability remains inadequate; its submarines are still relatively noisy; it lacks sufficient anti-aircraft defenses; and it has a very

limited capability for carrying on prolonged combat operations. Many of its missile systems lack a re-loading capability; it possess limited capabilities for giving logistical support to its forces at sea, and its auxiliary vessels are particularly vulnerable; it has limited ability to project its power ashore, since its first aircraft carriers were built only recently and its amphibious forces are still not really fit for prolonged operations in regions far away from Soviet territory.

Logically, the transformation and strengthening of the Soviet navy had to be reflected in the Mediterranean. Even so, the increase in the Soviet naval presence in this sea in the last few years has been particularly significant. The increase is most clearly visible if we examine the geographical distribution of U.S. and Soviet naval combat units (1) between 1965 and 1975. In fact, while on the average Soviet naval deployment rose from 2 to 3 units in the Pacific, from 2 to 10 in the Atlantic, and from 0 to 9 in the Indian Ocean, in the Mediterranean the increase was from 4 to 28 units. (2)

Even more significant is the increase in the average number of ships present daily from the overall Soviet naval forces, and the sharply upward trend of total annual ship-days of Soviet presence from 1964 to 1977. (3)

The size of the Soviet naval squadron varies not only from year to year with changes in internal and international policy, but also within the year, from season to season, with increased presence and activity in the spring and summer, when meteorological conditions are better.

Year	Yearly Ship-Days	Average Daily Strength
1964	1,500	5
1965	2,800	8
1966	4,400	12
1967	8,100	22
1968	11,000	30
1969	15,000	41
1970	16,500	45
1971	19,000	52
1972	18,000	49
1973	20,600	56
1974	20,200	55
1975	20,000	55
1976	18,600	50
1977	-	46

The various authorities (Lewis, Weinland, and Grant) estimate the typical composition of the Soviet Mediterranean squadron differently.

For Lewis, the average presence can be estimated at around 55 units, with the following typical composition: (4)

2 cruisers
4 destroyers
12 submarines, including some nuclear submarines
4 amphibious craft with infantry and marine units
squadron re-supply ships
repair vessels
auxiliary support ships
Auxiliary General Intelligence units (AGI)

For Weinland, on the other hand, the typical make-up is as follows:

2-4 cruisers, some or all armed with missiles, plus periodically a Moskva-class helicopter carrier

9-12 destroyers and escort vessels, some of them armed with missiles

1-3 minesweepers

1-3 amphibious units

8-10 submarines armed only with torpedoes

2-3 submarines armed with cruise missiles

15-20 support units (supply, repair vessels, etc.)

5-6 units for surveillance and oceanic research and for gathering intelligence data.

Thus, for Weinland, with a total of 10-13 submarines, 13-22 combat ships, and 20-26 auxiliary vessels, it is a naval force that varies from 43 to 61 units. (5)

In Grant's view, the composition of the fleet in 1977 was:

10-12 combat ships

8-9 submarines

15-20 auxiliary ships

5-7 units for intelligence-gathering and for special missions. (6)

This typical composition is often reinforced by a Moskva-class helicopter carrier and, more recently, i.s. since the summer of 1976, by an aircraft carrier (or anti-submarine cruiser, as it is officially designated in order to permit its passage through the Dardanelles), the Kiev.

After the loss of their naval bases in Egypt, Soviet units can avail themselves only of Syrian ports--Tartus and, in a limited manner, Latakia. However, they continue to utilize

a series of anchorages in international waters, located extremely strategically in the neighborhoods of the more important "choke points": off the islands of Alboran, Lampedusa, Kithira, and Lemno; west of Melilla, in the Gulfs of Cadiz, Hammamet, and Sollum; near Cape Passero and Cape Andreas (Cyprus); east and south of the island of Crete. Of these, the most heavily used are those of Alboran, Kithira, Hammamet, Sollum, and those around Crete. (7)

The Grant report gives the following distribution of Soviet naval units among the various anchorages on a typical day: (8)

Gulf of Cadiz	1 AGI (Auxiliary General Intelligence) unit
West of Melilla	1 supply ship (AO) 1 auxiliary unit
Gulf of Hammamet (main anchorage)	3 destroyers (DE) 1 supply ship (AO) 1 submarine support vessel 1 submarine
Island of Kithira	1 missile-carrying cruiser (CLG) 2 missile-carrying destroyers (DG) 1 supply ship (AO) 1 auxiliary unit
Gulf of Sollum	1 missile-carrying cruiser (CLG) 3 destroyers (DE) 1 minesweeper (MSF) 6 support units
Cape Andreas	2 medium landing ships (LSM)
Port of Tartus	1 floating dock 1 minesweeper (MSF) 4 auxiliary units 1 submarine 1 submarine-support unit

The number and the degree of utilization of these anchorages would seem to confirm the Soviet Union's limited capability for logistical support for its forces at sea. Indirectly, it also confirms the lack of availability of port facilities, either permanent concessions or use rights, that can effectively provide for the needs of the fleet, especially in the central and western Mediterranean. However, the distribution of these anchorages does give the Soviet units the needed flexibility of action throughout the Mediterranean basin. Nevertheless, in case of conflict they would be inadequate without the possession of land bases.

Despite the diversification of its goals, which resulted naturally from its increased capabilities, the Soviet Navy's primary mission remains what is commonly called "sea denial," or, in McGwire's terminology, "sea prevention." (9) This means denying the adversary free use of the sea and cutting maritime communication and supply lines which are vital for the survival of the United States and Europe. In the Mediterranean, this mission has been directed first of all toward opposing what the Soviets consider the most worrisome threat: a possible nuclear attack against Soviet territory by nuclear submarines and by the fighter-bombers aboard American aircraft carriers. Thus the Soviet Mediterranean fleet is characterized by a high capability to respond to American actions, both in terms of development of ships and in terms of deployment.

In fact, it is precisely in the Mediterranean that the typical features of that mission and the action-reaction factors in it are most clearly visible. In 1958, Soviet submarines operating out of their base in Valona, Albania, were

first deployed in the Mediterranean, probably as a reply to the assignment of A3D fighter-bombers to the flight squadrons of the American aircraft carriers, whose range enabled them to penetrate Soviet territory. In 1964, the Soviets first asserted a continuous naval presence in the Mediterranean, most likely in response to the entry of the first Polaris submarines into the Mediterranean in March 1963. And in 1973, during the Arab-Israeli war, the Soviet Union strongly increased its naval presence and clearly deployed its units as a countervailing force with the aim of limiting the range of options open to the United States.

This does not mean that the U.S. Sixth Fleet has been the sole cause and justification of the Soviet naval presence and that consequently had there been no Sixth Fleet there would have been no Soviet presence. Aside from the Soviet Union's historical interest in the Mediterranean, and apart from its need to counter a strategic threat felt to be particularly disturbing, Soviet naval deployment was the logical consequence of a foreign policy which, as it took on global dimensions, needed the military instruments appropriate to those dimensions. Thus, the "sea-denial" mission of the Soviet fleet, aside from its weight in the military picture, has first-order political significance, in terms of support (either indirect,as a presence, or direct, as a counterforce) for an allied or client state of the Soviet Union in confrontation or conflict with a U.S. ally or client state.

In fact, to carry this analysis a bit further, the Mediterranean mission of the Soviet naval squadron might be more correctly designated a "mission-denial mission," that is, a mission intended to make more difficult, if not impossible,

the accomplishment of the typical missions of the Sixth Fleet. And in this context its political "value" is quite elevated, superior to its purely military worth. This is because the Soviet Union is aware that militarly the limits on U.S. action imposed by its naval presence are similar to those imposed on it by the presence of the Sixth Fleet; similar, but substantially less constrictive, given the overall American superiority. Furthermore, the Soviet Union is also aware of the difficulties of achieving effective "sea denial" beyond a short period at the onset of any hypothetical conflict, unless it were to possess full control of access to the Mediterranean or to have air and naval bases in North African and Middle Eastern countries at its disposal.

However, this does not imply that the "mission-denial mission" of the Soviet naval forces does not affect the Sixth Fleet's missions profoundly. Therefore, as stated earlier, it seriously affects the capabilities of the United States to pursue its own military objectives in the Mediterranean area. In actual fact, the effects of the Soviet presence would be important not only in the hypothesis of a conflict on the southern flank between the two Alliances (whether provoked by a local crisis or caused by a widening of a conflict begun in northern and central Europe), but also in the hypothesis of a crisis external to NATO. (10) Indeed, in this latter situation the United States position appears even more critical. In the former case, the Sixth Fleet would be favoured by the likely longer warning period, the cooperation and support of air and naval forces of allied countries, and the full availability of bases on their territory. In the latter case, the United States might find itself isolated, if its European allies were

to consider the crisis outside the letter and the spirit of the North Atlantic treaty and not in their own interests. Or even if they were to express their solidarity with the United States, they might be politically influenced by the possible economic consequences of their attitudes and decisions. That is to say, the United States might be forced to rely only on its own forces and its own independent logistic-support capabilities. As in 1973, the United States could be compelled to make relatively inflexible use of its naval forces, with a significant increase in their vulnerability. (11)

But aside from such external constrictions on U.S. action (the presence of the Soviet fleet and slight or non-existent allied support) there are also the constrictions characteristic of any crisis situation likely to lead to a clash with the Soviet Union. And the fact that for the latter such constrictions are equally strong (perhaps even stronger) does not alter the terms of the questinn. Moreover, the United States might feel these constrictions all the more intensely because of the composition and structure of the Sixth Fleet. For instance, the real and symbolic value of the aircraft carriers might induce an excessive self-restraint, for fear of exposing them to enemy attack, a fear which might be disproportionate to the kind and severity of the crisis and the interests at stake. Similarly, the same consideration could lead to a stronger-than-necessary reaction, in the case of a threat to the carriers which took the form of an act of war. The consequence could be a dangerous military escalation and politically extreme reactions to the crisis. For these reasons, the Sixth Fleet's use flexibility could turn out in practice to be less than it is expectd to be. As a consequence, because

of the high level of "confrontation" and "violence" it represents and because of the importance of its main units, the fleet may be an ill - adapted instrument for crisis management in the Mediterranean. This would be true above all for small-scale crises or crises in which the Soviet Union was not directly involved, but it would apply to some extent in all crises, at least in the initial phase.

The Naval Threat

An analysis of the actual threat of Soviet naval forces in the Mediterranean is appropriate here, since this is certainly the most important of the external limitations on U.S. action that we have mentioned. We must assess the Soviet fleet's actual capability for accomplishing the missions assigned to it.

The Soviet Mediterranean squadron is made up of surface vessels from the Black Sea Fleet, while its submarines come from the Baltic and North Sea Fleet. (12) On the basis of the Military Balance 1978-79 data, (13) taking into account the total number of ships subdivided by classes, the total number of ships assigned to each fleet and assuming a subdivision of those vessels based above all on the importance of the zone in which they are expected to be employed, my estimate of the make-up of the Soviet Black Sea Fleet (major--tonnage ships only), is as follows:

1 Kiev-class aircraft carrier

2 Moskva-class helicopter-carrying cruisers

2 Kara-class missile cruisers (SSMs and SAMs)

1 Kresta I-class missile cruiser (SSMs and SAMs)

3 Kresta II-class cruisers (SSMs and SAMs)
1 Kynda-class missile cruiser (SSMs and SAMs)
3 Sverdlov-class cruisers (one equipped with SAM)
6 Krivak-class missile-carrying destroyers (SSM)
2 Kanin-class destroyers (SAM)
1 Kildin-class destroyer (SSM)
7 Kashin-class destroyers (all with SAM, 3 with SSM)
2 Kotlin-class destroyers (modified SAM)
6 Skory-class destroyers
6 Kotlin-class destroyers
6 Mirka-class frigates
18 Petya-class frigates
10 Riga-class frigates
1 Kola-class frigate
25 submarines

Défense Nationale gives other figures. (14) According to the French magazine, the approximate composition of the Soviet Black Sea Fleet is as follows:

2 helicopter-carrying cruisers
6 missile-armed cruisers
4 classic cruisers
16 missile-armed destroyers
10 classic destroyers
65 escort vessels of all sorts
20 corvettes and missile-armed fast patrol boats
30 diesel-powered submarines

These figures differ from my estimate most importantly in the number of missile-carrying destroyers and escort vessels.

However, since the various classes of the ships are not specified, nor is it indicated whether those called missile--ships are armed with SSMs and SAMs or with SAMs only, it is difficult to carry out a more detailed comparative investigation. Thus in my calculations I have chosen to rely on the Military Balance data, though I have re-worked them myself, because they make possible a less arbitrary, although still approximate, assessment.

For the sake of simplicity, I have considered just two cases: the first, which assumes a Soviet naval presence capable of projecting a medium level of threat; and the second, which assumes a presence capable of projecting a high level of threat (the classic "worst case"). Moreover, I have assumed that the corvettes and Fast Patrol Boats (even those armed with surface-to-surface missiles) of classes Nanuchka, Osa I, Osa II, etc. operate primarily in the Black Sea and in the narrow confines of the Aegean. Hence they may be ignored in the assessment of the threat to the Sixth Fleet. Finally, though aware of the dangers of over-simplification, I have limited the investigation of the threat to a single element, which while not the only factor is certainly the most important: the number of missiles that Soviet units would be capable of launching against the Sixth Fleet.

First Case: Medium level of Threat

Under this hypothesis, we assume that about 50% of the Black Sea Fleet's SSM-armed combat ships are transferred to the Mediterranean to form the nucleus of the Soviet squadron. Thus it is assumed that at the moment of transition from the

state of maximum tension to that of open military conflict, this force would be present, in addition to 6 submarines, armed with anti-ship missiles, from the Baltic and North Sea Fleet. That is, it is assumed that at the outbreak of hostilities the Soviet anti-ship missile threat would be composed of: 3 cruisers (1 Kara, 1 Kinda, 1 Kresta II), 5 destroyers (3 Krivak, 1 Kildin, 1 modified Kashin), 2 Charlie-class submarines, 2 Juliett-class submarines, and 2 Echo II-class submarines.

As already stated, these forces would represent only a fraction of the Soviet fleet's effective combat capability in the Mediterranean. They would be complemented by other destroyers, escort vessels, submarines armed only with torpedoes (presumably 6 to 8 Foxtrots), and supported by numerous auxiliary vessels.

The following table, taking into account the missile armament of these ships, gives the total missile threat, 84 missiles: (15)

Missile	Kara	KrestaI	KrestaII	Kynda	Krivak	Kashin	Kildin	C	E	J	Tot.
SS-N-10 (SS-N-14)	1x8		1x8		3x4						28
SS-N-3				1x8					2x8	2x4	32
SS-N-11						1x4	1x4				8
SS-N-7								2x8			16
Total											84

Second Case: High level of Threat

For this second case, I make the assumption that about 80% of the Black Sea Fleet's SSM-carrying ships have been transferred to the Mediterranean, along with 9 submarines from the Baltic and North Sea Fleet, and that they are present at the outbreak of hostilities. Of course, it is reasonable to assume that the number of other units would be increased as well, with a probable total of 9 to 12 Foxtrots. In short, this case would envisage the presence of 5 cruisers (1 Kara, 1 Kresta I, 2 Kresta II, 1 Kinda), 7 destroyers (4 Krivak, 1 Kildin, 2 modified Kashin), 3 Charlie-class submarines, 3 Juliett-class, and 3 Echo II-class. In this case the missile threat would become:

Missile	Kara	KrestaI	KrestaII	Kynda	Krivak	Kashin	Kildin	C	E	J	Tot.
SS-N-10 (SS-N-14)	1x8		2x8		4x4						40
SS-N-3		1x4		1x8					3x8	3x4	48
SS-N-11						2x4	1x4				12
SS-N-7								3x8			24
Total											124

If the threat represented by torpedoes is also taken into consideration, assuming the presence of 8 Foxtrot submarines in the first case and 12 in the second (in addition to the already-mentioned submarines with cruise missiles), we would obtain:

	First Case	Second Case
Echo II	2 x 10 = 20	3 x 10 = 30
Charlie	2 x 8 = 16	3 x 8 = 24
Juliett	2 x 10 = 20	2 x 10 = 30
Foxtrot	8 x 10 = 80	12 x 10 = 120
Total Torpedoes	136	204

As always, the bare numbers can give an oversimplified and hence biased view of a situation which is in reality much more complex. It is necessary to put this partial view into clearer focus in the light of several considerations.

(1) The first, general consideration, refers to a real case. During the Arab Israeli conflict of 1973, the Soviet fleet in the Mediterranean deployed a total of 80 ships as of October 24 (including 26 warships and 16 submarines) and 96 ships as of October 31 (including 34 warships and 23 submarines). Thus, according to Admiral Elmo Zumwalt, it possessed the following "first-launch" capacity: (16)

October 24:	40 SSMs
	250 Torpedoes
	28 SAMs
October 31:	88 SSMs
	348 Torpedoes
	46 SAMs

(2) There remains some doubt and uncertainty as to the effective role and capabilities of the Soviet SS-N-10 missile carried by Kara, Kresta II, and Krivak-class ships. Classified as a surface-to-surface missile with anti-ship functions

it has recently been re-designated SS-N-14 and is considered by some sources as an exclusively anti-sub missile. Other sources, however, while considering it primarily an anti-sub missile, feel it also has anti-ship capability.

