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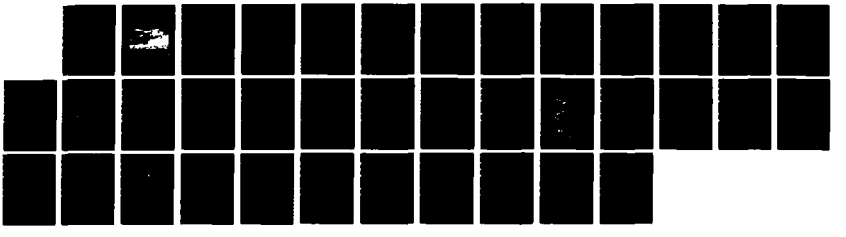

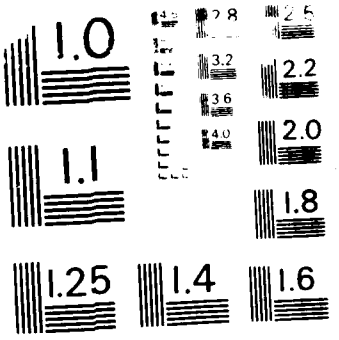

Naval Ocean Research and Development Activity
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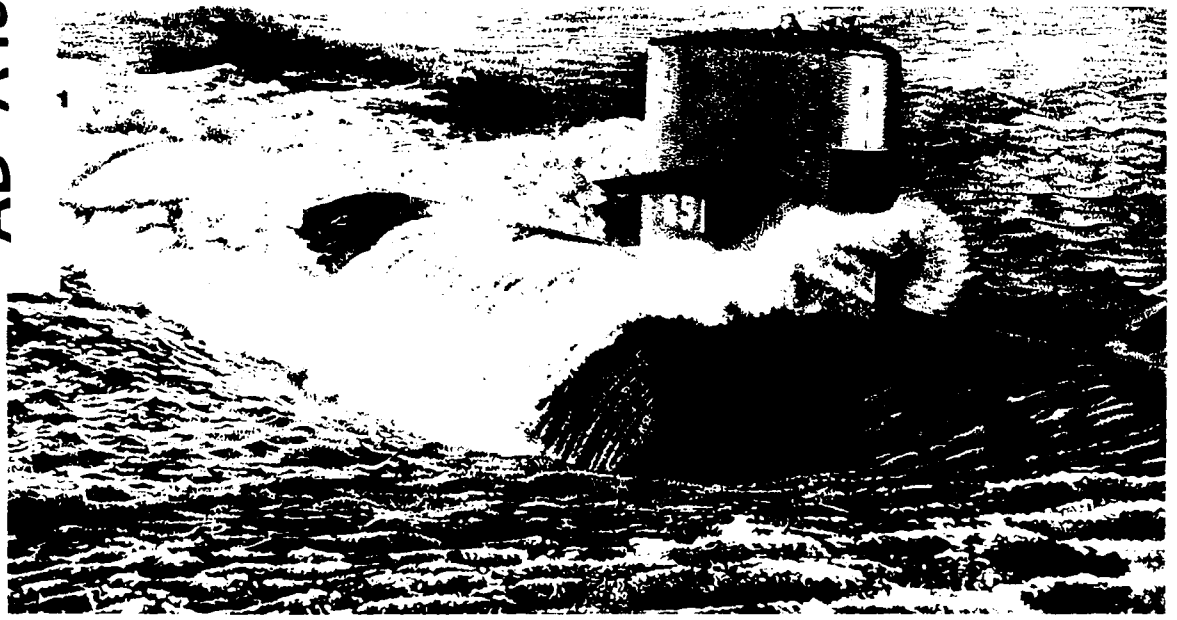
Strategic Passages



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Executive summary

Selection of the foremost strategic maritime passages in the world is achieved by examining fundamentals of military strategy and contemporary views of global strategy from U.S., NATO, and U.S.S.R. perspectives. This examination discloses six axiomatic conclusions:

- Defense and resupply of NATO is a major United States commitment.
- The economic vitality of the Alliance must be maintained.
- The Soviet Union crucially needs economic growth, particularly in the Far East.
- Since military power is founded upon economic vitality and endurance, the most important attribute of a maritime passage is the nature and volume of what passes through it during normal conditions, that is, the matrix attributes–traffic and peace use.
- The immense cost of man-made passages (canals) warrants them special attention. No arguments have been discovered that lessen their initial value to world commerce.
- Aside from defense and control of the canals, maritime passages affecting the major ports and flanks of Europe, as well as the Soviet Southern Sea Route, are crucial to economic survival and growth. That some maritime passages are important to both the Alliance and the Soviets gives them special significance.

From these six conclusions, 12 maritime passages are deemed to be crucial to policies of the major world powers: Bab el Mandeb, Dardanelles, English Channel, Formosa Strait, Great Channel, Korea Strait, Panama Canal, Strait of Gibraltar, Strait of Malacca, Straits of Florida, Suez Canal, and Yucatan Channel.

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Strategic Passages

1.0 Introduction

Freedom of the seas is vital to the security of virtually every nation in the world. By weight, 98% of the trade of the democracies[1] is carried by sea; any disruption of that trade obviously diminishes the well-being of those countries.

Use of the world's oceans for economic, political, and military purposes is not limited to ships of the Free World; developing Third World nations and Communist Bloc nations also desire and need to use ocean routes. Table 1.1 (*World Almanac*, 1985) ranks by size the major world merchant fleets as of 1 January 1984. Although the Soviet Union is generally regarded as a "land" nation, the size of its merchant fleet (approximately 10% of the world fleet) belies that perception. The Soviet Union is acutely aware of marine traffic and its economic and political importance. Second to Panama in the number of registered vessels of 1000 gross tons or over, the U.S.S.R. is eighth in Deadweight tonnage (Dwt). Their present merchant marine policy features many relatively small freighters. Soviet interest in ocean trade is underscored by their progress in naval technology; of four nuclear-powered merchant ships in the world, the U.S.S.R. possesses two, of 18,172 Dwt and 13,366 Dwt.

To ensure a desirable future, the Free World must retain the right of free passage through the world's seas under all circumstances, including transit through narrow, well-defined bodies of water under the control of various nations. Preservation of this right entails allocation of appropriate protective resources: economic, political, or military. Since the means for adequate protection are always limited, it is crucial to identify the most important of these bodies of water to assure sufficient resources are allocated to their protection.

From both Free World and Soviet Bloc perspectives, the following analysis develops a rational mechanism for determining the foremost maritime passages. To rank order maritime passages, one must first ascertain those attributes upon which the utility of a passage can be measured; second, one must ascribe a value system to the attributes. Finally, the evaluated attributes are used as a template to retrieve a set of strategic passages from a larger set. In essence, this development examines an exhaustive list of the world's maritime passages in the context of current perceptions of Free World and Soviet *strategy*. The mechanism, featuring a relational data base with easily changed parameters, has additional utility, as it will respond to other logical queries about global maritime passages.

Section 2.0 presents some basic definitions and concepts of maritime passages. Section 3.0 reviews elementary concepts of strategy. Sections 4.0, 5.0, and 6.0 examine current United States, North Atlantic Treaty Organization, and Soviet strategy. Section 7.0 develops the logical selection process, and Section 8.0 lists and describes the foremost strategic passages.

2.0 Straits and Canals

Perusal of any world map reveals that much of the maritime trade passes through constrained, narrow bodies of water. In addition to maritime trade, significant military traffic frequently utilizes these same waterways; denied their use, a nation could be seriously threatened. For example, of the 15 largest United States ports, 9 are located on the Gulf Coast (*The World Almanac*, 1985) and are accessible only through the Straits of Florida or the Yucatan Channel. If either or both of these passages were denied to United States commercial or military traffic, it would precipitate a serious disruption of national policy. Such maritime waterways are herein defined as strategic passages: a narrow body of navigable water connecting two stretches of the high seas at which the territorial seas of two land areas meet and overlap, whose denied or contested use crucially impairs the conduct of national policy.

Under customary international law (International Court of Justice in the 1948 *Corfu Channel* case), both merchant ships and warships have, unless otherwise prescribed by treaty, a right of free passage "through straits used for international navigation between two parts of the high seas without previous authorization of a coastal state, provided that the passage is *innocent*." Except in this respect, the Geneva Convention of 1958 subjects the territorial sea in straits to the same regime as the territorial sea elsewhere. In time of war, a neutral littoral state may enforce reasonable means to protect the neutrality of its territorial waters within a strait. These means may include mine laying and compulsory pilotage, but the strait must be kept open to free navigation. When a coastal state is at war, it may close the strait to enemy shipping and vessels carrying contraband to the enemy, and may take all belligerent

Table 1.1. Merchant fleets of the world (as of 1 Jul [illegible] 1984

Countries	Total Number	Total Gross Tons	Dwt Tons	Vessel Type: Freight Number	Vessel Type: Bulk Number	Vessel Type: Tanker Number
Panama	3290	34617	57781	[illegible]	[illegible]	[illegible]
U.S.S.R.	2497	17299	23157	1804	[illegible]	[illegible]
Greece	2454	39090	68612	[illegible]	[illegible]	[illegible]
Liberia	2019	68093	131545	449	[illegible]	[illegible]
Japan	1712	36933	61191	[illegible]	[illegible]	[illegible]
U.S.	788	15713	24409	[illegible]	[illegible]	280
U.K.	685	16921	27251	259	[illegible]	267
Norway	529	18458	32470	125	[illegible]	246
All countries	25579	395325	666404	14268	[illegible]	5548

measures that it would be authorized to employ in its other territorial waters or on the high seas. For more detailed research into the legal aspects of straits, a select bibliography for the *Law of the Sea*, published by the United Nations (1985), can be found in the appendix.

Canals are not subject to the same legal regime as straits; their width, length, and man-made characteristics set them apart. Canals connecting the two seas, used only for local traffic and untraversed by large seagoing vessels, are not of international significance (for example, the Baltic–White Sea Canal in the U.S.S.R. and the Gota Canal, connecting the North Sea and the Baltic).

3.0 Concepts of Strategy

As the world becomes an *increasingly lawless place*, defense of a nation and security of a nation come to share more and more alignments of interest. The military aspects of security are basically twofold: preparation for a general or limited war and the preservation of order. The planning and conduct of these two tasks require a good, workable strategy.

A real strategy is, above all, a choice among alternate ways of dealing with a particular situation or with a range of likely situations. In war, it is a guide for tactical planning. In peacetime, it should be a means of choosing the appropriate forces, force postures, and research goals.[2]

3.1 Fundamental concepts

Hart[3] quotes two contemporary political leaders, who more than any one else in this century irrevocably altered the course of history, to underscore the foundations of political-military strategy.

The soundest strategy in war is to postpone operations until the moral disintegration of the enemy renders the delivery of the mortal blow both possible and easy.

V. I. Lenin

Our real wars will in fact all be fought before military operations begin.

How to achieve the moral breakdown of the enemy before the war has started—that is the problem that interests me.

A. Hitler

Hart defines strategy as the art of distributing and applying military means to fulfill the ends of policy, concerned not merely with the movement of forces, but also with the effect. For the purpose of my analysis, I have broadened this definition to include coordination and direction of the resources of a nation, or a band of nations, toward the attainment of goals defined by fundamental policy.

A sound strategy is based upon very careful preparation prior to any physical engagement. This preparation includes positioning of forces, quantity and quality of forces, political maneuvering, economic maneuvering, and disruption and dislocation of opposing forces.

Success depends upon economy of force and deterrent effect, which are combined in a defensive-offensive method based on high mobility that carries the power of swift retort. Economy of force is based on surprise and mobility. Railways, roads, and ocean straits provide strategy with speed of movement, but without an accompanying *flexibility*—the other essential constituent of true mobility. Mobility and indirect approach are fundamental to achieving a superior military position.

There are substantial differences between indirect approach and surprise. Surprise in time, place, and force may disrupt an adversary, but may not necessarily achieve the broader objective of the indirect approach.

An important aspect of World War I was the decisive part that sea power had played, without any decisive battle at sea, in producing the enemy's collapse by economic pressure. Regarding the Dardanelles, German General Falkenhayn remarked, "If the straits between the Mediterranean and the Black Sea were not permanently closed to Entente traffic, all hope of a successful course of the war would be very considerably diminished. Russia would have been freed from her significant isolation . . . which offered a safer guarantee than military successes that sooner or later a crippling of the forces of this Titan must take place automatically." (This demonstrates the dangers of strategic isolation.)

Again during World War I, the British blockade of Imperial Germany exemplified a grand strategy of indirect approach to which no effective resistance was possible and of a type which incurred no risk except in its slowness of effect. The effect, true to the law of momentum, tended to increase speed as it continued, and at the end of 1917 the Central Powers were in a desperate situation.

3.2 Current Perceptions of U.S. Strategy

Dunn and Staudenmaier[4] recently examined American strategy. Currently, United States defense policymakers are debating the merits of two competing strategies, continentalist and maritime, to determine whether one or the other can provide a remedy for a basic strategic dilemma. That is, how can the United States protect its interests in Europe without placing Free World interests outside Europe at risk and simultaneously avoid nuclear conflict? Although neither concept is prevailing at present, the outcome will establish national security foundations well into the next century.

Supporters of both concepts agree on one point: the strategic environment has changed dramatically in recent years; consequently, United States policy and concepts must be reexamined. Four factors support this conclusion.

- The United States no longer surpasses the rest of the world as a nuclear power.
- Soviet conventional military capabilities have improved markedly during the past two decades.
- The United States is no longer the world's unchallenged economic or political power.
- Traditional alliance structures have weakened as the United States and its allies have become increasingly dependent upon critical resources from politically unstable Third World areas.

