

D

AD-A259 350



~~SECRET STATE~~

Approved for public release
Distribution Unlimited

DTIC
ELECTE
JAN 4 1993
S E T

BRAZIL

and the vital

SOUTH ATLANTIC

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

CONTINUED FROM PREVIOUS PAGE



93-00013
JAN 4 1993

93 1 02 031

BRAZIL
and the vital
SOUTH ATLANTIC

by

ORLANDO BONTURI

Captain, Brazilian Navy

1988

*International Fellow
National Defense University
Washington, DC*

Opinions, conclusions, and recommendations expressed or implied within are solely those of the author and do not necessarily represent the views of the Government of Brazil or the United States government.

First printing, September 1988

Contents

Foreword	ix
Introduction	1
The Seas, the Atlantic, and the South Atlantic	3
The South Atlantic's Geography and Brazil	29
Brazilian Security and the Defense of the South Atlantic	55
The Divergence and the Problem to be Solved	81
Selected Bibliography	89

Tables

II-1 Monthly Ship Transits in the Atlantic: Projections for 1985	9
II-2 USSR Possible Targets in Terms of Resource Opportunities in the Caribbean and South Atlantic Regions	24
III-1 Brazilian Exports by Types of Merchandise	44
III-2 Brazilian Exports by Bloc of Countries	45

Figures

II-1 The "Choke Points" of Panama, Drake, the Cape of Good Hope, and Gibraltar	7
II-2 The Interior Sea Theory	11
II-3 The South Atlantic and Its Accesses	13

II-4	Some Minerals and Metals which the USA Must Import in Large Quantities	20
II-5	South Atlantic Oil Sea Lines of Communication	23
II-6	Selected World Shipping Lanes	27
III-1	The South Atlantic Islands	31
III-2	Island of Saint Helen	33
III-3	Trade Routes of Brazilian Interest	39
III-4	Brazilian Commerce Main Routes	40
III-5	Petroleum and By-Products' Transfer in 1983	42
III-6	The Importance of the Brazilian Coastline	49
III-7	Brazil as a Springboard to the Commerce of the Atlantic	51
iii-8	Ports on Brazil's Northeast Region	52
IV-1	Main Brazilian Maritime Routes of Commerce	57
IV-2	The South Atlantic Islands	60
IV-3	South America's "Protection Belt"	61
IV-4	Main Trade Routes on the South Atlantic	66
IV-5	Soviet Coverage of the South Atlantic	68
IV-6	An "Ideal" System for the Control of the South Atlantic	80

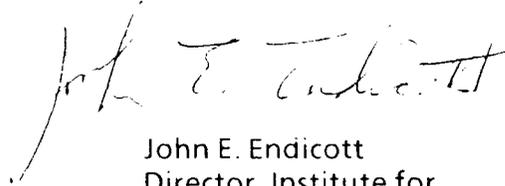
Foreword

Throughout history, control of the seas has been critical in war and indispensable to economic prosperity. In today's global economy, the security of the world's oceans remains critical. In this essay, Captain Orlando Bonturi, of the Brazilian Navy, examines the security of the South Atlantic, the vulnerability of its lines of communication, and the capability of Brazil to help ensure security in that ocean.

Captain Bonturi contends that Brazil is well suited to take a leading role in the defense of the South Atlantic; Brazil's own defense is closely tied to the South Atlantic, he notes. By virtue of its geographical position and numerous good ports, Brazil is increasingly looking toward the sea for its growth as a major trading nation. In his analysis, Captain Bonturi examines the sea lines of communication so critical to Brazil's and the West's economic well-being. He identifies major choke points that could become vulnerable during a crisis, including the straight formed by the western-most coast of Africa and the eastern-most coast of South America--a line often overlooked in strategic analyses. The author also suggests a possible defense line--the "South Atlantic Early Warning Belt"--be established between the two continents.

Captain Bonturi recommends a NATO-like organization--a *South Atlantic Treaty Organization*--made up of South American and African nations for the defense of the South Atlantic. As envisioned by Bonturi, "SATO" would work in close cooperation with the North Atlantic allies. A large nation with vast resources,

Brazil is often compared with the United States. It behooves us to take note of the aspirations of emerging nations like Brazil, whose strategic perspective of South Atlantic security is well described in this essay.

A handwritten signature in cursive script, reading "John E. Endicott". The signature is written in dark ink and is positioned to the left of the printed name.

John E. Endicott
Director, Institute for
National Strategic Studies

BRAZIL

and the vital

SOUTH ATLANTIC

Introduction

Throughout history, control of the seas has been recognized as a state's major and most important source of power; the nations which guaranteed free transit for their ships throughout the world's oceans and seas could impose their will on those peoples who did not understand the value of sea power.

Among the several oceans of the globe, the Atlantic holds a special relevance. This ocean links the majority of the most economically important nations on earth. For this reason, the Atlantic has been the object of several studies and theories, among which is the theory of the "Interior Sea." This theory views the Atlantic as consisting of two distinct parts, one North and one South, which makes the first "dependent" on the second.

This essay examines the significance of maritime commerce in the southern portion of the Atlantic Ocean, dwelling on the essentiality of preserving freedom of navigation, while at the same time calling attention to the vulnerability of the sea lines of communication (SLOCs) in the South Atlantic. These SLOCs are vital to world commerce as a whole.

Beginning with an overview of the importance of the South Atlantic, this essay goes on to examine in greater detail the inherent geographic and political aspects of the South Atlantic area. I then emphasize descriptive characteristics of the underwater platform and the continental shelf, as well as of adjacent islands and several of the countries located in the region of the South Atlantic. Among these countries, my object of special focus is Brazil, because of its economic and political importance to that area as a whole and, in particular, its unique geo-strategic position.

Brazil owes its status as a maritime nation to its colonial beginnings as adjunct to the empire of the world's greatest maritime nation of its day--Portugal. Consequently, sea lines of

communication have always figured prominently in Brazil's economic development. Brazil has long been an important source of food and vital raw materials and manufactured goods to the world; a fact that, allied to its favorable geography, its mild climate, and industrious character of its people, places Brazil in a position of growing influence on the world scene. The decisive implications of these Brazilian characteristics in the South Atlantic area become naturally heightened. On the basis of these conditions, I use concepts developed from the "Interior Sea" theory to demonstrate Brazil's importance in the South Atlantic ocean. A critical problem I review is the security of Brazil and the defense of the South Atlantic region. This essay establishes a comparison between the ideal situation and the hard reality, which allows me to delineate what already exists and what could exist in the South Atlantic in terms of defense. In my analysis, I conclude with a discussion of the possible solutions in light of the restraints that affect these solutions.

The climax of this essay treats areas of disagreement between Brazil and the United States in regard to political-military policy for the South Atlantic. I conclude by bringing forward a highly controversial subject for a hard look: a NATO-type treaty for the defense of the South Atlantic region--SATO. I feel my approach to this subject allows me to conclude--in a diplomatic, but above all prudent and sober, manner--by raising another intricate international problem still to be resolved.

The Seas, the Atlantic, and the South Atlantic

The oceans cover three-fourths of the Earth's surface and, beyond territorial waters, have no frontiers. These waters are great international conduits which are used not only to carry trade and people but also to project power and influence. Also, the oceans are an immense source of natural wealth in the form of food, minerals, and fuel.

For these reasons, the seas have historically occupied a position of importance. Those civilizations that in the course of the centuries have made use of the seas have distinguished themselves from those who could not or did not know how to use them.

Because a major part of the world's commercial trade is carried by ships, and mankind is increasingly dependent upon ocean resources, the importance of control of the sea is greater than ever before. In fact, the present days are witnessing the beginning of a new hegemony of maritime and naval power. The world's greatest land power, the Union of Soviet Socialist Republics (USSR), occupies "the Heartland"--which, according to Mackinder's theories, would guarantee the domination of the world--and is also becoming the greatest naval power of our time. The Soviet Union's merchant navy, fishing fleet, research vessels, and its naval support forces, in addition to its naval supply and repair bases being installed in almost every ocean area, will probably comprise, in the near future, the necessary elements of a formidable, if not the greatest, maritime power in the world. The present situation of the Soviet maritime power is already sufficient to prove the seriousness and coherence the Soviets give to the concepts expressed by leading military and political strategists. Indeed, Czar Peter the Great said, "The state that only has an Army, has only one arm. To have two arms, it needs a Navy." The people and civilizations which understood the use of

sea power were able, at all times, to defend their interests, to spread their culture, and to impose their will upon those who did not have either the possibility or the wisdom to understand and use the sea.

"Command Of The Sea" Theory

The greater or lesser use of the sea is based upon two interacting elements: geography and naval power. Extensive coastlines and favorable access to the sea are essential to a well-structured naval force supported by a coherent governmental policy. The following are characteristics that, according to Meira Mattos, affect accessibility to the seas:

- *the nature of the coastal areas*--seashores with protected ports, bays, gulfs, coves, or hostile seashores;
- *the situation of the sea*--that is, if it offers exchange facilities such as the Mediterranean, the Atlantic, and the Pacific, or universal rarefaction such as the Arctic or the Antarctic Seas;
- *the navigability of the rivers*--when navigable and flowing to the seashore, these rivers become extraordinary vehicles of land-sea interaction and favor land. (On the other hand, those rivers with waterfalls are valuable sources of electric power, to fuel economic and social progress.)

If we consider that the government of a state is responsible for shaping its nation's destiny, the objectives of a maritime power should be based on a maritime strategy. As an example, England has historically understood that her destiny depended on the sea; for this reason she adopted a coherent strategy and policy to this reality, the result of which were maritime and naval powers responsible for the greatness and glory of that country which have been recorded and we still witness today. Maritime and naval strength engenders potential for Command of the Sea. Such a concept has been, for quite some time, advocated by several scholars, among them Mahan, Corbett, Turner, and Zumwalt. Although not the first, Alfred Thayer Mahan was certainly the most influential of those who recognize that sea power, in its broadest sense, encompasses "not only the military strength afloat that rules the sea or any part of it by force of arms," but also includes "the peaceful commerce and shipping from which alone a military fleet naturally and healthfully springs, and on which its securely rests."

That succinctly enunciated principle was true enough almost a century ago, when *The Influence of Sea Power Upon History* was first published, and is even more true today at a time when foreign trade and merchant shipping have become absolutely essential to the world for both economic and national security reasons.

However, absolute command of the sea, as meant by Mahan, is no longer possible, mainly because of the world's technological boom which brought about inventions such as nuclear submarines, SLBMs, and formidable developments in the electronics field leading to high performance surveillance techniques. Nevertheless, the control of one's SLOCs is still vital today and has to be achieved even without the absolute command of any particular sea, as seen by Corbett. The solution can be found in Turner and Zumwalt's concepts of sea control, which is to command defined areas during a specific period of time and for a set purpose. This is the only possible strategy to be adopted, in any ocean, at the present.

However, since domination of the sea is the desired effect of a naval strategy, a responsibility of such strategy is to determine the degree of domination that a nation wishes to obtain--under a given belligerent situation, and that will be a function of the maritime objectives to be reached. For example, to deny to the enemy the use of a given oceanic area or to fight for and obtain the domination of this area or even to exploit the domination of the sea. Nevertheless in a peace-time situation, and especially for nations that tend to be non-expansionist or non-imperialist, the development of the naval power would hardly grow out of its own population. The authorities which are responsible for this sector of activities will have to place themselves in an advantageous position to regard the degree of alertness of the national conscience. Economic growth, interconnected with the increase of foreign commerce, will certainly require greater support from the nation's naval power, a persuasive means that states can develop and use where diplomatic efforts are not providing desirable effects.

Thus, naval forces, the activating means of a naval strategy, must be capable of accomplishing its obligations within the maritime strategy drawn by the state. This will assure that those states who have ample vision of sea power's uses have the ability to defend their interests, to spread their culture, to expand their influence, and even to impose their political will on those who

neither have the geographic ability to use the sea nor the wisdom to understand it to use it. In other words, civilizations which have used the sea have distinguished themselves from those who did not know how or were not able to use it.

The Atlantic as a Whole

For the past 500 years the Atlantic Ocean has been associated with many great historical events. Because Western Europe is oriented toward the oceans, its people and culture made its appearance in both the Northern and Southern hemispheres. The Atlantic's configuration permits South America to integrate into the most important flows of the world's commercial traffic, enabling its various nations to participate in the economic and political interests of the dominant industrial nations currently centered on the North Atlantic littoral.

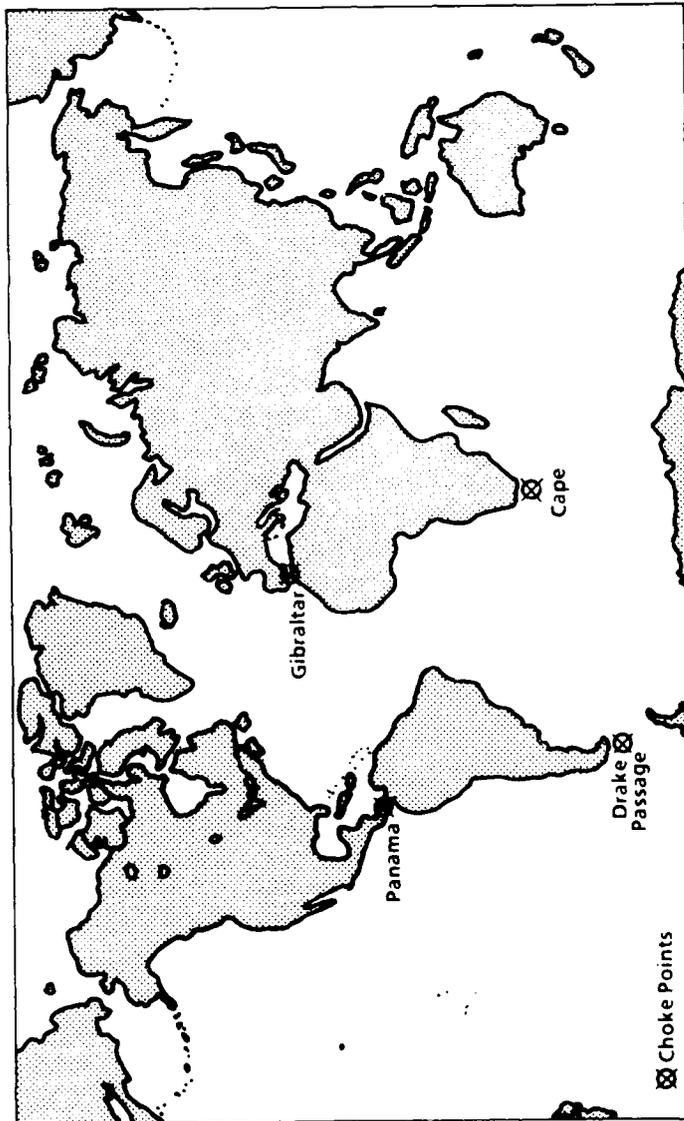
In geographic terms, the Atlantic Ocean, 81,000 square kilometers, is the youngest of all oceans. Its coastlines are irregular and its greatest depths are found near the continents (the average depth being about 600 meters). The Atlantic Ocean is about one-half the size of the Pacific Ocean. However, compared to the Pacific Ocean's great surface and low populations, the Atlantic Ocean has the advantage of less distance between the great population centers of the European and American continents, not only in its northern sector but also in its southern sector.