In fact The Military Balance, in the previously-cited list of these units' missile weaponry, mentions only surface and air systems as part of their armament. Not only that, but the SS-N-10 itself does not appear in the table of anti-ship missiles, while the SS-N-14 is explicitly called an anti-sub missile, not a surface-to-surface missile. (17)

Michael MccGwire has stated that "The Karas are equipped with anti-sub missiles, not, as was originally assumed, with SSMs of the SS-N-10 type" and that "at present it is fairly certain that the principal missile system of the Kresta IIs consists of anti-sub missiles and not of surface-to-surface missiles. Moreover, it is possible that the Kresta Is are equipped with comparable missiles rather than with SS-N-3s." (18)

Johan Jørgen Holst has written that "The SS-N-10 might possess a double anti-sub and anti-ship capability." (19) Jane's Weapon Systems 1978 seems to suggest that the SS-N-14 is an anti-sub missile different from the SS-N-10 but capable of using the same launching systems. (20) Finally, the U.S. department of the Navy, in reporting the armament of Kara, Kresta II, and Krivak-class ships, calls the SS-N-14 exclusively an anti-submarine weapon. (21)

Thus, if, as now seems certain, the SS-N-10 is equivalent to the SS-N-14, with exclusively anti-submarine capability, the total missile threat against the surface vessels of the Sixth Fleet is reduced to 56 missiles in the case of a medium

level of threat and 84 missiles in case of a high level of threat. These figures, incidentally, are very close to those provided by Admiral Zumwalt.

(3) The SS-N-3 missile is an old-model weapon, and hence certainly suffers problems of effectiveness and reliability. Moreover, if its considerable range (over 250 nautical miles) is to be taken advantage of and sufficient accuracy still to be attained, it requires mid-course guidance. This mid-course guidance can be provided by aircraft or helicopters, systems which are quite vulnerable to enemy attack (interceptors, surface-to-air missiles, anti-aircraft guns). This limitation adversely affects the SS-N-3's accuracy and the flexibility of its employment. Another limitation is that sub-marine-mounted SS-N-3s can only be launched from the surface. Finally, iy seems that this missile is also limited as concerns its minimum range, so that its threat is reduced when the opposing units find themselves relatively near one another, as often happens in "shadowing" operations. (22)

(4) The Soviet units' anti-ship missile systems appear to lack re-loading capability (only the Kinda-class cruisers have it). Hence, presumably the number of SSMs on board is limited. This represents a very serious limit on combat operations that last beyond the initial exchange of fire, and reveals a vital dependence on logistical support, which could be unavailable or could arrive too late.

(5) The SS-N-11 missiles (on board Kildin and Kashin-class destroyers) and the SS-N-7 (on board Charlie-class sub-marines) have a maximum range of about 50 and 55 kilometers, respectively. This means that in order to get themselves in

position for launching, these Soviet ships and submarines will have to enter the defense perimeter of the Sixth Fleet Task Groups. This means that surface vessels certainly, and submarines fairly probably, will be located, followed, checked, and hence attacked immediately after the launching of their first missiles. Therefore the missile threat can be reduced on the basis of the Sixth Fleet's ability to use its resources (escort vessels, attack planes, anti-sub planes and helicopters) to erect a barrier or defense screen, with a high degree of reaction-capability, based on an efficient command and control system and a communications network highly resistent to jamming and interference. This defense system is capable of fulfilling certain deterrent function, and in any event it is capable of reducing the effectiveness and the impact of a surprise attack.

(6) The operational capability of the Black Sea Fleet may be less than is assumed. In this case, the array of missile units which we have designated as the basis for calculating a medium level of threat might correspond in reality to the maximum level of threat the Black Sea Fleet is capable of mounting. The same argument goes for the presence of submarines equipped with cruise missiles. The Soviets might be reluctant to use a large number of these units as reinforcements in the Mediterranean, because they can be more usefully employed in the Atlantc, especially if the crisis were expected to develop into open conflict and if they had no bases at their disposal along the African coast. In other words, the Soviets might consider it scarcely rational to utilize modern units in a closed sea whose access routes they do not control, on a mission which could also be carried out

by relatively less sophisticated submarines armed only with torpedoes. Under this assumption, while the number of submarines present in the Mediterranean might not change, the number of Charlie, Juliett, and Echo-class subs would be less than in the preceding analyses. Consequently, the total missile threat would be reduced.

The Air Threat

Our analysis must be complemented by an examination of the threat represented by Soviet naval aviation forces, posted primarily in the Crimea, assigned to the Black Sea Fleet and intended to operate in the Mediterranean theater.

The information available on the air forces is even more divergent and contradictory than that on naval strength. The International Institute for Strategic Studies (23) announces a total of 350 bombers (280 Tu-16, Badgers, 40 Tu-22 Blinders, 30 Tu-26 Backfires) assigned to naval aviation, but does not give details of their distribution among the various fleets. According to Défense Nationale (24) the total number of bombers is 460, of which 130 are assigned to the Black Sea Fleet. Clarence A. Robinson, Jr., Military Editor of Aviation Week and Space Technology, attributes to the Black Sea Fleet an air force constituted by 57 Tu-16 Badgers (plus 4 electronic-warfare models and 13 tanker models), 25 Tu-22 Blinders, and 16 Tu-26 Backfires. (25)

In our analysis we will consider only the threat represented by air-to-surface missiles. Robinson's figures are here adopted as the most reliable, but we have rounded off the

number of Badgers to 60 and of Backfires to 20. As with the naval forces, we will examine two cases: the first a medium level of threat and the second a high level.

The first case, based on 50% efficiency and thus on an availability of 40 planes and the missile weaponry of which they normally dispose, provides the following picture:

	Badger	Backfire	Total
AS-4 Missile	-	10 x 1	10
AS-5 Missile	30 x 2	-	60
TOTAL			70

In the second case, based on 70% efficiency and consequent availability of 56 planes, we get:

	Badger	Backfire	Total
AS-4 Missile	-	14 x 1	14
AS-5 Missile	42 x 2	-	84
TOTAL			98

The totals for the first and second cases rise to 90 and 112, respectively, if it is considered that the Backfire is armed with the new AS-6 missiles (2 missiles per plane, mounted under the wings).

However, the seriousness of this threat too is diminished by several considerations:

A. The information available on the characteristics and the performance of these missiles is not sufficient to allow an exact assessment of their capabilities. But in any event

it is believed that their accuracy is not great, since it depends on inertial navigation systems or on external mid--course guidance. In the end, their accuracy depends greatly on target-position data obtained before launching and on the effectiveness of the missile's own terminal guidance system. Positional information could come either from units of the Soviet Fleet engaged in "shadowing" the Sixth Fleet or from a land-based operations center, which in its turn would have gotten its data from an ocean reconnaissance satellite. (26)

However, this presumes not only the availability of satellites in orbits capable of covering the Mediterranean area but also the existence of a centralized command and control system and an efficient communications network linking ships, planes, and the operations center on land.

B. The speed of the AS-4 and AS-5 does not appear great enough to make interception particularly difficult. During the Arab-Israeli conflict of 1973 almost all the AS-5 missiles launched by Egyptian Badgers were shot down by Israeli fighters or else failed to hit their designated targets becayse they were deflected from their trajectories by special counter-measures, presumably of an electronic nature. (27)

C. Finally, there is one other general consideration, equally valid for SSMs and ASMs. This is that the assumption of 100% efficiency is completely unrealistic, especially in a war situation. In fact, it is impossible to imagine that there would be no inefficiencies or malfunctions before, during,and after the launch phase; that all the planes would take off correctly and that technical problems in flight would

not force some of them to return to base; that there would be no errors on the part of the crews; or that environmental factors (abnormally high seas, limited visibility, etc.) would not influence the course of events.

In fact, therefore, the previously estimated missile totals should be reduced by at least 10-20% (perhaps by a greater percentage, depending on the training of the technical personnel and the quality of maintenance), leaving aside possible defensive actions by the American forces.

All of this notwithstanding, with 45 SSMs and 56 ASMs in the more favorable case, 67 SSMs and 78 ASMs in the worst case, the level of threat would appear quite considerable; (28) all the more so if we accept the possibility of a pre-emptive strike by Soviet forces, carefully planned and coordinated among the three components (ships, submarines, naval aviation bombers), in such a way as to combine maximal effectiveness with maximum surprise. This possibility, in fact, presupposes not only the Soviet Union's political intent to provoke a global clash with the United States; in addition, it presupposes the existence and functionality of a highly sophisticated $\underline{C^3}$ system. But there is likely to be an inherent tendency for Soviet units operating in the Mediterranean to "pre-empt." Several factors push them in this direction: the awareness of their inferiority and of their inability to sustain prolonged combat operations; the awareness of their slight chances of survival in case of closing of the straits, the lack of air support, the unavailability of bases; the fact that the American aircraft carriers represent a nuclear threat to Soviet territory; and Soviet military doctrine itself,

which sees offensive action and surprise as the fundamental ingredients of success. (29)

Interruption of Communication Lines

No discussion of the mission of the Soviet fleet would be complete without an analysis of its effective ability to cut off maritime communication lines, i.e. commercial traffic, in the Mediterranean.

Ordinarily, attempts to assess such capability refer to the example of World War II and the Battle of the Atlantic. In particular, they point to the fact that the German Navy, with fewer than 50 operational submarines at the outbreak of hostilities, was able to inflict heavy losses on the allied convoys, coming close to completely cutting the flow of supplies from the United States to Britain. In the hypothesis of a possible conflict, the projections of the experts and the official projections of the U.S. Department of Defense seem to go back to those experiences. They foresee heavy losses in the initial phase, followed by gradual neutralization of Soviet forces, and a final situation of allied control of the Atlantic in terms of the capability to supply the European continent adequately.

However, in the Mediterranean the picture could be rather different. In case of war, the first concern of the Soviet forces will be the sea battle against the Sixth Fleet, whose outcome, even if favorable, could not fail to seriously damage Soviet ability to carry out further sea-denial operations, at least in the absence of major reinforcements. But,

as has already been said, it is foreseeable that the Mediterranean would be substantially closed to Soviet vessels, through a closing of the Bosphorus and because of the extreme difficulty of an unobserved and unopposed passage of Soviet submarines through the Straits of Gibraltar. Moreover, allied maritime traffic would be carried on primarily in the Western and central Mediterranean, a region in which it would be easier to provide convoys with air cover by NATO's land-based planes (including MAPs armed with Harpoon ASMs). In any case, it would be more difficult for the planes of the Soviet navy to operate without available airbases in the countries of the North African coast.

Finally, other statistics on the convoy war provide a more variegated and less gloomy picture. In World War II, between 1940 and 1943, the English air and naval forces did not succeed in cutting off logistic supplies between Italy and North Africa. Considering the nature of the cargos and the countries concerned, the proportion of men and material that safely reached their destination was quite high. (30)

Type of Cargo	Destination	% Arrived
Men	Libya	91.6%
Material	Libya	85.9%
Fuel	Libya	80.0%
Men	Tunisia	93.0%
Material	Tunisia	71.0%
Fuel	Tunisia	72.0%

And all this despite Britain's possession of a crucial strategic point like Malta, its air and naval forces' easy access to the Mediterranean, the advantages represented by the

use of the most technically advanced radar and sonar, and, since they had cracked the code, the possibility of deciphering any messages relating to convoy movements intercepted from the Italian and German communication networks. And notwithstanding the poor Italian air cover and protection and the quantitative, and in some respects also qualitative, inadequacies of the Italian escort units.

Obviously, such statistics are not absolutely valid. Surface ships and submarines today are vastly superior to those used during the second world war in terms of speed and offensive capabilities. Of course, at the same time there has also been vast improvement of the anti-aircraft and anti-submarine capabilities of the surface vessels assigned to convoy escort duty.

On the other hand, it would be easier for the Soviet Union to try to cut off maritime traffic bound for Southern Europe outside the Mediterranean: in the Indian Ocean, along the routes south of the Cape of Good Hope, along the routes toward the Straits of Gibraltar. This would be even more likely if, as is not at all improbably, it would be possible for the Soviets to utilize the ports and airports of several African countries, such as Mozambique, Angola, and Guinea, for instance. And the use of Badgers and Backfires in an anti-ship role, working out of African bases, would be facilitated by the total lack of any Western interception capability in those regions.

The problem would change if the Soviets had port and airport infrastructures in North African countries at their disposal. But it would change especially if the naval and air forces of those countries (Libya possesses medium Tu-22

Blinder bombers and Mig-23 Flogger and Mig-25 Foxbat fighters) were to participate in operations against NATO forces, even with the limited effectiveness they would have, given their low operational efficiency.

Sea denial, which appears difficult to achieve through the use of surface units and submarines, may be attainable--particularly in the Mediterranean basin--through an extensive use of mines. This is a sector of naval warfare which is perhaps undervalued and in which the Soviet Union seems to have a certain advantage, if nothing else in quantitative terms.(31)

Mining of stretches of sea (choke-points, major traffic passages, etc.) is a relatively simple operation, which can be accomplished by light, fast vessels that are difficult to intercept, or by specially-equipped planes and helicopters. Still, even in this case the employment of small vessels throughout the Mediterranean, given the limited autonomy of such craft, presumes that the Soviet Union could use ports on the North African coast or else that it could use, directly or indirectly, the units of those Arab countries that might be willing to support the Soviet Union on the international level.

The Vulnerability of the Sixth Fleet

Discussion of the threatnecessarily leads to an analysis of the Sixth Fleet's own vulnerability, that is, of its realistic survival capability. This problem is made more complicated by the virtual lack of reference points in recent examples of naval conflict. Since the end of World War II,

the only noteworthy events, which are not sufficiently indicative, have been: the sinking of the Israeli destroyer Eilat (a formerly British Hunt-class destroyer), which was hit by two Styx missiles launched by an Egyptian fast patrol boat; the naval operations conducted during the Indo-Pakistan war of 1971-72, with the sinking of two Pakistani destroyers, the Khaibar and the Shah Jehan, off of Karachi in the course of the biggest naval clash of the conflict; and the sinking of the Indian frigate Khukri by a Pakistani submarine (probably one of the Daphne-class submarines Pakistan had purchased from France) in the waters of the Arabian Sea. (32)

Nor can the Second World War be of much help, given the radical changes that have taken place and the weight of new technologies in the creation of new weapons systems, in the modernization of craft and equipment, in the sophistication of electronic and communications apparatus, and the updating of employment doctrines and operating procedures, especially as they concern aircraft carriers, that sprang from the Korean and Vietnam experiences of the American Navy.

Nevertheless, as stated above, there is a tendency, especially in the field of submarine warfare, to regard the results obtained by the German U-Boots in the first part of World War II as fairly indicative of the Soviet Navy's effective ability to seriously threaten marine communications lines. Such an analysis is based on extrapolation of the data on the number of operating German submarines at the outbreak of the conflict and on the tonnage sunk.

In other words, there is a tendency to affirm that if the Germans, with less than 50 operational submarines in 1939, were able to provoke a serious crisis in allied supplies

across the Atlantic through the infliction of very heavy losses on convoys, and in 1941 could neutralize the entire British fleet in the Eastern Mediterranean with just 10 submarines, the Soviets, with a submarine fleet 300 strong, will therefore be capable of carrying out their sea-denial mission with equal if not superior effectiveness.

In reality, however, it is difficult to see how there can be any direct correlation, in terms of results, between the submarine warfare of the 1940's and that which would be conducted in the case of a new conflict that pitted the two superpowers against one another. For if the performance and attack capabilities of submarines have increased, the anti-submarine potential of ships, planes, and helicopters today is also different and certainly greater, and the weaponry that would be used is certainly more effective. In any event, it seems sure that past and future submarine warfare do have one feature in common: the difficulty of quickly achieving enough sea control to allow navigation along the marine communication routes at an acceptable level of risk and an equally acceptable rate of losses. The argument of the increased effectiveness of anti-submarine systems is equally valid for modern anti-aircraft weapons systems, which today possess some anti-missile capability and are thus in a position to oppose the attacks of SSMs and ASMs.

Starting from the information on threat levels worked out above, we can attempt to analyze the degree of vulnerability of the Sixth Fleet on the basis of its "typical" presence and of the defenses it has at its disposal, in terms of available weapons and the tactics employed.

As a typical presence, at least numerically, we can assume the level which existed in the Mediterranean at the start of October 1973, before the outbreak of hostilities in the Middle East: (33)

2 aircraft carriers
1 cruiser
16 escort vessels (destroyers and frigates)
4 patrol boats
10 landing ships
12 auxiliary vessels
unknown number of attack submarines.