The maritime strategy features three variants: the "official" Navy position articulated by Secretary of the Navy, John Lehman; the "manipulative" version; and the "unilateralist" version. In the Navy's view, a three-ocean fleet of 600 ships will achieve naval superiority over the Soviet Union and permit simultaneous operations in all major theaters if global war should occur. Possessing this capability, the United States fleet could project military power against a hostile shore and attack the Soviet Navy in its major ports on the Kola Peninsula and the Far East maritime provinces. This part of military strategy is called horizontal escalation. Horizontal escalation is founded upon three premises:

- The United States lacks the capability to defeat Soviet forces in areas where the Soviet Union might attempt to use its military power in the coming decade (for example, Southwest Asia).
- The Soviet Union is more brazen and willing to initiate military actions to threaten Free World interests than in the past. (This results from the United States losing vertical escalation dominance.)
- A strategy of horizontal escalation increases United States options. (That is, policymakers will not be linked inextricably to the event and place of Soviet aggression.)

Success of the maritime strategy is linked to three factors: suitability, feasibility, and acceptability. This strategy envisions the destruction or neutralization of the Soviet fleet as a proper military objective, allowing the United States to project its land, sea, and air power at the time and place of its choosing. Thus, Free World interests will be protected.

Strategies do not exist in a vacuum; the very existence of a strategy confirms the presence of another, opposing strategy. Since the development of these strategies is interdependent, it is necessary to examine both. Consistent with our definition of strategic passages, it is necessary to examine both United States and Soviet naval strategies to determine the crucial passages, whose use or denial could affect significantly the outcome of a global conflict.

Strategic passages are major elements of United States, NATO, and Soviet strategy. The essence of the current United States maritime strategy is global vigilance and commitment, which entails a massive naval effort. To fulfill effectively the ever-increasing requirements of this strategy, the United States Navy must function with limited resources. Success will depend upon innovative operations that include effective exploitation of the maritime environment.

3.3 Strategy and Ocean Science

The question of how well the United States can implement a chosen strategy[5] must be placed in the context of such contemporary issues as

- our perceived national security interests,
- the competitors for and threats to those interests,
- the multilateral set of military and economic power balances existing today, and
- the limitations imposed by current and prospective technology. (This fourth issue is of particular interest to research and development organizations.)

Combat capability (the ability to achieve a specified wartime objective) results from the aggregation of four attributes:

- force structure—the numbers, size, and composition of the combat and support units that comprise the defense forces;
- modernization—the technical sophistication of forces, units, weapons systems, and equipment;
- readiness—the ability of a force, unit, weapons systems, or equipment to deliver the outputs for which it was designed; and
- sustainability—the "staying power" of forces, units, weapons systems, and equipment.

Combat readiness is also linked to strategic mobility. With cultural, economic, and political bonds extending across several oceans, the naval role in any national strategy is crucial. Current naval strategy focuses upon deterrence of war, particularly nuclear war. One aspect of this deterrence is the deployment of ballistic missile submarines; conversely, security against nuclear attack requires surveillance

of intruders and vigilance in all waterways and ports. Such monitoring includes all forms of antisubmarine and mine detection, as well as inspection of any unscheduled aircraft. Coping with Third World actions adds another dimension to this immense security task. Mining in the Red Sea and air attacks in the Persian Gulf aptly demonstrate the vulnerability of shipping to terrorism and local conflicts.

Alluded to previously, successful implementation of the maritime portion of a national strategy will depend upon effective development and use of ocean science and technology. The Secretary of the Navy, John Lehman, fully appreciates the need for this ocean science support: "Of all the nine principles of maritime power, geography is the most determinant, and geography overwhelmingly favors the Free World alliance."[6]

In a major policy statement,[7] Chief of Naval Operations, Admiral J. D. Watkins, candidly declares, "The impact of the ocean environment upon tactical and strategic forces and their operations and system performance must be understood and accounted for to most effectively employ our Navy."

Among several policy points, Admiral Watkins stresses the need to

- "develop sensing, data assimilation, and distribution capabilities to describe the *operating environment* to our naval forces in global near real-time basis by year 1995," and
- "consider appropriate *environmental factors* in Navy weapons systems from early design through test and evaluation to full operational capability."

An idealistic goal would be to obtain exhaustive environmental information covering all areas of the globe; realistically, resources will never be available to achieve this goal. A practical approach to the problem allocates scarce resources to measure and comprehend the ocean environment by partitioning and ranking the ocean areas. Maritime passages must rank very high, as vessel interdiction probabilities will be directly proportional to traffic density. This line of reasoning establishes the need for the following inquiry, namely, where are the foremost passages in the world, of vital importance to all maritime powers?

4.0 U.S. Maritime Strategy

Current U.S. Navy policy centers upon the Maritime Strategy, which in turn, adheres fully to NATO strategy, that is, the defense and resupply of Europe. Adequate defense of Europe entails containment of Soviet thrusts upon both the northern and the southern flanks of Europe.

Although a maritime power, the United States has lacked a coherent national ocean policy with a well defined naval strategy component. According to an analysis by Stavridis,[8] only token national ocean policy planning has occurred, and it has been sporadic and generally lacking in government support. Stavridis points out, "It is not the lack of ocean policies that is the issue, rather the problem is the lack of a comprehensive approach to setting ocean policies."

In peacetime, it is difficult to quantify and evaluate the extent to which national security goals are affected by the oceanborne movement of critical goods.[9] Although no supplies need be moved to support military actions, critical materials must be received during peacetime to permit preparations for war, as well as to supply the domestic economy. One example of the present U.S. policy (or lack of it) is the lack of a U.S. dry bulk fleet; currently, more than 96% of the dry bulk commodities imported by the United States are transported by foreign-flag ships.

The traditional role of the U.S. Navy includes four major tasks: sea control, power projection, strategic deterrence, and naval presence. Naval strategy is the large-scale planning undertaken to fulfill established and defined national policies. As the United States becomes more involved in ocean activity, naval strategy will likewise be more involved with broader issues of national ocean policy.

4.1 A Beginning

Shortly after the beginning of the first Reagan administration, Secretary of the Navy, John Lehman, remarked[10] that the new administration was committed to a major shift in naval strategy from defensive deployment of approximately 400 ships to forward defense with 600-plus vessels to destroy Soviet vessels near their home ports. Later in 1982, he reiterated the point, "What I have said is that we have to be able to gain control of the Norwegian Sea. First, you've got to go up there with submarines and you'll need land-based air support. But ultimately you've got to be able to support Norway and prevent Norway from being used as a main operating base against NATO."

More recently, in February 1984,[6] Secretary Lehman laid down "Nine Principles for the Future of American Maritime Power":

- Coherent, realistic national strategy
- Strong national will
- Character of government institutions
- Superior military leadership
- Adequate military material strength
- Superior allied naval forces
- Integration of specific geography and naval strategy
- Forward naval employment strategy
- Sealift

In the context of examining the why and where of strategic passages, the last three principles are of concern. NATO commitments require both shipping (sealift) and naval presence (forward naval employment strategy). These commitments can be effected more economically through appreciation and utilization of area geography and oceanography, particularly at choke points and strategic passages.

4.2 Basic Concepts

The maritime [illegible] been under[illegible] U.S. Navy [illegible] rather a radical [illegible] posed

from above. It has, however, three new features:

- It is explicit.
- It is a choice from among many ideas.
- It is intended to be a long-term choice.

Strategy serves three related purposes:

- It is the basis for a choice of programs.
- It is a basis for justifying the Navy's choices to the U.S. defense establishment and to the U.S. Government. If future wars never escalate to nuclear use (as most Americans believe), such naval contributions as strategic mobility and the security of sea lanes will become increasingly important in a protracted war. For that matter, the sea lanes will serve to preserve the security of the West's global industrial base, which will become a vital wartime priority as the war continues.
- It helps make the Navy's own operations and its own thinking more coherent.

The new strategy demands increased attention to such issues as interoperability and commonality of communication links, both interservice and interallied. Today's political situation demands three major capabilities from the Navy, to be achieved simultaneously and within severe limitations on its resources:

- *Direct attack on Soviet forces.* The forward offense posture of the new maritime strategy draws Soviet threats away from the sea lanes by forcing the Soviets to defend their SSBN force, surface forces, and land bases. By moving into areas the Soviets consider vital, U.S. forces might tie down the Soviets or force them into unprofitable engagements.
- *Protection of sea lanes.* A major tenet of sea lane protection is air superiority, which must be provided by sea-based aircraft to be effective (i.e., reaction time is crucial). So much of the West's industrial base is now located in East Asia that the defense of that region may be linked inextricably with the defense of Europe.
- *Projection of power into the Third World.* Although the main United States planning scenario remains a NATO war, warfare is more likely to occur in the Third World. (Witness the Falklands and the Persian Gulf.)

The maritime strategy is predicated upon global conflict and forward deployment of Alliance forces. This strategy is dedicated to deterrance; it is cost-effective, since history has demonstrated that prevention is far cheaper than the cure for almost any circumstance. Consequently, these forces will be dispersed and only limited resources will be available in any particular theater of operations. Maximum effectiveness must be achieved for all deployed systems. Robust design and adequate operator training are necessary. In addition, the ability to effectively operate in a variety of environments is essential. This ability is linked to comprehension and utilization of diverse oceanographic factors. Comprehension derives from sound theory and experimental verification programs, both expensive in resources. Since resources are limited, they must be focused upon regions of crucial importance in naval warfare, namely, strategic passages.

4.3 Chief of Naval Operations Viewpoint

Admiral J. D. Watkins has placed U.S. maritime strategy in a proper perspective with six unambiguous statements:[11]

- It is a *global* strategy.
- It is a *forward* strategy.
- It is a *deterrent* strategy.
- It is an *alliance* strategy.
- It is a *flexible* strategy.
- It is a *nonnuclear* strategy.

This maritime strategy complements the overall strategy, which is founded on three pillars: *deterrence*, *forward defense*, and *alliance solidarity*.

Preparation for global war is the critical element in ensuring deterrence, but U.S. peacetime operations and response in time of crisis are also crucial contributions in deterrence and stability; that is, Maritime Strategy is a stability-seeking, status quo policy.

Today, the continuing and widespread existence of localized conflicts and crises, mostly in the Third World, often have global implications. These conflicts and other crises with the potential to break into hostilities frequently involve U. S. and Allied interests. Transcending the interests of states directly involved, these confrontations often serve as backdrop for potentially more serious conflicts between major powers. A fundamental component of the nation's success in deterring war with the Soviet Union depends upon United States' ability to stabilize and control escalation in Third World crises.

The CNO points out that the U.S. Navy devotes much of its effort to maintaining this stability. Potential crises and the aftermath of crises have increasingly defined the location and character of forward deployments. The U.S. Navy maintains a continual presence in the Indian Ocean, the Persian Gulf, and the Caribbean, as well as the more traditional forward deployments to the Mediterranean and the Western Pacific. U.S. interests and commitments are worldwide, and increasingly focus on the Third World. U.S. economy and security require oil from the Persian Gulf and Caribbean Sea, and strategic minerals from southern Africa; trade with nations of the Pacific Basin now surpass that with Europe.

The Soviets also have worldwide interests and commitments; thus, naval forces must be prepared to encounter high-technology, combined-arms threats in virtually every ocean of the world. Their methods for extending and protecting these interests include support and encouragement of limited warfare by Cuban, Libyan, Syrian, and North Korean proxies, as well as direct crisis response by their own forces. They also have enhanced their access to air and naval facilities in key strategic locations, including Ethiopia, South Yemen, Cuba, and Vietnam.

They steadily improve their ability to sever vital sea lines of communication, while improving their ability to counter U. S. crisis reaction moves. For example, Moscow recently established its first fully developed overseas base at Cam Ranh Bay, Vietnam. From this base Soviet forces can strike

key United States and friendly forces and installations as far north as Hong Kong.

A tenet of their idealogy, the Soviets presume a future war with the West will be global in scope, violent, and decisive. The probable centerpiece of Soviet strategy in global war would be a combined-arms assault against Europe, where they would seek a quick and decisive victory. As prudent military planners, the Soviets would, of course, prefer to concentrate on a single theater; a central premise of U. S. strategy is to deny them such an option.

Some Soviet overseas clients and surrogates outside the Warsaw Pact are located close to critical sea lines of communication and conceivably could join in an attack. Any Western strategy must, of necessity, hedge against such a third-country involvement.

While Soviet ground and air forces conduct a massive offensive, a critical Soviet Navy role in a future conflict would be to protect the Soviet homeland and their ballistic missile submarines, which provide the Soviets with their ultimate strategic reserve. Locating and destroying Western sea based nuclear assets, such as aircraft carriers and submarines, is the highest priority of the Soviet Navy. Interdicting sea lines of communication or supporting the Soviet Army, while important, will probably be secondary, at least at the war's start.

This view of the Soviet Navy's role in overall Soviet strategy suggests that the bulk of Soviet naval forces will initially deploy in areas near the Soviet Union, with only a small fraction deployed forward. Numerous advantages accrue from this strategy:

- short lines of logistics and communications,
- short deployment time,
- minimize build-up and surge indications,
- defensive posture is economical, and
- attack can occur with minimum warning.

One key goal of U.S. peacetime strategy is to further international stability through support of regional balances of power. The more stable the international environment, the lower the probability that the Soviets will risk war with the West.

The heart of U.S. Maritime Strategy is crisis response. If war with the Soviets occurs, it will probably result from a crisis that escalates out of control. U.S. ability to contain and control crises is an important factor in preventing global conflict.

Should war come, the Soviets would prefer to use their massive ground force advantage against Europe without having to concern themselves with a global conflict or with actions on their flanks. To countervail this strategy, the U.S. must ensure the Soviets will have to face the prospect of prolonged global conflict. This countervailing maritime strategy comprises three phases.

4.3.1 Deterrence or the Transition to War

The initial phase of the maritime strategy would be triggered by recognition that a specific international situation has the potential to grow to a global superpower confrontation. (A false alarm can be costly, leading to the "cry wolf" syndrome; that is, the United States will be in a reaction mode and the Soviets will surely test our reaction and resolve.)

The goal of this phase is deterrence. Deterrence can be achieved by preparing for the transition to war specifically, to global war. Therefore, such preparations are an integral feature of this phase.