In strategic terms, four of the nine "choke points" of great strategic importance in the world are in the Atlantic: the Panama Canal, the Drake Passage, the Cape of Good Hope, and the straits of Gibraltar (see *Figure II-1*).

In military-strategic terms, I feel that the use of the Atlantic Ocean represents one of the most important national security concerns, at least during the coming ten or fifteen years. Although airlift capabilities are being expanded, deployment of large-scale reinforcements to NATO Europe would undoubtedly require sealift. Seaborne resupply for the US forces and those of the allies would also be necessary. Naval power will therefore be needed to keep open the sea lines of communication in the Atlantic.

The United States, however, has other security agreements on and near the Atlantic. The Inter-American Treaty of Reciprocal

Figure II-1
The "Choke Points" of Panama, Drake, Cape and Gibraltar



Assistance (ITRA), which was signed in 1947, commits the United States to a share in the defense of thirteen Latin American nations that border the Atlantic.

Keeping focus on the US example, from the seaborne trade point of view, 80 percent of US seaborne imports of manufactured products move through Atlantic ports. And, of course, all of Western Europe's seaborne trade to and from the US moves on the Atlantic.

The distribution of foreign direct investment provides another kind of evidence of economic interests. The United States has invested in countries that border the Atlantic Ocean more than 70 percent of all its direct investment overseas. According to national income accounts published by the US Department of Commerce's Bureau of Economic Analysis, imports and exports in 1983 accounted for 10.8 percent of the US gross national product, in constant dollars. From a US national security standpoint, according to Tony Beargie, imports are more important than exports because of the massive tonnages of raw materials that must be brought into the country to fuel and lubricate the US defense industrial base. (The United States is what strategists call "a raw materials deficit nation," and for this reason is used as an example at this point.) Should the United States be cut off from its overseas raw material sources, American and free world security would be seriously threatened. The operations of US basic industries would be sharply curtailed for lack of critical materials. There also would be a significant reduction in the nation's capacity to manufacture naval/military equipment of all types.

However, trade and investment involves shipping. *Table II-1* gives, for example, a projection of monthly transits across the Atlantic in 1985. More than half the world's shipping currently travels Atlantic routes. The main trade across the northern part of the Atlantic Ocean is in manufactured goods. More than half of all the manufactured products imported by North America are shipped across the Atlantic, and about 43 percent of European imports of finished or manufactured products come from North America. In the southern portion of the Atlantic Ocean, the most important maritime interest is, beyond question, the movement of Persian Gulf oil, mainly to the United States and Europe. About 90 percent of that oil is shipped through the South Atlantic and, as can be seen by this table, the volume of oil imports from the Persian Gulf is likely to continue to grow at a 2.2 percent annual rate. As a consequence, the route around the Cape of Good Hope

Table II-1
Monthly Ship Transits in the Atlantic: Projections for 1985

	1974	1985	Growth Rate
Petroleum Tankers	1,575	2,000	2.2%
Dry Bulk Carriers	3,150	5,875	5.8%
General Cargo Ships	3,850	8,000	6.9%
Total	8,575	15,875	5.8%
Share of World Total	56.4%	55.8%	—

Source: "Securing the Seas," 1979.

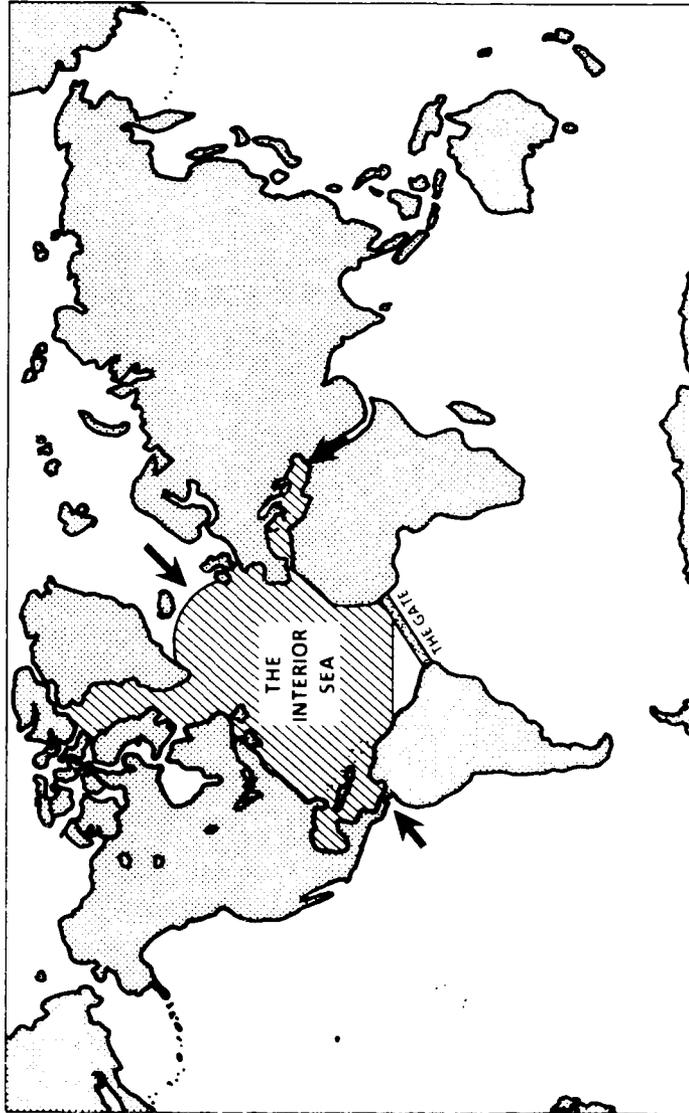
and up the sea lanes of the South Atlantic predominate, at the present, in strategic importance. The southern region of the Atlantic Ocean is also a significant source of raw materials. Imports of iron ore and semi-finished products account for most of this trade. The United States also imports other metals from sources on the South Atlantic such as bauxite, beryllium, chromite, cobalt, columbium, manganese, platinum, tantalum, and vanadium. In sum, the importance of the Atlantic Ocean to shipping is derived from, primarily, the exchange of raw materials and manufactured goods between the nations of North America, Western Europe, Latin America, and Africa, as well as from the movement of Middle East oil.

In terms of natural resources, the Atlantic Ocean contains a wide variety of sealed resources, but in quantities far smaller than those available elsewhere. In the North Atlantic, offshore oil and gas production is concentrated in the North Sea and in the Caribbean. Production in these areas accounts for something less than 20 percent of all offshore oil and about 3 percent of total oil production. West Africa accounts for only 3 percent of the estimated world reserves of offshore oil. Also, manganese nodules have been located in the west central Atlantic, off Florida, and along the Mid-Atlantic Ridge. In the South Atlantic these reserves are concentrated along the Rio Grande Rise, about 800 miles off the coast of Brazil, and on the Agulhas Plateau, about 300 miles off the coast of South Africa. In addition, forty percent of the world's open ocean catch comes from the Atlantic. If we add to this broad scenario the immense perspective of the Antarctic region, we could say that the Atlantic Ocean as a whole is a most important region, and has a strategic relevance for the entire world.

The "Interior Sea" Theory

The importance of the Atlantic in general and of the South Atlantic in particular is well emphasized by the theory of the "Interior Sea." Because commercial navigation to and from the Atlantic through the Arctic Ocean is unlikely, the closure of the Suez and Panama canals would transform the North Atlantic into a large interior sea (as is the Mediterranean) with only one gate--the stretch between the Northeast region of South America and the Northwest area of Africa (see *Figure 11-2*). In this situation, all the maritime traffic from this interior sea would necessarily pass through that gate, which, therefore, can be considered an important focal area for commercial and naval concern.

Figure II-2
The "Interior Sea" Theory



If we accept that the closure of the Suez and Panama canals can be accomplished, even during peacetime, either by "accident" or by terrorist acts, then we will be able to understand that it is possible to force most seaborne trade through the South Atlantic "gate," subordinating, to some extent, the viability of Atlantic maritime commerce to the whim or will of those states on either flank of the "gate." Therefore, this "Interior Sea" theory shows that a nation which has the control of at least one coast of the South Atlantic "gate" can influence the maritime situation of the whole Atlantic, as long as it is able to exercise command of the sea in that region. These ideas are in accordance with the concept of Mahan which posits geographical position as one of the principal conditions affecting the seapower of nations.

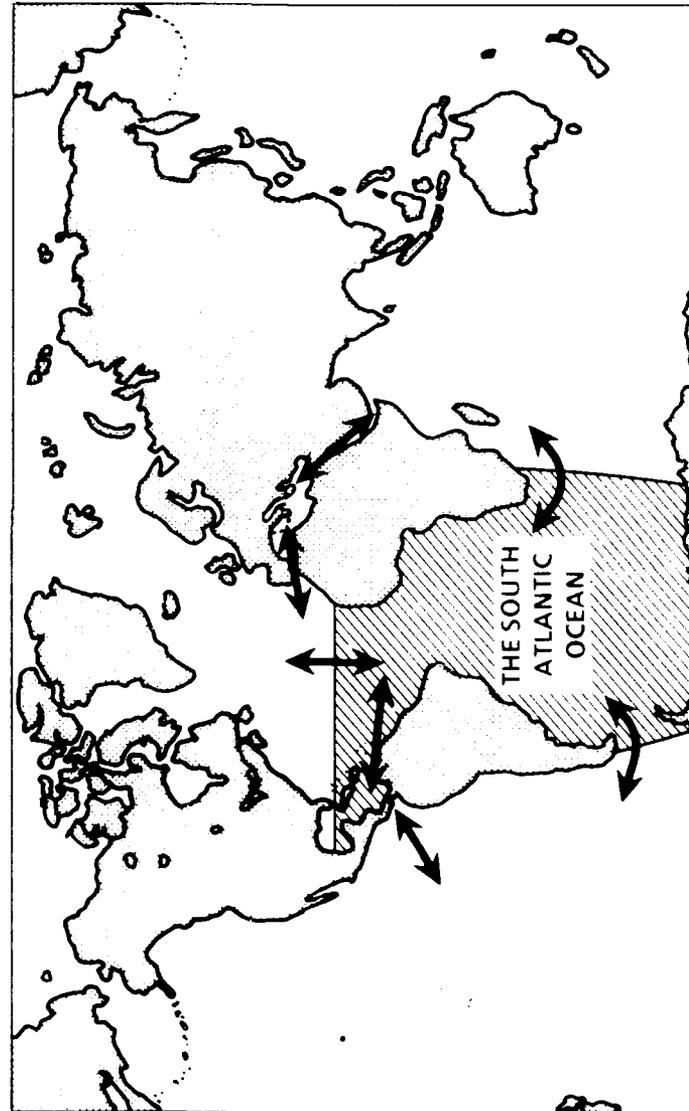
Such a concept of the "interior sea" and its "strait" of access will then be subordinating all the maritime traffic, going to and coming from the region located north of the line between the Brazilian Northeast and the African Southwest, to the southern part of the Atlantic Ocean. Brazil and the West Coast of Africa are vital to the free world under this concept.

The South Atlantic In Particular

By thus focusing our attention on the southern part of the Atlantic Ocean, let us select the Tropic of Cancer (parallel of 23° 30' North) as the dividing line between the North and South Atlantics; I choose this demarcation because the Tropic of Cancer is the southern limit of the area under the cognizance of the North Atlantic Treaty Organization. Thus, we can consider the South Atlantic Ocean, in terms of geographic limits, as being located between the East of South America and the West of Africa and being limited on the North by the Tropic of Cancer and on the South with the Antarctic Continent. (See *Figure II-3*.)

The most important strategic accesses to the region of the South Atlantic are, on the North, the Caribbean Sea (including the Panama Canal) and the Strait of Gibraltar (including the Suez Canal) and, on the South, the Cape of Good Hope, and the extreme southern passages of the South American continent (Strait of Magellan, Cape Horn, and Drake Passage). In terms of sea lines of communications, the South Atlantic is traversed by routes particularly vital for the Western world, among which are the oil route of the Cape of Good Hope and the route along the coast of Brazil, Uruguay, and Argentina. The latter, through the

Figure II-3
The South-Atlantic and Its Accesses



Strait of Magellan, the Beagle Channel, and the Drake Passage, allows sea communication between the two coasts of the American continents. These routes are alternatives to the primary passages through the Suez and Panama canals which, as mentioned earlier, are quite susceptible to closure.

On the other hand, the South Atlantic Ocean becomes the natural route for the products of these regions--among which, are food and strategic materials of great importance to the whole world--as much as Africa and South America are today, undoubtedly, the larger sources of food, raw materials, and manufactured goods that supply all continents.

In addition, besides strategic importance, the Indian Ocean produces significant effects on the South Atlantic's importance. The loss of "command of the sea" in the Indian Ocean would have to be compensated, in the South Atlantic Ocean, through actions leading to the assurance of threatened sea lines of communication.

Also, within the aspects of the importance of the South Atlantic, we should consider the South Atlantic's connection with the Antarctic territory. The political alignment of this territory is not yet perfectly defined, and may cause it to be a region for future conflict. At such a point, the South Atlantic Ocean will assume unquestionable strategic importance to all parties concerned. Two fundamental aspects render the South Atlantic a premier position in the struggle for world hegemony: its extraordinary economic value (renewable and non-renewable natural resources), and its vital geographic importance. These two aspects ensure that today the role of the South Atlantic in strategic planning should assume new and important value.

The Antarctica Problem

In 1991 a new international conference, for the purpose of trying to solve the territorial claims on the Antarctic continent, will determine the destiny of the last portion of the globe's surface still without recognized owners. Under the Antarctic continent, oil deposits and other mineral riches lie untouched. Likewise, the Antarctic is surrounded by waters with marine life of enormous protein potential. With its 5.4 million square miles of firm land, not including the immense permanently frozen icefield regions, Antarctica is the last portion of emerged land of the globe which still harbors unexplored regions, largely due to the inability

of the human being to subject himself to the extremely adverse conditions existing there.