It can be further supposed: that the two aircraft carriers are of the Kitty Hawk class; that the cruiser is of the California class; that the escort vessels include 9 destroyers (3 Coontz class, 3 Charles Adams class, and 3 Spruance class) and 7 frigates (2 Brooke class and 5 Knox class).

Each aircraft carrier disposes of an air force divided approximately as follows: (34)

2 squadrons of F-14 interceptors with about 24 planes
2 squadrons of A-7 fighter-bombers with about 24 planes
1 squadron of all-weather A-6 fighter-bombers with about 13 planes (including tankers for in-flight refueling)
1 squadron of E2-C radar surveillance planes, about 4 aircraft
1 squadron of S-3A anti-sub planes, about 10 aircraft
1 squadron of SH-3D anti-sub helicopters, about 8 helicopters.

In addition, each carrier has either a twin launcher for

Terrier surface-to-air missiles or 3 launchers of the BPDMS (Basic Point Defense Missile System) with Sea-sparrow missiles.

The California class cruisers, in addition to 2 127-mm cannons, are outfitted with 2 single launchers for SAMs with Standard MR missiles, 4 tubes for MK-32 torpedoes and 8 tubes for ASROC.

Coontz class destroyers, apart from a 127-mm gun, make use of 1 twin SAM missile launcher with Standard ER missiles, 6 MK-32 torpedo tubes, and 8 ASROC launching tubes.

Destroyers of the Charles Adams class, besides the 127-mm gun, (considering that the models in use are from DDG 15 to DDG 24) also possess a single launcher for Tarter SAMs (in the process of modernization to allow launching of Standard Mr or ER missiles), 6 MK-32 torpedo tubes and 8 ASROC launch tubes. Spruance class destroyers, besides two 127-mm guns, have no SAMs but only anti-sub systems (1 SH-3D or 2 SH-2D Lamps Helicopters, 6 MK-32 torpedo tubes and 8 ASROC launch tubes).

Brooke class frigates, aside from a 127-mm gun, have one launcher for Standard MR SAMs, 6 MK-32 torpedo tubes, 8 ASROC tubes and one Lamps helicopter. Knox class frigates have one 127-mm gun, one Standard MR SAM launcher, 6 torpedo tubes, 8 ASROC tubes, and one Lamps helicopter.

Bringing all of these various weapons systems together we have:

	BPDMS launchers	Standard MR-ER launchers	Torpedo tubes	ASROC tubes
Aircraft Carriers	2x3= 6			
California cruiser		1x2= 2	1x4= 4	1x8 = 8
Cootz destr.		3x2= 6	3x6= 18	3x8= 24
Charles Adams dest.		3x1= 3	3x6= 18	3x8= 24
Spruance dest.		-	3x6= 18	3x8= 24
Brooke frigates		2x1= 2	2x6= 12	2x8= 16
Knox frigates		5x1= 5	5x6= 30	5x8= 40
TOTALS	6	18	100	136

The total of 24 missiles appears to be a totally inadequate defense in the face of the Soviet SSMs and ASMs, even assuming the most favorable case. Still, just as for the threat, the figures on American defense capabilities must be put into a broader framework and assessed in the light of several further considerations:

A. The Phoenix AA missiles carried by the aircraft carriers' F-14s must necessarily be counted as anti-missile weapons. Calculating that each aircraft can carry up to 6 missiles, and assuming an aircraft efficiency of 70%, the Sixty Fleet has available 198 theoretically usable missiles. Of course, this total must be reduced on the basis of the number of planes in the air at the outbreak of hostilities and, in terms of effectiveness, on the basis of their interception capability with ot without E-2C radar surveillance aircraft.

B. The Sea-sparrow missiles utilized by the BPDMS have some anti-missile capability, (35) while Standard missiles of the SM-1 type are supposed to have not only that capability but also the possibility of being used as surface-to-surface missiles, though in this event their range is limited to the horizon line. (36)

C. It would be unrealistic not to consider the aircraft carriers' attack planes within the framework of the Sixth Fleet's defensive potential. In fact, it is reasonable to suppose that as the crises sharpens, defense measures will be intensified. A state of alert will be declared, crews will be readied for combat, the number of aircraft permanently in flight will be increased, the number of photographic reconnaissance and radar surveillance missions will be increased, etc. Thus it is logical to presume that at the delicate and decisive moment of transition from the stage of confrontation to that of conflict, the A-6s, A-7s, S-3As, SH-3Ds, and LAMPS of the Sixth Fleet will be in position to bring their weapons systems immediately to bear in an attack on the Soviet surface and submarine units, which will have been kept under constant surveillance up to that moment.

D. It is in this framework that we must assess the threat of the Soviet Backfire bombers and their survival capacity when faced with the E2-C/F-14 tandem. The E2-C can extend the area of the fleet's surveillance to over 500 miles. It has a radar that can keep check on as many as 300 targets, storing course, speed, and altitude data in its own memory, and it has a data-link communication system both with

the F-14s and with the aircraft carriers' operations centers, which gives it very great flexibility in carrying out its fighter-guide functions. (37) The F-14, armed with 6 "Phoenix"missiles, has a radar apparatus capable of following up to 24 tracks at once; it can launch its 6 missiles against six different targets according to a computer-determined order of priority and up to a maximum distance of 110 miles. (38)

In assessing the Backfires' survival ability, we must bear in mind that they will have to operate with no fighter escort - unless we again assume that the North African air-bases would be available to the Soviets (in any event, these would not be spared by U.S. counter-aviation attacks). Further, the Backfires will have to traverse Turkish air space (39) and hence (in case of conflict between the two alliances) could be detected by Turkish air defense radars, turned over to the Sixth Fleet's E-2C aircraft by cross-tell, and be exposed to the attacks of Turkish interceptors.

E. Finally, we have hypothesized that as a crisis sharpened the Soviet Union would reinforce its fleet in the Mediterranean as much as it could (though drawing only on the Black Sea Fleet, at least for surface craft). As a corollary, we also must hypothesize an American reinforcement of the Sixth Fleet. Such reinforcement could take the form of the dispatch of another Task Group (hence another aircraft carrier) to the Mediterranean. The presence of such a Task Group would significantly alter the picture presented in the previous Table.

The much-debated question of the effective vulnerability of aircraft carriers deserves special mention. In relative terms aircraft carriers, precisely because of their size and displacement (factors facilitating attacks against them) have significant features of self-protection and armor. Moreover, they possess a high degree of duplication of their major systems and effective fire-control and damage-control systems.

Here, the Navy department's answer to a question on aircraft carriers' vulnerability which Senators Culver and Nunn asked during the Senate Armed Services Committee debate over the fiscal 1977 budget is relevant. Even though statements at such hearings are made for prestige reasons, to justify particular programs for which the needed appropriations are being requested, or to reaffirm roles and missions linked to the existing make-up of a service branch, the statement is worth reproducing: (40)

> Aircraft carriers, operated in flexible task forces which combine the various kinds of offensive and defensive systems in mutual support, routinely deploy in forward area. They are vulnerable in the sense that an enemy could conceivably concentrate an attack--air, surface,or submarine--which would get through the defenses of the task group, but the task forces are equipped to destroy the missile launching platforms well beyond their effective launch point. Further, task forces are capable of tactical surveillance to the extent that the effect of surprise should be blunted. Task force airborne early warning and fighter aircraft (E2/F14) can engage incoming raids hundreds of miles from the task force, and well beyond Soviet anti-ship missile range. Given adequate intelligence, along with unboard capabilities for long range surveillance and reconnaissance, naval tactical commanders would use the mobility inherent in carrier task forces to maintain the tactical advantage over opposing forces.

> Thus, carrier task forces tend to be less vulnerable as isolated naval units than the underway replenishment groups which support them. Carriers themselves are less vulnerable than other surface combatants, across the spectrum of warfare, because of their size and compartmentation. For example, during training exercises in 1969, the nuclear carrier Enterprise endured accidental explosion of 9 major caliber bombs (equivalent in explosive power to 6 anti-ship cruise missiles) on her flight deck. All essential ship systems remained operable, effective damage control contained the effects of the fires, and the ship could have resumed air operations within hours."

However, two other missile accidents befell the aircraft carriers Oriskany in 1966 and Forrestal in 1967 with quite different outcomes: all flight activity had to be suspended and the two units were forced to undergo extensive repair work at dockside, lasting four and eight months respectively.(41) The Forrestal accident in particular, which was caused by the dropping of an auxiliary fuel tank from the wing of an aircraft parked on the flight deck and the consequent ignition of the fuel caused by the superheated steam of the catapults, completely destroyed 21 aircraft and damaged another 42, out of the total of 80 present on board. (42)

While on the basis of the events of the second world war it may be affirmed that aircraft carriers are hard ships to sink, it is hard to conceive that flight operations would not be more or less drastically limited by missiles or shells that struck the deck. But the interruption of those flights, even if partial and limited in time, means the loss of the Task Force's greatest offensive and defensive potential.

There is one further point of interest in connection with the problem of vulnerability. As doctrinal, geostrategic,

operational, and technical factors (at bottom elements of perceived weakness) inherent in the Soviet Mediterranean fleet could induce it to attempt a disarming "first strike," so the Sixth Fleet's own elements of vulnerability - above all the very high value of the aircraft carriers in warmaking potential - could in turn push the American toward a "pre--emptive strike."

This is an element of danger in an acute crisis between the two superpowers that should not be underestimated. Perceptions of reciprocal vulnerability can lead the adversaries to seek immediate military advantages and not to lose those they already possess. Erroneous interpretations of the other side's operations, to which particular meanings and intentions are attributed, may arise. Commanders at sea, in their justified concern with safeguarding their own forces, may be tempted to portray the situation in such a way as to encourage a political decision in accordance with the most convenient military course of action, even if it aggravates the crisis. Further, tendencies toward preventive attack may be stimulated not only by the sensation that one is in a position of relative weakness, but also by the awareness of holding practically irreplaceable units whose fully operational state is essential to the victorious conduct of operations. This danger factor could therefore represent a further incentive to seek out different forms of American military presence in the Mediterranean; forms which, still respecting the achievement of the established military objectives, lower the threshold of risk in case of crisis.

Despite certain experts' pessimism about the Sixth Fleet's ability to operate in the Mediterranean at all, (43) that

operational ability and the level of vulnerability varies according to the zone of operations. As regards the eastern Mediterranean, all opinions agree in underlining the Sixth Fleet's difficulties. The Navy department itself has been quite explicit on this point, stating that the possibility of operating in that zone would be uncertain in the best of cases. (44) And the annual reports of the Defense Department for fiscal years 1978 and 1979 state that Soviet forces would be capable of preventing, at least initially, the full utilization of the eastern Mediterranean. (45) Moreover, the vulnerability to surprise attack of naval forces emplaced in the eastern Mediterranean is a matter of constant concern. Here, aside from special geostrategic and military factors,the Soviet Union would be favored by the lengthening of the Sixth Fleet's logistics and supply lines, (46) and, under present conditions, the less extensive air cover by land-based aircraft.

In the western Mediterranean, however, the reverse is true. (47) On the other hand, it should be pointed out that the mission of combat support in land battles on the southern flank does not necessarily require the deployment of any Task Groups in the eastern Mediterranean. For with the exception of land operations on the Turkish-Soviet border, this mission could be performed from the Ionian Sea.

The Sixth Fleet's heightened vulnerability naturally weakens its capability and its credibility as an effective military tool <u>vis à vis</u> the Soviet Union, particularly in the conrext of a confrontation likely to develop into a clash between the two military alliances. Furthermore, it also weakens the Sixth Fleet for minor crises in which the Soviet

union does not intend to take part, that is, in possible "gunboat diplomacy" actions against some country in the Mediterranean area.

Today, nearly all the countries in the area are outfitted with fast craft armed with surface-to-surface missiles, hence they possess significant attack capability, and theycan represent an effective threat even for the largest and most heavily armed ships. (48) This threat will become even greater if the present fast patrol boats are replaced by units of greater displacement and heavier armament (such as the 350-ton Type 143 units of the West German navy). (49)

The risks involved in the use of naval forces as means to exert political-military pressure have gotten higher, and crisis management has become more difficult. This would be especially true if, as has been stated, aircraft carriers were to become "hostages," likely to increase the dangers of escalation rather than being factors of conciliation and reduction of crisis elements.

However, it is perhaps rash to assert that such "gunboat diplomacy," admittedly risky, is no longer possible. Possession of fast missile-armed vessels and conventional submarines does not seem sufficient unless supported by adequate surveillance capability, a certain air cover, a command and control system able to measure its responses, avoiding either going too far or underestimating the risks of the situation. In other words, a country subject to pressure will not be able to oppose it effectively through the mere possession of sufficiently credible military tools. Rather, it will also need valid political and economic tools and will need to be able to count on effective international diplomatic support.

Furthermore, if Soviet participation in the crisis situation were ruled out, the United States would be able to marshal forces scaled according to the kind of presence it wishes and the pressures it intends to exert, without exposing its most valuable units to useless risks. It could utilize the new LHAs (general purpose helicopter assault ships), capable of carrying VTOL aircraft, such as the AV-8B Harrier. The same size as the old Essex class aircraft carriers used in World War II, they could carry out a wide range of functions in a crisis and could form the basic element in the forward deployment, thus removing the aircraft carriers to safer zones farther back. And if necessary, the latter could always intervene anyway.

THE SOVIET PENETRATION

In the course of the preceding analysis, we referred several times to the possibilities of direct or indirect support for the Soviet Union from countries in the Middle East and North Africa. We emphasized that such support would strengthen the Soviet strategic position. This possibility raises the question of how effective Soviet penetration in North African and Middle Eastern countries is. Are they disposed to provide such support, not merely with a foreign policy that generally adheres to the Soviet line but also, in case of crisis or conflict, with concessions as to utilization of technical or logistical infrastructures, or even with open and active alignment alongside the Soviet Union, both diplomatically and militarily?

Several characteristic elements can be identified in the Soviet Union's efforts to penetrate the Middle East and the countries of North Africa.

The first is military aid:

- in the form of sale or gifts of more or less sophisticated weaponry (but with a tendency to provide high-technology armaments more and more often);

-- in the form of the presence of advisers and technical personnel, both civilian and military, who in some countries, on certain occasions, have assumed the magnitude of a military "force" properly speaking. They have at times taken on important, fundamental operational and logistic tasks: command and control of the defense network, functioning of radar and missile bases; piloting of aircraft and participation in surveillance and reconnaissance missions in the Mediterranean (ordinarily an anti-Sixth Fleet measure), or even combat missions; first and second level maintenance of equipment and weapons systems.

- in the form of training of the military personnel of the country which has received the arms, both on-site as "on-the-job" training and training in the Soviet Union through specialized technical and operational courses.

Although it is always possible for the advisers to be sent back home, as has happened, the establishment of dependency in military equipment should not be underestimated. Providing arms, technical assistance, training, and replacement parts means creating a dependency from which it is impossible to escape suddenly, without putting the effectiveness and operationality of the military forces in serious danger. The deterioration of a military force always proceeds

faster than its construction and strengthening. Without replacement parts, and lacking solid experience in the maintenance field, efficiency levels fall drastically in a very short time.

Turning to alternative sources for the acquisition of arms makes the problem no less complicated. For aside from the possible delays in the acquisition process, other factors cause considerable difficulty: the lack of inter-operability, the difficulty of integrating Soviet and Western arms in a single logistical system (resupply, maintenance, management), complications in training of personnel.

Moreover, training in the Soviet Union, especially where courses for officers are concerned, perhaps at the level of the military academy or of armed services staff, permits the formation of acquaintances, friendships, personal ties. And, through a typical process of identification, it permits the creation of an outlook, attitudes, and behavior which tend to reflect those typical of the military community of the host country. All these are factors which could prove highly useful should those officers become key men in the armed forces and government structures of their nations. Furthermore, one must not forget the advantages of the transmission of doctrines, operational concepts, tactics, which facilitate the carrying out of joint or integrated operations, in the event that the country in question opted to align itself with the Soviet Union in case of conflict.

Along with military aid, economic aid has not been lacking. But in this field the Soviet Union has not shown equal capability and influence. In fact, outside the military sector, Soviet technology, managerial techniques, and models

of industrial organization are far inferior to what the West can offer. Middle Eastern and North African countries are well aware of these limitations and tend to turn to Europe, especially to those countries from which it is possible to receive assistance and sign contracts without its necessarily involving a political choice.

Partly because the particular social and political conditions do not permit it, there seems to have been no Soviet effort to export Communist ideology. The profound differences between these nations and the Soviet Union have often caused them to take sharp and drastic measures against any internal political movement for Communism. However, this has not prevented the establishment of stable relations, culminating in many cases with friendship and mutual collaboration treaties.