Keys to the success of both the initial phase and the strategy as a whole are speed and decisiveness in national decisionmaking. Timely, accurate intelligence coupled with a reliable, secure command, control, and communications system is essential. Procrastination here can be fatal; however, there is a heavy cost for reacting prematurely and rashly.

Even though a substantial fraction of the fleet is forward deployed in peacetime, prompt decisions are needed to permit rapid forward deployment of additional forces in crisis. This requirement underscores the importance of the Panama and Suez Canals in facilitating repositioning.

The need for forward movement is obvious. Aggressive forward movement of antisubmarine warfare forces, both submarine and maritime patrol aircraft, will force Soviet submarines to retreat into defensive bastions to protect their ballistic missile submarines. This move denies the Soviets the option of a massive, early attempt to interdict our sea lines of communication and counters such operations that the Soviets might undertake against them.

Moving one Marine amphibious brigade by air to rendezvous with its prepositioned equipment and reinforce Norway provides a convincing signal of Alliance solidarity. However, if this gambit fails, the Alliance may collapse.

Deployments to the Western Pacific directly enhance deterrence, including deterrence of an attack in Europe, by providing a clear indication that, should war come, the Soviets will not be able to ignore any region of the globe. Of course, dispersing our resources increases our risk in the central theater.

In addition to allowing rapid deployment, speed and decisiveness in national decision making are crucial to the strategy's overall execution. As more functions are transferred to the reserve forces, execution of the President's authority to call reservists becomes increasingly crucial to successful implementation of the strategy. The short training period allowed these personnel creates risk. For example, the maritime strategy includes a Memorandum of Agreement with the U.S. Coast Guard to establish Maritime Defense Zones. Under this agreement, Coast Guard units, combined with both active and reserve naval forces, will defend harbors and shipping lanes along U.S. coasts in time of war.

An important aspect of the strategy's initial phase is sealift. In 1984, the Secretary of the Navy established sealift as the third primary mission of the Navy, along with sea control and power projection. This increased emphasis recognizes the importance of both economic and military resupply. As a consequence of the present inventory of

available ships and the limited ship-building capacity of American shipyards, the U.S. can neither tolerate attrition typical of World War II nor provide adequate sealift to transport requisite strategic raw materials. Therefore, early and effective uses of existing sealift are essential.

4.3.2 Seizing the Initiative

This is the second phase of the strategy. If deterrence fails and a crisis erupts into war, the Soviets will probably focus their offensive on Central Europe, while maintaining a defensive posture elsewhere. U.S. and Alliance maritime forces must counter the first salvo, wear down the enemy forces, protect sea lines of communication, continue reinforcement and resupply, and improve positioning.

It will be essential to conduct forward operations with attack submarines, as well as *to establish barriers at key world choke points* using maritime patrol aircraft, mines, attack submarines, or sonobuoys to prevent leakage of enemy forces into the open ocean where the Western Alliance's resupply can be threatened.

Logistics and sustainability are integral to the success of any strategy; they are especially vital in this one, which demands aggressive, sustained, forward operations.

4.3.3 Carrying the Fight to the Enemy

In the third and final phase of the maritime strategy, U.S. forces would endeavor to complete the destruction of all the Soviet fleets that was begun in the second phase. This action allows the U.S. to threaten the homeland bases and the support structure of the Soviet Navy in all theaters, with both air and amphibious power.

4.4 The Bottom Line

Success of the maritime strategy depends on early reaction to crisis and the political will to make difficult decisions early. As history has frequently demonstrated, survival depends upon both superior intelligence and leadership.

5.0 North Atlantic Treaty Organization

The evolving Communist threat in postwar Europe prompted the Western Allies to form the North Atlantic Treaty Organization (NATO). Signed into being on 24 August 1949, this treaty declared: *An armed attack against one or more of them in Europe and North America shall be considered an attack against all.*

Membership now includes the United States, Canada, Belgium, Denmark, France, the United Kingdom, Italy, Iceland, Luxembourg, the Netherlands, Norway, Portugal, Greece, Turkey, West Germany, and Spain.

The NATO structure comprises a Council and a Military Committee of three commands: Allied Command Europe, Allied Command Atlantic, and Allied Command Channel.

The four principal tasks of the Allied Command Atlantic are to

- control the Atlantic Ocean sea lines of communication,
- protect reinforcement and resupply [illegible]
- safeguard the seaborne trade of [illegible]
- provide support for Allied Command Europe and the Channel Command.

These tasks are embedded in three [illegible]

- The Norwegian Sea campaign [illegible] porting NATO forces on the Northern [illegible] ing enemy amphibious landings on [illegible]
- The battle for the Atlantic lifelines is directed [illegible] the vital sea lines of communications for NATO [illegible] Europe, as well as to protect the economic [illegible] Alliance.
- The battle for the shallow seas seeks to [illegible] trol of the Baltic Sea, the English Channel, and [illegible] Sea. Most trans-Atlantic shipping must [illegible] through these areas.

Mining[12] can be employed to take advantage [illegible] restrictive geography that limits the free access [illegible] Pact forces to the open ocean. The Soviet Baltic Fleet could be controlled initially by a series of national minefields, which are essentially defensive and protective. These minefields are supplemented by a NATO plan that calls to close the Baltic exits to Warsaw Pact vessels and lay anti-invasion mines.

With current assets, NATO can close off only the Baltic and Black Seas, implement a very limited number of deep-water barriers, and conduct small-scale protective and defensive mining.

On the other hand, Soviet mining capability and the environmental conditions on both sides of the Atlantic make NATO's coastal waters and the use of the deep-water approaches to them very vulnerable. The Soviets recognize this situation, disdaining the German strategy of attacking Allied shipping in the open ocean. The Soviet stockpile of sea mines totals approximately 25[illegible],000, the majority of these mines are of recent vintage.

Soviet defensive minefields could be expected across choke points and sea access routes; offensive mining could be directed at the Baltic Sea, Allied submarine bases, approaches to the English Channel, the southern North Sea, ports in Greece and Turkey, and the Eastern seaboard of the United States, including the Straits of Florida.

Currently, the best mine countermeasure is to keep minelaying assets away from areas of significant interest.

Of historical note, belligerents laid 235,000 mines during World War I and 635,000 mines in World War II.

5.1 The Atlantic Bridge

A common view in the northern hemisphere is that "the Atlantic bridge between North America and Europe is now, and ever shall be, the linchpin in the structure of political, economic, and military ties which underpin the world order."[13]

Lessons from World War II and NATO [illegible] confirmed two truisms:

- It costs much more to win a war than it does to prevent it.

• The security of both North America and Europe are inseparable and can be decoupled only at the peril of both.

The Atlantic is a major sea [illegible] maritime activity. At any given moment, [illegible] 2000 vessels are steaming across the seas and [illegible] 400 are in harbor. In 1982, almost 700 million tons of cargo were shipped through U.S., Gulf, and Atlantic ports and almost 100 million tons through Canadian ports. Consider then, the results of the Soviet strategy that port denial (at either end of the sea route) is more cost effective than open-sea engagements. It is also worth noting that in the last few years, oil imports from OPEC to Western Europe have declined substantially. North Sea production has reduced European dependence on Middle East oil.

Security of the Atlantic sea lines of communication under various conditions of peace, crisis, or war is an integral part of the defense of Western Europe. It is essential to NATO's land defense; the better able NATO is to defend itself on land, the better able it must be to defend itself at sea, particularly in the northeast Atlantic. While NATO could win in the Atlantic and still lose a war, it could not lose there and win the war. Deterrence is enhanced to the extent that the generally accepted perception is that NATO can maintain its sea lines of communication to and from Europe under all conditions.

Three major changes have affected the maritime environment:

• the emergence of the Soviet Union as a maritime power,

• the impact of nuclear weapons, and

• the growth of global interdependence.

The cumulative effect of these factors will likely portend trouble for the future security of NATO countries.

Soviet maritime capabilities may [illegible] disrupt NATO use of the sea as a

• primary means for transporting resources and goods,

• medium for the development and exploitation of resources,

• secure base for [illegible] deterrent,

• required [illegible] for the protection abroad of conventional military [illegible]

• bridge for the [illegible] of Western Europe in time of [illegible]

Thus, the Soviet [illegible] both an economic and [illegible] portion of the Soviet [illegible] fleet is not overwhelming [illegible] Soviet forces is significant: 20% between [illegible] America, 35% between Northern [illegible] Mediterranean, 25% between Northern [illegible] coast of Latin America, and [illegible] and the Gulf of Mexico.

Nuclear weapons, [illegible] nuclear parity, have changed the [illegible] nuclear weapons have [illegible] Western Europe to Soviet [illegible] numbers, accuracies, and [illegible] war an extremely hazardous option which places NATO strategy in a quandary. The earlier doctrine of massive nuclear retaliation is no longer plausible, but it also lacks the capability for a [illegible] Planners are trapped between the [illegible] of nuclear weapons [illegible] reinforcement and supply [illegible] Europe.

There is increasing [illegible] for the redistribution of resources. [illegible] must be moved by sea. Few nations possess all the food, energy, and mineral resources necessary for continued development. Even the largest countries are not self-sufficient; they need trading partners. This trend toward global interdependence [illegible] significant changes in both the military [illegible] of the seas for the remainder of this century. [illegible] free and unencumbered passage [illegible] of increasing importance to the NATO [illegible] trade grows.

At the same time, Third World countries will become increasingly involved in both [illegible] the seas and will press the developed countries for a greater share of the economic benefits of the sea. As technology makes all surface ships more vulnerable, the Third World countries will also possess a greater capability to interfere with the free passage of both military and commercial vessels. At the same time, the Soviet Union can be expected to expand its own uses of the seas for military, political, and economic purposes.

5.2 NATO and the U.S. Maritime Strategy

In both World War I and World War II, the major task of the U.S. Navy was to protect the movement of men and material to Europe. In these wars, [illegible] German submarine and other maritime assets caused major damage in the early phases of the war. However, the lack of air superiority doomed German efforts against these sea lines of communication. Eventually, the [illegible] so great that the German submarine fleet was [illegible] from the Atlantic to await the production of [illegible] equipped submarines. The strategy of sailing [illegible] protected by powerful surface and [illegible] end of waiting for the German attacks to appear [illegible] massed formation was the most effective way of [illegible] the submarine threat.

Nuclear weapons and NATO are [illegible] why this earlier strategy [illegible] appropriate.

As ballistic missile submarines became operational within the U.S. Fleet, the [illegible] same to dominate Soviet strategy. This [illegible] evident in the priority assigned to the [illegible] SSBN force and the emphasis on [illegible] ASW forces to

• destroy enemy SSBNs and

• protect Soviet SSBNs [illegible]

Thus, although the [illegible] mission, the [illegible] force has three [illegible]

of communication is third in priority. The other aspect differentiating today's situation from that of World War II is U.S. membership in NATO. Commitment to defend Allied territory and immediate involvement in the war requires a greater role for U.S. naval forces in support of the European land battle at the begining of the war than occurred during World War II.

Control of northern Norway and the Norwegian Sea is essential for Soviet naval operations in the North Atlantic. The Soviet Northern Fleet is the only naval force with a realistic possibility of operating in the North Atlantic. Most of their striking power is in this fleet. As of 1983, 64% of the Soviet Typhoon, Delta I-III, and Yankee SSBNs, and 66% of the Soviet Navy's post-1967 combat ships operated out of the Kola Peninsula and White Sea ports. To reach the Atlantic, these forces must proceed around the northern cape of Norway, across 1000 miles of the Norwegian Sea, and through the Greenland-Iceland-Norway (GIN) gap, a difficult proposition at best. Conversely, Soviet control of this region would place extreme pressure on both the European northern flank and the North Atlantic sea lines of communication.[14]

As mentioned, the maritime strategy embraces five principles:

- nonnuclear,
- protracted coalition war with sequential and rollback operations,
- offensive pressure to protect sea lines of communication,
- war termination leverage, and
- control of the seas to apply effects of a massive Western mobilization (U.S. $1 trillion per year, plus non-European Allies $500 million per year).

The maritime strategy adds to Soviet uncertainty[15] by declaring that regardless of how well the Soviets are doing on the Central Front, the U.S. naval policy is to

- apply pressure globally,
- possibly change the nuclear balance,
- prolong the war,
- apply to Europe the effects of U.S. mobilization,
- assist in the mobilization of Japan and other non-European Allies,
- possibly transport high technology military items to the Peoples Republic of China,
- apply pressure on the Soviet flanks,
- attack Soviet bases,
- destroy the Soviet Navy, and
- prevent the Soviet use of any ocean for any reason.

These capabilities point to a conflict of different dimensions from a World War II-type blitzkrieg on the Central front. In deterrent terms, this increases Soviet uncertainty and complicates Soviet planning. To prevail against the maritime strategy, the Soviets must achieve two very difficult tasks: break the center, and seize the flanks to choke down the massive reinforcements which will be coming across the sea lines of communication.

5.3 The Northern Flank

The Reagan administration is committed to a major shift in naval strategy, from defensive deployment of 400 ships to defend the sea lines of communication to forward defense with 600 plus ships to destroy Soviet vessels near their home ports. Virtually all analysts agree that the best strategy would be to gain control of the Norwegian Sea.

Perception of the utility of the U.S. maritime strategy, relative to the protection of Northern Europe, depends upon geography, economic development, and the political actions of the U.S., the Soviets, and the Europeans. The issue is not at all clear to the Europeans, whether this new strategy represents a U.S. move toward a clear commitment to European defense or a is destabilizing and dangerous step that will increase the risk of war.[16]

Nordic Europe faces a fundamental dilemma: how to manage the prospect of aggressive Soviet action–accommodation or a strong defense within NATO. Resolution of this dilemma is linked to the perception of the Forward Maritime Strategy. The strategy is ambiguous and evolutionary. Its basis is perceived to be one or more of the following doctrines:

- funding,
- deployment,
- horizontal escalation,
- conventional war, or
- conventional strategic defense.