Beneath the ice are certainly large deposits of iron and coal and strong evidence exists that coal and gas may be found on the Antarctic continental shelf. Experts also put oil reserves at approximately 45 billion barrels and natural gas at 115 billion cubic meters. Also, evidence exists of a wide range of other minerals such as copper, lead, silver, nickel, tin, gold, chromium, manganese, and titanium. Another resource already being exploited is fish. Besides fin fish, squid, crabs, and lobsters, an abundance of protein-rich crustaceans called krill is now being harvested by the Japanese, Poles, and Russians.

On the surface, Antarctica's icebergs are a potential source of fresh water for arid countries. A French engineering company, Cicero, calculated that the cost of towing an 85 million ton iceberg to Saudi Arabia would be (in 1985 US dollars) \$.52 per cubic meter, compared with \$.79 per cubic meter for desalinated water.

These potential riches lay stress upon the territorial claims for the region, which so far have been based on the following points:

- historical facts (based on discoveries and/or explorations);
- national security;
- effective occupation;
- application of the Contiguity Principle (according to which the effective occupation of a territory gives the occupying state the right of sovereignty on all adjacent lands that have no owners);
- application of the Continuity Principle (based on the *morphological similarity of neighboring areas*, of which Chile, for example, takes advantage to claim rights on the Antarctic);
- application of the Facing Principle (which would divide the Antarctic continent by establishing sectors that would be determined by meridians which, converging on the Southern Pole, go through the extreme points of the territorial limits of the facing countries).

In addition, two points are the most popular foreseen political solutions envisaged for the future of Antarctica:

- Dividing the continent--transforming it into a kind of condominium to be owned by a small group of nations (a

territorialist position). Its defenders allege that since the region belongs to no one, it is liable to appropriation for national sovereignty and jurisdiction.

- Internationalizing the continent--considering Antarctica a property of all. Antarctica would not be subject to national sovereignty and appropriation under any pretext, but would be a continent to be explored for the benefit of humanity and administered on an international basis.

As one can imagine, these criteria can provoke heated debates in conferences that will attempt to decide the destiny of this frozen continent. Some powerful people may try the division in small condominiums using historical allegations. However, the greater support of such allegations will possibly be based more on power than history. On the other hand, because they cannot find benefits in criteria that may not include their interests, others will claim the universality of ownership. A division under the Facing Principle, sponsored by several nations, would benefit in particular those nations of the Southern Hemisphere, leaving some "pieces" for the nations to the north, as can be seen when one looks at the oceanic openings in a world map. Geographic proximity, strategic security, and previous accomplishment of scientific research through the years, together with other alleged motives, will enrich the discussions as these claims will be defended as possible "just" criteria.

In any case, although the Treaty of Antarctica's protocols emphatically excludes the use of that continent for military purposes, the strategic value of Antarctica is a reality. It offers the possibility of installation of bases for logistic support of ships and aircraft. Moreover, military facilities such as communications, radiogoniometry, submarine tracking, and radar stations, among others can be installed. All of this allows us to admit that in the heat of human conflicts, all nations might act according to the above-mentioned protocols of peace and understanding for that region.

Vulnerability of the Sea Lines of Communication

The Western world's needs of commerce and provisioning depend, fundamentally, on communications across the three great oceans of the world: Atlantic, Pacific, and Indian. Although a significantly large part of the flow of goods may take place on the North Atlantic (the primary area of NATO maritime defense),

the sea lines of communication on the other oceans are particularly and recognizably essential.

The security of the maritime routes which pass the Cape of Good Hope is doubtful, particularly if we consider the hypothesis of a generalized East-West conflict. This can be very well understood if we look at the assessment made by the US Department of Defense in *Soviet Military Power--1984*. This document shows a progressive expansion of Soviet influence and the "Cubanization" of strategically important areas on Africa's east and west coasts, from which opposing naval and air forces would have the ability to operate and to receive support (Angola, Ethiopia, Congo, Mozambique, South Yemen, and Guinea Bissau, among others).

An intense military effort will have to be developed to defend the choke point at the Cape of Good Hope, particularly if South African forces must face aggressive threats on its northern borders. Since the South African armed forces seem, to me, as to have been conceived and prepared for many years for the specific task of naval and air naval operations oriented to the defense of maritime traffic, this would require a reconfiguration for the South African forces distinct from their current emphasis. Since the available resources are finite, the possibility of a de-emphasis of South African naval power may be considered reasonable. The intensity of the Western military effort will probably require a greater naval presence in the South Atlantic and Indian Oceans. Quite certainly, the Western powers would expect participation, in the Atlantic, from their South American allies. The protection of the selected maritime traffic between the southern tip of Africa and the Brazilian coastal areas, as well as the support and protection of the routes which are adjacent to the Brazilian northeastern salient, will probably be tasks which will naturally require the presence of the Brazilian Navy.

As for the Panama Canal, much can be speculated. Without disregard to the enormous North American war potential that could be mobilized to defend that canal, the maritime traffic still may be interrupted there due to actions which may vary from simple sabotage to nuclear ballistic missiles. The Reagan Administration's position on air and naval operations for interdiction, of which the Grenada operation is an example, indicates, in my opinion, the North American concerns with regard to the security of the area. The implications of a possible interdiction of the Panama Canal are obvious: massive volumes of

maritime cargo will have to be re-routed to the long route that goes around the southern tip of the South American continent; responsibilities will be added to the naval forces of the countries adjacent to this alternative route.

The concept behind the unbreakable resolve of the British government to retake the Falkland/Malvinas Islands from the Argentines and not to negotiate its sovereignty seems something more than the sole defense of one of Her Majesty's territories invaded. The islands in dispute are, in fact, a strategically located bastion for the support and base of British and/or allied military forces in the case of a general war, besides making the British interests in Antarctica more viable.

Also, the growing strategic importance of maritime routes may take place suddenly and exponentially, as soon as a condition of belligerence develops. For example, the closing of the Suez Canal, which caused the immediate suspension of maritime communications between the Mediterranean and the Red Sea, followed by a quick and intense increase of maritime traffic around the Cape of Good Hope and through the Straits of Magellan and Cape Horn passages. The ability to guarantee the security of such maritime routes cannot be obtained overnight. To be able to unleash adequate naval and air forces should be the fruit of strategic formulations anticipated, always an expensive and slow process.

Such adequacy, however, cannot lose sight of the feasibility of developing the air-naval power. A balance between cost and benefit will always have to be based, undoubtedly, on the value of the commerce that flows in this maritime traffic.

Growing Importance of the Maritime Trade

To appreciate the importance of the South Atlantic's sea lines of communications we must analyze commerce which traverses this ocean. To realize the volume of traffic which normally circulates through the South Atlantic, we should consider that around 27,000 ships pass by the African Cape each year, transporting--among other cargoes--90 percent of the West's petroleum, 70 percent of its minerals, and 25 percent of its food imports.

The United States has a particular interest in this area--it is heavily dependent upon the seaborne import of numerous

strategic minerals and metals for its economy in general and military requirements in particular. *Figure II-4* shows a "Net Import" graph, which lists some of the minerals and metals which the United States must obtain in large quantities and where these necessities are obtained.

This figure assumes specific relevance when one realizes that US goals such as the export of high technology goods and services, domestic energy conservation and substitution, or a strong national defense cannot be achieved without access to strategic materials. Some of these materials are closely related to computer, communication, and space technology (columbium, cesium, and tungsten are examples). Other materials essential to US energy and defense needs for superalloys capable of withstanding high temperatures and stresses are nickel, chromium, cobalt, titanium, and aluminum. Moreover, access to aluminum is basic to the reduction of weight in the transportation sectors and all estimates related to US energy conservation. According to Warren Baker, unprecedented demands for such materials are foreseen until the end of this decade (1989), not only in the United States but throughout the industrial world.

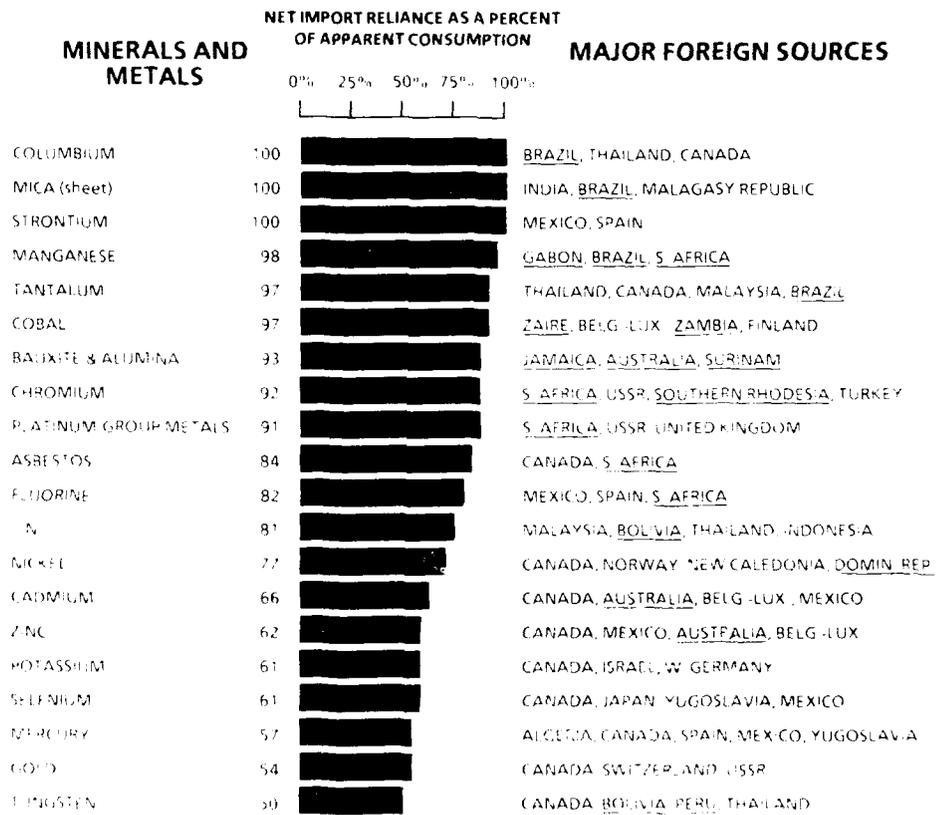
Neither the East nor the West, which generate most of the world demand, have satisfactory reserve deposits of chromium, columbium, rutile, tantalum, and industrial diamonds. Additionally, the United States and its main allies are unusually short of manganese, platinum, and vanadium. Nations of the Warsaw Pact are relatively deficient in bauxite and nickel.

The Bureau of Mines published a report showing how the South Atlantic region (SOLANT) fits into the supply posture in the growing world demand for high technology materials. In a figure contained in *Mineral Commodity Summaries 1981*, the SOLANT is shown as having abundant reserves of many critical raw materials and, in the particular case of eight minerals--bauxite, chromite, cobalt, columbium, industrial diamonds, platinum, rutile, and tantalum--most of the world's reserves. As recently as December 1981, the world's largest reserves of bauxite were found in Brazil (those reserves are projected to last for over 100 years).

This same figure further shows that, for the production of superalloys, the South Atlantic region is a major-to-vital source of bauxite (aluminum), cobalt, chromite, and rutile. Therefore, it will remain an area of great strategic importance in the years ahead.

Figure II-4

Some of the Minerals and Metals which the United States Must Import in Large Quantities



- Import sources correct for the years 1974 through 1977.
- "Net Import Reliance" based on 1978 import data.

Source: Sea Power, October 1980 (emphasis added).

In contrast, the Soviet Union, itself virtually self-sufficient in most strategic raw materials, has been systematically using its excess in minerals for economic and political gain. By this means, the USSR can gain diplomatic and economic leverage with the Third World nations. A 1982 Presearch Incorporated technical report states that the Soviet Union has been concentrating particular attention on the nations of southern Africa and, in some cases, bartering for minerals which it already has in abundance.

This situation is elaborated upon in the CENS/NSIC White Paper, which states that the most likely real-world threat facing the United States is not the nuclear forces of the Soviet Union nor the Warsaw Pact forces facing those of NATO. The real threat would be posed by an ever-increasing number of countries subservient to the Soviet Union, the control of bases facing the United States, dominance of the raw material supply routes, and the potential of terrorism, propaganda, and even military and naval incursion by the Soviet Union or their surrogates against targets which are important to the US economy.

To substantiate this assertion (that the USSR may be waging a resource war against the West), I believe it is sufficient to quote two prominent Soviets: Major General A. N. Lagovskiy and Premier Leonid Brezhnev. General Lagovskiy has said that the US dependency on certain strategic material imports is the "weak link" in the American military capability. As a consequence, he defended a Soviet effort to control such strategic materials as a means of exerting influence on the health of the American economy. Brezhnev noted in 1973 that "the control of Europe's sources of energy and raw materials would reduce it to the condition of a hostage to Moscow."

These thoughts could explain why the USSR is extending its influence into the Third World, particularly in Africa and Latin America. A Soviet-Cuban military presence exists in Angola, Mozambique, and Ethiopia, as well as significant communist influence and/or contingents in Guinea, Guinea Bissau, Libya, Tanzania, Zambia, Congo, Nicaragua, and, until recently, in Grenada.

Effective control of both Angola and Mozambique would give the holders of these territories an excellent position from which to interdict the approaches to the strategic sea lanes which round the Cape of Good Hope. Such an hypothesis becomes more

relevant because the command of the Cape route is tantamount not only to the control of the mineral resources of all the southern Africa region, but also to the control of the West's strategic imports.

Let us now examine the problem from the US point of view. About 19 percent of the total US oil supply depends upon the security of sources and sea lines of communication in the South Atlantic region (SOLANT). Taking US Department of Energy estimates and other factors into account, the South Atlantic region will continue to remain as important to American petroleum interests as it was in 1980.

Figure II-5 graphically illustrates major vulnerabilities in the transport of petroleum to the US from overseas sources. In the Persian Gulf area, the Presearch Incorporated study points out that areas of vulnerability are at the critical choke points of Bab el Mandeb and the Suez Canal, as well as in the eastern Mediterranean. Another area of vulnerability is assumed to be the eastern Caribbean, with oil being delivered by very large crude carriers to either the Louisiana Offshore Oil Port facility or transshipment points there. The equatorial Atlantic constitutes a third area of petroleum vulnerability, as large crude carriers from both the Persian Gulf and western Africa are on "final approach" to Caribbean transshipment points. Moreover, one should also remember the importance of the sea lines of communication in the Gulf of Guinea so long as Nigeria remains one of the major sources of US imports (16 percent) and accounts for a significant share (6 percent) of the total oil supply. In summary, for its oil imports, the United States is expected to depend upon SOLANT sources and sea lines of communication for 19 percent, upon Caribbean sources for another 5 percent, and upon other regions for the remaining 13 percent.