Thus, the general objective of Soviet policy in the Mediterranean area may be to play a bigger role and have greater influence on the international postures of Middle Eastern and North African countries and to forge elements of military dependence. Specific Soviet objectives concern the use, exclusive if possible, of naval and air bases in those countries. The Soviets want ports to provide logistical support which anchorages in international water cannot guarantee, to effect those maintenance operations possible only with dock equipment, to provide rest areas for ship crews. They want airbases for utilization as staging bases in case of airlifts to African countries and as re-deployment bases for maritime patrol and reconnaissance aircraft used to keep the movements of the Western fleets in the Mediterranean under surveillance, especially during exercises or maneuvers,

or to carry out photographic missions.

Both naval and air bases are useful in peacetime and in time of crisis, giving the Soviet military presence greater flexibility of employment. But in the case of a conflict, they would become indispensable for the Soviet Union to be able to continue to operate effectively in the Mediterranean. Quickly reviewing the various countries, and limiting our investigation to the military aspects only, the situation appears as follows:

Syria: Syria has received a substantial quantity of war materiel, including Mig-23 aircraft, SA-2, SA-3, SA-6, SA-7, and SA-9 surface-to-air missiles, Scud and Frog surface-to--surface missiles, T-62 tanks, Petya class frigates, and Osa and Komar class Fast Patrol Boats armed with Styx SS missiles. Soviet advisers and technicians are present in the country. The Soviets use the port of Tartus in limited but continuous fashion for maintenance activities on submarines.

In 1978, a temporary deterioration in Syrian-Soviet relations occurred. In November, the trip of the Syrian Chief of Staff, Gen. Chehabi, to Moscow was interrupted, reportedly, because of differences on the question of new arms supplies, especially over Soviet reluctance to sell Mig-27 fighter--bombers to Syria. However, it seems that a compromise was later reached, after Syrian Defense Minister Tlas's visit to the Soviet Union, and Mig-27 aircraft will go into service in the Syrian air force. (50)

Egypt: There is no need to re-tell the story of how Soviet-Egyptian relations developed after the forced with-

drawal of all Soviet personnel from Egypt. Equally well known is Egypt's effort to diversify its sources of weapons acquisition.

The port of Alexandria is no longer available as a logistical base for the Soviet fleet; nor are the airports of Jiyanklis, Cairo West, Beni Suef, and Aswan, which were fully under Soviet control in 1970 and from which Mediterranean reconnaissance aircraft took off. The loss of Alexandria appears to have seriously hurt the operational capability of Soviet forces in the Mediterranean. There has been a reduction in the size of the Soviet naval squadron and in the Mediterranean patrols of submarines coming from the Baltic and North Sea Fleet.

Libya: Libya has received major quantities of Soviet materiel, including particularly sophisticated weaponry: Mig-23 fighters and Tu-22 "Blinder" medium bombers; "Scud" surface-to-surface missiles, SA-2, SA-3, SA-6, surface-to-air missiles, T-62 tanks. Soviet personnel is alleged to be present in the country. During Kosygin's visit to Tripoli in May 1975, agreement was supposedly reached on arms purchases totalling $4 billion (only $800 million according to Official Libyan sources). The agreement called for the delivery of tanks, Mig-23 aircraft, 6 conventional submarines, (51) and assistance in the rebuilding of service-and-repair equipment for submarines in the ports of Bengazi and Tobruk. Also, Libyan personnel was to be sent to the Soviet Union for submarine training courses. (52) Among other things, the Libyan Navy now possesses Osa II-type fast patrol boats, equipped with 4 launchers for Styx 2 SS missiles. (53)

However, Libya, like Syria, has turned to the Western arms market, making purchases in France (Mirage aircraft, Alouette II and III and Super Frelon helicopters, Crotale SA missiles), in Great Britain (Saladin and Saracen tanks), in Italy (corvettes armed with Otomat SS missiles, CH-47C helicopters, SF-260 training-aircraft). Yugoslavia has furnished Galeb training jets.

Although Libya has always denied that permission to utilize its air and naval facilities has been granted to the Soviet Union, press sources have repeatedly reported news of flights over the Mediterranean and the Middle East countries by Mig-25 reconnaissance aircraft that take off from the Libyan airport Okba Ben Nafie (the former US. Wheelus base). The report of the U.S. Navy department, cited several times already, admits that Soviet aircraft operate out of Libyan and Iraqi bases. (54)

Finally, in a recent interview granted to the Washington Post Rear Admiral James Watkins, the new Commander in Chief of the Sixth Fleet, explicitly stated that Libyan air forces are reported to have had Mig-25 aircraft at their disposal since the summer of 1978. (55)

Obviously, the utilization of Libyan naval bases and airports would give the Soviets significant advantages in terms of full air cover over the central and western Mediterranean, greater possibilities of operating in those zones, and precious logistical and technical support for attack submarines.

Algeria: Algeria has also received weapons from the Soviet Union, including Mig-21s and SU-7s, SA-2 missiles,

T-62 tanks, and, in the naval sector, Komar and Osa II-class FPBs armed with Styx I and Styx II SS missiles.

It does not seem that the Soviets are utilizing the naval installations of the port of Mers-el-Kebir, but periodically they do use the port of Annaba to anchor one support unit there and effect maintenance operations on their submarines. On the other hand, during the Angolan conflict, Soviet transport planes allegedly utilized the airport of Colomb-Bechar as a staging base.

Of course, it cannot be ruled out that Algeria might concede facilities for the use of Algerian installations in exchange for Soviet diplomatic and military support in the context of a worsening of relations between Algeria and Morocco growing out of differences over the Sahara issue. Even more than for Libya, the availability of such bases would give the Soviet Union greater capability to operate in the Western Mediterranean.

Tunisia: Tunisia has not acquired weapons from the Soviet Union. However, Soviet units reportedly utilize, though in limited fashion, the infrastructures of the port of Biserta for maintenance and repair work.

Morocco: Morocco has extremely little Soviet armament: old T-54 tanks and SA-7 missiles. It appears that Soviet units do not use Moroccan ports in any way.

Overall, it can be stated that while the Soviet Union does possess a certain amount of leverage which could be utilized in support of its own international interests, this

leverage is certainly not without limits. The vague anti-Westernism of a number of these countries is linked above all to American policy in the Middle East, and it is in this perspective that attitudes of greater or lesser friendliness toward the Soviet Union come into play. Of course, to this are added specific national interests and the assessment of what support the Soviet Union is capable of providing in defending those interests. But it is precisely this nationalist factor which works in the other direction as well, inhibiting the establishment of very close ties which would in some ways be constricting.

In fact, despite the sale of weapons and equipment and the presence of Soviet personnel in several of these countries, the countries of the African coast do not appear very willing to grant the Soviet Union special facilities, not to mention exclusive rights, to the use of the port and airport infrastructures.

Yugoslavia: Although with respect to Soviet requests Yugoslavia is similar to the Arab countries, it is nevertheless a special case, which merits special mention.

The Soviet Union has always sought to achieve two objectives in its relations with Yugoslavia: the first, a very far-ranging one, aimed at the re-entry of Yugoslavia into the Soviet sphere of influence, with a sharp break from its position of international non-alignment. The second, more restricted but no less important, is to establish closer political, economic, and military ties (working here too by means of forcing some dependency in the provision of war supplies). Closer ties would aim at easing the concession of

special facilities as regards the use of Yugoslav ports and overflights through Yugoslav air space. And, in a more ambitious perspective, utilization of Yugoslav airports.

Yugoslav law permits most countries, on certain conditions, to use the naval facilities of its Adriatic ports for repairs and other maintenance and resupply work. The law was amended in 1974 to increase the number of warships and auxiliary vessels that could be granted permission to anchor in Yugoslav harbors at once for such operations.

However, this does not seem adequate to the support needs of the Soviet fleet in the Mediterranean. And in fact the possibility of unrestricted use of Yugoslav ports, or of building an exclusively Soviet naval base in the Adriatic, has always been one of the principal topics of discussion in meetings between Yugoslav and Soviet leaders. It is quite significant that Admiral Gorshkov, on his Yugoslavian visit in August 1976, was particularly interested in the port facilities on the Adriatic coast and that Brezhnev himself, during his visit to Belgrade in November of that year, again persisted in his request to Tito for concrete concessions. According to some press sources, he went so far as to ask to lease the Gulf of Kotor, for the purpose of constructing a Soviet naval base there. Brezhnev was allegedly equally insistent in his request for permanent overflight authorization for Soviet aircraft, both civil and military, over Yugoslavia.

So far, overflight permission has always been granted, even in cases of international crisis, as during the Arab--Israel war of 1973, when Soviet transport planes overflew Yugoslavia on their way to the Middle East. Nevertheless, cases could arise in which overflight rights might be granted

through a different procedure, only if requested long in advance, or only for certain aircraft, or even denied absolutely. This would deprive the Soviet Union of an easy and direct access route to North Africa. This handicap could become very serious if Turkey were also to place limitations on Soviet air traffic over its territory. Both of these eventualities would only come to pass, however, in the case of an open East-West conflict and not in the case of another Middle East crisis.

Finally, the importance to the Soviets of being able to have at their disposal, or at least utilize, airports in Yugoslav territory is all too obvious, in time of peace as in time of war. They could serve as refueling stops along the African flight routes, for air cover over the Adriatic and central Mediterranean, for potential air operations against targets in Italy and Greece, and for air support for operations on the central European front.

Up to now, President Tito has always resisted Soviet pressure and has rejected all requests for the concessions of special privileges in the utilization of Yugoslav naval and airport infrastructures. However, this situation could change if after Tito's death (discounting the improbable hypothesis of direct Soviet intervention, more or less openly supported by other Warsaw Pact countries), new leaders, more oriented toward political reconciliation with the Soviet Union, were to take power. And even if there were no substantial changes,the Soviet Union might perhaps obtain some concessions or favorable treatment by using the leverage of military supplies and aid, plus indirect pressure, which we might call the pressure "of the most influential mediator." In fact, although it is

believed that with a minimum of external support the Yugoslav arms industry is capable of producing weapons systems and equipment to meet about 80% of the needs of its armed forces, the lack of capability is precisely in those high-technology sectors where foreign sources of supply become indispensable for the modernization of the military.

One such sector is represented by combat aircraft. Yugoslavia will soon find itself faced with the necessity to update its flight line, despite the predicted completion of the joint Yugo-Rumanian project for the Orao tactical support aircraft (which, moreover, is behind schedule). The Soviet Mig-23 appears the most logical choice, given that the interceptor squadrons of the Yugoslav airforce are already equipped with Mig-21 F/PFs. Moreover, even if Yugoslavia wanted to diversify its sources of procurement in the aeronautical sector, it would be very hard for it to find Western countries able and willing to provide aircraft equivalent in class to the Mig-23. Thus, the offer of a Yugo-Soviet pact in this area, especially if posed in economically enticing terms and linked with favorable industrial trade-offs and special compensatory measures, might represent a Soviet means for exerting pressure under which to extract facilitations and concessions.

On the other hand, the Soviets could use the tool of indirect pressure, i.e. of the "influential mediator," in the case of a crisis in Yugoslav-Bulgarian relations. In a crisis arising out of renewed Bulgarian territorial demands against Macedonia, the Soviet Union could present itself to Yugoslavia as a mediator capable, through its influence, of reducing Bulgarian aspirations and softening Bulgaria's attitude, in

exchange for greater Yugoslav "flexibility" toward Soviet requests. This is an improbable hypothesis perhaps, but not an impossible one, if it is assumed to occur during the delicate post-Tito transition period.

France, An Unknown

While the support of the Mediterranean countries for the Soviet Union is hypothetical and not at all sure, in case of conflict between the two alliances the United States could count on the participation not only of the members of NATO but almost certainly also of France. This would significantly change the naval equation in the Mediterranean, greatly to the detriment of the Soviet Fleet. The capabilities of the southern flank NATO countries' naval forces have already been mentioned. And while Greece and Turkey may have modest naval forces with quite limited offensive capabilities (gradually being reinforced by procurement of more units armed with surface-to-surface missiles), Italy and especially France constitute a contribution of great importance. Italy is valuable especially for the ASW capabilities of its maritime components, France for its aircraft carriers and the numerous attack submarines which it would deploy in the Mediterranean.

The role of France in the Mediterranean, and its possible participation in a conflict alongside the Atlantic allies, merits a brief discussion. (56) There is no doubt that France considers the Mediterranean area vital to its own interests. The high priority assigned it in the framework of French defense policy is confirmed by the shift of the aircraft carriers Foch and Clemenceau and of specialized anti-aircraft

anti-sub warfare units (such as the cruiser Colbert and the frigates Suffren and Duquesne) to Toulon in 1976. About 80% of French imports come by sea, and the maintenance of an uninterrupted flow of petroleum products from North Africa and the Persian Gulf is of central importance. The Mediterranean mission of the French fleet consists primarily in the defense of maritime communication lines. It is to be achieved by means of permanent presence of naval forces, their reinforcement during crises in the ways and times deemed necessary, and through their intervention should the crisis shift from the political to the military plane.

However, France is aware that with its own forces alone it is incapable of guaranteeing permanent and effective protection of all sea routes, especially against the submarine threat. Hence there appears to be some willingness on its part to act in concert and coordination with the allies. In fact, French naval forces in the Mediterranean take part in NATO exercises, and French liaison officers are assigned to the major allied commands of Southern Europe. In this way solid links have been forged, and in case of need there should be no great difficulties for French forces in operating jointly with the other allied air and naval forces.

Obviously, there are particular French interests in the Mediterranean area, and situations could arise in which French attitudes and choices could partially or totally diverge from those of the United States. This is true above all for crises involving countries still influenced by elements of previous colonial experience and the factors of economic inter-dependence are connected to them. But it is very difficult to imagine that in a confrontation between the two blocs France

would choose to remain uninvolved rather than joining the allies and taking an active part in defending free passage across the Mediterranean.

SOME BASIC CONSIDERATIONS

So far, our analysis has not aimed at establishing general parameters of aero-naval superiority and inferiority in the Mediterranean or determining the winners and losers of a possible naval war. Potential crisis scenarios are too numerous, the possible course of events even within a single scenario is too uncertain. There is a vast range of possible variations in the deployment and size of the forces involved, the number of the participant countries, and the phases of shift from tension to open war. Altogether, the elements of uncertainty appear so numerous as to render it quite impossible to arrive at any credible conclusions.

Nevertheless, our analysis, though subject to differing overall judgments, can serve as the basis for several valid fundamental considerations. The basic new element is the presence of a sizeable Soviet naval force in the Mediterranean that is anything but insignificant in terms of attack capability and is supported by the aircraft of Soviet naval aviation.

This Soviet presence no longer permits the Sixth Fleet to carry out its assigned mission of air support for land troops engaged on the southern flank at the outset of hostilities between NATO and the Warsaw Pact, at least not until after winning the battle at sea. If it is felt that such air sup-

port is essential to NATO defenses, this entails a penalization of NATO's military arrangements which must be carefully considered and corrected.

The Soviet presence has diminished the Sixth Fleet's capability and the flexibility of its intervention ability even in the case of crises outside the NATO-Warsaw Pact framework. It has not eliminated that capability, but it has nonetheless made it harder and more complex. Moreover, it has increased the risks of an escalation. In a state of tension, the element of direct military confrontation produces the possibility of misleading perceptions of reciprocal threat, with a consequent risk of dangerous and destabilizing military actions.

Third, the Soviet presence has complicated possible options of alteration or disengagement of American naval forces. Now such moves must be assessed not only on the basis of their political repercussions,but also on the basis of the indispensable maintenance of a military balance that prevents the creation of power vacuums. In other words, not only has the Soviet presence made the U.S. ability to manage crisis situations less flexible, but at the same time it has diminished the political significance of the American presence by restricting its options for intervention.

Of course, the limits imposed on action are reciprocal in the sense that the Soviet Union must submit to an equal if not greater loss of its own flexibility of intervention. But that does not change the problem much for the United States, whose interests in the area appear more extensive and much more vital. In fact, the U.S. military presence in the area can preserve the strategic status quo, but it cannot influence the

political evolution of the Mediterranean countries. And this even though it still has the "technical and operational" ability to carry out those operations most directly tied to immediate U.S. interests (such as the evacuation of American civilians).

Further, the United States risks a loss of credibility, precisely because of the limits on its action and its reduced capability for carrying out the missions necessary to the achievement of its established military objectives. (57) If because of changed circumstances the objective is no longer attainable, essentially because of the loss of the absolute predominance previously enjoyed, there are only two logical choices: either change the objective and therefore the mission connected with it, or else maintain the objective, but therefore adopting those necessary military measures which could allow it to be pursued.