The last concept is most troublesome for Northern Europe. Antisubmarine warfare is a prominent feature of this strategy, possibly posing a threat to Soviet nuclear missile submarines and thus destabilizing the political situation. A major trend in arms control in recent years has been the importance of strengthening what has become known as "crisis stability": the belief that either side, faced with the vulnerability of a large percentage of its strategic forces, will be tempted to launch a preemptive nuclear strike in a crisis.

Recognition of Norway and the Norwegian Sea as the key to the defense of Europe is now commonly accepted as conventional wisdom. How this defense would be effected, however, is still a subject for debate. NATO's successful defense of Norway hinges upon control of the sea and air space north of the GIN line to enable the rapid reinforcement of Norway.[17]

Reality must eventually be faced. North of the GIN line, the Soviets presently predominate on, above, and beneath the sea. On land, Soviet forces significantly outweigh the Norwegian forces tasked with the defense of the northern region. With the balance of power on the Northern Flank in favor of the Soviets, the outcome of a Soviet thrust into Norway could easily be decided before NATO could respond.

To overcome this deficiency, NATO's peacetime presence in the area needs to be increased, and the reaction time required to reinforce the region needs to be reduced.

The North Cape region of Norway is obviously of some importance, since the Soviets must pass by it on the way

to the Atlantic. Because of sea ice, there is a 130-mile-wide, ice-free passage to Murmansk in the winter. In summer, the width of this passage increases to 300 miles.

Soviet control of northern Norway would virtually assure their dominance in the Norwegian Sea down to the GIN line and would push back the frontier of NATO sea-launched missiles into the North Atlantic. This move would provide for an in-depth Soviet projection of surface and subsurface interdiction of the NATO Atlantic lifeline and would place the resupply of Europe in extreme peril.

The Soviets have two major fleets in Nordic Europe, the Northern Fleet and the Baltic Fleet. The former possesses the most powerful strike capability of the four Soviet fleets, whereas the latter is largest in total number of vessels and manpower. The principal strength of the Baltic Fleet is found in mine warfare and ground support operations (amphibious).

NATO's naval presence is generally limited to deployments of the 7-9 vessel Standing Naval Force Atlantic (StaNavForLant), operating under Allied Command Atlantic. Because of its responsibilities in all of Allied Command Atlantic's area of operation, this force is not focused on the Norwegian Sea.

The most serious threat to reinforcing the Northern Flank is Soviet aviation. The key to battle for the Norwegian Sea would be the effectiveness of Soviet bomber coordination, on one hand, and of Allied antimissile systems and fighter aircraft, on the other.

Although the North Atlantic seas are extremely rough, the Norwegian Sea is not as treacherous. From the standpoint of men and equipment, the environment is more tolerable to operate in the Norwegian Sea than to fight through the North Atlantic to recapture it.

A key element in determining NATO's capability to repel a Soviet assault in Norway is the amount of warning time that strategic intelligence would be able to provide to NATO's governmental decision makers. Regardless of the amount of warning time, the contribution of naval forces to Norway's defense will be critical.[18]

6.0 Soviet Strategy

So far, we have examined U.S. and NATO perspectives of the global situation; the Soviet viewpoint is somewhat different and thereby lies the danger of misinterpretation of intent.

6.1 Global Strategy and the TVD

Although the West (that is, NATO) considers that a large-scale war would be a world war, only Europe has been divided into theaters. This follows because NATO was conceived in 1949 to defend only Western Europe, North America, and the North Atlantic. Also, following the British and French debacle in the Suez War, British withdrawal from Aden and French withdrawal from Indochina, all in the 1950s, European power "East of Suez" declined to almost nothing.

In marked contrast to the NATO perspective, the interests of the Soviet Union are truly global and far reaching.[19] In speaking of the Soviet Union and its theatres, Western concepts do not apply.

Soviet specialists believe that war may break out anywhere and quickly spread either to other parts of the planet or to the whole planet. For many reasons, the Soviets do not proclaim their strategy to the world; however, a glimpse of Soviet strategy is revealed in their partitioning of the world into 16 TVDs (military-geographical zones). (TVD is the Soviet acronym for theater of actions on a strategic scale.) Figure 6.1 shows these TVDs to be divided into several categories: TVD 1, the Central Strategic Region (CSR) surrounding Moscow; Continental TVDs; Oceanic TVDs; and Maritime TVDs.

The term, TVD, evolved through several changes of meaning, but was eventually defined as "part of a continental territory with its coastal waters, inland seas, and air space (Continental TVD), or the water areas of one ocean, including islands, adjoining seas, and coastal land belts (Oceanic TVD) within the boundaries of which strategic groupings of armed forces may be deployed and military operations carried out." Continental TVDs include land and coastal waters, and oceanic TVDs include water areas and coasts; thus, coastlines and continental shelves belong to both continental and oceanic TVDs. The third TVD category of significance is the Maritime TVD, which includes only two zones—the Caribbean Sea and the Mediterranean Sea, zones 15 and 16, respectively.

Numbering and boundaries of the TVDs reveals something of the Soviet world perspective. The boundaries are not made public because they reflect the global interests of the Soviet Union. Numbering implies a ranking of priority. As might be expected, the Soviet capitol and industrial complex is Zone 1 (Central Strategic Region), and its chief protagonists, North America and Europe, are Zones 2 and 3, respectively. Thus, North America and not Europe represents the principal threat to the U.S.S.R. Soviet East Asia is Zone 4, Southwest Asia is Zone 5, and Southeast Asia is Zone 6.

After NATO, zones 4, 5, and 6 constitute a major concern for the Soviets. Of the Oceanic TVDs, top ranked is the Arctic Ocean (Zone 11), followed by the Pacific Ocean, (Zone 12), the Atlantic Ocean, (Zone 13) and, finally, the Indian Ocean, (Zone 14). If zone numbering is indeed a ranking of region, then the ranking of the Caribbean Sea ahead of the Mediterranean is interesting!

The boundaries of these TVDs is also revealing. For example, the Western TVD (Europe), Figure 6.2, extends from Novaya Zemlya in the Arctic Ocean southward through Morocco. This extent is interesting because, at its northern and southern extremities, it includes a Soviet egress passage, Proliv Karskiye Vorota, and a major Allied sea line of communication, the Strait of Gibraltar, respectively. To the southeast, the Western TVD, Zone 3, also includes the Turkish Straits (Dardanelles and Bosporus), a key passage in the Soviet Southern Sea Route.

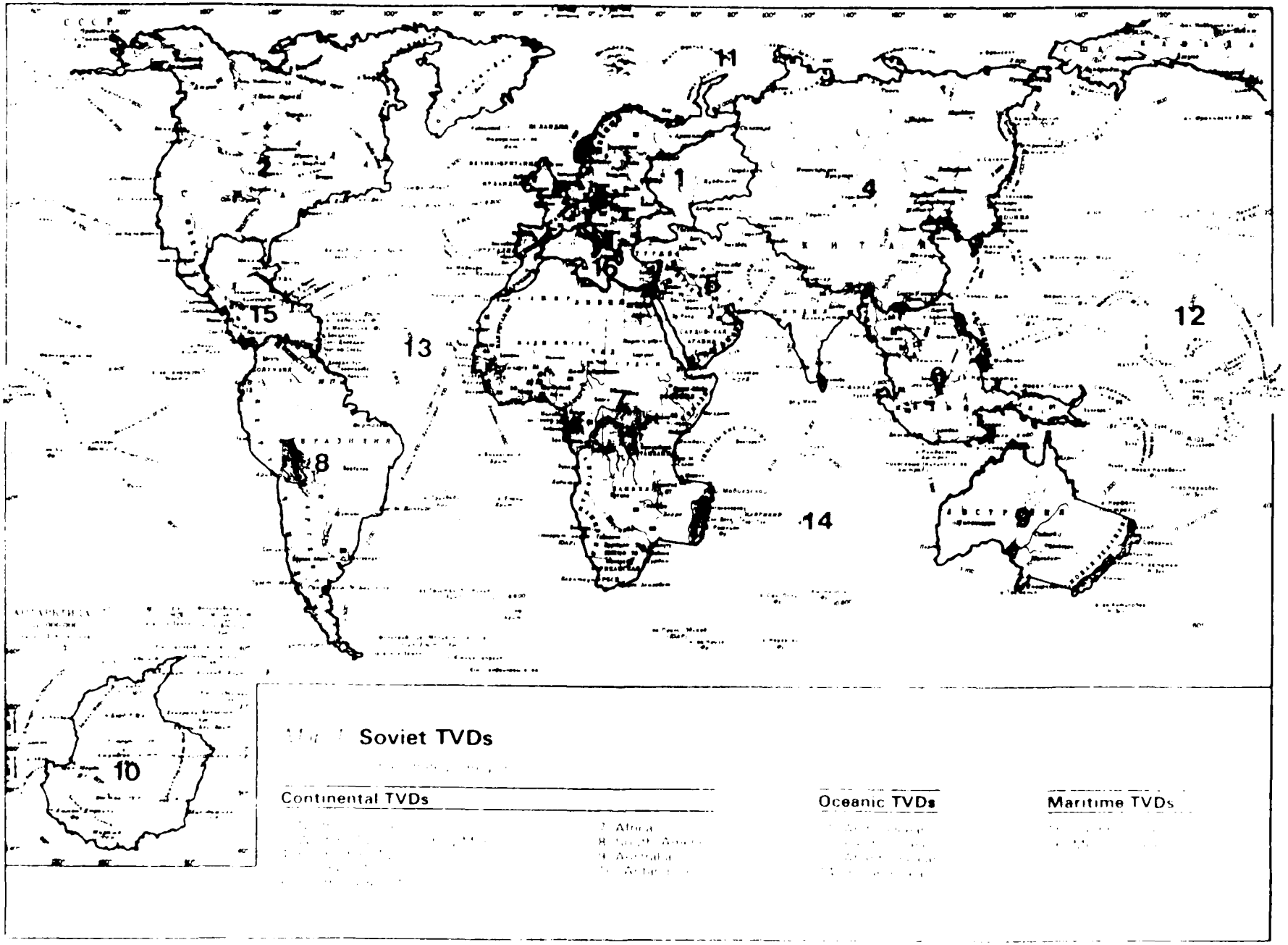
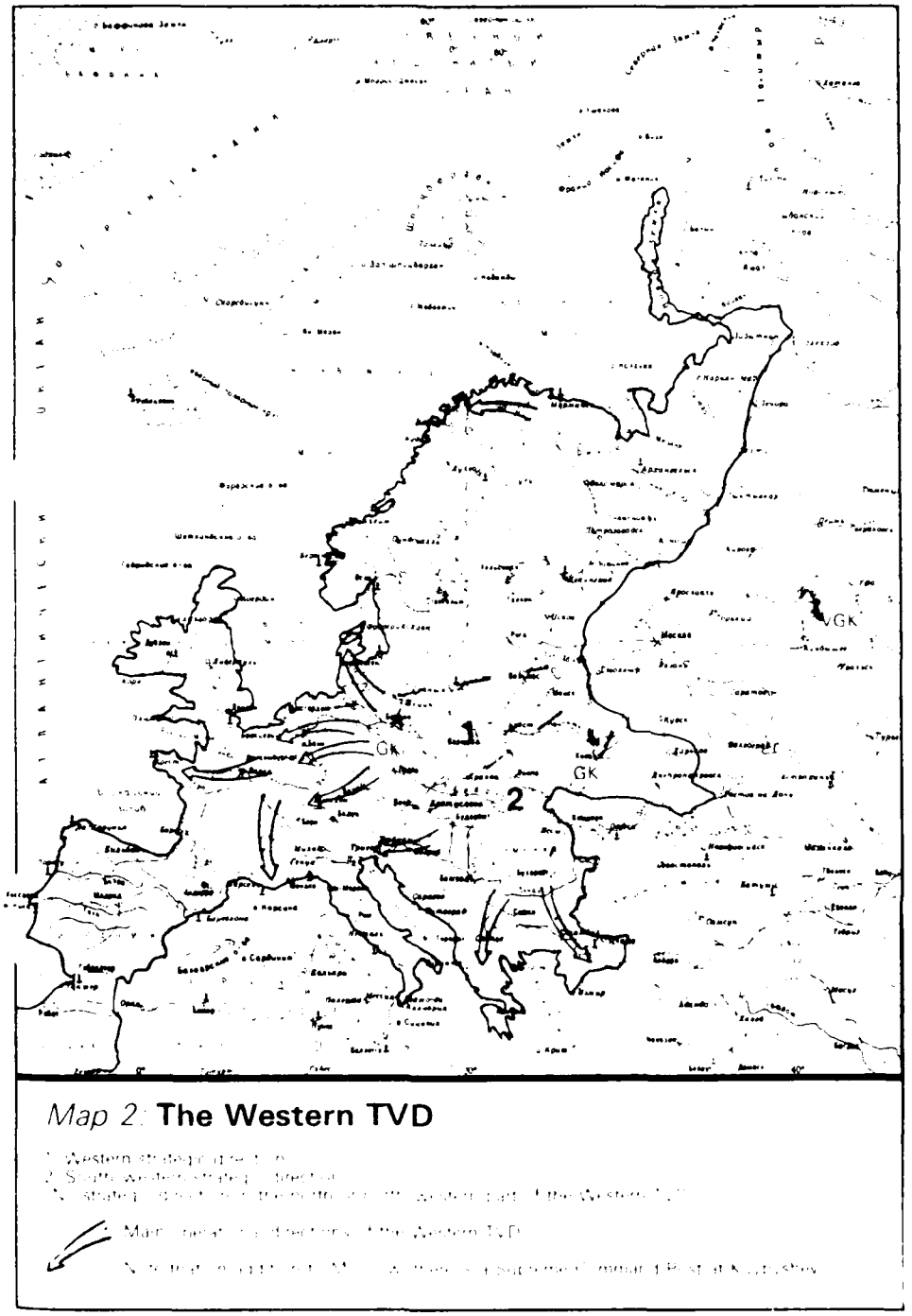


Figure 6.1 Soviet TVDs (after Suvorov 9).