The Soviet Union and its allies too seem to have entered the 1980's with their own share of economic problems that cannot be ameliorated simply by exploiting resources in Siberia. Not much is known about Soviet stockpiles of critical materials because such information is classified as "state secrets," but *Table II-2* suggests likely targets of Soviet opportunity in the South Atlantic.

If we compare these possible targets with the Soviet global power projection presented by the US Department of Defense in *Soviet Military Power--1980*, we will perceive some noticeable material vulnerabilities: the USSR and its allies show pronounced

Figure II-5
South-Atlantic Oil Sea Lines of Communications

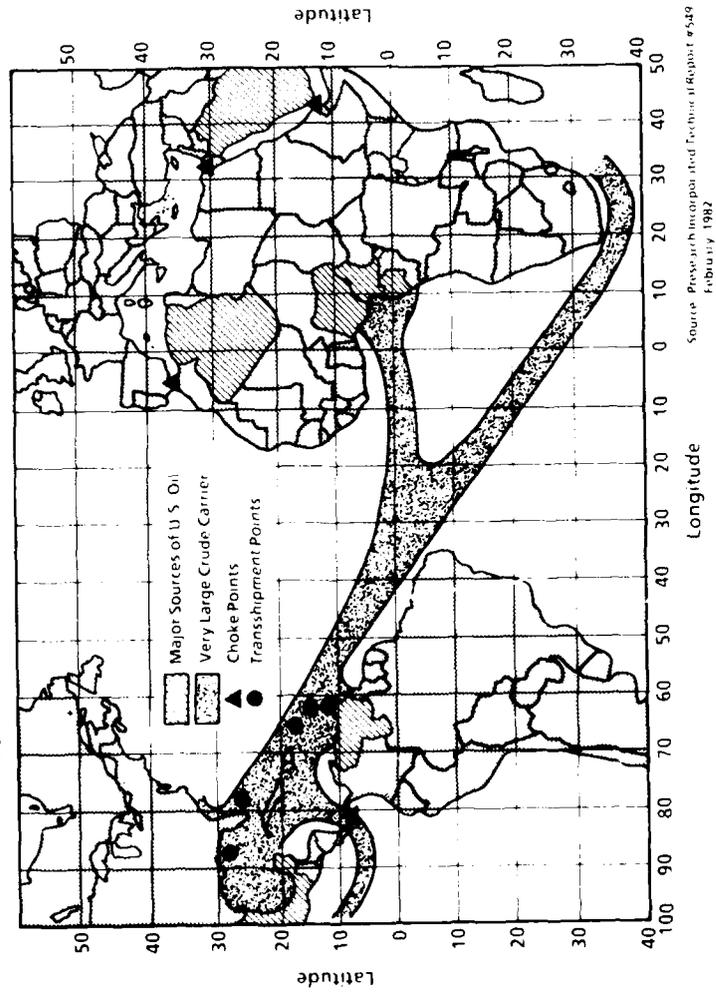


Table II-2

USSR Possible "Targets" in Terms of Resource Opportunities in the Caribbean and South Atlantic Regions

Country	Primary Nonfuel Resources	Percent of World Reserve Base	Access Beneficial to USSR/Allies	Denial Harmful to US/Allies
Guinea	Bauxite	28	Yes	Yes
Nigeria	Columbium Tantalum Tin	1 12 3	Yes Yes Yes	Yes Yes Yes
Zaire	Cobalt Industrial diamonds Tantalum Tin	38 74 61 2	Yes Yes Yes Yes	Yes Yes Yes Yes
South Africa	Chromite Industrial diamonds Manganese Rutile Vanadium	68 7 41 4 49	Yes Yes No Yes No	Yes Yes Yes Yes Yes
Cuba	Nickel	6	Yes	No
Jamaica	Bauxite	9	Yes	Yes
Surinam	Bauxite	2	Yes	Yes
Guyana	Bauxite	3	Yes	Yes
Brazil	Bauxite Columbium Manganese Rutile Tin	11 93 2 75 4	Yes Yes No Yes Yes	Yes Yes Yes Yes Yes

Source: Presearch Incorporated Technical Report # 549, February 1982.

weakness in bauxite (about 25 percent dependent upon import from Guinea), in chromite (6.2 as a ratio of reserve to current production), and industrial diamonds (2.9 as reserve to current production), according to Presearch Incorporated. This would then explain the Soviet efforts toward gaining access to the chromite and industrial diamonds of Zaire and Rhodesia, if not South Africa itself. In terms of South America, the Soviet relationship with Brazil, at present, has been characterized by the absence of confrontations and by expanding trade relations, particularly as a consequence of the USSR self-sufficiency in crude oil production, which compensates for the reduction of Brazil's oil supplies from Iraq and Iran.

Therefore, considering the maritime activity innate to the South Atlantic region associated with the Persian Gulf petroleum routes, and discounting use of the Suez and Panama canals, it seems easy to me to gauge how vital the South Atlantic Ocean is to the rest of the world.

The following are some important observations relating to increasing trade in the SOLANT area from Technical Report #549 of Presearch Incorporated:

- From 1965 to 1976, the tonnage of seaborne goods exported and imported by the countries bordering the South Atlantic Ocean increased by 48 percent. Four of these countries--Brazil, Venezuela, Mauritania, and Nigeria--accounted for 78 percent of the shipborne merchandise, with crude oil and iron ore accounting for the greatest tonnages.
- Brazil itself occupied ninth place among 141 nations in terms of world seaborne trade, ahead of both West Germany and Spain.
- In 1979, about 435 million tons of crude oil were exported by Persian Gulf oil producers to the United States, Canada, and Western Europe. At least 84 percent of this oil was carried by tankers sailing South Atlantic routes (Iraq has not been included in these figures), whereas only 3.5 percent were shipped via the Suez Canal.

The Presearch Incorporated report also concluded the following:

- The SOLANT has become more important in recent years as a source of raw materials. The amount of cargo (tonnages)

natural to the area exceeds that of the Persian Gulf petroleum sea lines of communication.

- The Suez and Panama canals together reduce by 23.8 percent tonnages that, otherwise, would have to pass through the South Atlantic Ocean, largely in the dry cargo category. This means that the closure, for any reason, of either canal would create an immediate shortage of dry cargo, would increase maritime traffic in the South Atlantic Ocean, and would add emphasis to the needs for sea control and defense in this region.
- Over the long term, maritime dependency upon the South Atlantic region itself is bound to increase, especially with oil developments in the Guinea and Angola Basins and a growing demand for raw materials and basic as well as high technology materials produced by western African and eastern South American countries.

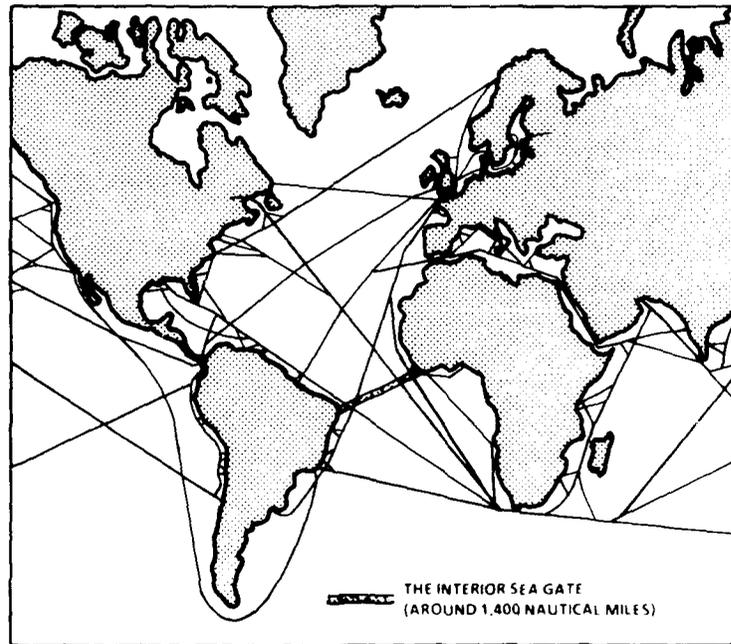
These broad conclusions allow us to grasp the strategic relevancy of the South Atlantic region to the rest of the world. Some scholars have even termed the South Atlantic Ocean the "Sea of Decision."

South Atlantic's Vital Importance To The World

Classification as "the Sea of Decision" is coherent with the concept earlier discussed in relation to the North Atlantic as an "Interior Sea" (should the Panama and Suez canals be closed.) As we have seen, with about 1,400 nautical miles separating the Brazilian east coast and the African west coast, several maritime routes cross through the Atlantic corridor, transporting all sorts of food and raw materials vital to the development of Latin America and essential to the world in general. (See *Figure II-6.*)

Besides this geo-political and strategic importance, the SOLANT recently assumed greater economic significance due to the growing discoveries of petroleum beneath its continental shelf, as well as the discovery of vital minerals in the region, which add to the already recognized enormous reserves of this maritime area. However, such huge potential is, in fact, a generator of tensions: at the same time the superpowers and the large multinational corporations are naturally interested in exploiting these resources, the eastern South American and western African countries, which lack the technological resources for such exploitation, are trying to reserve these riches for themselves by taking their demands and

Figure II-6
Selected World Shipping Lanes



protests to the purview of the Conference on the Rights of the Sea at the United Nations.

The SOLANT has a paramount importance in warfare planning. In the first half of the present century world war exploded twice, and in both of these world wars, the struggle was carried out, in good part, on the sea. For the second half of this century, the potential threat between the communist and the Western blocs seems, to me, to be essentially maritime or transatlantic (assuming conventional warfare and allowing for significant non-maritime efforts). Special attention should be given to the South Atlantic and to the countries which surround it or that depend on it, be they from the Americas or from Africa. For such purpose, to iterate only three aspects is enough:

- Food, raw materials, and goods which are vital to the nations of the Americas and Africa have circulated across the South Atlantic maritime routes in the past and still circulate in the present.
- International maritime commerce on the South Atlantic Ocean is indeed significant because Canada, the United States, Central and South America, the Antarctic, and Europe are touched by the Atlantic Ocean. Furthermore, easy access is gained from the South Atlantic to the Pacific and Indian Oceans, where the largest oil sources and other important world markets are located.
- The access facilities to the resources of this sea are important, as they are conveniently located along an extensive strip of its coastal countries.

Among the nations directly related to the use of the South Atlantic, Brazil assumes a special role. Because of its geography, its natural resources, and the maritime characteristics of its people, Brazil must naturally be party to the formulation of any defense strategies to the region. We shall discuss this in the next chapter.

The South Atlantic's Geography and Brazil

Geo-strategic thought maintains that an area's global location is vitally important. This characteristic causes men or nations to focus their attention, to a lesser or greater degree, on an area because of its location, raw material capacity, or political influence.

Thus, from location and physical attributes--such as form, extension, topography, nature of soil and subsoil, climate, access facilities, coastal extent and configuration, contiguous maritime areas, continental shelf, existence of good harbors, and, last but not least, greater or smaller considerations for men--can we conceive a strategic capacity. From this we see economic activities, such as agriculture, industry, communications, and transport. Then we can see, as a result of these factors, certain areas have, throughout history, tended to be focal points of contention between men or states for domination of those areas. The geographic space occupied by states influence and even condition governmental policies. Likewise, that space and its peculiarities will result in strengthening of relations or conflict with neighbors.

South Atlantic Geography

For the purposes of this study, we shall consider the South Atlantic region to be bounded on four sides:

- On the north - the Tropic of Cancer;
- On the west - the east coast of South America;
- On the south - the north coast of the Antarctic territory;
- On the east - the west coast of Africa.

Such limits define a large oceanic expanse, which covers an interesting submarine platform, encompasses numerous islands, touches the territories of many countries, and is located beneath

strategic air space. Let's quickly review some of these geographic characteristics.

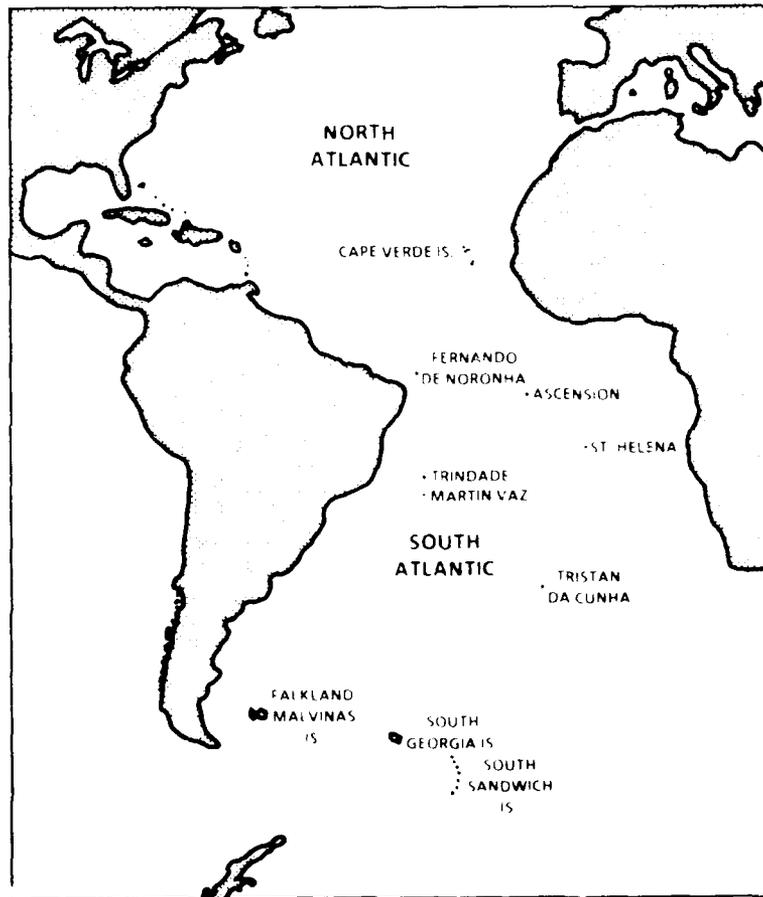
Islands and Countries

Among the islands in the South Atlantic area, that are particularly noteworthy in a geo-political context are the islands of the Cape Verde Archipelago along the Senegal shores; the islands of Fernando de Noronha and Trindade along the Brazilian coast; the British Islands of Tristan da Cunha, Ascension, and Saint-Helen, in the middle of the ocean; and the islands of South-Sandwich, South-Georgia, and Falkland/Malvinas, much further to the south (the latter having been the object of conflict between Argentina and Great Britain). (All these islands are shown in *Figure III-1*.) As we shall see, these islands provide margins for interesting considerations of a strategic and political nature.