The double role that is assigned to the American presence renders the situation particularly complex, of course. On the one hand, it is a key element of strength in the military alignment of NATO on the southern flank. On the other hand, it is an element of strength for American Mediterranean policy aside from the commitments of the Alliance. This double role becomes a factor of division and fracture within the Alliance whenever American military force is used as an instrument for the management of those extra-NATO crises, which are assessed by the European countrie from a different point of view than that of the United States. Especially so when such use calls for the collaboration of those nations for the utilization of bases and facilities. Thus whereas a structural reduction, whether quantitative or qualitative, of American forces in

central Europe affects NATO's defense capabilities exclusively, in South Europe it affects both NATO' posture and also the ability to safeguard specific U.S. interests in the area and to honor commitments made to other countries, such as Israel. And it could happen that modifications of the American forces intended to improve them insofar as their capabilities to carry out NATO missions is concerned might in the end reduce their capabilities to manage all the other possible crises; or vice-versa. In the latter case, the political repercussions within the Alliance would certainly be heavy.

There may be a temptation to leave things as they are, to keep essentially the same military presence and the same level of strength, with no attempt to rethink the military problem in the Mediterranean or to seek answers to resolve the contradictions of the present situation. In fact, however, it seems necessary to find alternatives that in the long run permit the United States to overcome the limits imposed by the Soviet military presence and on the other to facilitate the beginning of arms-control negotiations. Such alternatives would consist in:

(1) Taking measures to compensate for the loss of the direct support missions on the land fronts which are no longer performable by the aircraft of the Sixth Fleet in the initial phases of a NATO-Warsaw Pact conflict.

(2) Taking measures, regarding the naval component of NATO's defense posture, which:

a - allow fighting the sea battle against Soviet forces with good chances of victory;

b - achieve greater integration of the allied forces, stressing the European side and the role of the Mediterranean countries of the Alliance, while still preserving the necessary links with American forces;

c - permit a reduction of the U.S. naval presence, but without allowing such measures to be interpreted as a reduction of NATO's military capabilities or, politically, as a demonstration of an altered U.S. committment to defense of the southern flank.

(3) Taking measures, concerning the American naval component, which:

a - make that component less vulnerable, more flexible in its employment and less conditioned in its management of crises by the high value of its units;

b - permit the preservation of the indispensable close correlation between military presence and the political value of that presence, as a force with credible ability to pursue the objective assigned it;

c - enable the reduction of the risk that in case of crisis the counter-position will become confrontation and then conflict, going beyond either side's intentions;

d - give the possibility of increasing or decreasing the size of the naval component, depending on circumstances, with an increase in its deterrent effect and in its crisis--management capability;

e - maintain the required level of capability to conduct successful combat operations in defense of southern Europe, in collaboration with allied forces.

But taking such measures means solving the big political and economic problems connected with them. It means altering the structure of the Sixth Fleet, revising its composition, its tasks and responsibilities. It means modifying the organition of the Alliance on the southern flank, altering its shape if necessary. And it means overcoming the conditioning inherent in choices that are deeply rooted in tradition and are deemed very hard to change, precisely because the situational factors appear difficult and complex.

Now, before going on to discuss the possible options for facing the above-mentioned problems, another topic deserves some analysis: the impact of technological development of weaponry on naval operations.

Chapter II: Footnotes

1) The term "combat unit" covers aircraft carriers, major and minor surface vessels, submarines without ballistic missiles, amphibious craft, and minelayers and minesweepers.

2) NATO Review, Dec. 1976, p. 12.

3) The table is taken from Robert G. Weinland, "Land Support for Naval Forces: Egypt and the Soviet Escadra 1962-1976," in Survival, March-April 1978, pp. 73-79. The data for 1977 are from the Grant Report, op. cit., p. 9.

4) Jesse W. Lewis, Jr., The Strategic Balance in the Mediterranean, "Washington D.C., American Enterprises Institute for Public Policy Research, 1976, p. 59.

5) Robert G. Weinland, "Superpower Naval Diplomacy in the October 1973 Arab-Israeli War," Professional Paper no. 221, Center for Naval Analyses, Arlington Va., June 1978, p. 43. The 1978 edition of "Understand Soviet Naval Development," published by the U.S. Department of the Navy, provides the same information as the 1975 edition to which Weinland refers.

6) WEU Assembly, Document #776, op. cit., p. 10.

7) The Hammamet anchorage, very well sheltered from winds, has become the principal point of support and supply for submarines. In fact 1 or 2 workships are permanently emplaced there. Sollum is the normal station for the larger warships. Défense Nationale, June 1978, p. 167.

8) WEU Assembly, Document #776, op. cit., p. 10.

9) Michael MccGwire, "Maritime Strategy and the Superpowers," in Power at Sea, Adelphi Paper no. 123, IISS, London, 1976, pp. 15-24.

10) I have ruled out the hypothesis of an exclusively naval confrontation between the U.S. and the U.S.S.R., independent of events occurring on land, either within or beyond the borders of the two alliances, as extremely unlikely.

11) On this point see Weinland, "Professional Paper no. 221, op. cit., pp. 30-40.

12) Article 12 of the Montreux Convention limits submarine transit from the Black Sea to the Mediterranean through the Straits to those units headed toward other ports for repairs. For the precise wording of the article and the full text of the Convention, see League of Nations, Convention Regarding the Regime of the Straits, signed at Montreux, July 20, 1936, in League of Nations Treaty Series, vol. 168, Geneva, 1936, pp. 214-241. The text is printed in the appendix of Jesse W. Lewis, op. cit., pp. 155-169.

13) The Military Balance 1978-79, op. cit., pp. 9-10.

14) Défense Nationale, June 1978, p. 170.

15) Regarding the weaponry of Soviet combat ships and submarines, see appendix, pp.

16) Admiral Elmo R. Zumwalt, Jr., On Watch: A Memoir, New York, 1976, pp. 442-443.

17) The Military Balance, 1978-79, op. cit., pp. 95-97.

18) Michael MccGwire, "Western and Soviet Naval Building Programs 1965-1976," in Survival, Sept-Oct. 1976, p. 207.

19) Johan Jørgen Holst, "The Navies of the Superpowers: Motives, Forces, Prospects," in Power at Sea, Adelphi Papers no. 123, op. cit., p. 9.

20) Jane's Weapons Systems 1978, p. 66.

21) Department of the Navy, Understanding Soviet Naval Developments (Washington D.C., U.S. Gov't Printing Office, Jan. 1978), pp. 84-90.

22) Department of Defense, Authorization Hearings, Senate Committee on Armed Services, Fiscal Year 1978, Part 7, p. 4988.

23) The Military Balance 1978-79, p. 10.

24) Défense Nationale, June 1978, p. 170.

25) Aviation Week & Space Technology, Jan. 24, 1977, p. 44.

26) It seems the Soviets already possess a fully operational ocean reconnaissance system by means of satellites. See Aviation Week & Space Technology, June 23, 1975, p. 18. The first U.S. Ocean surveillance satellites, called "Clipper Bow," are programmed to be launched by 1983-84. Air et Cosmos, May 28, 1977.

27) Just 5 succeeded in avoiding Israeli air defenses. Air Force Magazine, March 1978, p. 108.

28) This calculation was made accepting the validity of the postulate: SS-N-10 = SS-N-14 = exclusively anti-submarine missile, ruling out use of the AS-6 missile, and assuming a rate of inefficiency, malfunction, and human error of 20%.

29) Gorshov was quite explicit in asserting the importance of the "first salvo" and the effectiveness of having the initiative in offensive action for achievement of success.

30) See Rivista Marittima, November 1977, pp. 81-83.

31) While stressing that these are approximate estimates, the IISS provides the following figures: Warsaw Pact, 400,000 mines; NATO, less than 100,000. Military Balance 1978-79, p. 118. For some indication of respective reserves, see Annual Defense Department Report, Fiscal Year 1979, U.S. Gov't Printing Office, Feb. 2, 1978, p. 185.

32) Keesing's Contemporary Archives, vol. XVIII, 1971-72, London, p. 25057.

33) Weinland, Professional paper no. 221, op. cit., p. 31.

34) The break-down cited is from Desmond P. Wilson, Jr., "The U.S. Sixth Fleet and the Conventional Defense of Europe," Professional paper no. 160, Center for Naval Analyses, Arlington, Va., Sept. 1976, p. 26.

A different break-down of air strength is that regarding

the aircraft carrier America reported by Clarence A. Robinson, Jr., "U.S. Retains Edge in Mediterranean Sea," Aviation Week & Space Technology, Jan. 17, 1977, p. 44:

2 squadrons of F-14s, 12 aircraft per squadron
2 squadrons of A-7s, 10 planes per squadron
1 squadron of E-2Cs, 4 aircraft
1 squadron of EA-6Bs, with 4 aircraft
1 squadron of A-6s, with 14 planes (4 aircraft adapted for the role of "tanker")
1 squadron of S-3As, with 10 aircraft
1 squadron of RF-8s,with 3 aircraft
1 squadron of SH-3s, with 8 ASW helicopters.

35) In 1975 the latest version of the Sparrow (the AIM-7F) was allegedly modified to provide it with the capability of intercepting anti-ship missiles, both "sea-skimmers" and missiles attacking with high velocity and sharp diving angle. Jane's Weapon Systems 1978, London, p. 110.

36) ibid., pp. 111-112.

37) For an interesting article on the capabilities of the E-2C aircraft, see Clarence A. Robinson, op. cit., pp. 43-48.

38) An interesting article on the capabilities and the features of the F-14 is Clarence A. Robinson, Jr., "F-14 Demonstrates Agile Aerial Combat Capabilities," Aviation Week & Space Technology, Nov. 29, 1976, pp. 46-55.

39) The hypothesis of overflight through Iran, Iraq, and Syria, apart from the reduction of range of action it would induce, seems hardly probable.

40) Hearings, Senate Committee on Armed Services, 94th Congress, Fiscal Year 1977, Authorization for Military Procurement, part 4, p. 1976 and part 5, p. 2661. (U.S. Gov't Printing Office, 1976).

41) Desmond P. Wilson, Professional Paper no. 160, op. cit., pp. 23-24.

42) Keesing's Contemporary Archives, 1967-68, Aug. 19-26 1967, p. 22214.

43) J.H. Morse has written: "It seems unwise to count on extensive Sixth Fleet operations in the Mediterranean for very long after major hostilities start. Nor does it seem likely that Italy, Turkey, or Greece could hold out long under present concepts of operations without Sixth Fleet and other U.S. support. The Mediterranean may be untenable for surface combat or supply ships in the event of hostilities." Captain John H. Morse USN (ret.) "Questionable NATO assumptions," Strategic Review, winter 1977, vol. IV, no. 1, p. 26.

44) Hearings, Fiscal Year 1977, op. cit., part. 5, p. 2650.

45) Annual Defense Department Report Fiscal Year 1978, U.S. Gov't Printing Office, Jan. 1977, p. 111; and Fiscal Year 1979, U.S. Gov't Printing Office, Feb. 2, 1978, p. 90.

46) In 1976 the aircraft carrier America, operating in the eastern Mediterranean, reportedly had an aircraft efficiency well below the planned 70%, precisely because of the length of the supply lines. The limited number of CODs available were apparently unable, partly because of problems of load capacity, to adequately supply replacement parts for the complex flight lines of the carrier. Aviation Week & Space Technology, Jan. 17, 1977, p. 45.

47) To the greater defense depth is added better air cover and support that could be provided by P-3Cs located in Sicily, to which could be added those based in the Azores and at Rota, in Spain, apart from land-based attack aircraft.

48) See Appendix, pp. , for tables concerning the naval strength of the countries of North Africa.

49) This is a trend that is already showing concrete results. In fact, in September 1977, the Italian Cantieri Navali Riuniti launched the first of 4 missile-launching corvette ordered by Libya. With a displacement of 550 tons (690 fully loaded) and armament constituted by one 76-mm gun and 4 "Otomat" SS missiles, they represent an undoubted strengthening of the Libyan fleet. See Défense Nationale, Feb. 1978, p. 160.

50) For Soviet arms sales to Syria, see Défense et Diplomatie, n. 47, Dec. 21, 1978, and n. 3, Jan. 18, 1979. See also, International Herald Tribune, Dec. 9-10, 1978, and Financial Times, Dec. 29, 1978 and Jan. 11, 1979.

51) The Soviet submarines to be sold to Libya belong to the Foxtrot class, the latest in the categoria of conventionally-power submarines, with features and performance similar to those of Western submarines of equal displacement. Their weaponry comprises 10 torpedo tubes, with a total of 24 torpedoes on board or an equivalent weight in mines. Défense Nationale, Nov. 1977, p. 158.

52) Libya has reportedly already received part of the materiel, in particular about 60 T-62 tanks, 3 submarines, Tu-22 aircraft, and a new shipment of Scud SS missiles. Défense et Diplomatie, no. 45, Dec. 7, 1978.

53) See Appendix, p. , for the strength of the Libyan navy.

54) Understanding Soviet Naval Developments, op. cit., p. 14.

55) Lewis B. Fleming, "U.S. Admiral Fears Upset in Mediterranean Balance," International Herald Tribune, Jan. 20-21, 1979.

56) Admiral Joire-Noulens, "Quelle Marine et pour quoi faire des temps de paix," Défense Nationale, July 1976, pp. 21-42. By the same author, also "Problèmes operationels et financiers de la Marine Nationale," Défense Nationale, Oct. 1975, pp. 5-21.

57) In the Department of Défense Annual Report Fiscal Year 1979, the Sixth Fleet is still held to be available for air support on the southern flank. Annual Defense Department Report, FY 1979, U.S. Gov't Printing Office, Feb. 1978, p. 90.

CHAPTER III: Technological developments and their impact on naval operations

In an essay that attempts to deal with military problems in the Mediterranean area, it seems only proper to discuss, at least in summary form, the technological developments which can affect the forms and means of naval warfare and its developing trends. Technology has influenced, and continues to influence, the evolution of naval forces in various ways.

Nuclear power has provided the capability to operate in nearly autonomous fashion for long periods, to reach and maintain very high velocities, and, for submarines especially, it has given these vessels a high operational flexibility.

Improvements in conventional propulsion and new techniques of hull construction (wing-supported hulls, air cushion hulls, surface-affect hulls) have supplied a considerable increase in speed, hence in mobility and quickness of intervention (extremely useful in anti-submarine warfare), with a parallel decrease in vulnerability.

The development of ever-more-sophisticated ship-to-ship and ship-to-air missiles has given even low-tonnage vessels significant offensive firepower (which means the capability to inflict heavy damage on major warships) and defensive firepower, which, combined with improvements in speed and maneuverability, makes them difficult targets to attack and destroy.

The development of helicopters and vertical and short take-off and landing aircraft (V/STOL), and their increased ability to operate even from minor ships and in adverse sea conditions, have broadened the possibilities of surveillance,

of attack, and of defense for individual vessels and naval formations. This facilitates defense of logistical units and convoys by escort ships and greater support capabilities for amphibious operations.

Developments in the field of electronics and computers have allowed the establishment of more accurate and reliable systems of search and location, more efficient command and control systems, partly or completely automated firepower control centers, particularly well suited for facing a complex and diversified aerial and missile threat. Moreover, such developments have enabled the establishment of closer and more organic cooperation among ships, airplanes, and helicopters, which today is indispensable for the effective conduct of naval operations, particularly for anti-submarine warfare.

The development of more and more advanced sensors has made attack submarines' mission more difficult to accomplish-while progress in the mine sector provides greater possibilities of creating barriers, closing canals to navigation, blocking harbours and ports, and exploiting the geographical advantages of straits and choke-points.

In naval construction, technological developments have moved toward creating greater offensive and defensive capabilities for ships. There has been more attention to factors of cost-effectiveness, thus giving priority to the construction of a greater number of relatively low-tonnage but heavily-armed ships.Technology has tended to take advantage of new propulsion systems combined with the creation of new hulls.

In particular, the United States plans: (1)

- construction of nuclear cruisers (class CGN-42), equipped with the Aegis anti-aircraft and anti-missile system, (2) which can operate either as complementary units in Task Forces or independently, given their advanced characteristics, their minimal logistical dependence, the offensive and defensive capabilities; (3)

- production of missile-carrying destroyers (DDG-47 class) armed with cruise missiles and the Aegis system, to be used within the framework of conventional Task Forces and also in support of amphibious forces or logistical units in areas of intense threat; (4)

- construction of missile frigates (class FFG-7) as escort vessels, specifically intendend for the protection of logistics units and convoys operating in zones of low-intensity threat. (5) This program is typical for many Western navies in which missile frigates are becoming the basic units: let it be enough to mention the Italian Lupo class frigates, the Dutch "Kortenaer" class frigates, and the NATO frigate 122 adopted by West Germany;

- the production, though in limited numbers (just 6 of the previously-programmed 30), (6) of Pegasus-class hydrofoils (PHM-1), which are especially well-suited for attack, patrol, and surveillance missions. The U.S. Navy intends to utilize these 6 units (the first was delivered in June 1977) to build a nucleus with which to elaborate adequate tactics. It is the US Navy's intention to use the 6 PHMs as a tactical squadron of small, high-speed, high firepower vessels to develop advanced tactics and gain technological experience, for a better understanding of the employment opportunities for these units and of the optimum characteristics for hydrofoils of the

future;

- construction of new helicopter-carriers (LHA) capable of carry V/STOL craft as well.