Map 2. **The Western TVD**

Figure 6.2. The Western TVD (after Suvorov[19]).

These clues are of strategic importance. The Soviet military consider the most important principle of war to be the concentration of forces and effort in the decisive place at the decisive moment. This principle also requires the concentration of the most capable generals and marshals at the place where the outcome of the war is to be decided.

In the opinion of Soviet leadership, a new war will move much more rapidly than previous ones, loss of communications at all levels will be common, and crises will arise constantly. The importance of flexibility in strategic command and control will grow, as will the necessity of being able to unite at a decisive moment various types of forces under a command with full powers and the knowledge of local circumstances.

A new term, "strategic offensive," has appeared recently in Soviet military jargon. The Soviet General Staff is preparing operations that will surpass in scale, intensity, and speed anything known in the past, including the massive World War II operations at Stalingrad and Kursk.

Of the five Soviet armed services, Strategic Rocket Forces, PVO (Air Defense), Ground Forces, Air Forces,

and Navy, the Strategic Rocket Forces is the most important because it is designed for battle with the main enemy, North America (Zone 2). They must be permanently prepared to carry out the foremost strategic operations--namely, the use of strategic nuclear forces to destroy the enemy's state and military organs, military-industrial complexes, and nuclear forces.

6.2 Strategic Surprise

Strategic surprise[20] is defined as concealment of the intention to launch an offensive and or its timing. It is achieved through "large-scale deceptive actions, regroupings, and concentrations, concealing troops and installations, and misinforming the enemy."

Although weaker than NATO in population, wealth, industrial power and technological progress, the Soviets do not conclude that a war against NATO cannot be won. Although lacking in military potential, their superiority in currently deployed military strength points to a conclusion that such a war must be won very quickly, in its initial period. This position is defined to be "the period of time which elapses between the start of hostilities and the completion by the combatants of their mobilization, concentration, and deployment."

In essence, the Soviets must seize a vital area of NATO (for example, West Germany) and destroy key combat groupings before NATO can either complete its defensive preparations or agree on the use of nuclear weapons.

The Soviets identify five elements for a quick victory:

- surprise,
- a heavy blow,
- a rapid advance,
- simultaneous attacks throughout the enemy's depth,
- air superiority.

Of these five elements, surprise is the most important to naval planners. Surprise can confer five advantages to the Soviets:

- Surprise preempts NATO reinforcement plans and renders them largely unworkable.
- Surprise makes it possible to achieve at least a limited strategic objective with much smaller forces than would be required against a prepared enemy.
- Surprise makes it easier to further disrupt by interposing forces between the enemy forces and their line of retreat or source of supply, thus prolonging the effects of surprise.
- Surprise lessens the logistic burden and the number of casualties in offensive operations.
- Surprise avoids inadvertent disclosure of attack plans to the Warsaw Pact.

Historically, the Soviets have been very successful in implementing such measures. World War II campaigns against both the Germans and the Japanese, and the Cold War invasions against Czechoslovakia, Hungary, Afghanistan, and Poland demonstrate their ability to [illegible] this military pattern [illegible]

6.3 The Southern Sea Route

Intertwined with Soviet military strategy is a strategy of economic growth and development, which must also be addressed. The Soviet Union's economy [illegible] two fundamental conditions:

- It is insulated from the direct effects of international supply and demand.
- It tends to be self-sufficient.

Since the year 1700, the Soviets have sought a "warm water" port on the Indian Ocean. This desire has not waned with time. Established briefly during World War II, a sea-land route through Iran and the Indian Ocean (Fig. 6.3) demonstrated the tremendous utility of Soviet access to ice-free ports. (Churchill regarded transportation of Western arms to the Soviet Union by this route as even more important than Western access to Iranian oil.[21])

This benefit was clearly understood by the Soviets; the focus of their strategy in Southwest Asia is not oil, but sea lines of communication. Their goals appear to be expansion of growth in efficiency and protection of the Soviet Union's geostrategic lines of communication that run through, or near, Southwest Asia.

Utilization and dependency upon the "Southern Sea Route" (Figs. 6.3 and 6.4) has increased since the beginning of this century to the point where Soviet national policy and planning depend upon this route through the Indian Ocean. This dependency has been fueled by the steady economic, political, and military developments in the Soviet Far East and the need to aid client states bordering the Indian Ocean.

Contrary to the United States concept of intercontinental strategy, the Soviets develop strategy on an *intracontinental* basis. Their political and military strategy is linked inextricably to the map (Fig. 6.1), principally, the map of Eurasia and the southern half of the eastern hemisphere.

The present transportation system of the Soviet Union is underdeveloped, deficient, and costly. In comparison with the West, all forms of land transportation in the U.S.S.R. bear heavy loads.

During the past two decades, sea transportation has increased in importance for both the economic and the military aspects of Soviet life. In 1950, railways carried 85% of Soviet freight, by 1980, this figure declined to 57%.[22]

The U.S.S.R. has five major industrial regions: the Northwest, the Ukraine, the Urals, the Kuznetsk Basin, and the Komsomolsk region. The Urals and eastern regions represent a [illegible] of the Soviet [illegible] from 1928 to 1960 [illegible] while industrial [illegible] Those changes have generated [illegible] The most critical problem is the [illegible] connect the European U.S.S.R. to the Ural [illegible] Komsomolsk and Khabarovsk regions in the Far East. There are no all-weather [illegible] between [illegible] transportation are [illegible] Ocean. [illegible]

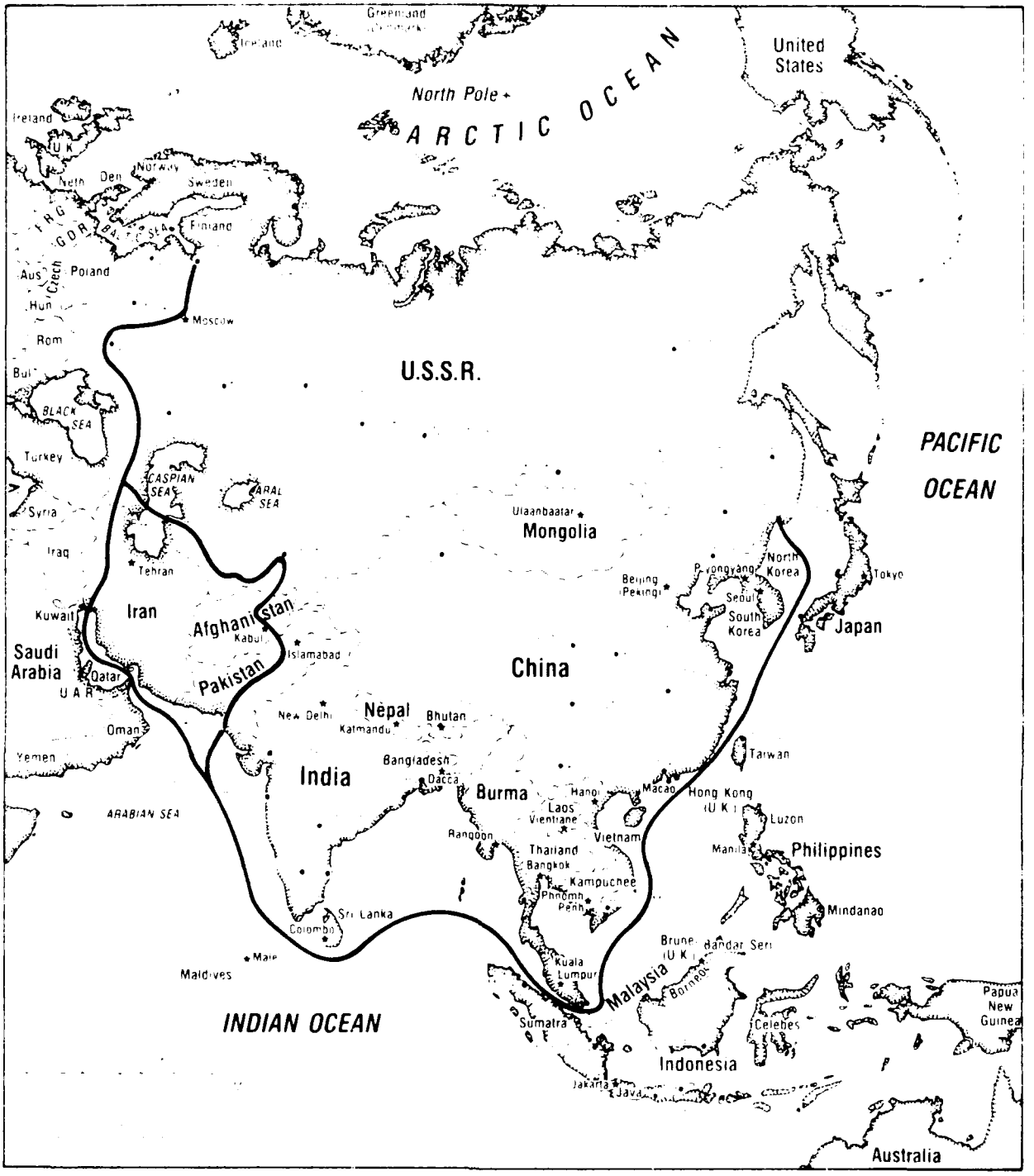


Figure 6.3. Southern Sea Route (after Westwood).

sea, although the sea route via the Suez Canal is over twice as long as the overland rail route.

Internal air and land transportation links have proved inadequate to transfer the volume of freight and the people needed for the continued defense and development of the Soviet Far East; consequently, the Indian Ocean route is vital to Soviet interests. Control of the Iran-Afghanistan-Pakistan (IAP) region offers protection for a large portion of the Southern Sea Route with the added potential benefit of denying this route to Soviet adversaries.

Air distances from southern U.S.S.R. to the Arabian Sea and the Persian Gulf are 800 miles and 600 miles, respectively. Airfields in Afghanistan are closer still; thus, establishing Soviet air superiority over this region presents no major problem.

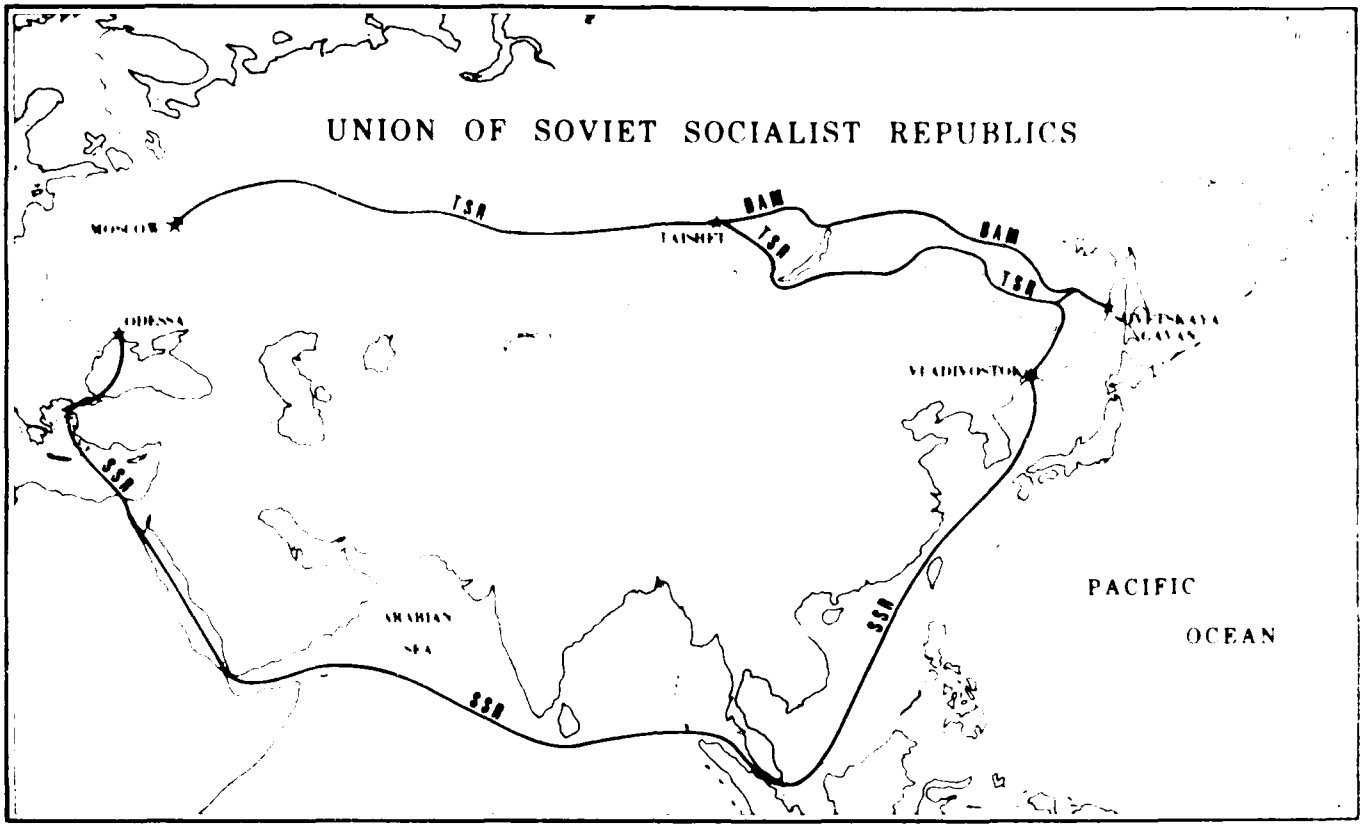


Figure 6.4. Soviet maritime strategy and transportation (after Westwood[22]).

Shifting a major portion of Soviet east-west freight traffic through the IAP region reduces the strategic communications problem. This solution is similar to the construction of the Panama Canal as a means for resolving early U.S. transportation problems between two oceans.

Expanding lines of communication characterize the 400-year history of Soviet expansion and territorial acquisitions in Central and Southwest Asia. So far, there is no evidence to suggest a policy change.