Within our established limits of the South Atlantic, Great Britain (with its islands in the center of this area), Brazil (to the west), Antarctica (to the south), as well as the African countries (to the east, southeast, and northeast) and Chile and Argentina (to the southwest) must, naturally, generate special attention in conjunction with the concept of Command of the Sea.

- Chile and Argentina have a dominant position as regards the maritime traffic around the Cape Horn route, traffic which reaches an average number of 10,000 ships per year. This volume would be significantly increased were the Panama Canal to be closed.
- South Africa occupies a prominent geographical position in the SOLANT, not only because of its own natural resources but because of the maritime traffic around the Cape of Good Hope as well, a passage made by approximately 27,000 vessels per year. This traffic would be substantially greater if the Suez Canal were to be closed.
- Other African countries, those east of the area under examination, are important because of their natural resources, particularly oil and strategic minerals. Those countries located in the northeast of the SOLANT as well as the islands of the Cape Verde Archipelago present, in their turn, a paramount strategic significance in the light of the "Interior Sea" theory.

Figure III-1
The South Atlantic Islands



Antarctica, on the other hand, is a region that, although not yet having its internal geographic limits defined and internationally accepted, possesses natural resources which are of interest to the whole world. Moreover, its geographic position--facing the southern part of the South Atlantic Ocean--constricts the passages to the south of both South America and Africa, giving the "white territory" a special relevancy in a strategic perspective.

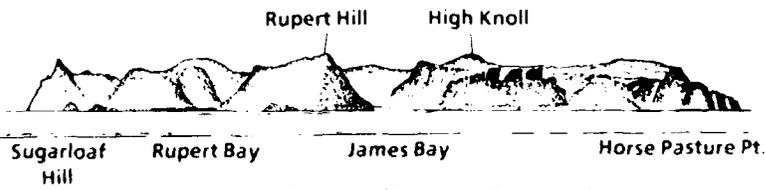
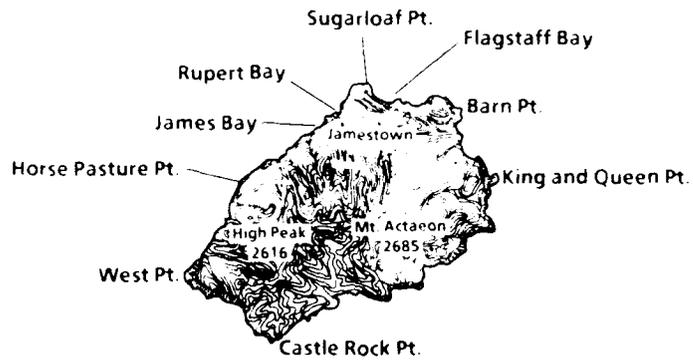
Finally, Great Britain--through the islands of Ascension, Saint-Helen, and Tristan da Cunha--and Brazil--by its vast territory, long shore, and islands of Fernando de Noronha (on the "gate" of the "interior sea") and Trindade--are two countries of the Western World whose geography or possessions places them, in my opinion, in naturally privileged positions in the South Atlantic Ocean.

Here I'd like to concentrate our focus on these British islands, and particularly on the huge and dynamic nation of Brazil. Ascension Island has demonstrated its real strategic utility during the 1982 conflict between Great Britain and Argentina over possession of the Falkland/Malvinas islands. Its anchorages, its runways, and its logistic support base, among other factors, were recognized worldwide as decisive factors in the success of the British war effort.

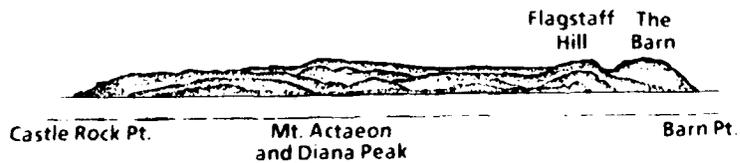
The island of Saint-Helen, also located in the middle of the South Atlantic, is another geographically strategic point in this area. *Figure III-2* shows the Island of Saint-Helen, seen from above and in profile. Because, to a certain extent, this island is almost unknown, I feel it is worthwhile to pay more attention in this study to its characteristics.

According to US Navy documents, the island, which is 9 miles long and 5 miles wide with an area of 47 square miles, is of volcanic origin and extremely rugged. Seaborne landings are considered generally impractical except on the northwest (lee) side of the island. The greatest extent of level ground is in the northeast of the island, more than 1,700 feet above the sea. St. James Bay, Rupert Bay at Jamestown, and other coastal waters surrounding the island are almost continuously subject to heavy swells and rollers. The spring tidal range at Jamestown is 3 feet. The sea approaches to the island and to James Bay and Rupert Bay anchorages are clear and deep. Jamestown, the only port of Saint-Helen, is located on James Bay, a small indentation on the

Figure III-2
Island of St. Helena



View of the Island from off James Bay Anchorage



View with Barn Haystack 307° (true) distant 13 miles

lee side of the island. Wharf facilities at Jamestown consist of one 300-foot concrete wharf with 10 to 12 feet of water alongside. Cargo handling facilities are available. The port area has paved road but no rail facilities. Fresh water is available in limited quantities. Electricity and telephone service are available. Less than one-third of the island's area is suitable for agriculture. Some vegetables, cattle, sheep, and poultry are produced locally. The island does not have a landing strip for conventional airplanes.

As for the Tristan da Cunha Group, its facilities are quite sparse, having neither ports nor landing fields for conventional aircraft.

Fernando de Noronha is a territorial island, managed by a governor appointed by the Brazilian national government. This island has routine commercial connections by air and by sea with the Brazilian mainland. The island affords imminently favorable characteristics for the landing of airplanes, anchorage of ships, warehousing of goods, support infra-structure, and communications, among other factors.

The island of Trindade's port and communications facilities are not particularly well developed at the moment. It is a volcanic island where neither landing strips for conventional airplanes nor ports for mooring ships exist. The island is inhabited by a Brazilian Navy contingent which reports meteorological activities. Access to the island is effected by shipboard based helicopters or by small boats from ships moored offshore.

The building of an airstrip for conventional airplanes on Trindade has been studied recently, but the cost of its construction, estimated around \$300 million, gave it a low priority in view of the financial difficulties which Brazil presently faces.

The South Atlantic and the Importance of Brazil

Because of the importance of Brazil to the area of the South Atlantic, let's look at some characteristics of this country in order to help our thinking.

Brazil covers a total area of 8,500,000 square kilometers (3,320,000 square miles), the world's fifth largest country in land area (larger than the continental United States). Crossed by the equator in the north, Brazil forms a single unbroken, almost triangular land mass. From the extreme north to the extreme

south of the country, as well as from the east to the west, one can travel about 4,300 kilometers. This fact gains special significance if we realize that this is roughly the distance between London and New York or London and Moscow.

On the east, Brazil is fronted by the South Atlantic Ocean, with a coastline of more than 4,800 nautical miles--about 500 miles longer than the total Atlantic and Pacific coastlines of the United States combined.

Brazil shares frontiers with all South American countries except Chile and Ecuador. (Only the Soviet Union and China have more continental neighbors.) All these frontiers were established by peaceful means and, because of that, Brazil has not had any disputes over its borders with its neighbors. Moreover, if we consider the maritime frontiers, Brazil is given at least 20 more neighbors by the African west coast.

Brazil was discovered and colonized by Portugal. While Spanish colonies had to fight strenuously for their independence, Brazil, under the Portuguese Crown, was cemented peacefully into a single political unit. This peaceful beginning has had a meaningful influence over Brazil's foreign policy, whose guidelines follow:

- people's self-determination;
- no intervention in other countries' internal affairs;
- condemnation of threats or use of force as means to settle international disputes; and
- respect for international agreements.

Another characteristic which must be considered when one studies Brazil is the cultural unity of the nation which exists despite the disparate blend of races--blacks, whites, Indians, and orientals--and cultural, spiritual, linguistic, and religious traditions that were brought to the area. Brazil has a current population of nearly 132 million people, which is growing at a rate of 2.5 percent per year. At the present, 42 percent of all Brazilians are under the age of 15 and about 70 percent are under the age of 30, giving the nation one of the world's youngest populations. In 1960, Brazil had about 60 million inhabitants, yet by 1980 this population was nearly 120 million people. This 100 percent population growth in 20 years had important effects upon the country's infra-structure. In essence a new Brazil, as a whole, has been constructed in a two-decade period.

Economically, Brazil is emerging as one of the most modern and highly industrialized countries in the Third World. Although per capita income is still relatively low, the nation's industrial prowess has placed Brazil in eighth place in terms of world GNP. Examples of these industrial activities are

- motor vehicle manufacturing (1 million units in 1984);
- steel production (25 million tons per year is the near term goal);
- space technology (Brazil launched its first communications satellite on February 8, 1985 which was completely designed by Brazilians);
- shipbuilding, aircraft production, petro-chemicals, heavy mechanical engineering, along with other traditional industries (textiles, shoe manufacture, food stuffs, etc.); and
- the weapons' industries (becoming increasingly important - expectations of sales were about 2.5 billion dollars, per year, by the end of 1985).

No single industrial field exists in which Brazil has not developed its own internal production.

As this industrial growth was taking place, the government put forth powerful effort toward enlarging the economic base, particularly in the energy sector. This program led the government to borrow money on the international market at unfavorable interest rates and debt service conditions (an increase of 0.5 percent in interest rates increases Brazil's debt service by approximately 800 million dollars).

This feverish rate of industrialization gave birth as well to new social and economic problems. Distortions inherited from its colonial past became more accentuated. Agricultural growth lagged behind that of the industrial sector and the government was compelled to invest substantial amounts of money to develop this primary sector. Moreover, the industrialization process was limited, in large measure, to the Central-South region of the country.

Thus, Brazil found itself with new problems, which were in part created by the Brazilians themselves; unfavorable external conditions have contributed to exacerbating them. Nevertheless, Brazil has all the necessary assets to continue its drive toward a

more prominent role in world affairs. Its present economic difficulties do not seem to be irreversible nor able to staunch the industrializing trend that Brazil has been experiencing for the last few decades.

The following geo-political characteristics, which will enable the reader to understand some of this nation's attitudes in its relations with the other countries of the world are necessary to bear in mind: Brazil is a developing country, Christian, multi-racial, demographically young, Western in philosophy, Latin American in culture, and maritime.

Dependency On Sea Lines Of Communication

From colonial times to the present, the presence of the Atlantic has been a significant factor in Brazil's foreign commerce. Even today, around 98 percent of all commercial exchanges effected by Brazil depend on the sea.

In the present stage of Brazilian development, Brazil's maritime area of interest cannot be limited only to the seas close to its coast. The increase of the Brazilian merchant fleet, and the consequent expansion of the national lines of seaborne trade, the aggressive export policy of freights, the need to import (particularly petroleum), and movement abroad of Brazilian capital all serve to highlight Brazil's increasing involvement in oceanic matters.

The considerable increase of the national merchant tonnage causes, every day, a greater presence of Brazilian merchant ships on the seaborne import and export routes. Through the South Atlantic's maritime routes, in 1980, came about 98 percent of Brazilian external commerce and 83 percent of the petroleum used in the country. Therefore, the maintenance of such routes in a period of crisis or war is in the direct national interest of Brazil.

Let's examine what the main routes are in the South Atlantic, on which the Brazilian economy depends:

A. South African oceanic route (Rio de Janeiro-Santos-Victoria areas to the southern tip of Africa, East Africa, and the Orient)--the main route for the importation of petroleum (Persian Gulf) and which has proven to be an important route for manufactured goods exportation.

B. Central African oceanic route (Rio de Janeiro-Santos-Victoria and the Gulf of Guinea)--a primary route for petroleum imports (coming from Nigeria particularly) and which is becoming more and more important for the exportation of manufactured goods to the coastal Central African states, including Angola.

C. European oceanic route (the Brazilian North/East Salient and the Dakar/Cape Verde area)--transports the most varied cargoes, it is becoming the fourth route of petroleum importation (coming from the Mediterranean).

D. Coastal route (the Plata River and Trindade)--in tonnage carried, it is the second most important route for petroleum importation; other mixed cargoes also move along this route.

Figure III-3 illustrates these primary maritime trade routes.

Just to give you a broad idea of these routes' importance, the following statistics for 1983 are presented as an example:

- **Route A** was the source of 85 percent of the petroleum imported by Brazil and the path for 31 percent of its exports to the Middle and Far East.
- **Route B** carried 5 percent of Brazil's petroleum imports from Africa.
- **Route C** carried 43 percent of the country's exports to Europe.
- **Route D** carried approximately one-half of Brazil's exports which pass from the South Atlantic to trading partners which border the North Atlantic.

At the present, the general external commerce figures are almost the same with the exception of petroleum. Brazil is already producing about 50 percent (about 500,000 barrels per day) of the petroleum it consumes. Route A now only carries about 37 percent of all the oil imported. With its north coast adjacent to NATO's southern flank, Brazil's maritime commerce remains vulnerable during any conflict in the Atlantic, either in the North or in the South.