Projecting toward the future, the United States in examining the possibility of producing two new ships within acceptable limits of cost-effectiveness: a new and more capable version of the old Sea Control Ship project (now called V/STOL Support ship or VVS), one unit of this type having been included in the building program for Fiscal 1980; and a surface-effect ship (SES), with a displacement of up to a few thousand tons, which because of the extremely high speeds it can attain (in excess of 80 knots) could considerably increase the operational flexibility of escort forces, especially in anti-submarine operations. Units of this type could be operational by the late 1980's. (8)

In the naval construction field,the Soviet Union has accomplished:

- the construction of the first Kiev class aircraft carriers, equipped with significant offensive and defensive missile weaponry, Ka-25 Hormone helicopters and Yak-36 Forger V/STOL craft. They are particularly suited for anti-sub operations, support missions, and amphibious operations and to function as command and control units;

- the construction of an improved version of the Kara class cruiser;

- the construction of an improved version of the Krivak class missile-armed destroyer;

- the construction of Nanuchka class missile patrol ships; in relation to their tonnage the Nanuchkas are the

most heavily armed vessels in the world; (9)

- the construction of Boris Chilikin class replenisher oiler (AOR). This ship is especially significant as it could improve the Soviet fleet's poor alongside understay replenishment capability. At present, in fact, the Soviet navy utilizes primarily tankers located in the various anchorages in international waters to provide limited logistic support.

New technology offers especially good prospects in the field of anti-submarine warfare, although so far it does not seem to have achieved a breakthrough that would make the fight against modern nuclear and conventional submarines less difficult and complex. In submarine surveillance, the United States has programmed the production of two new systems: the Surveillance Towed Array Sensor (SURTASS) and the Moored Surveillance System (MSS).

The former will provide commanders of forces at sea with a highly effective mobile sensor, so it would permit convoy escort vessels to enlarge their coverage and control of areas through which enemy submarines must penetrate in order to put themselves in attack position. The latter system,which calls for planes, submarines, or ships to scatter passive sensors in the area about which information is desired, will allow surveillance of zones in which it is impossible to utilize other means.

As to the sensors, important improvements will be made; surface ships will be equipped with the new AN/SQS-26 sonar and the Tactical Towed Array Sensor (TACTAS); and submarines will get the new AN/BQQ-5 sonar, which is in the process of being installed on all Los Angeles class attack submarines

(SSN-688). (10) The former two sensor systems will be complemented by the new LAMPS MK-III helicopters.

In the sector of anti-submarine weapons, improvements are planned for the MK-46 torpedo (MK-46 Neartip), as well as the development of a more advanced torpedo (Advanced Light Weight Torpedo - ALWT), with a more powerful warhead, higher speed, capable of reaching greater depth. It is expected to be operational by the mid-1980's. For anti-submarine mines, development of the Quickstrike mine family is projected (a program for the conversion of M-80 bombs); its features will be economy, operational flexibility, and resistance to counter-measures. Another project is the Propelled Rocket Ascent Mine (PRAM). (11) Both will help augment the anti-sub capabilities of the already operational CAPTOR mines. (12)

In the aircraft sector, it will be enough just to mention the greater technological sophistication of the search, pick-up, and tracking systems of MAP P-3C Orion aircraft and S-3A Vikings, (13) the in-flight refueling capability of the new Orions, and the entry into service of the new LAMPS MK-III helicopter, which is expected to occur in the next few years.

In the field of naval weaponry, the revolution occurred with the advent of the anti-ship missile, which has now become the typical weapon of every surface ship, even those of modest displacement; it can also be mounted both on submarines (with possible underwater launch possibilities) and on attack planes in its air-to-surface version. In this particular sector, the Soviet Union has a several-years lead on the United States. The latter, however, is steadily outfitting its forces with the Harpoon missile and developing the tactical version of the Tomahawk cruise missile both as an anti-ship weapon and as an

attack missile against land targets, with either conventional or nuclear warheads.

The Harpoon missile, aside from being the equipment of practically all new surface ships, can also be installed on attack submarines and arm the fighter-bombers and MAP and ASW aircraft of the Sixth Fleet. With the Harpoon, airplanes will be able to attack Soviet units while remaining out of range of their anti-aircraft weapons. The Tomahawk will be mounted on the CGN-42 class nuclear cruisers.

The Soviet Union, aside from the improvements made on the second version of the SS-N-2 Styx missile, which is the armament of the Osa class ships of Algeria and Libya as well, has developed a new series of naval surface-to-surface missiles: the SS-N-9 mounted on Nanuchka class vessels; the SS-N-12, as a replacement for the SS-N-3 mounted on Kiev class aircraft carriers; the SS-N-7, mounted on Charlie and Papa class submarines; the SS-N-11, a replacement for the SS-N-2, mounted on Kashin and Kildin class destroyers.

In addition, the United States is developing a new 8-inch (203mm) naval gun, the Major Caliber Light Weight Gun (MCLWG), to be used in support of amphibious operations and in an anti-ship role; it is also developing laser-guided and infra-red guided shells for 5-inch (127-mm) and 8-inch guns. (14)

In the sector of aircraft, the two most important innovations have been (for the Americans) the entry in service on aircraft carriers of the new F-14 interceptor, armed with Phoenix air-to-air missiles; and (for the Soviets) the entry on-line of the new Tu-26 Backfire bomber, which on account of its range (more than twice that of the Badger, which it is designed to replace), its supersonic speed, its modern

electronic-warfare apparatus, its adaptability for outfitting with the latest AS-6 Air-to-surface missiles, represents an important qualitative leap in terms of threat and capability of providing adequate air support in zones left uncovered up to now by the Badgers.

In the air-defense field, the United States plans the procurement of the Aegis system, designed to be mounted, as mentioned previously, on CGN-42 class cruisers and DDG-47 class destroyers. In its functions as an integrated defense system with anti-aircraft and anti-missile capabilities, the Aegis allows very short reaction times, significant resistance to electronic counter-measures, and capability of opposing concentrated attacks. Moreover, in its command-and-control-system function, it offers the commander of forces at sea the possibility of highly effective coordination among all the air--defense elements of the units under his command.

Other developments foreseen for this sector include: improvement of the performance of the Standard missile and improvement in electronic countermeasures for existing SAM systems so as to increase their interception probabilities in an electronic environment. Also projected is the procurement of the Phalanx Close-In Weapon System (CIWS), based on an extremely rapid-firing 20-mm gun for short range defense. Finally, to complement this system, development is planned of the Rolling Airframe Missile (RAM), a missile especially suited for short-range interception of low-altitude attacking cruise missiles that have gotten past the long-range and medium-range defenses. (15)

The Soviet Union is developing a new SAM, the SA-10,

which, though planned as a land-based anti-aircraft missile system, could be adapted to a naval role and installed on Soviet ships as a replacement for the older anti-aircraft systems SA-N-1 and SA-N-3.

Finally, two other sectors deserve a short discussion.

First is the Fuel Air Explosive (FAE). (16) FAE weapons are formed by a mixture of highly inflammable fuels, contained in several tanks. Freed at the instant of impact,the mixture vaporizes spontaneously, forming a cloud about 16 meters in diameter and 3 meters thick. This cloud, in a state of aerosol suspension, is detonated, producing a shock wave whose destructive effects are many times greater than those produced by the explosion of the same quantity of TNT.

FAEs have been used as an anti-ship weapon in the course of operational testing with especially interesting results. In fact, a second-generation FAE explosive placed on a barge and detonated near its target, an old destroyer, caused damage so heavy as to sink the ship. The use of FAE weapons in an anti-ship capacity appears very promising. All the ship's superstructures (from radar antennas to communication antennas to electronic warfare and flight assistance systems) and the aircraft (planes and helicopters) parked on deck are highly vulnerable to the effects of the shockwave and the strong dynamic pressures caused by an FAE explosion. It is believed that over-pressure of 0.42 Kg/cm^2 would be more than sufficient to damage a warship seriously enough to decisively reduce its operational capability. When one considers that third--generation FAE charges are reportedly capable of producing, with a 500-kg charge of methane, over-pressures on the order

of 0.9 kg/cm^2 at a distance of about 100-130 meters from the edges of the gas cloud, with a residual over-pressure of 0.42 kg/cm^2 at 170-190 meters, the importance such weapons could take on in a naval conflict is obvious. All the more so once third-generation FAE charges are adaptable for anti-ship missiles. However,it seems that there are very complicated technical problems, and as far as is known the possible use of FAEs in the naval sector has not been pursued.

The second sector is that of Remotely Piloted Vehicles (RPV) and mini-RPVs, (17) to be utilized as surveillance and reconnaissance vehicles and as a means for the beaming of lasers for laser-guided artillery shells fired by the combat units' guns. Research and development is extremely active in this field, but there are still major problems to be solved before RPVs can be employed in conflict with operationally valid results, particularly in naval applications. The principal problem concerns the systems of launching and of recovery of RPVs at the end of their missions. For naval units recovery has proven difficult and complex.

Chapter III: Footnotes

1) For the characteristics and the weaponry of the units mentioned, see Appendix, p.

2) For the Aegis system, see Appendix, p.

3) Four CGN-42s are planned. A first appropriation was approved by the American Congress for fiscal 1978. See Annual Defense Department Report Fiscal Year 1979, op. cit., p. 171.

4) Long-term plans of the Defense Department call for the construction of 15 DDG-47s. ibid., p. 172.

5) The prototype of these units, the Oliver Hazard Perry, began sea tests in summer 1977, and was delivered to the U.S. Navy in December of that year. Congress authorized the construction of 26 FFG-7s. For 18 of them, work is already under way at three different U.S. shipyards. Rivista Marittima, July-Aug. 1977, p. 170; Annual Defense Department Report, FY 1979, op. cit., p. 178.

6) The reduction was made necessary by a considerable increase in costs: about 130% over, with respect to the predicted unit-procurement cost. See Hearings, Fiscal Year 1977, op. cit., part. 4, p. 2193.

7) The technical success of the PHM-1s supposedly removed all doubt as to the feasibility of constructing larger-sized hydrofoils, with displacements near 1,000 tons, trans-oceanic capabilities, and speeds above 40 knots in practically any sea conditions. Hearings, op. cit., par. 1, p. 186.

8) The class of Surface Effect includes APBs (Advanced Patrol Boat) built by Bell-Halter. Whereas the Osa-class FPBs, whose top speed is about 35 knots, are reportedly unstable and incapable of maintaining more than a few knots' speed in Force 4 seas, the APBs are supposedly capable of producing a top speed of more than 60 knots and of main-

taining more than 50% of that speed in Force 5 seas. Moreover, the prototype of the Surface Effect Ships built by Bell Aerospace Textron, the SES-100B, reportedly reach a speed of 55 knots in Force 3 seas and more than 90 knots with Force 1 seas.

For APBs and their possible employment configurations, see Conference Proceedings, International Naval Technology Expo 1978, Rotterdam June 6-8, 1978, published by Interavia SA, 1978, pp. 208-228. For the development of surface--effect aircraft carriers, see ibid., pp. 229-234.

9) For the Characteristics and weaponry of the Nanuchka, see Appendix, p.

10) Hearings Fiscal Year 1977, op. cit., part. 4, p. 2001.

11) ibid., part 1, p. 193.

12) For the CAPTOR mine, see Appendix, p.

13) For the technical characteristics, the operational concepts of employment, and the performances of the P-3C Orion and the S-34 Viking, see, respectively, Aviation Week & Space Technology, Nov. 15, 1976, pp. 34-45, and Nov. 22, 1976, pp. 34-45, and Nov. 22, 1976, pp. 30-41.

14) For details on the two systems, see Annual Defense Department Report, Fiscal Year 1979, op. cit., p. 184.

15) On the RAM, see Bruce A. Smith, "RAM to offer Anti-ship Missile Defense," Aviation Week and Space Technology, Dec. 11, 1978, pp. 53-58.

16) On FAEs, see Edgar Ulsamer, "Adding Another Dimension to Airpower," Air Force Magazine, August 1972, p. 34; Clarence A. Robinson, Jr., "Special Report, Fuel Air Explosives," Aviation Week & Space Technology, Feb. 19, 1973, pp. 42-46; Robinson, "Soviets begin Fuel Air Explosive Tests," ibid., Oct. 22, 1973,p. 24; Air Force Magazine, March 1974, pp. 30-35; Georg Johannsohn, Les Fuel Air Explosives révolutionnent le combat classique, Revue Internationale de Défense, 6, 1976, pp. 992-996; Hearings, Fiscal Year 1977, op. cit., part 10, p. 5310.

17) There is a vast literature on developments in the field of RPVs. See especially Barry Miller, "Navy Studying Varied Role for RPVs," Aviation Week & Space Technology, Oct. 14, 1974, p. 39; Philip J. Klass, "Increased Use of mini-RPVs Foreseen," Aviation Week & Space Technology, May 17, 1976, pp. 58-61.

On U.S. Navy programs for RPVs and mini-RPVs, see Hearings Fiscal Year 1977, op. cit., part 10, pp. 5512-5522.

CHAPTER IV: Possible Alternatives

Any analysis of the possible alternatives in the Mediterranean must be made keeping a number of elements in mind:

- the awareness that naval forces are the most acceptable, the most versatile, and the most flexible form of military presence in peacetime and in crisis situations; despite their recently heightened vulnerability, they remain precious and at times irreplaceable tools of foreign policy;

- the peculiar nature of the Mediterranean, which is essentially a "closed" sea, both because of its natural compartmentalization and because of its moderate dimensions, especially in the north-south direction;

- the special characteristics of the countries that border the Mediterranean, which have extremely varied political structures and ethnic and cultural bases, are at quite unequal levels of economic and social development, and have widely differing stances in international affairs;

- the virtual impossibility that a conflict between the two superpowers or between the two alliances could spring directly from a confrontation at sea between their respective naval forces in the absence of events connected with some international crisis in Europe, the Middle East, North Africa, or the Balkans;

- the differences between the function of the Sixth Fleet's presence in the Mediterranean and that of the presence of the U.S. forces in central Europe, in terms of demonstrating the American commitment to the defense of its allies;

- the impact of the new naval-warfare technologies: on

the one hand, the fact that they make the Mediterranean even less "adapted" to the survival of naval forces and render their operations, whether of sea-control or of sea-denial, more difficult; on the other hand, we should remember that they permit the assignment of missions normally performed by the navy to other means and other weapons;

- the secondary importance of the Mediterranean theater, as far as naval operations are concerned, compared to the Atlantic. In case of conflict, it will be across the Atlantic that the bulk of reinforcements and supplies reach Europe. It is expected that the Soviet Union will project the bulk of its maritime forces towards the Atlantic; the biggest exercises of the Soviet Navy have always been held in the Atlantic. (1) And finally, in the last few years Soviet military activity has increased in the access routes to the Atlantic, i.e. in the Baltic and the North Sea, raising worry and concern over the defense of the northern flank.

For the sake of simplicity, we will divide our analysis of possible alternatives into two parts: first, consideration of alternatives to the role the Sixth Fleet now plays inside and outside U.S. defense commitments to NATO; second, alternatives to the military structures of NATO itself on the southern flank and to the forces the Mediterranean countries would assign to NATO in case of conflict.

We have already asserted that even assuming only a medium level of threat, the Sixth Fleet would have scant probabilities of bringing its air and amphibious components to bear in support actions on the land fronts of Southern Europe during the initial phase of a conflict between the Alliances. If the

aircraft carriers had to be withdrawn from the Mediterranean, the support of their airplanes would not be available even after the initial phase, that is, after the conclusion of the sea battle. If it is felt that this support is indispensable, the first problem is that of finding means and methods of compensating for this loss of capability. This could be achieved:

- by landing the Marines of Task Forces 61 and 62, before the outbreak of hostilities, in the zone of greatest enemy threat and greatest allied weakness. This action would presumably take place without opposition, and might perhaps favor a diplomatic solution to the crisis, as it would be a tangible proof of America's readiness to commit itself totally in defense of the Alliance.

On the other hand, the disembarkation could be considered an act likely to lead to further military escalation of the crisis. But to delay the landing on the basis of such a hypothesis could easily mean having to put it off again, because of the particularly difficult conditions for amphibious operations which would be created in the eastern Mediterranean, once hostilities had begun; or else, it could mean having to make the landing anyway, but in much worse conditions, with higher risks and lower probability of success;

- by providing that the tactical air units located in the United States and projected for redeployment to Europe be distributed between the north-central and the southern European theaters of operations in such a way as to assign an adequate number of flight squadrons to the southern flank. It would be best if decisions regarding deployment were linked, in a flexible way, to the actual course of events, rather than to

the declaration of states of alert or mobilization; in this way decisions could be adapted to circumstances and an over-rigid model of application be avoided. Anyway, these units will have to possess very rapid reaction capabilities, to be able to be redeployed with a minimum of warning and in relatively short time.