Soviet passages through the Suez Canal demonstrate their need for the Southern Sea Route. Between 1958 and 1966, Soviet shipping in the canal increased by more than 250%, and tonnage increased by more than 350%. Between 1966 and 1979, Soviet ranking in canal tonnage rose from seventh to fourth place. Routinely, there are 100-200 Soviet merchant ships of various types in the Indian Ocean. As much as one-third to one-half the merchant fleet is committed to the Southern Sea Route.

Past Soviet success in Southwest Asia resulted from lack of effective resistance and interior lines of communication. These advantages will most likely remain until the interior lines become sea lines of communication (that is, exterior lines).

On 29 September 1984, the final section of the Baikal-Amur-Mainline (BAM) railway was laid in place.[22] This recently completed 2000-mile-long rail system links central Siberia with important commercial and military ports on the Soviet Pacific coast: Sovetskaya Gavan, Vladivostok, Nadhodka, and Vostochnyy (see Fig. 6.4). Servicing the extractive and productive industries of southeastern Siberia, it transports a rapidly growing volume of products to the eastern ports on the Sea of Japan and thence to European U.S.S.R. ports via the Southern Sea Route.

BAM is a significant accomplishment and is indicative of Soviet determination to economically develop the region. BAM took 10 years to complete. It crosses five principal terrain elevations and 17 rivers. There are four tunnels, including the first tunnel ever completed in permafrost. Another tunnel is over 9 miles long. There are 58 bridges along the railway.

The probable immense cost (the Soviet investment is officially forbidden for open publication) of this railway plus the cost of maintaining Soviet naval bases at Cam Ranh Bay, Vietnam, and Socotra Island, Yemen, underscore Soviet intentions to protect and increase use of the Southern Sea Route.

6.4 Naval Policy

Geography is the primary influence upon Soviet strategy; the Soviet Navy is to defend certain geography and economic development of that geography. The recent replacement of Admiral Gorshkov with Admiral Chernavin demonstrates clearly the principal role of the Soviet Navy *defense*.

6.4.1 Naval Missions

The Soviet Navy is assigned three missions:

- Protect the Soviet SSBN force, particularly the reserve force.
- Defend the homeland against attack from submarine and aircraft carrier nuclear assets.
- Inderdict Allied sea lines of communication.

Note that the first two missions are valid during peace, crisis, and war, whereas the third mission is not valid during peace and may not be valid in crisis situations.

6.4.2 Naval Policy Trends

The recent retirement of Soviet Commander in Chief Gorshkov and his replacement by Admiral Chernavin[23,24] signals a change to earlier trends in Soviet Navy growth and development. Gorshkov transformed the Soviet Navy from a post World War II coastal defense fleet to a powerful global force; however, his advocacy of an independent Soviet Navy clashed with Gorbachev's desire for a unified Strategic Nuclear Force (SNF). With Gorshkov's retirement, the creation of a new SNF seems imminent, with the heads of the Strategic Rocket Force (SRF), the Navy, and the Air Force passing control of the SSBN force, long-range aircraft and ICBMs to an organization headed by three operational commanders-in-chief, who report to a single nuclear chief. Thus, Soviet SSBN's are no longer under Navy control: constituting an integral part of the nuclear arsenal, Soviet ballistic missile strategy is now part of a unified war plan.

The new Commander-in-Chief of the Soviet Navy, Admiral Chernavin, insists upon total integration of the Navy into the combined arms art of war. He believes naval forces can operate effectively as an integral part of a land-based command, without losing the operational and tactical autonomy to fully exploit the unique performance of naval weapon systems.

While under his command the Northern Fleet, which took a central role in the ZAPAD-81 Exercise (September 1981), performed the largest naval landing in Soviet history. The Soviets consider ZAPAD-81 to be the prototype of the future war, and Admiral Chernavin understands that only a complete integration of the fleet into the emerging strategy will ensure the fleet's development.

At the onset of World War II, the Germans demonstrated the advantages of prepositioning[4] limited naval assets for maximum effectiveness; undoubtedly, the Soviets will attempt a similar strategy. A counter strategy entails extensive surveillance and intelligence gathering.

A graphic clue to Soviet naval strategy lies in their exercise locations. As would be expected, frequent naval exercises occur in the Greenland and Barents Seas, the Baltic Sea, the Black Sea, the Sea of Japan, and the Sea of Okhotsk. Less frequent exercises are conducted in the Norwegian Sea and the Greenland-Iceland-United Kingdom (GIUK) gap, and the in Eastern Mediterranean Sea. On occasion, exercises have been held in the Northwest Pacific, the South China Sea, the southern tip of India, the west coast of Africa near Angola, the Northwest Atlantic, and the Caribbean Sea. Note that three of these distant, expensive exercises relate to Soviet sea lines of communication, but all six exercises relate to Alliance sea lines of communication.

6.5 Implications of Soviet Strategy

Although the foregoing evidence is meager, some conclusions are apparent:

- Economic, political, and military development of the Soviet Far East is a key element of Soviet strategy.
- Soviet political, economic, and military pressure on Western Europe will continue.
- North America, not Europe, is the principal Soviet adversary.
- A war of attrition does not favor the Soviets.

The Soviets understand clearly the crucial value of sea lines of communication in both Soviet and Alliance strategy. Protection or denial of these sea lines of communication impacts any global strategy, particularly if they are essential to prepositioning of forces.

7.0 Selection Process for Strategic Passages

As mentioned earlier, rank ordering of the world's strategic passages entails three tasks:

- Ascertain those attributes upon which one can measure the utility of a passage.
- Ascribe a value system to the attributes.
- Apply the evaluated attributes as a template to retrieve a set of strategic passages from a larger set.

All the previous sections provided a prologue for these tasks; at this juncture, we have established, through examination of contemporary views of global and naval strategy, a reasonable understanding of those attributes that contribute to the perceived utility of a maritime passage. The task before us is to link key attributes to an exhaustive set of candidate passages in a form that will expedite rank ordering of their importance.

7.1 Candidate passages

Although stability is a clearly stated goal of U.S. strategy, inexorable and unforeseen political and economic events tend to confound the issues, creating a "fog of purpose." The U.S. seeks stability in a scene of inevitable change. As a consequence, the relative importance of geographical areas, such as strategic passages, may change with events. In this context, it is better to start anew rather than to cling to earlier perceptions of geographical significance.

A reasonable [illegible] is an exhaustive survey of all maritime passages that could be considered important. Reference to a good world map provides an adequate source. Table 7-1 lists 77 passages obtained from the Defense Mapping Agency's *Map of the World, Series 1142*. Inland waterways, such as the Great Lakes, are not included. This list identifies each passage with a geographic theater or TVD of interest.

Table 7.1. Major maritime passages of the world.

Name	Theater	Name	Theater
Bab el Mandeb	Arabian 5	Preparis North Channel	Indian 6
Strait of Hormuz	Arabian 5	Preparis South Channel	Indian 6
Denmark Strait	Arctic 11	Strait Sumba	Indian 6
Ballantyne Strait	Arctic 2	Strait Sunda	Indian 5
Barrow Strait	Arctic 2	Strait of Malacca	Indian 6
Byam Martin Channel	Arctic 2	Ten Degree Channel	Indian 6
Davis Strait	Arctic 2	Mozambique Channel	Indian 7
Dease Strait	Arctic 2	Strait of Bonifacio	Mediterranean 16
Dolphin and Union Strait	Arctic 2	Strait of Messina	Mediterranean 16
Kennedy Channel	Arctic 2	Strait of Otranto	Mediterranean 16
M'Clure Strait	Arctic 2	Dardanelles	Mediterranean 3
Maclean Strait	Arctic 2	Strait of Gibraltar	Mediterranean 3
Nansen Sound	Arctic 2	Suez Canal	Mediterranean 5
Peary Channel	Arctic 2	Cabot Strait	N. Atlantic 2
Penny Strait	Arctic 2	Hudson Strait	N. Atlantic 2
Prince of Wales Strait	Arctic 2	Strait of Belle Isle	N. Atlantic 2
Robeson Channel	Arctic 2	English Channel	N. Atlantic 3
Smith Sound	Arctic 2	Formosa Strait	N. Pacific 12
Sverdrup Channel	Arctic 2	Dixon Entrance	N. Pacific 2
Proliv Karskiye Vorota	Arctic 3	Shelikof Strait	N. Pacific 2
Bering Strait	Arctic 4	Strait of Juan de Fuca	N. Pacific 2
Proliv Dimitriya Lapteva	Arctic 4	Unimak Pass	N. Pacific 2
Proliv Longa	Arctic 4	Korea Strait	N. Pacific 4
Proliv Vil'kitskogo	Arctic 4	La Perouse Strait	N. Pacific 4
Gulf of Finland	Baltic 3	Proliv Bussol'	N. Pacific 4
Kattegat	Baltic 3	Tartar Strait	N. Pacific 4
Skagerrak	Baltic 3	Tsugaru Strait	N. Pacific 4
Sodra Kvarken	Baltic 3	Babuyan Channel	N. Pacific 6
Guadeloupe Passage	Caribbean 15	Balabac Strait	N. Pacific 6
Mona Passage	Caribbean 15	Balintang Channel	N. Pacific 6
Northeast Providence Channel	Caribbean 15	Bashi Channel	N. Pacific 6
Panama Canal	Caribbean 15	Makassar Strait	N. Pacific 6
St. Lucia Channel	Caribbean 15	Mindoro Strait	N. Pacific 6
St. Vincent Passage	Caribbean 15	Torres Strait	N. Pacific 6
Straits of Florida	Caribbean 15	Wetar Passage	N. Pacific 6
Windward Passage	Caribbean 15	Strait of Magellan	S. Atlantic 13
Yucatan Channel	Caribbean 15	Bass Strait	S. Pacific 9
Palk Strait	Indian 5	Cook Strait	S. Pacific 9
Great Channel	Indian 6		

7.2 Passage attributes

After assembling the candidate passage list, the next step in the selection process involves determining what attributes describe the utility of a maritime passage. Using the preceding sections for guidance, eight attributes deemed very relevant to passage utility are described in the following subsections.

7.2.1 Geographic region and Soviet TVD

Region descriptions are North Atlantic, South Atlantic, North Pacific, South Pacific, Arctic, Caribbean, Mediterranean, Indian, Arabian, and Baltic regions. Soviet TVD regions are listed.

(1) Central Strategic Region (CSR)

Continental TVDs

(2) North America
(3) Western TVD (including Morocco)
(4) Far Eastern TVD
(5) Southern TVD
(6) South-Eastern TVD
(7) Africa
(8) South America
(9) Australia
(10) Antarctica

Oceanic TVDs

(11) Arctic Ocean
(12) Pacific Ocean
(13) Atlantic Ocean
(14) Indian Ocean

Maritime TVDs

(15) Caribbean Sea
(16) Mediterranean Sea

In cases where the passage lies on the boundary of two TVDs, the lower numbered TVD is chosen.

7.2.2 Coast

Relative to U.S. interests, the coast of a passage can be hostile, friendly, neutral, or Third World. Where the shores differ, the worst case is chosen. In essence, this attribute measures risk.

7.2.3 Traffic

Primary shipping traffic through the passage is labeled: commercial, military, SOVLOCU, SOVLOCR, or none. SOVLOCU designates a Soviet Line Of Communication with unrestricted (free world) commercial use; SOVLOCR designates a Soviet Line Of Communication with restricted commercial use.

7.2.4 Egress

Egress from a major naval base to the open sea is designated U.S., Soviet, or No.

7.2.5 Peace Use

Primary military use by the Free World Alliance during peace is Canal, Sea Line of Communication, Intelligence, Barrier, or None. Canal emphasizes the man-made aspect of the passage, thus its intrinsic value. This operating mode corresponds to the deterrence phase of the U.S. maritime strategy.

7.2.6 Crisis use

This maritime traffic mode corresponds to the transition to war portion of the maritime strategy. Primary military use by the Alliance during a crisis uses the same factors as peace use.

7.2.7 War use

This traffic mode corresponds to phase two, seizing the initiative, of the maritime strategy. Phase three, carrying the fight to the enemy, is not considered here, since it presumes all maritime passages are closed to hostile forces and all military action is directed against the Soviet homeland. Primary military use by the Alliance during war uses the same factors as peace use.

7.2.8 Operation

Primary Alliance wartime operations, relative to the passage, are either offensive or defensive.

7.3 Matrix of maritime passages

Upon describing each of the 77 maritime passages with the foregoing eight attributes, the resulting relationships are arranged in matrix form within a relational data base (INGRES), Table 7.2. The resultant matrix is 77 rows (passages) and 8 columns (attributes) that feature simple, descriptive entries. A relational data base is a practical analysis technique that enables the use of simple queries to retrieve selected qualitative or quantitative data from the data base. For example, all passages located within TVD 3 and providing egress from a Soviet naval base can be selected and retrieved.

7.4 Passage selection

Referring to preceding sections to formulate a selection template, several major strategic conclusions emerge:

- Defense and resupply of NATO is a major United States commitment.
- The economic vitality of the Alliance must be maintained.
- The Soviet Union crucially needs economic growth, particularly in the Far East.
- Since military power is founded upon economic vitality and endurance, the most important attribute of a maritime passage is the nature and volume of what passes through it during normal conditions, that is, the matrix attributes, Traffic and Peace_use.
- The immense cost of man-made passages (canals) warrants them special attention. No arguments have been discovered that lessen their initial value to world-wide commerce.
- Aside from defense and control of the canals, maritime passages affecting the major ports and flanks of Europe, and the Soviet Southern Sea Route are crucial to economic survival and growth. That some maritime passages are important to both the Alliance and the Soviets (SOVLOCU) gives them special significance.

Using these criteria, passages were retrieved from the data base, where

Traffic = *SOVLOCU*, or
Peace_use = *Canal*, or
Peace_use = *SLOC*.