Figure III-4 shows the daily average number of ships on the main routes of Brazilian commerce in November 1983. (These figures refer to ships of about 1,000 tons of displacement and only consider the maritime traffic from and to Brazil.) According to the statistics of the Command of the Control of Maritime Traffic of the

Figure III-3
Trade Routes of Brazilian Interest

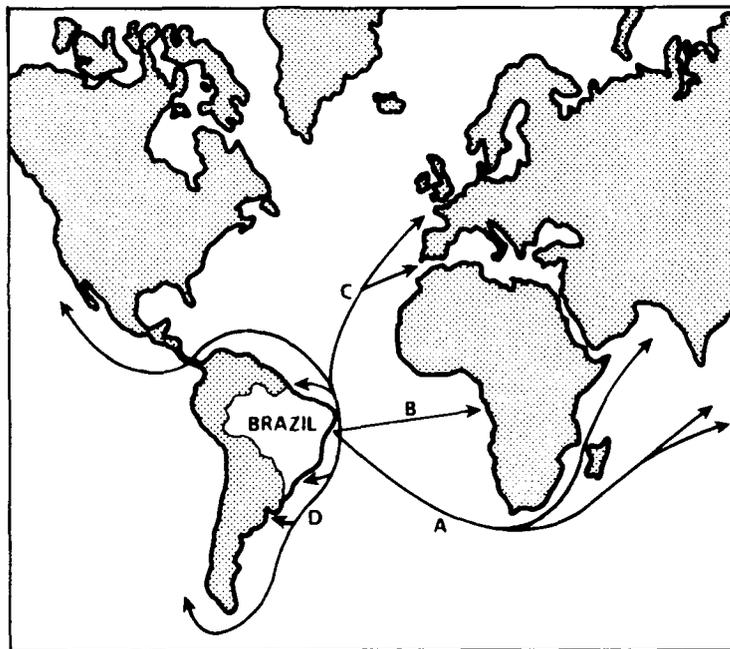
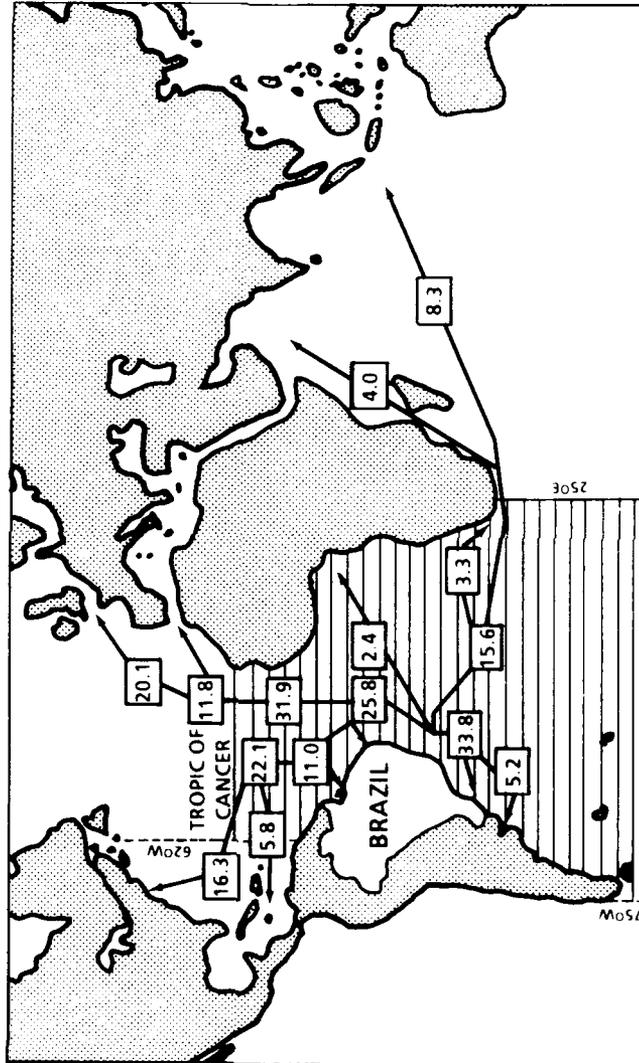


Figure III-4
 Brazilian Commerce Main Routes
 (Daily Average of Ships)



SOURCE: BRAZILIAN NAVY COMCONTRAM, NOVEMBER, 1983.

Brazilian Navy, in November 1983, 33,107 ships passed through the South Atlantic Ocean.

Brazil At A World Commerce Choke Point

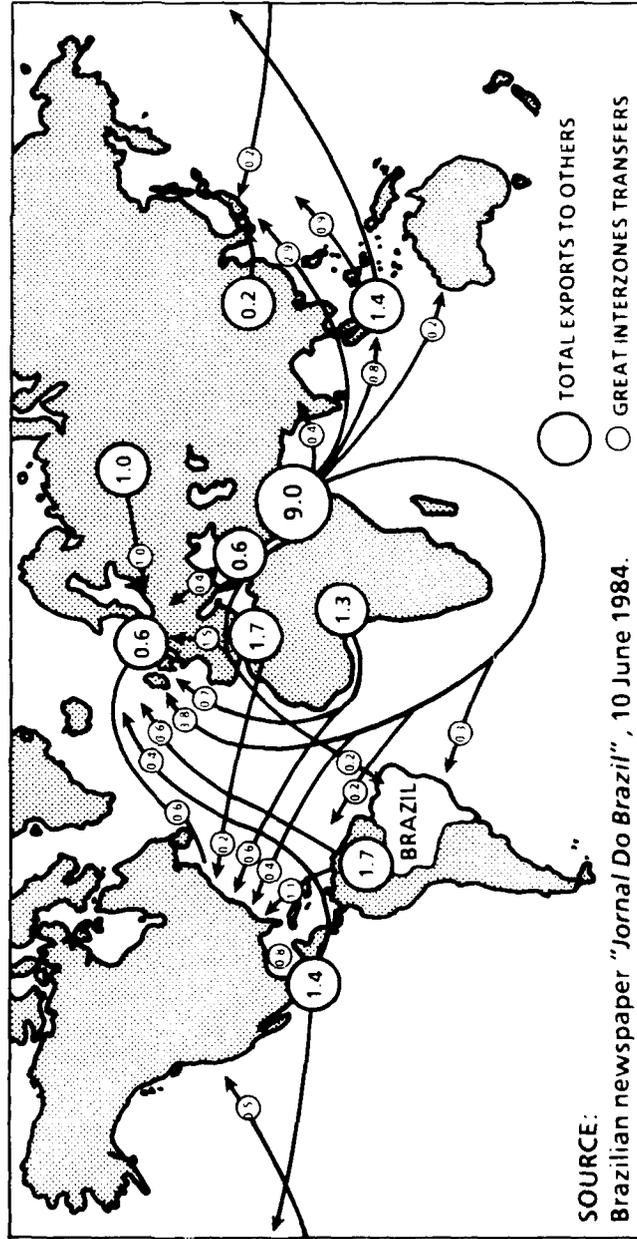
The importance of the Atlantic sea lines of communication may be shown by reviewing world distribution of petroleum. Current petroleum demand is approximately 43 million, 500 thousand barrels per day. Of this amount, 20 million barrels per day come from the Persian Gulf. *Figure III-5* shows the petroleum and by-products' shipments in 1983; the circled numbers represent millions of barrels per day.

According to some US Maritime Administration statistics, in 1965 liner cargo moving in the North Atlantic trade totaled 4.751 million long tons; by 1970, this trade was 5.584 million long tons; 1975 totaled 5.053 million long tons; by 1980, 5.668 million long tons. These trades are considered "highly developed," meaning that a substantial percentage of the tonnage is high-value cargo in terms of US dollars.

Foreign trade is of great and growing significance to virtually all sectors of the multi-faceted US economy. The leading liner exports included wood, lumber, and cork, synthetic resins, road vehicles and parts, tobacco and tobacco products, general industrial machinery and equipment, machinery for specialized industries, fruit and vegetables, organic chemicals, meat and meat preparations, and paper. The leading liner imports were alcoholic and non-alcoholic beverages, road vehicles and parts, iron and steel, organic chemicals, nonmetallic minerals, inorganic chemicals, machinery for specialized industries, nonferrous metals, coffee, cocoa, tea, and spices, and metal manufactures.

Although most of the high-value US liner cargo moves on the trans-Pacific and Northern European routes (as opposed to the less developed trades to and from Central America, South America, and Africa), those lesser developed areas are sources for materials which are critical to the US economy and national defense. Significantly, according to Tony Beargie, Central America, South America, and Africa accounted for about 60 percent of US tanker imports (mostly petroleum and petroleum products). In 1981, such imports from Central and South America totaled a hefty 92.3 million tons; from Africa, 80.1 million tons; from the Middle East, 66.9 million tons; and from Europe, 31.3 million tons. Tanker

Figure III-5
 Petroleum and By-Products Transfer in 1983



The less of 200 thousand barrels/day transfers have not been considered in the figure above

imports of US Atlantic ports totaled 109 million tons in 1981, and at Pacific coast ports 17 million tons.

The real importance of the South Atlantic region in general, and of Brazil in particular, to the health of the world's economy can still be stressed on the basis of a figure that was already shown (*Figure II-4*).

The importance of the South Atlantic region in the supply of strategic materials such as columbium, mica (sheet), manganese, tantalum, cobalt, chromium, platinum group metals, asbestos, fluorine, tin (the exports from Bolivia normally take place through export corridors within Brazilian territory), and tungsten is readily apparent.

In the particular case of Brazil, *Tables III-1 and III-2* show the variety of products exported by that country. This, therefore, allows us to state that Brazil, together with the other countries of South America and with those on the African west coast are, indeed, an important source of goods and materials for all areas of the globe.

These resources' shipments illustrate the importance of western Africa and eastern South America (especially Brazil) as focal points of world commerce. Because of this, we can see that a great need for a "Command of the Sea" presence in the South Atlantic ocean exists.

Brazilian Interests in the Antarctic

In September 1983, Brazil was elected as a consulting member to the Antarctic Treaty. This international decision recognized the interests of Brazil, as that country has the longest coast facing the Antarctic, but which, until then, was excluded from decisions relating to the Antarctic and its South Atlantic environs. However, as previously mentioned, the critical year will be 1991, when new international negotiations will take place for the purpose of trying to solve the different territorial claims on the Antarctic continent.

In order to assure its full effectiveness in the decision making process associated with the Treaty of the Antarctic, Brazil has developed an Antarctica Program (PROANTAR), which was formulated on the basis of general directives from the Brazilian National Policy for Antarctica Matters (POLANTAR). January 5,

Table III-1

**Brazilian Exports by Types
of Merchandise
(1982)**

Item	1981 (in US \$ Millions FOB)
Coffee	1,761
Sugar	1,062
Iron Ore	1,748
Soybean	2,136
Footwear	586
Boilers	1,546
Machines	560
Transportation Equipment	2,076
Manufactured Steel Products	801
Orange Juice	659
Sundry	10,358
Total	23,293

Source: Central Bank of Brazil, 1982.

Table III-2

Brazilian Exports by Bloc
of Countries

Country	1981 (US \$ Million FOB)	%
USA and Puerto Rico	4,111.4	17.6
Spain	372.4	1.6
Canada	289.4	1.2
European Free Trade Association	538.5	2.3
Portugal	103.6	0.4
Latin American Association for Integration	4,208.9	18.1
Argentina	880.2	3.8
Mexico	643.5	2.8
Chile	640.5	2.7
Paraguay	449.6	1.9
Council for Mutual Economic Assistance	1,698.8	7.3
Soviet Union	621.4	2.7
Poland	506.5	2.1
European Economic Community	5,932.9	25.5
Netherlands	1,470.0	6.3
Federal Republic of Germany	1,316.7	5.6
Italy	961.3	4.1
France	851.3	3.7
United Kingdom	734.9	3.2
Middle East	1,249.7	5.4
Iraq	298.4	1.3
Africa	1,705.3	7.3
Nigeria	770.2	3.3
Asia (except M.E.) & Oceania	2,419.5	10.4
Japan	1,219.7	5.2
Rest of World	765.8	3.3
Total	23,293.0	100.0

Source: Central Bank of Brazil, 1982

1983 marks the arrival of the first Brazilian expedition to the Antarctic continent. Since that day, the Brazilian oceanographic ships BARAO DE TEFFE and PROFESSOR W. BESNARD have made other visits to the region, in support of research projects. Presently, Brazil tries to maintain the continuity of its Antarctica Program through the adoption of several measures. Among them are the construction of the Antarctica Support Station, at the Foundation of the University of Rio Grande in the Brazilian state of Rio Grande do Sul, and the beginning of negotiations for construction of a polar research ship. The BARAO DE TEFFE, of the Brazilian Navy, and the PROFESSOR W. BESNARD, of private ownership, were constructed to withstand the stresses of the Polar region. The POLANTAR's charter is based on confirmation of the Brazilian national interest on the Antarctic continent. Its purpose is to assure Brazil of benefits that might result from the exploration of the area on equal conditions with other countries. Moreover, my understanding is that this posture would also guard against possible threats that may occur against South American interests in that region.

Brazilian interests in the Antarctic lie, basically, in the scientific, economic, political, and strategic fields. Scientific interest is justified by the exceptional conditions offered by the Antarctic region for the accomplishment of certain research and, mainly, by the atmospheric and glaciologic phenomena that can affect Brazil. Brazil's economic interest is derived from two factors: the possibility that Brazil will benefit from the use of the natural resources of the region, and the need for a full knowledge of the physical and biological phenomena that occur in Antarctica (these phenomena influence the climatic, oceanographic, and maritime fauna conditions in the Southern Hemisphere). When political interest in Antarctica reached a position of importance in the Latin American environment, Brazil could no longer remain aloof from the determination of the destiny of the Antarctic. Indeed, Brazil needs to solidify its presence in the area. Additionally, the growing interest of the international community in the Antarctic, which will naturally generate conflict among states and possibly with international law, would by itself justify the need for Brazilian participation in the determination of policies dealing with the future of this austral continent.

Among the factors conditioning Brazilian strategic interest in Antarctica, the following ideas are given as review:

- the greater part of the Brazilian coastline is oriented to the South, i.e. the Antarctic area;
- the inclusion of part of the Antarctic in the security zone established by the Inter-American Treaty of Reciprocal Assistance (ITRA) raises the possibility of assigning to Brazil partial responsibility for the region's security;
- the region is important because of its proximity to the routes around the Capes.

Also true is that in the last 25 years Antarctica has provided the stage for collaborative efforts among the important nations of the world, a factor coinciding with Brazilian external policy. There, the scientific spirit transcends xenophobia and greed, thus creating a constructive climate for cooperation and mutual understanding. All of this occurs according to the Treaty of Antarctica protocols which emphatically excludes the use of the continent for military purposes. However, the growing strategic value of Antarctica may stir up human conflicts in the sense that the guarantees for the peaceful use of that region might not be respected. If this becomes the case, Antarctica may eventually have bases installed to support air and naval operations on the South Atlantic, as well as becoming an area for satellite tracking, for communications facilities, for sonar listening stations, and for radiogoniometry operations; all will support the control and command of the vital maritime and air routes which can be projected from this continent. I feel, therefore, that the Brazilian Antarctic Program will naturally reinforce Brazil's rights, in accordance with its posture as a great power, to always participate in the decisions on the South Atlantic area as a whole. One should understand that Brazil, as a country that already owns the largest coastal extension of the South Atlantic (and which hopes to occupy a prominent position among the nations of the world), will need to be able to defend its interests, mainly through its maritime power, at least in the whole area of the South Atlantic on which the security of its territory depends. In other words, Brazil needs to have adequate means to reinforce its potential natural maritime importance and to allow it to have effective authority over and responsibility for the South Atlantic Ocean whenever it becomes necessary.