The number of planes redeployed would have to be such as to virtually compensate for the missing support of the Sixth Fleet aircraft carriers, in terms of daily combat sorties. Moreover, it seems necessary that the bases to which redeployment is to be made should be pre-chosen, that they should have the needed facilities and be capable of protecting aircraft on the ground (reinforced-concrete "hangarettes"), and strengthened in their anti-aircraft defenses. Finally, there should be a pre-storage of ammunition and essential spare parts, in decentralized but easily accessible deposits, so as to limit the number of transport planes needed to support the redeployment and so as to reduce to the absolute minimum the time period between landing of the aircraft at their new base and the time when they are fully operational.

Considering that the two American carriers normally operating in the Mediterranean have an attack capability of four A-7 squadrons and two A-6 squadrons, about 60 planes, the redeployment of four squadrons (counting 15-16 planes assigned to each squadron) should be an adequate compensatory measure. These squadrons could be naval aviation squadrons, so that they could also, if necessary, be effectively utilized on anti-ship missions, given their greater experience in naval air operations.

It might be objected that the approximately 84 daily com-

bat sorties (estimating an aircraft efficiency of 70% and a maximum of two sorties per day per aircraft), which would decrease as losses and inefficiency mounted, would not provide decisive support for the waging of land battles. However, in this case the political significance of a U.S. decision to compensate for its fleet's reduced capability is more important than its purely military significance; this would be especially true if America's allies perceived that reduction as real and important. Furthermore, we should not underestimate the increase in operational flexibility of the aircraft carriers that would result from relieving them of the responsibility for "immediate" air support on the southern flank--especially as that immediacy no longer appears attainable.

In the medium run, aircraft redeployment could be complemented and partly replaced by the deployment in allied countries of mobile Ground Launched Cruise Missiles (GLCMs). Because of their extremely high accuracy, they are capable of carrying out certain air missions, such as interdiction and counter-aviation: the former, against fixed targets vulnerable to conventional explosives, the latter with warheads capable of making airport runaways unusable (runway-busting munitions). However, they are limited to areas not heavily defended, at least until supersonic cruise missiles with autonomous electronic-warfare capability become available.

The second problem concerns the naval battle proper: in the hypothesis of the retirement of the carriers from the Mediterranean, how to replace the offensive, defensive, air reconnaissance, and anti-sub capabilities of their aircraft?

Apparently, the simplest solution would appear to be the use of land-based air forces. However, this would mean a

further increase in the number of flight squadrons that would have to be redeployed from the United States to the allied countries of the south flank. Such an increase is made difficult both by the limited overall number of American flight squadrons available as reinforcements and by the even more vital needs of the center-northern front. In fact, it is unthinkable that a conflict between the two alliances in the South could occur without all of Europe's being involved. Further, the Italian, Greek, and Turkish air forces are quantitatively insufficient, and qualitatively poorly suited, to replace the contribution aircraft on board the carriers can make in naval operations, because of their characteristics and the special training of their crews. In case of conflict, in any event, those forces would be heavily engaged in land battles and hence could dedicate very few resources to the war at sea.

Nevertheless, the use of AWACS aircraft, and the strengthening of the radar network in the southern sector, especially for coverage at low and very low altitudes, could compensate for the loss of the discovery and fighter-guidance capabilities of the carriers' E-2Cs. Several measures could make up for the offensive capabilities of the carriers' A-6s and A-7s: employment, from bases in the Azores, of B-52s equipped with "smart" weapons systems (air-to-surface missiles with electro-optical, laser, and IIR guidance, GBU-15 type guided glide bombs); utilization of MAP and ASW aircraft in an anti-ship role, equipping them with Harpoon AS missiles (this role will however be made more difficult by the deployment of the Soviet Kiev-class aircraft carriers in the Mediterranean); and adoption of the cruise missiles, which are now starting to become

part of the typical armament of many surface ships of the U.S. Navy. Finally, a reinforcement of the P-3C groups at Sigonella and Lajes could compensate for the lost anti-submarine capability.

However, other problems would still remain unsolved.

In general, the use of land-based air forces has a number of disadvantages: their range of action is limited, especially with heavy warloads; their intervention flexibility is not as great as that of airplanes on board ships; they cannot constitute a "presence"; they cannot be used to exert political pressure, while it is extremely hard to graduate the military pressure they exert; in case of crisis, the utilization requires precise intelligence, if possible in real time, which can come only from forces already present in the area concerned.

Next, there would be the need to increase air-defense capabilities: Sixth Fleet interceptors constitute the first screen, both against aircraft attacking naval forces and against Soviet medium bombers directed towards land targets. Such an increased capability would have to include not only a perfectly continuous radar coverage, but also the deployment of modern fighters, with fast reaction time and intervention time, with sophisticated air-to-air missiles, and with radius of action and autonomy sufficient for the defense of the areas in which the establishment of a certain degree of sea control is desired. This means having available U.S. aircraft of the F-14 and F-15 type, i.e. in any event drawing on U.S. reinforcement capacity. Further, a sufficient number of airbases in allied countries would have to be available, with adequate equipment and protection, so that U.S. air strength not be

concentrated in just a few airports, with a consequent dangerous increase in vulnerability.

But it should not be forgotten that there might be strong resistance on the part of allied countries, for internal political reasons, to the prospect of a costly strengthening of infrastructures and installations with a view toward redeployment of American forces, even if only in case of emergency. Such resistance would become even stronger if it were necessary to assume an enlarged American presence even in peacetime.

Measures to "compensate" for the decreased overall capability deriving from restructuring the Sixth Fleet in the sense of gradual replacement of aircraft carriers with other units (more generally, a "different" military presence in the area) should not be taken except in the context of close consultation and coordination with the allied countries directly and indirectly interested in security in the Mediterranean.

This does not mean that the United States could not modify its military presence unilaterally anyway, on the basis of choices that take account of its world policy and the limits of the defense budget. In this case, however, the United States would have to accept the political repercussions of such choices. And the repercussions would certainly not be limited to allied countries, but would involve the perceptions of all the Mediterranean nations. Further, the United States would have to take account of how the Soviet Union might interpret those choices and consider whether they might not create a power vacuum (even a psychological and not a real vacuum would be enough), which could induce greater Soviet

activism in the Mediterranean.

In other words, the United States would seem to be faced with two objectives which could prove difficult to reconcile: First, it must review its military presence in the Mediterranean on the basis of its own requirements, but in such a way that the final result would not lead to an overall decrease in the security of the Alliance in the Mediterranean. Hence, it must involve its allies in a coordinated action which, in the military sphere, favors a change in that presence and contributes to the maintenance of the level of strength needed to guarantee the strategic balance. Second, it must persuade its allies and the Mediterranean nations that a different presence of the American forces does not mean any revision of U.S. committments or a "withdrawal" from a region of vital importance to Western interest. And it must do so in such a way that this "message" is heard and clearly understood by the Soviet Union as well.

The first objective is certainly more complicated to achieve. For this objective, an allied willingness to contribute with appropriate political and military measures is quite indispensable. We have already mentioned the necessity for closer coordination among the southern flank NATO nations in production and procurement of air and particularly naval weapons systems. This coordination should take place in the context of a military policy which, if nor common, is at least adequately integrated in the objectives pursued. This need is felt all the more strongly the further one projects a future in which the Mediterranean might become marginal to the United States' world policy, while remaining as vital as ever for the European nations. But it is a need which so far has not taken form in

an agreed-upon and detailed analysis of the role the Western European nations should play, the policy they should follow in the sphere of the North-South dialogue (with respect to or in coordinatinn with the East-West dialogue), and the means that should be utilized to encourage greater stability in the Mediterranean area, not necessarily linked with the presence of the two superpowers.

The European nations lack a common foreign and military policy on the Mediterranean. Every country seems to pursue its own special interests, and the results of the activities of the EEC itself are certainly not comforting.

In the military sphere, the action of the NATO nations of southern Europe could take place on two levels. The first level, in coordination with the United States, involves a fuller operational and logistical integration of forces. It involves those programs for strengthening the allies that could, on the one hand, allow the NATO countries to take on greater responsibilities in the Mediterranean area and, on the other hand, would facilitate America's choices regarding a change in its own military presence. This level also involves the search for more suitable tools of crisis management in the region, especially for extra-NATO crises, which the European tend to view in an economic and political rather than a security framework, while the Americans place such crisis in the wider context of their world-wide interests and in the more complicated game of power, influence, and counterposition with the Soviet Union on the world battlefield. In this game strategic factors play an extremely important role.

At this first level, therefore, closer consultation between the United States and European nations about security

problems in the Mediterranean appears to be a necessity. Such consultation should aim at compatible conduct, or at a minimum, at actions not completely at cross purposes, in case of crises internal to the Atlantic Alliance (a new worsening of Greek-Turkish relations) or outside it (Yugoslavia, Middle East, North Africa). For particularly serious crises, prior coordination of the central elements in possible diplomatic and military courses of action would be desirable; within this framework, the respective responsibilities of the various countries should be coordinated.

Further, a concrete U.S. effort is needed to aid the modernization programs of the allied countries of southern Europe through financing, economically advantageous co-production, and gifts of material along the lines of the old Mutual Defense Assistance Plans. Such an effort could not fail to encounter strong resistance in a Congress which is less and less disposed to approve choices that continue to give the impression that it is the United States which bears the major burden of the Atlantic alliance. Yet such an effort appears indispensable, considering the economic conditions of the southern NATO nations and the narrow limits for growth in their defense budgets. In purely economic terms, American aid might be difficult to defend before American public opinion. But on the military plane it is fully justified. Moreover, in the long-term perspective such programs might turn out to be quite attractive for the United States in terms of cost-effectiveness, through the reduced expenditure that would derive from a diminished U.S. presence.

Finally, Spain, France, Italy, Greece, and Turkey must become more fully aware of the limits of a nationalistic Med-

iterranean policy confined to the defense of their own national interests, and of the limits of a policy with broader objectives in the absence of the effective capability to pursue them. They must also see the limits inherent in an independent, uncoordinated development of military, and especially naval, forces, which are in any case designed to be projected in the Mediterranean in defense of what are essentially common interests.

And it is with this fuller awareness that the NATO countries of the south flank should act on the second level of their military policy, i.e., the national and European level.

On the national plane, what is necessary is a rethinking of the distribution of defense budgets, with a more balanced assignment of resources among the individual branches. This applies above all to Italy. Such distribution should be based on the geo-strategic situation, the international agreements in effect, and the outlook for European agreements to face the political and technical problems of the 1980's. In this sphere, existing bilateral pacts between individual countries and the United States could play a role, while possible reciprocal concessions could serve to obtain aid which would facilitate European agreements. What is to be avoided is giving so strongly bilateral a nature to such concessions as to encourage reciprocal national interests and make the formation of a truly European framework more difficult.

On the European level, movement is possible in several directions. First of all, broader consensus should be sought within the Independent European Program Group concerning closer collaboration among the countries of Southern Europe on those weapons-systems projects that show themselves to be

useful tools for a common military policy in the Mediterranean. An inter-ministerial committee could be created in every southern-flank country (including France and Spain) to analyze and study security problems in the Mediterranean area. The views of these committtees could be utilized in the determination of defense needs and in the working out of an arms-control policy. And they could help advise the governments in case of international crisis in the Mediterranean.

Such committees, which could also be formed in West Germany and Great Britain so as to preserve the necessary links between center and south and avoid the danger of isolating the Mediterranean area from its European context, would be expected to coordinate their studies and analyses, for the purpose of laying the groundwork for a truly "european" Mediterranean policy.

Further, at the operational level certain proposals can be made. These would concern the formation of a standing European naval force (not on call like the present Navocformed). (2) This force would not be earmarked for subsequent assignment to NATO commands, as are the naval forces of the countries of the alliance, but would already be under NATO command in peacetime, as are air-defense forces. It should include American, Italian, Greek, and Turkish units as well as some German, Dutch, and British units in rotation, to denote the interest of the nations of central Europe in free passage through the Mediterranean. The American units assigned to this new-concept "Stanavformed" could be units of the Sixth Fleet, but the Fleet as such would lose its direct links with NATO--South Command, while preserving its nature as a U.S. force stationed in the Mediterranean for the safeguarding of U.S.

national interests and the pursuit of U.S. goals. Of course, it would still be available as reinforcement in case of a NATO-Warsaw Pact conflict.

The constitution of a "Stanavformed" would provide several advantages:

- It would strengthen the image of the American "presence" in function of its NATO defense commitments, by integrating an American naval component into a multinational force assigned to NATO in peacetime;

- It would separate the Fleet's role, composition, size, deployment, and time of presence in the Mediterranean from its NATO "framework", which would allow the United States to increase the flexibility of its intervention capability and to more effectively graduate the political weight of its naval presence in case of a non-NATO crisis;

- It would enlarge the responsibilities of southern European countries for security in the Mediterranean, removing that problem from the context of a simple geostrategic rivalry between the two superpowers. By clarifying its political meaning, it could have positive repercussions on the Mediterranean countries in terms of a different perception of their own security problems, perhaps a lesser "permeability" as regards utilization of their territory and their facilities on the part of the Soviet Union, greater openness to the North-South dialogue within the framework of a reconfirmed awareness that the Mediterranean Sea is a region of preeminent Euro-Arab interest.

- It could lay the groundwork for a force which, in the long-term perspective, through appropriate functional and structural changes, would permit French and Spanish participa-

tion.

On the military plane, this solution seems on the whole quite feasible. An "on call" naval force in the Mediterranean already exists, a functional NATO command structure exists, there are installations, vessels, and an efficient communications network. Of course, neither must the difficulties be underestimated. This force must be strengthened, both in the number and in the type of naval units that constitute it; attack submarines must be included. It must be filled out with other complementary units: coastal cruise missiles with mobile launchers, (3) combined with surface-to-air missiles, for cover and defense of the sectors most sensitive to a threat from the sea and the most important port facilities; land-based attack aircraft, armed with air-to-surface missiles, in an anti-ship role and earmarked for direct support in the sea battle; maritime surveillance aircraft, reconnaissance planes, and antisubmarine platforms (planes and helicopters). Further, this force must be strengthened in communications, in logistical support capacity, and in electronic-warfare capability.

In short, this would mean the formation of an integrated, highly flexible force under a single command, fully adequate to the task of counterbalancing the Soviet fleet's capabilities and suitable for use throughout the Mediterranean to establish the necessary degree of sea control. And,aside from the cruise missiles, the means and the weapons systems for such a force already exist.

But while on the military plane the creation of such a force may be feasible (though requiring a heavy commitment from the participant nations), it would represent a very dif-

ficult political choice. For it would carry with it important implications; it would both assume and foreshadow changes in the American military presence in the Mediterranean, in U.S.-European relations, and in the structure of NATO itself on the southern flank.

Moreover, we cannot ignore the difficulties represented by the crisis in Greek-Turkish relations, the Greek withdrawal from the NATO military organization, and the reluctance of the European nations to create a permanent Mediterranean naval force without French participation, (4) which at present is virtually impossible. Such participation could come about in a different context and in a military structure different from NATO: in other words, only through the radical alteration of the presence command structure of the Alliance in southern Europe.

Finally, one should not underestimate the danger that the Mediterranean countries would interpret the constitution of the "Stanavformed" as a strengthening of the Western military apparatus. This is, despite all possible efforts of European diplomacy to put such an initiative in the proper light, it might nevertheless be seen as an essentially neo-colonialist decision, certainly not one likely to reduce tensions or encourage arms-control measures in the Mediterranean.

Chapter IV: Footnotes

1) It is enough to recall the "Okean '70" and "Okean '75" exercises.

2) Entering into function in 1970, the Navocformed is constituted by naval units from Great Britain, Greece, Italy, the United States, and Turkey. Mobilized directly by Saceur, when activated it depends directly on Commavsouth.

3) For example, the Otomat-type missiles.

4) Once already, in 1971, the European countries rejected an American proposal to transform NATO's naval force from "on call" to standing.

Conclusions

Since the conclusions I will draw here refer primarily to the military dimension of the problems on the Southern flank, they are necessarily partial. Nevertheless, in my opinion the military side is of special importance. In particular, the role played in the Mediterranean by the two superpowers' air and naval forces is such that it affects the political dimension of the problem and thus the overall conclusions of the study.