The resulting 12 *strategic passages* are listed alphabetically in Table 7.3. Figure 7.1 locates these crucial waterways on the world map of Soviet TVD's.

An estimate of potential risk can be obtained by examining the Coast attribute for these 12 passages. Table 7.2 shows that

- two of the passages have at least one *hostile* coast.
- four of the passages have at least one *Third World* coast.
- two of the passages have at least one *neutral* coast.
- four of the passages have *friendly* coasts.

Further, two passages provide *egress* from Soviet naval bases and one passage provides *egress* from U.S. naval bases.

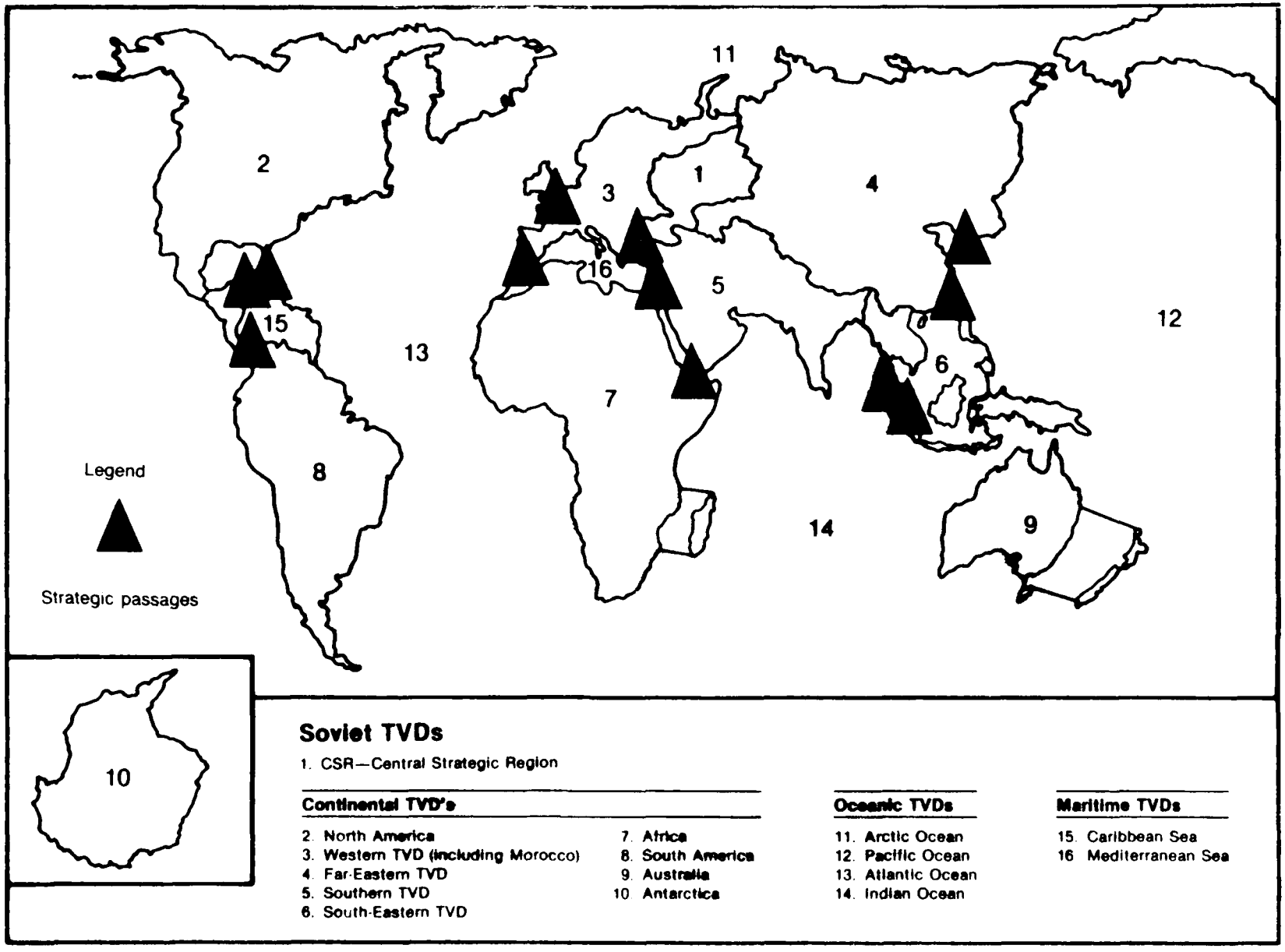


Figure 7-1. Selected strategic passages.

Table 7.2 Maritime passages attribute matrix.

Name	Theater	Coast	Traffic	Egress	Peace Use	Crisis Use	War Use	Operation
Bab el Mandeb	Arabian 5	Third World	SOVLOCU	No	SLOC	SLOC	SLOC	Defense
Strait of Hormuz	Arabian 5	Hostile	Commercial	No	None	SLOC	SLOC	Defense
Denmark Strait	Arctic 11	Friendly	Commercial	No	Intelligence	Intelligence	Barrier	Defense
Ballantyne Strait	Arctic 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Barrow Strait	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
Byam Martin Channel	Arctic 2	Friendly	None	No	None	None	Intelligence	Defense
Davis Strait	Arctic 2	Friendly	Military	No	Intelligence	SLOC	SLOC	Defense
Dease Strait	Arctic 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Dolphin and Union Strait	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
Kennedy Channel	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
M'Clure Strait	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
Maclean Strait	Arctic 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Nansen Sound	Arctic 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Peary Channel	Arctic 2	Friendly	None	No	Intelligence	Intelligence	Barrier	Defense
Penny Strait	Arctic 2	Friendly	None	No	None	None	Intelligence	Defense
Prince of Wales Strait	Arctic 2	Friendly	None	No	None	None	Intelligence	Defense
Robeson Channel	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
Smith Sound	Arctic 2	Friendly	None	No	Intelligence	Barrier	Barrier	Defense
Sverdrup Channel	Arctic 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Proliv Karskiye Vorota	Arctic 3	Hostile	SOVLOCR	No	Intelligence	Intelligence	Barrier	Offense
Bering Strait	Arctic 4	Hostile	Commercial	No	Intelligence	Barrier	Barrier	Offense
Proliv Dimitriya Laptseva	Arctic 4	Hostile	SOVLOCR	No	Intelligence	Intelligence	Barrier	Offense
Proliv Longa	Arctic 4	Hostile	SOVLOCR	No	Intelligence	Intelligence	Barrier	Offense
Proliv Vil'kitskogo	Arctic 4	Hostile	SOVLOCR	No	Intelligence	Intelligence	Barrier	Offense
Gulf of Finland	Baltic 3	Hostile	Commercial	No	Intelligence	Intelligence	Barrier	Offense
Kattegat	Baltic 3	Neutral	Commercial	Soviet	Intelligence	Intelligence	Barrier	Offense
Skagerrak	Baltic 3	Friendly	Commercial	Soviet	Intelligence	Intelligence	Barrier	Offense
Sodra Kvarken	Baltic 3	Neutral	Commercial	No	None	Intelligence	Barrier	Defense
Guadeloupe Passage	Caribbean 15	Friendly	None	No	None	Intelligence	Barrier	Defense
Mona Passage	Caribbean 15	Neutral	Commercial	No	None	SLOC	SLOC	Defense
Northeast Providence Channel	Caribbean 15	Friendly	Commercial	No	None	SLOC	SLOC	Defense
Panama Canal	Caribbean 15	Friendly	Commercial	No	Canal	Canal	Canal	Defense
St. Lucia Channel	Caribbean 15	Friendly	Commercial	No	None	SLOC	SLOC	Defense
St. Vincent Passage	Caribbean 15	Friendly	Commercial	No	None	SLOC	SLOC	Defense
Straits of Florida	Caribbean 15	Hostile	Commercial	U.S.	SLOC	SLOC	SLOC	Defense
Windward Passage	Caribbean 15	Hostile	Commercial	U.S.	None	SLOC	SLOC	Defense
Yucatan Channel	Caribbean 15	Hostile	Commercial	No	SLOC	SLOC	Defense	
Bab el Mandeb	Arabian 5	Third World	Commercial	No	None	Intelligence	Intelligence	Defense

Table 7.2 Continued.

Name	Theater	Coast	Traffic	Egress	Peace Use	Crisis Use	War Use	Operation
Great Channel	**Indian 6**	Third World	SOVLOCU	No	SLOC	Barrier	Barrier	Defense
Palk Bay North Channel	Indian 6	Third World	None	No	None	Intelligence	Intelligence	Defense
Palk Bay South Channel	Indian 6	Third World	Commercial	No	None	SLOC	SLOC	Defense
Strait Sumba	Indian 6	Third World	None	No	None	None	Intelligence	Defense
Strait Sunda	Indian 6	Third World	Commercial	No	None	SLOC	SLOC	Defense
Strait of Malacca	Indian 6	Third World	SOVLOCU	No	SLOC	SLOC	SLOC	Defense
Ten Degree Channel	Indian 6	Third World	None	No	None	Intelligence	Intelligence	Defense
Mozambique Channel	Indian 7	Third World	Commercial	No	None	SLOC	SLOC	Defense
Strait of Bonifacio	Mediterranean 16	Friendly	None	No	None	Intelligence	Barrier	Defense
Strait of Messina	Mediterranean 16	Friendly	Commercial	U.S.	None	SLOC	SLOC	Defense
Strait of Otranto	Mediterranean 16	Hostile	Commercial	No	None	Intelligence	Barrier	Defense
Dardanelles	Mediterranean 3	Friendly	SOVLOCU	Soviet	Intelligence	Intelligence	Barrier	Offense
Strait of Gibraltar	Mediterranean 3	Neutral	Commercial	No	SLOC	SLOC	SLOC	Defense
Suez Canal	Mediterranean 5	Third World	SOVLOCU	No	Canal	Canal	Canal	Defense
Cabot Strait	N. Atlantic 2	Friendly	Commercial	No	None	SLOC	SLOC	Defense
Hudson Strait	N. Atlantic 2	Friendly	Commercial	No	None	Intelligence	Barrier	Defense
Strait of Belle Isle	N. Atlantic 2	Friendly	Commercial	No	None	SLOC	SLOC	Defense
English Channel	N. Atlantic 3	Friendly	Commercial	No	SLOC	SLOC	SLOC	Defense
Formosa Strait	N. Pacific 12	Neutral	SOVLOCU	No	None	Intelligence	Barrier	Defense
Dixon Entrance	N. Pacific 2	Friendly	None	No	None	Intelligence	Barrier	Defense
Shelikof Strait	N. Pacific 2	Friendly	None	No	None	None	Intelligence	Defense
Strait of Juan de Fuca	N. Pacific 2	Friendly	Commercial	U.S.	None	SLOC	SLOC	Defense
Unimak Pass	N. Pacific 2	Friendly	Commercial	No	None	SLOC	SLOC	Defense
Bering Strait	N. Pacific 4	Friendly	SOVLOCU	Soviet	Intelligence	Intelligence	Barrier	Offense
La Perouse Strait	N. Pacific 4	Hostile	Commercial	Soviet	Intelligence	Intelligence	Barrier	Offense
Tsugaru Basin	N. Pacific 4	Hostile	None	Soviet	Intelligence	Intelligence	Barrier	Offense
Tatar Strait	N. Pacific 4	Hostile	SOVLOCB	Soviet	Intelligence	Intelligence	Barrier	Offense
Tsugaru Strait	N. Pacific 4	Friendly	Commercial	Soviet	None	SLOC	SLOC	Defense
Kanmon Strait	N. Pacific 6	Third World	Commercial	No	None	None	Intelligence	Defense
Luzon Strait	N. Pacific 6	Friendly	Commercial	No	Intelligence	Intelligence	SLOC	Defense
Mindoro Strait	N. Pacific 6	Third World	Commercial	No	None	Intelligence	SLOC	Defense
Balabac Strait	N. Pacific 6	Friendly	Commercial	No	None	SLOC	SLOC	Defense
Sibutu Strait	N. Pacific 6	Third World	Commercial	No	None	SLOC	SLOC	Defense
Lombok Passage	N. Pacific 6	Third World	Commercial	No	None	SLOC	SLOC	Defense
Strait of Magellan	S. Atlantic 13	Third World	Commercial	No	None	SLOC	SLOC	Defense
Taiwan	W. Pacific 9	Friendly	Commercial	No	None	Intelligence	Intelligence	Defense
Korea	W. Pacific 9	Friendly	Commercial	No	None	Intelligence	Intelligence	Defense

Table 7.3 Strategic passages.

Name	Theater	Traffic	Coast	Egress	Peace Use
Bab el Mandeb	Arabian 5	SOVLOCU	Third World	No	SLOC
Dardanelles	Mediterranean 3	SOVLOCU	Friendly	Soviet	Intel
English Channel	N Atlantic 3	Commercial	Friendly	No	SLOC
Formosa Strait	N Pacific 12	SOVLOCU	Neutral	No	None
Great Channel	Indian 6	SOVLOCU	Third World	No	SLOC
Korea Strait	N Pacific 4	SOVLOCU	Friendly	Soviet	Intel
Panama Canal	Caribbean 15	Commercial	Friendly	No	Canal
Strait of Gibraltar	Mediterranean 3	Commercial	Neutral	No	SLOC
Strait of Malacca	Indian 6	SOVLOCU	Third World	No	SLOC
Straits of Florida	Caribbean 15	Commercial	Hostile	U S	SLOC
Suez Canal	Mediterranean 5	SOVLOCU	Third World	No	Canal
Yucatan Channel	Caribbean 15	Commercial	Hostile	No	SLOC

8.0 Twelve strategic passages

This final section individually locates each of the 12 strategic passages on a world map and describes the passage and its data base attributes. Also given are the significance of the passage and relevant treaties.

In retrospect, these results are not startling. With the exception of three North American passages (whose implicit value includes the defense of Europe), the remaining 9 strategic passages relate to the same goals that motivated Marco Polo, Vasco de Gama, and Columbus: establishment of trade routes between Europe (including the Soviet Union, east of the Volga River) and the Far East.