Brazilian Importance in a South Atlantic Command

From Mahan's writings, we learn that among the conditions affecting maritime power are the following:

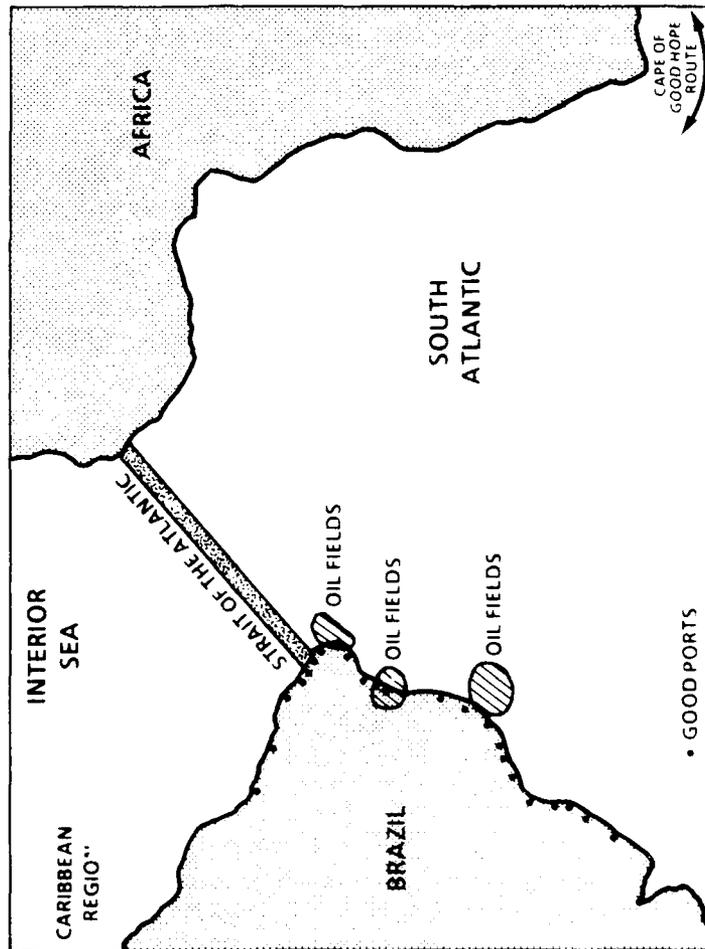
- Geographic position
- Coastal configuration
- Territorial extension
- Numerical strength of maritime population
- National character
- Governmental character and policies

All of these conditions Brazil has in plenty! On the other hand, we have already seen that naval forces and activity have to be formulated in light of achieving the particular objective of "Command of the Sea." At present, a "control of maritime area" concept is being adopted; that is, domination, for a limited time, of a certain area of the sea--control with sufficient time to allow the given objectives to be obtained. In the area between South America and Africa, especially where the distance is at its least (1,620 nautical miles between Natal, Brazil, and Dakar, Senegal), the need for command of this maritime area becomes obvious. Presumably, conflict in this area will be conducted predominantly with air and naval actions.

The strategic importance of the northeastern Brazilian salient in terms of command of the South Atlantic "gate" becomes obvious. Moreover, other reasons justify emphasizing the strategic value of the Brazilian northeast region (*see Figure III-6*):

- This region, by presenting a notable extension of the land mass (to the area where the Calcanhar lighthouse is located), abuts the obligatory passage for navigators traveling between the South and North Atlantic Oceans.
- Despite the excellent highway system in existence on the northeastern region of Brazil, a large portion of exported or imported goods depend on maritime transportation.
- The coastal route, Santos-Brazilian-Northeastern salient, which is heavily utilized, branches away from the salient toward Europe and toward Central America, the north of Brazil, and North America. (These routes and their traffic densities have previously been noted.)
- The continental shelf of the Brazilian northeast has shown to be promising for petroleum exploration. Oil fields already exist at the Libarana, Agulha, Xareu, Curima, Espada, and Atum drilling sites, all located in the area in focus. Also important to observe is that the oil drilling and production equipment, as well as the support structures which exist there, assume relevant strategic importance in the eventuality of conflict.

Figure III-6
Importance of the Brazilian Coastal Line



- As we have already seen, important maritime trade routes pass through the "sea gate" or the "Strait of the Atlantic" enroute to the Persian Gulf and the Far East and to North, Central, and South America and to Europe.
- The proximity of Brazil to the western coast of the African continent and the Caribbean region provides Brazil with the capability of being a major originating and transshipment point for the Atlantic region as a whole (see *Figure III-7*).
- A large number of operating ports and aerial installations are along the Brazilian coast. These facilities could provide appropriate bases to support any air-naval action which may become necessary to defend the movement of shipping through the "sea gate." *Figure III-8* illustrates this fact by allowing us also to have an idea of the relatively small distances among the Brazilian ports. There we can see the following ports:
 - Itaqui (excellent natural harbor)
 - Luis Correia
 - Fortaleza (a port which has recently been considerably improved)
 - Natal (excellent strategic location)
 - Cabedeio (now receiving considerable improvements in its operational characteristics, among them the deepening of its channel)
 - Recife (a traditional port and the best equipped of the area)
 - Suape (in construction)
 - Maceio (appreciable modernization over the past few years)
 - Salvador (a traditional port, with a very good harbor and satisfactory facilities)
 - Ilheus

Still, more excellent ports exist in the southern half of Brazil. My concept of "Command of the South Atlantic," as emanating from Brazilian territory, must take into consideration the Archipelago of Fernando de Noronha. Besides being located along trade routes, Fernando de Noronha offers very favorable positioning from a strategic-military point of view. This strategic importance can equally be attributed to the Island of Trindade, which is another possible point for supporting military operations in the South Atlantic.

Figure III-7
Brazil as a Springboard to Commerce in the Atlantic

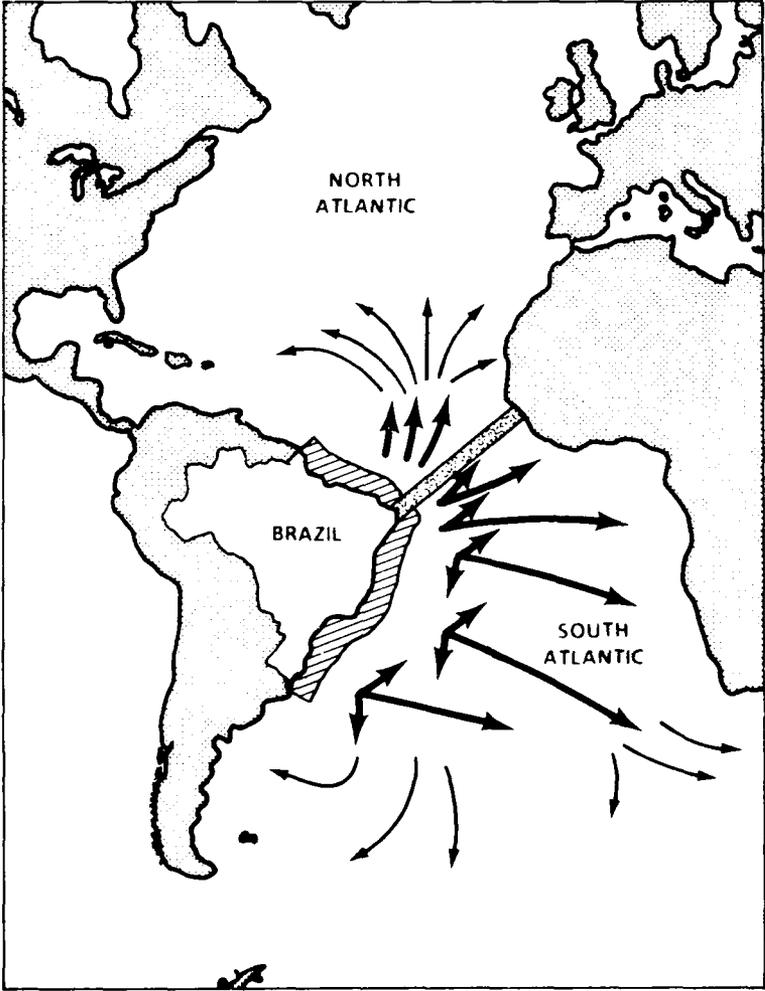
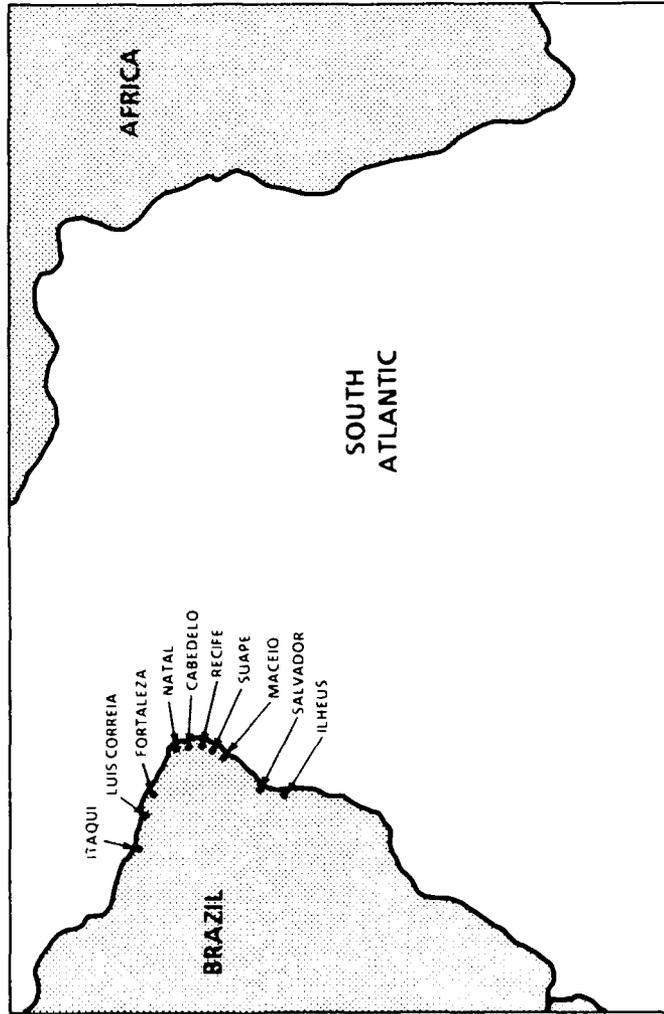


Figure III-8
Ports on Brazil's NE Region



As we have seen, Brazil, with its immense coastal area, is the only nation with maritime borders facing two segments of the Atlantic Ocean. Besides this characteristic which has, of itself, important strategic significance, the Brazilian northeast salient provides a "spring-board" to the African continent and also facilitates close control of the Island of Fernando de Noronha, situated 350 kilometers off the Brazilian coast in proximity to the crossing points of the maritime routes connecting the Cape of Good Hope to the Americas as well as to the Mediterranean and to Europe.

These factors place Brazil in an ideal geographical position to exert or decisively influence Command of the Sea in the South Atlantic. This, in fact, became clear during the Falkland/Malvinas war, when Great Britain had all its operations concentrated on Ascension Island, the only support they had in the whole area. Any operations in the South Atlantic without Brazilian concurrence could be difficult and vulnerable to interdiction.

However, if we consider that the external security of a nation which hopes to become a World Power cannot be restricted only to the defense of its territory, we will have to include in it the capacity of defense of its interests abroad, even when that nation does not have any expansionist concerns nor desires any conflict with other people, as is the case of Brazil.

These ideas allow us to conclude that a nation that cannot or would not have leaders with the capacity to conceive and implement its external security according to these concepts, will not have nor will hope to have the status of World Power.

Brazilian Security and the Defense of the South Atlantic

At this point in our study, we should be fully aware of the importance of the South Atlantic area to world trade. The tranquility of its use as a sea line of communication is an indispensable condition for the viability of the economic order of the nations whose goods traverse that ocean, among them Brazil. The security of Brazil therefore is intimately connected to the free use of the South Atlantic or a South Atlantic controlled by Brazil or a friendly power or alliance.

An Overview of Brazilian Security

In the case of Brazil--a country that occupies the most prominent strategic position on the South Atlantic Ocean and which is growing in strategic importance on the world scene--its concept of external security is indisputably and predominantly dependent on its concept of security of the sea. Thus, we should consider the security of Brazil on the sea from two basic focal points: first, security within the territorial sea area (200 nautical miles, in the Brazilian case); second, on external security, on all the other oceanic areas where threats to the national territory may come or where Brazilian interests need to be defended.

In any case, in terms of security, the Brazilian concerns in the Atlantic will always be influenced both by the neighboring countries of the Americas as well as by those of Africa, and quite naturally by the Antarctic. The result is that Brazil must be considered as having a natural interest in the political and economic situations in Sub-Saharan Western Africa and, at least, the shore line of Antarctica opposite the South American continent. In other words, the meaning of the word *regional*, as used here, will encompass the countries bordering Brazil, the South Atlantic Ocean, the coastal states of western Africa, as well as the Atlantic periphery of Antarctica. North of the South

Atlantic region, the "strait" between the Brazilian northeast and the African extreme west, placed as it is very close to the southern limit of NATO, justifies my choice of the Tropic of Cancer as a limit to this region.

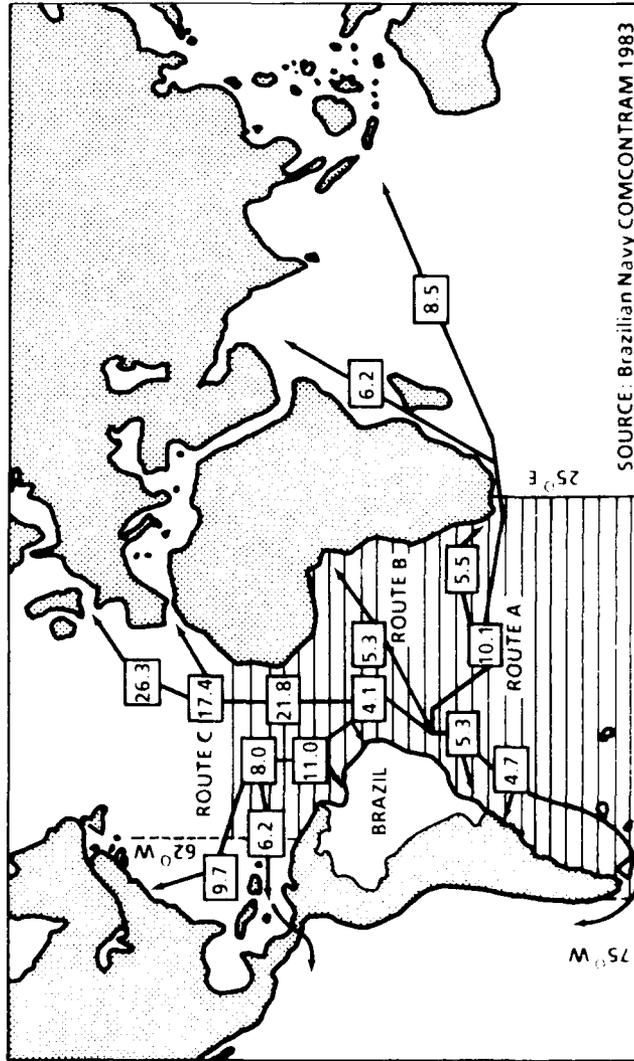
This definition of area of interest serves to emphasize the attention that this ocean should always deserve, particularly on the part of Brazil. Although Brazil does not have any expansionist plans, a clear and natural imperative for Brazil is to be able to always have free access to "its" sea. This is mandatory for the purpose of the survival of its economic and material progress. Brazil's dependence on maritime transportation and on maritime resources allows us to affirm that all studies related to the South Atlantic are of vital interest to Brazil, particularly those studies related to the control and, obviously, to the defense of that ocean. In this particular case, if other reasons were not enough, the great strategic advantages of Brazil's geographic positioning would be enough to insist that whatever the conclusions of these studies, Brazilian interests will always necessarily have to be considered.