There are numerous possible justifications for a "different" American presence in the Mediterranean:

- the quantitative and qualitative increase in the air and maritime capabilities of the Soviet Union (the increase in the number of ships in the Fleet, the operability of the Kiev-class aircraft carriers, the entry into service of the Backfire bomber);

- the shrinking of the U.S. Navy and, looking toward the future, its lesser capability to maintain two Carrier Task Groups permanently in the Mediterranean without taking strength away from other regions;

- the decreased need for the permanent presence of a naval force of this size and make-up, which derives from the following considerations : that it is extremely difficult to postulate a Warsaw-Pact attack in the Southern zone which would not be preceded by a strategic warning long enough for the adoption of the necessary counter-measures (strengthening of the Sixth Fleet, sending reinforcements, etc.); that it is equally difficult, if not more so, to imagine a conflict

between the two alliances springing from a naval clash between the U.S. Sixth Fleet and the Soviet Fifth Squadron in the absence of an international crisis in the Mediterranean area; that in any event carrier-based American airplanes would not be able to provide support in land battles at the outbreak of hostilities; and that the potential nuclear role of the Sixth Fleet can be effectively played by other forces;

- the necessity to have available a force able to manage possible crises not involving NATO and the Warsaw Pact, in terms of greater operational flexibility, superior deterrent power, and lower politico-military vulnerability (deciding the magnitude of the air-naval deployment according to circumstances with gradation of pressure, presence of high-value units only when necessary, etc.), less dependence on the technical and logistic support of allied nations:

- the desirability of urging the European countries of the Mediterranean (including France and Spain) to take on greater responsibility and play a more important role, with the prospect (though only in the medium or long term) of integrating their Mediterranean policies; a new role which, combined with a different U.S. presence, could ease the North--South dialogue on security problems in the Mediterranean; this dialogue, in its turn, could prove useful as a factor tending to limit Soviet penetration in the Middle East and North Africa;

- the importance of recent international events (Horn of Africa, Afghanistan, Iran, Cambodia), which tend to lower the priority assigned to the Mediterranean region by the United States in the context of maintaining world geopolitical and geostrategic balance; this priority is destined to be further

reduced if a positive solution is reached as regards relations between Egypt and Israel and between Greece and Turkey--and if Turkey itself succeeds, with the indispensable help of the West, in preserving its internal stability and its present international stance;

- the possibility that the "different" U.S. presence could provide the stimulus for, and in fact constitute the first step towards, arms control in the Mediterranean, arms control which could begin only from initiatives by the two superpowers to reduce their military presence in the area.

Of course, it is impossible not to see the difficulties in the way of finding the right solution to the problem, the complexity and the sometimes only hypothetical feasibility of the alternatives mentioned above. The Mediterranean could maintain its present importance in U.S. world policy for a good many more years. Both the Middle East crisis and the Greek-Turkish crisis could re-erupt. Destabilizing events could occur in Yugoslavia and the North African nations. (In spite of everything, Yugoslavia after Tito is still a big question mark, as is the future of relations between Morocco and Algeria and Libya's role in the Arab world). Internal events could force Turkey to seek a new political equilibrium and new international ties, separating itself more or less openly from the Western alliance. And the Soviet Union could be tempted to try to extend its own influence in the Mediterranean area--especially if it got the impression that a power vacuum had been created which it could fill without excessive risk and with an acceptable level of political and military effort.

Moreover, the European countries do not seem at all ready or willing to take on greater responsibility, to coordinate their Mediterranean policies, or to try, together with the United States, to find the proper means for dealing with possible situations of instability and crisis. On the southern flank, NATO itself has by now reached the brink of complete "break-down" in its own military cohesion, and a new rupture of relations between Greece and Turkey would mark its definitive dissolution.

On the other hand, it is necessary that the "different-ness" of the American presence not be capable of being interpreted as a "retreat" or, worse still, as a sign of lack of commitment, and therefore of lesser availability and lesser interest. Thus it seems indispensable that the solution to the military side of the Mediterranean question be only one element in a broader and more sophisticated effort, which must not neglect the political and economic aspects of the problem.

Finally, difficulties and conflicts could arise within the United States itself, if Congress were to consider the choices made too costly and/or not adequately justified politically.

The United States and its allies may be tempted to leave things as they are, reacting to events when and if they occur. But lack of courage and foresight, the incapability (or could it be impossibility?) of making choices at the moment when they are necessary, have always meant having to pay a higher economic, political, and military price in the long run.

A P P E N D I X I

NAVAL FORCES

UNITED STATES

1. Nuclear Strike Cruiser (CSGN)

Displacement: about 17,000 tons.
Nuclear propulsion.
Aegis System with Advanced Standard Surface-to-Air Missile (SM-2).
Ability to carry 8 "Tomahawk" cruise missiles (300 NM range).
Ability to carry 16 "Harpoon" missiles (60 NM range).
One 8 inch gun.
One "Phalanx" Close-In Intercept System.
Ability to handle 2 VTOL aircraft or LAMPS helicopters.
TACTAS System and SQS-53 hull-mounted sonar.
Fragmentation protection in vital areas.
Minimum dependence on logistic support which permits operation in remote locations and stays for extended periods.
Uniquely suited for independent missions.

2. DDG-47 Class Guided Missile Destroyer

Displacement: about 9,000 tons.
Gas Turbine propulsion.
Aegis System
2 twin launchers for SM-2 MR missiles.
8 "Harpoon" missiles.
1 twin 127 mm (5 inch) rapid fire gun mounting.
2 LAMPS helicopters plus ASW sensors.

3. FFG-7 Class Guided Missile Frigate

Displacement: about 3,600 tons.
Gas Turbine propulsion.
MK-92 fire control system plus Standard Missiles to provide AAW/ASMD.
"Harpoon" missile capability.
2 LAMPS helicopters plus hull sonar and potential for Towed Array.
1 single 76/62 mm gun mounting.
1 "Phalanx" System.
2 triple launchers for MK-32 torpedo.

LAMPS = Light Airborne Multi-Purpose System

4. Patrol Hydrofoil Missile Ship (USS "Pegasus" PHM-1)

Displacement: about 235 tons.
MK-94 fire control system.
8 "Harpoon" missiles.
1 single 76/62 mm rapid fire gun mounting.

5. "Tarawa" Class General Purpose Helicopter Assault Ship (LHA)

Displacement: about 39,000 tons.
About 30 troop helicopters or "Harrier" AV-8 V/STOL aircraft in place of some helicopters.
3 single 127/54 mm gun mountings.
2 BPDMS (Basic Point Defence Missile System) launchers firing "Sea Sparrow" missiles.
Ability to transport and land a unit of about 1900 Marines fully equipped.

SOVIET UNION

1. "Kiev" Class ASW Cruiser

Displacement: 37,000 tons.
20-25 Ka-25 "Hormone" helicopters.
15-20 Yak-36 "Forger" VTOL aircraft.
4 twin launchers for SS-N-12 surface-to-surface missile.
2 twin launchers for SA-N-3 surface-to-air missile.
2 twin retractable launchers for SA-N-4 surface-to-air missile.
2 twin 76 mm dual-purpose gun mountings.
8 twin 57 mm or 30 mm anti-aircraft gun mountings.
12 tube ASW rocket launchers.
4 tube "chaff" launchers.

2. "Kara" Class Cruiser

Displacement: 9,700 tons.
2 quadruple launchers for SS-N-14 ASW missile.
2 twin launchers for SA-N-3 surface-to-air missile.
2 twin retractable launchers for SA-N-4 surface-to-air missile.
2 twin 76 mm dual-purpose gun mountings.
4 twin 23 mm anti-air gun mountings.
2 six-tube rocket launchers.
2 five-tube launchers for dual-purpose torpedo.
1 Ka-25 "Hormone" helicopter.

3. "Kresta II" Class Cruiser

Displacement: 7,500 tons.
2 quadruple launchers for SS-N-14 ASW missile.
2 twin launchers for SA-N-3 surface-to-air missile.
2 twin 57 mm gun mountings.
4 twin 30 mm gun mountings.
1 Ka-25 "Hormone" helicopter.

4. "Krivak" Class Missile Destroyer

Displacement: 4,000 tons.
1 Quadruple launcher for SS-N-14 ASW missile.
2 twin launchers for SA-N-4 surface-to-air missile.
2 twin 76 mm dual-purpose gun mountings.
4 30 mm anti-aircraft guns.
2 four-tube launchers for torpedo.

5. "Nanuchka" Class Guided Missile Patrol Gunboat

Displacement: about 850 tons.
2 triple launcher/containers for SS-N-9 surface-to-surface missile.
1 twin retractable launcher for SA-N-4 surface-to-air missile.
1 twin 57 mm anti-aircraft gun mounting.

6. "ECHO II" Class Submarine

Displacement: 5,000 tons surfaced.
Nuclear propelled.
8 SS-N-3 (SS-N-12) anti-ship cruise missile.
10 torpedo tubes.

7. "Charlie" Class Submarine

Displacement: 4,000 tons surfaced.
Nuclear propelled.
8 SS-N-7 anti-ship cruise missile.
8 torpedo tubes.

8. "Juliett" Class Submarine

Displacement: 3,000 tons surfaced.
Diesel-electric propelled.
4 SS-N-3 anti-ship cruise missile.
8-10 torpedo tubes.

9. "Foxtrot" Class Submarine

Displacement: 2,000 tons surfaced.
Diesel-electric propelled.
10 torpedo tubes (20 torpedos carried).

ITALY

1. Helicopter Cruiser "Giuseppe Garibaldi"

Displacement: 13,000 tons.
16-18 SH-3D helicopters.
4 launchers for "Teseo" (Otomat) surface-to-surface missile.
2 launchers for "Aspide" surface-to-air missile.
3 40/70 mm anti-aircraft guns ("Dardo system").
6 torpedo launchers for MK-32 torpedos

2. "Lupo" Class Frigate

Displacement: 2,500 tons.
8 launchers for "Teseo" (Otomat) surface-to-surface missile.
1 Sea Sparrow surface-to-air system.
2 40/70 mm anti-aircraft guns ("Dardo system").
2 triple torpedo launchers.
1 AB-212 helicopter.

3. "Sparviero" Class Hydrofoil

Displacement: 60 tons.
2 launchers for "Teseo" (Otomat) surface-to-surface missile.
1 76 mm gun.

NORTH AFRICA'S NAVAL ORDER OF BATTLE

LIBYA

1 frigate "Vosper" class with "Sea Cat" surface-to-air missile.
2 corvettes (1 with Otomat SSM).
8 fast patrol boat: 3 "Susa" class with SS-12 and 5 "Osa II" class with "Styx" SSM.
14 patrol craft.
3 Foxtrot class submarines.
2 log support ships.
2 landing ship-tank (LST)
(3 "Foxtrot" class submarines, 3 corvettes with Otomat SSM, 10 FPB armed with SSM, 80 Otomat SSM on order)

TUNISIA

1 destroyer escort
1 coastal minesweeper
1 large patrol craft
3 P48-class with SS-12 SSM
2 Vosper patrol craft
10 coastal patrol boats (less than 100 tons)

MAROCCO

5 large patrol craft
1 coastal minesweeper
15 coastal patrol craft
2 "Batral"-class landing ship log
1 landing craft
(4 large patrol craft, 1 landing ship log on order)

ALGERIA

6 ex-Soviet SO-1 submarine chasers
6 Komar, 3 OSA I, 4 OSA II class FPB with "Styx" SSM
10 ex-Soviet P-6 torpedo boats
2 fleet minesweepers (ex-Soviet T-43 class)
1 Polnocny class landing craft tank (LCT)

A P P E N D I X II

NAVAL WEAPONS

UNITED STATES

1. AEGIS.

The Aegis weapon System MK 7 is a fast-reaction, high fire power shipboard Anti-Air-Warfare weapon system, possessing a high degree of system availability, able to counter massed attacks using the SM-2 Standard Missile. The system will be particularly effective against highly coordinated attacks of low-altitude, high-speed aircraft and missiles, air-to-surface missiles, and surface-to-surface missiles. In addition, the system has a significant capability against small surface targets without compromise to the primary AAW capability.
Aegis provides the following key performance factors:

1. Low Past Reaction Time, particularly against low altitude attacks.
2. High Fire Power to prevent system saturation by a massed attack.
3. High Electronic Counter-measures and Clutter Resistance to include a capability to overcome extensive jamming and land, weather, and sea clutter.
4. High Availability to ensure system operation when needed.
5. Extended Coverage to defend other ships in the area.
6. Efficient, Effective and Designed Integration with other ship systems, of the Aegis armed combatants, and with other fleet combatants (Aegis or non-Aegis) by data-links.

The Aegis system is based on the use of a AN/SPY-1A phased array radar to automatically detect and track multiple targets simultaneously while directing the engagement of a significant number of intercept missiles.
The system is also capable of acquiring, tracking and controlling multiple missiles simultaneously. It can be reprogrammed to fire new missiles.

2. PHALANX (CIWS).

This system will provide the fleet with a close-in last-ditch defence against the air threat in general and the Soviet anti-ship cruise missile in particular.

It adapts the Army's "Vulcan" 20 mm six-barrel gun mount to Navy use, and incorporates a fully automatic aim correction feature, and an autonomous threat evaluation that commences fire when a valid target is within range.

3. "HARPOON" MISSILE (AGM-84).

Produced by McDonnel Douglas Astronautics. Anti-ship, supersonic missile, with all-weather performance, a range of 60 NM and a 500 lbs warhead with a pre-explosion penetration capability.
It is reported that the missile can make in-flight turns of up to 90°, fly towards the target few meters above sea level, and climb rapidly close to the target so as to strike from above, thereby increasing its attack capability against fast-moving vessels.
For mid-course guidance the "Harpoon" uses a system comparable to an inertial navigation system, composed essentially of a radio-altimeter and a digital computer, which uses velocity data from 3 axis given by a gyroscope system, to calculate the signals to be given to the missile's mobile surfaces.
For final guidance, the missile is equipped with an active radar system, resistent to electronic counter-measures.

4. STANDARD MISSILE - 2 (SM-2).

SM-2 Medium Range. Speed above 2 Mach.
Estimated range = 18 km.

SM-2 Extended Range. Speed above 2.5 Mach.
Estimated range = 55 km.

5. CAPTOR MINE (ENCAPSULATED TORPEDO).

Is a deep water mine that consists of a modified MK-46 torpedo housed in a capsule which contains its own acoustic detection and classification system. When a submerged target comes within range of its sensor and is classificed as enemy, the Captor releases the M-46 torpedo.
Owing to the mobility of the torpedo, the Captor mine has a damage radius several orders of magnitude greater than any conventional mine.

SOVIET UNION

SURFACE-TO-SURFACE MISSILES.

1. SS-N-9 shipborne surface-to-surface missile.

Carried in 2 triple launcher/containers aboard the "Nanuchka" class missile patrol boat. No pictures or official detail of the missiles have been made public. Estimated range up to 150 NM with external mid-course guidance by cooperating aircraft or helicopter. A normal operating range of about 40 NM seems likely. Mid-course guidance probably by autopilot with terminal guidance probably by active radar homing.

2. SS-N-11 surface-to-surface missile.

Carried in new launcher/containers aboard the latest version of the "OsaII" class missile FPB. Are generally believed to be an advanced version of the SS-N-2 "Styx" missile with better guidance techniques. No pictures or official detail of the missile have been made public. Range is estimated as about 20 NM maximum.

3. SS-N-12 surface-to-surface missile.

Carried by the "Kiev" aircraft carrier. Estimated range about 250 NM.

4. SS-N-14 ASW missile.

Carried in new launcher/ containers aboard "Kara", "Kresta II" and "Krivak" class vessels. No pictures or official detail of the missile have been made public. Estimated range of about 30 NM but this figure is thought to be applicable only to the maximum autonomous range, without the assistance of an aerial vector for mid-course guidance.
Terminal guidance is most likely active radar homing.

AIR-TO-SURFACE MISSILES.

1. AS-4 KITCHEN.

The air-to-surface missile which arms the Tu-22 "Blinder".
Is reported to be at present carried, singly, recessed under the belly, by the "Backfire" bomber as an interim weapon until the AS-6 is operational.
Estimated range varies from 300 km. to 800 km. A UK MOD report quoted a maximum range of 298 km.

2. AS-5 KELT.

The air-to-surface missile used by "Badger" bombers.
Estimated range varies between 160 km. and more than 320 km. However, a UK MOD report gave the former figure as the maximum range.

3. AS-6 KINGFISH.

Reported to be under development. Probably is the air-to-surface missile which will arm the "Backfire" bomber.
Maximum range has been quoted in a report issued by the UM MOD report as 135+ statute miles (220 km).

NORWAY

"PENGUIN" ANTI-SHIP MISSILE

Guidance: inertial en-route guidance with infra-red terminal homing; guidance method is aerodynamic by moving wings

Warhead: 120 kg. semi-armour-piercing impact fuse

Cruising speed: Mach. 0.7

Range: at least 20 km. (11NM)

FRANCE

"EXOCET" ANTI-SHIP MISSILE

Guidance: inertial en route guidance plus active radar homing.

Warhead: 165 kg.

Cruising speed: MM 38 42 km.
MM 39 >50 km.
MM 40 >70 km.