8.1 Bab El Mandeb

Theater and TVD: Arabian 5

Traffic: SOVLOCU

Coast: Third World (Yemen)

Egress: No

Peace_use: SLOC

Description: This strait is the southern entrance to the Red Sea and thence to the Suez Canal. Yemen, a communist state, occupies the eastern coast; the western coast comprises Ethiopia and the French Territory of Afars and Issas. There is very little intracoastal trade; the crucial traffic is that of the Suez Canal.

This passage is 20 miles (32 km) wide and is divided into two channels by the rocky, barren island of Perim. The western channel is 16 miles across and 311 m deep; the eastern channel is 2 miles wide and 30 m deep. During the north-northwest summer winds, surface water and a layer of highly saline bottom water flow out of the Red Sea into the Gulf of Aden; between these layers, a countercurrent flows from the Indian Ocean. In winter, surface waters enter the Red Sea from the Gulf of Aden, but Red Sea water continues to discharge at depth.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1974

8.2 Dardanelles

Theater and TVD: Mediterranean 3

Traffic: SOVLOCU

Coast: Friendly (Turkey)

Egress: Soviet

Peace_use: Intelligence

Description: This passage, including the Bosporus, is the only entrance to the Black Sea. Most of the shipping involves the Soviet Southern Sea Route. Egress for the Soviet Black Sea Fleet increases its strategic importance.

This narrow strait extends northeastward for 38 miles (61 km) to link the Aegean Sea with the Sea of Marmara. Its width varies from ¾ to 4 miles and lies between Gallipoli (northwest) and the mainland of Asia Minor (southeast). Average depth is 55 m, reaching a maximum of 100 m in the narrowest central section. There is a rapid surface current from the Sea of Marmara to the Aegean Sea and a compensatory undercurrent returning more saline water.

International Treaties: The Montreux Convention of 20 July 1936 established the right of Turkey to fortify the straits. Further, it differentiated between warships of Black Sea states and those of non-Black Sea states. With the exception of aircraft carriers and submarines, all warships of Black Sea states were allowed unrestricted passage through the straits in peacetime; only light warships of non-Black Sea states had this right under limitations of tonnage, number of units simultaneously present and duration of cruising time. In time of war the straits would be closed to all participants in the conflict if Turkey were neutral.

This convention was scheduled for revision in 1956, but the signatories were unable to agree on the premises of such a revision.

Reference: *Encyclopedia Britannica*, 1974

8.3 English Channel

Theater and TVD: N. Atlantic 3

Traffic: Commercial

Coast: Friendly (France)

Egress: No

Peace use: SLOC

Description: The channel is the southern entrance to such major European ports as Antwerp, Rotterdam, London, Bremen, and Hamburg.

Access to Europe's greatest harbors underscores the channel's strategic importance. Situated on the Scheldt River, 55 miles from the North Sea, Antwerp is one of the biggest seaports in the world, ranking only after Rotterdam and New York. As the Scheldt, together with the Meuse and Rhine rivers, forms the biggest estuary in western Europe, Antwerp may be considered as an essential part of the greatest harbor complex in the world.

The English Channel gradually narrows from west to east from a maximum of about 112 miles (180 km) to a minimum of 21 miles between Dover, England, and Calais, France. As it becomes more narrow, the average depth decreases from 122 m to 46 m.

The sea floor dips fairly steeply near the coasts, but is generally flat and remarkably shallow. Its greatest depth is 172 m in the Hurd Deep, one of a group of anomalous deep, enclosed troughs in the bed of the western Channel. In the central Channel, 46-m to 61-m depths are fairly uniform over chalk outcrops, but alterations of clays and limestone give rise to an undulating terrain and deeps reach almost twice the average.

Tides are generally strong, especially in the Dover Strait, and may be visualized as an oscillation about a north-south line through the center of the channel. The central portion experiences daily double tides, and the Golfe de Saint Malo experiences, at 8.5 m or more, the greatest tidal range. There is an overall water flow through the channel to the North Sea; a complete replacement takes about 500 days.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1974

8.4 Formosa Strait

Theater and TVD: N. Pacific 12

Traffic: SOVLOC

Coast: Neutral (China)

Egress: No

Peace use: None

Description: The west coast of this passage is China, a communist state. Most of the shipping involves European and Soviet commerce with Japan and the Soviet Far East.

This strait is 100 miles (160 km) wide between China's Fukien Province coast and the island of Taiwan. It extends from southwest to northeast between the South and East China Seas. Average depth is 70 m. The strait contains the Pescadores Islands.

International Treaties: None.

Reference: *Encyclopedia Britannica*, 1975

8.5 Great Channel

Theater and TVD: Indian 6

Traffic: SOVLOC [illegible]

Coast: Third World (India)

Egress: No

Peace use: SLOC

Description: This channel is the primary western entrance to the Strait of Malacca. There is little intracoastal trade; the bulk of the traffic is international and passes through the Strait of Malacca.

This waterway is located near the Nicobar Islands, a group of 19 islands in the Bay of Bengal, southeast of India. With the nearby Andaman Island, they comprise a union territory of India.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1975

8.6 Korea Strait

Theater and TVD: N. Pacific 4

Traffic: SOVLOC

Coast: Friendly (Korea)

Egress: Soviet

Peace use: Intelligence

Description: Most shipping through the strait involves Soviet and European commerce with Japan and the Far East. Being the principal sea route to South Korea, the sole democracy on the East Asian mainland coast, adds to it's strategic significance.

This passage extends northeast from the East China Sea to the Sea of Japan between the south coast of Korea (northwest) and the Japanese islands of Kyushu and Honshu. The strait, which is 90 m deep, is bisected by the Tsushima Islands. The passage to the east is sometimes referred to as Tsushima Strait. The western passage was formerly referred to as the Chosen Strait.

The warm Tsushima Current, a branch of the Kuroshio Current, passes north through the strait. Following the coasts of the Japanese islands, some of the current's waters continue north to flow into the Pacific and the Sea of Okhotsk at Sakhalin Island, while the remainder swings counterclockwise to flow south along the Asian mainland.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1986

8.7 Panama Canal

Theater and TVD: Caribbean 15

Traffic: Commercial

Coast: Friendly (Panama)

Egress: No

Peace use: Canal

Description: [illegible]

between the Atlantic and Pacific coasts of the North and South American continents can be reduced by 3000-4000 nm; maritime traffic between Europe and western Asia and Australia can save 1000-2000 nm. Hence, the Panama Canal is of the greatest international importance, strategically and economically.

The 51-mile-long (82 km) canal was first opened to traffic on 15 August 15 1914. From a low of 807 transits in 1916, traffic rose to a high point of 15,523 transits of all types in 1970. The cargo carried through the canal that year amounted to over 132,500,000 tons.

In 1970 an average of 41 oceangoing ships, with an average size of 7800 tons each, passed through the canal each day. It has been calculated that by 1990, traffic will increase to 70 ships per day.

International Treaties: The Hay Pauncefote Treaty of November 18, 1901, stipulated that the canal would be free and open to the vessels of commerce and war of all nations, which observed the rules established for the Suez Canal by the Convention of Constantinople, 1888, by which the Suez Canal was made a corridor for all ships of all nations in peace and in war.

The Panama Canal Zone, established 4 May 1904, was abolished on 1 October 1979, with the return to Panama of direct civil control under a treaty signed in 1977. By the same treaty, a commission under joint United States-Panamanian ownership was established to operate the canal until the year 2000, when Panama will assume full control.

Reference: *Encyclopedia Britannica*, 1986

8.8 Strait of Gibraltar

Theater and TVD: Mediterranean 3

Traffic: Commercial

Coast: Neutral (Morocco)

Egress: No

Peace_ use: SLOC

Description: This passage is vital to the southern flank of Europe. All traffic headed for the Suez Canal or the Mediterranean must enter here.

This channel is 36 miles (58 km) long and narrows to 8 miles wide between Point Mairoqui (Spain) and Point Cires (Morocco). The strait's western extreme is 27 miles wide between the capes of Trafalgar (north) and Spartel (south), and the eastern extreme is 14 miles wide between the Rock of Gibraltar and Mt. Acho, just east of Cueta, a Spanish enclave in Morocco.

Average depth of the strait is 310 m. A 2-knot surface current flows eastward through the center of the channel, except when affected by easterly winds, This surface movement exceeds a westward flow of heavier, colder, and more saline water, which takes place at a depth of about 122 m.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1986

8.9 Strait of Malacca

Theater and TVD: Indian 6

Traffic: [illegible]

Coast: Third World (Indonesia)

Egress: No

Peace use: SLOC

Description: Lying on the shortest sea route between India and China, the strait is one of the most heavily traveled shipping channels in the world, almost a natural Suez Canal. At the southern end of this strait is Singapore, the largest port in southeast Asia and the fourth largest in the world. Shipping is primarily international; intracoastal traffic is negligible. In addition to its use as a waterway by other forms of shipping, the strait affords passage to giant oil tankers that voyage between Middle East oilfields and ports in eastern Asia.

This 500-mile-long waterway (800 km) is extremely vital; it links the Indian Ocean with the South China Sea. Its width varies from 155 miles (249 km) in the north to 40 miles in the south

In the southern portion of the strait, water depths rarely exceed 37 m and are usually about 27 m. Toward the northwest, the bottom gradually deepens until it reaches the 200-m isobath that marks the boundary of the Andaman Basin. Throughout the year, the current flows northwest at rates of up to 1.7 knots.

International Treaties: None

Reference: *Encyclopedia Britannica*, 1986

8.10 Straits of Florida

Theater and TVD: Caribbean 15

Traffic: Commercial

Coast: Hostile (Cuba)

Egress: U.S.

Peace use: SLOC

Description: Connecting the Gulf of Mexico with the Atlantic Ocean, the length of this important waterway is about 110 miles (180 km) between the Florida Keys on the north and Cuba and the Bahamas on the south and south east. All eastbound and northbound traffic from the Gulf of Mexico passes through this waterway, including over half of U.S. petroleum, oil, and lubricants (POL). Cuba is a littoral communist state for both the Yucatan Channel and the Straits of Florida

These straits mark the area where the Florida Current, the initial part of the Gulf Stream, flows eastward out of the Gulf of Mexico with a mean speed of 4-6 knots and a width of [illegible] to 95 miles. Current transport is about 25,000,000 [illegible] of water per second. It is recognized by [illegible] above 44 F

International Treaties: None

Reference: *Encyclopedia Britannica*, 1986

8.11 Suez Canal

Theater and TVD: Mediterranean 5

Traffic: SOVLOC [illegible]

Coast: Third World (Egypt)

Egress: No

Peace [illegible]use: Canal

Description: The canal extends 105 miles (168 km) from Port Said on the Mediterranean to the Gulf of Suez in the south. It provides the shortest route between Europe and the lands lying around the Indian and western Pacific Oceans. The distance from London to Bombay, by cape and by canal, is 10,800 nm and 6,300 nm, respectively, a savings of 42%; similarly, the distance from Marseille to Bombay is shortened from 10,400 nm to 4,600 nm, a 56% saving in distance.

The canal was opened to traffic in November 1869. In 1870, the canal's first full year of operation, there were 486 transits, or fewer than two per day. Carrying oil from the Caucasus region to the Far East, the first tanker transited the canal in 1892. In 1900, 88 tankers transited the canal. After successive widenings and deepenings, the canal, by 1967, featured a minimum width of 179 feet and an uninterrupted depth of almost 12 m at low tide. In 1966-67 there were 20,326 canal transits, an average of 56 per day, with net tonnage increasing from 437,000 (1870) to 267,000,000. By 1978, the average had increased to 58 ships per day. The canal was enlarged between 1975 and 1980 and presently accommodates ships of 53 feet draft.

International Treaties: The Convention of Constantinople 1888 stipulated the canal would be, "a corridor for all ships of all nations in peace and in war." Acts of hostility in its waters were forbidden.

Reference: *Encyclopedia Britannica*, 1986

8.12 Yucatan Channel

Theater and TVD: Caribbean 15

Traffic: [illegible]

Coast: [illegible] (Cuba)

Egress: [illegible]

Peace[illegible]use: SLOC

Description: All Panama Canal traffic, bound for the Gulf [illegible] M[illegible] or most east coast ports, passes through this waterway. This channel connects the Gulf of Mexico and the Caribbean Sea, extending 135 miles (217 km) between Cape Catoche, Mexico, and Cape San Antonio, Cuba. The north and south equatorial currents enter the channel from the [illegible]east and form the beginnings of the Gulf Stream [illegible] Gulf of Mexico. The current flowing through the Yucatan Channel is strongest in the summer, attaining speeds exceeding 4 knots.

International Treaties: None

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United Nations
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Selection of the foremost strategic maritime passages in the world is achieved by examining fundamentals of military strategy and contemporary views of global strategy from U.S., NATO, and U.S.S.R. perspectives. This examination discloses six axiomatic conclusions:

- Defense and resupply of NATO is a major United States commitment.
- The economic vitality of the Alliance must be maintained.
- The Soviet Union crucially needs economic growth, particularly in the Far East.
- Since military power is founded upon economic vitality and endurance, the most important attribute of a maritime passage is the nature and volume of what passes through it during normal conditions, that is, the matrix attributes, traffic and peace use.
- The immense cost of man-made passages (canals) warrants them special attention. No arguments have been discovered that lessen their initial value to world commerce.
- Aside from defense and control of the canals, maritime passages affecting the major ports and flanks of Europe, as well as the Soviet Southern Sea Route, are crucial to economic survival and growth. That some maritime passages are important to both the Alliance and the Soviets gives them special significance.

From these six conclusions, 12 maritime passages are deemed to be crucial to policies of the major world powers: Bab el Mandeb, Dardanelles, English Channel, Formosa Strait, Great Channel, Korea Strait, Panama Canal, Strait of Gibraltar, Strait of Malacca, Straits of Florida, Suez Canal, and Yucatan Channel.

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