In the economic field Brazil cannot remain aloof from Antarctic involvement. Although the present and the most immediate future concerns with that region are related to the economic field, the future perhaps assigns a strategic role to the Antarctic continent. Such an hypothesis, in its turn, serves to reinforce economic interest in that area.

In terms of commerce, for example, *Figure IV-1* reflects the daily average of the Brazilian maritime traffic in 1983. As shown on this figure, Brazilian maritime traffic covers practically the whole world. Thus, the Brazilian exports by sea in 1980 were of the order of 102 million tons. The imports reached, in the same year, the figure of 70 million tons, of which 70 percent were of bulk liquid, 25 percent of solid bulk, and 5 percent of general cargo. Coastal navigation reached in 1980 the value of 24.7 million tons (67 percent liquid bulk, 27 percent solid bulk, and 6 percent general cargo), which was around one-tenth of the internal transportation of the country and one-seventh of the Brazilian road transportation in that same year. As can be seen, routes A, B, and C were in 1979, on the average, the following:

- on route A, 85 percent of Brazilian imports of oil and 31 percent of total Brazilian exports;

Figure IV-1
Main Brazilian Maritime Routes of Commerce
(Daily Average)



Ships of less than 1,000 tons (DWT) displacement have not been considered.

- on route B, 5 ships per day and 5 percent of the Brazilian importation of petroleum; and
- on route C, 43 percent of the total Brazilian exports.

In addition, the external component of this Brazilian maritime commerce grows every year and such a growth is, as we have seen, essential for Brazilian economic growth. On the other hand, this fact reveals the vulnerability of the Brazilian economy to a weak naval presence in its primary areas of trade.

Also, these three routes, A, B, and C, pass coastal areas that are currently or potentially politically unstable. Therefore, the hypothesis that safety of passage along these routes may be challenged should not be dismissed.

Therefore, Brazil can not and should not relieve itself from the responsibility for the protection of its sea lines of communication, particularly within the strategic South Atlantic.

But what is the situation of Brazil regarding its external security?

The Real and the Ideal

Strictly from the military standpoint, and considering existing forces and the threats they could present, in my opinion we can discard a military threat to Brazil by the West African countries themselves, as they are not currently or potentially hostile to Brazil. In addition to the excellent political relationships between Brazil and the West African countries, I believe that such nations do not have the national frame of mind to effectively exercise military power externally. Even South Africa, who is very well positioned in regard to the critical maritime area around the southern tip of Africa, utilizes relatively few resources for offensive air-naval actions; its most acute problem, to me, has to do with its territorial borders and internal security.

In regard to a hypothetical military threat from South America, nations like Argentina, Chile, Peru, and Venezuela, for example, possess very professional, capable, and well-structured navies, which give them important influence in regional relationships and in matters pertaining to the South Atlantic and Antarctica. In any case, however, the relationship between Brazil and all South American countries has been one of understanding and excellent

friendship; thus, no reason leads me to consider a situation of conflict with these countries.

These considerations then indicate that Brazil's greatest potential threat lies in the SOLANT. Obviously, general war between the Western and the communist worlds becomes emphasized in this scenario. In such a case, for example, the Soviet Union could effectively use facilities on the African continent in order to take action against South Atlantic maritime and naval activity. On the other hand, if we consider the reverse--that is, the possibility that Western forces are to be supported from that continent--we will naturally examine the problem of the relationship between the security of Brazilian interests and SOLANT's possible support positions under the ideal perspective of its use by allied forces. Among these locations, as can be seen in *Figure IV-2*, are the South Atlantic Islands. Obviously, Ascension Island's situation is of fundamental interest to Brazil; it is directly related to the security of the Brazilian maritime interests. Ascension is important for the control of the Brazil-Gulf of Guinea-Angola route, in addition to having equal importance in the control of the petroleum routes from the Middle East to Europe and to the United States. Maritime surveillance aircraft operating from Ascension bases would therefore be a very powerful element in the control of the South Atlantic Ocean, as was proven during the Falkland/Malvinas war

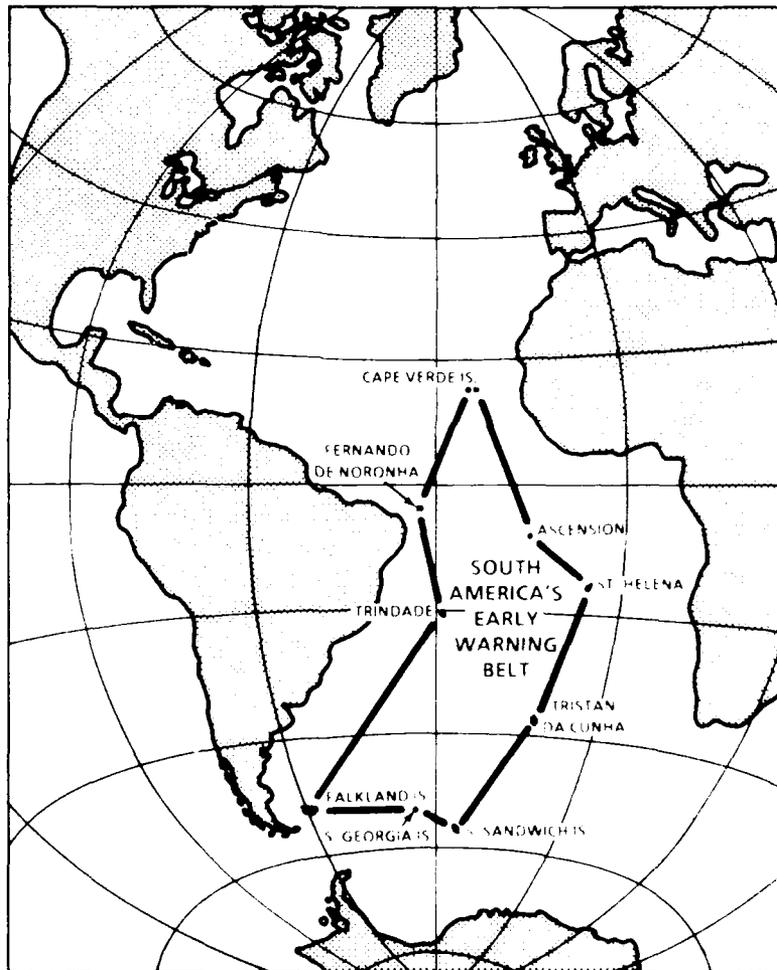
Saint-Helen and Tristan da Cunha are geographically very well placed for the support and protection of routes that link the Cape of Good Hope to the North Atlantic and to the Rio de Janeiro-Rio Grande region respectively. They will be very useful for control and defense of the South Atlantic, particularly so if landing strips are built. These islands could be used as bases for the installation of sensors (radars, hydrophones/sonars, radiogoniometers, communication stations, etc.), and for the installation of resupply facilities for ships, submarines, and airplanes.

The South Sandwich, South Georgia, and Falkland/Malvinas Islands compose a forward, off-shore advanced, line of defense in regard to the South American and, of course, Brazilian coast. Strategically speaking, they are part of a "belt" that could be configured to support actions of command-of-the-sea as well as early warning bases for any type of threat moving through the South Atlantic to the South American continent in general and to the Brazilian coast in particular (*Figure IV-3*). Thus, it seems quite clear that these islands are, in themselves, territories that, from

Figure IV-2
The South-Atlantic Islands



Figure IV-3
South America's "Protection Belt"



the standpoint of Brazilian defense strategy, can be considered quite important.

To the same extent, I believe that a presence on the Antarctic territory might be among Brazilian concerns should the need arise to defend its interest from bases in that region.

However, this ideal defense reasoning would involve problems of sovereignty with some of the mentioned territories. Ascension Island, for example, one of a chain of submerged mountains that separate the eastern and western South Atlantic, would provide Brazil with a prime geographical location from which to project sea and air power in support of its interests. To pose the hypothesis of Brazilian participation in the use of that island's facilities is quite possible. Saint-Helen and Tristan da Cunha are located slightly on the eastern hand of the Atlantic, which, at least geographically, provides Africa better claim to territorial title of those islands than Brazil. However, negotiations to obtain consent for the use of these two islands, whenever necessary, by Brazilian forces would be, in my view, equally desirable from the ideal strategic standpoint.

The South Sandwich, South Georgia, and Falkland/Malvinas Islands might, in the opinion of some, be transferred to the control of Brazil as an intermediate solution while litigation between Argentina and Great Britain is in progress. However, although an interesting idea to me from a strategic view, recognition is mandatory that such an hypothesis would deviate from the principles defended by Brazilian foreign policy, which, in fact, recognizes the Argentine rights over the Falkland/Malvinas Islands.

In regard to Antarctica, the official Brazilian position is already internationally defined and firm, and no formal surprise is to be expected.

Focusing our analysis on Africa, I reemphasize the importance of some other sites: the Cape Verdes, Dakar, and Bissau for the control of the perimeter of the northwest African salient; San Tome/Principe and Lagos for the control of the Gulf of Guinea; and Luanda and Lobito for the control of the perimeter off the southwest of Africa. In the Union of South Africa, Simonstown and Cape Town are sites of strategic importance for control of the Cape route, but the Union of South Africa is undergoing such serious internal political problems that considering the hypothesis

of their use by allied forces would be difficult. Besides, the southern tip of Africa does not seem to me to deserve all of the importance that it usually is given. If we accept that such importance is a result, in particular, of the traffic of petroleum from the Middle East, we will, logically, admit that since the source of this traffic can be easily under the reach of the Soviet power this source could be drastically reduced in case of war. Moreover, since the southern tip of Africa is very far from the metropolitan Soviet bases, that the Soviet submarines would be used in the South Atlantic seems to be much more reasonable, fundamentally in less distant areas, which would include areas such as those of the Cape Verde/Dakar, the Brazilian northeast, and the proximity focal areas in the North Atlantic. Such an hypothesis re-emphasizes the decisive strategic importance of Brazil and its off-shore islands.

One should also consider the importance of the historical backgrounds of several of the previously mentioned strategic areas: the Cape Verde, Bissau, San Tome/Principe, and Luanda/Lobito are all former Portuguese colonies, which obviously would bring them closer to Brazil. Ascension, Saint-Helen, and Tristan da Cunha are islands that belong to Great Britain, a country with which Brazil has good relations, suggesting the existence of mutual good will for frank dealings concerning the use of those territories by Brazilians as well. Of the remaining islands of South Sandwich, South Georgia, and the Falkland/Malvinas, as previously mentioned, Brazil officially recognizes the Argentinian rights in the region. This line of clear respect for the International Law appears to me as a strong argument for mutual confidence, thus making Brazilian operations feasible, together with the Argentinians from those territories under common purposes for both countries.

From a perspective of national security, Brazil must cultivate a solid friendship with, among other nations, Great Britain and the West African and all South American nations. Good will, based on cooperation and on stimulus to the creation and consolidation of common interests, as well as respect for humanistic values, is necessary to Brazil's security. In my opinion, the growth and consolidation of mutual links of interests and of humanistic and cultural values must precede the links of security, for the latter without the former would succumb in the political and economic struggles of the contemporary world.

Likewise, in ideal terms, I feel that for Brazil to develop a policy directed to the possibility of Brazilian participation in operations based on the islands of Ascension, Saint-Helen, and Tristan da Cunha is both natural and desirable. This would provide the Brazilian coast with a highly desirable, advanced line of warning and defense augmented by Fernando de Noronha and Trindade, islands which are already Brazilian territory. In an ideal strategic situation, one would integrate the facilities provided by at least the South-Sandwich and/or South-Georgia islands thus improving the capability of this "early warning belt." (See *Figure IV-2* which shows these islands in relation to the Brazilian coastline.)

The measures so far mentioned would involve not only Brazilian relations with Great Britain and Argentina, but also with the West African states, the United States, Portugal, and with the other states of South America, and they can only be acceptable if they are conducted without generating any conflict with those countries. Although the defense of Brazilian interests will necessarily have to force the strategic-military initiatives of this great country, equally evident is that, faithful to its characteristic of being an orderly and peaceful country, Brazil will always consider, in any case, the norms of International Law as a policy guideline.

South Atlantic Defense

Would Brazil's becoming a communist country *not* be catastrophic for the United States, Great Britain, Europe, Africa, and for the whole of South America, thus changing its policies to those that serve the interests of the Soviet bloc? Such a question would place before us a problem that still has to be solved: the defense of the South Atlantic region as a whole.

We already know that maritime order in this ocean and the tranquility of its use as a line of communication are indispensable conditions for the viability of the economic systems of the nations that are served by the South Atlantic among them, Brazil.

However, the maintenance of the maritime order and peaceful use of the South Atlantic Ocean will be a function, among other factors, of the defense capacity that exists in that area. For such purpose, to assess the possible threats that may alter this global picture of stability will always be necessary. Within those threats, the threat of the Soviet bloc assumes a most relevant importance.

The Soviet Threat

Soviet Military Power, a US Department of Defense publication, publishes charts showing the worldwide disposition of Soviet forces. Examining the Atlantic area of these charts, we find a number of locations with strategic importance for military action in the area. Focusing on Africa, the following naval and air facilities are on the western African coast:

- Ports or bases with more than 7 meters (22.9 feet) of depth--Dakar (Senegal), Bissau (Guinea-Bissau), Conakri (Guinea), Takoradi (Ghana), Lagos (Nigeria), Libreville (Gabon), Point Noire, Luanda, Lobito, Walvis Bay, Simonstown, and San Tome;
- Landing strips of more than 1,000 meters--Dakar, Bissau, Conakri, Takoradi, Lagos, Principe, Libreville, Point Noire, Luanda, Lobito, Walvis Bay, and Cape Town.

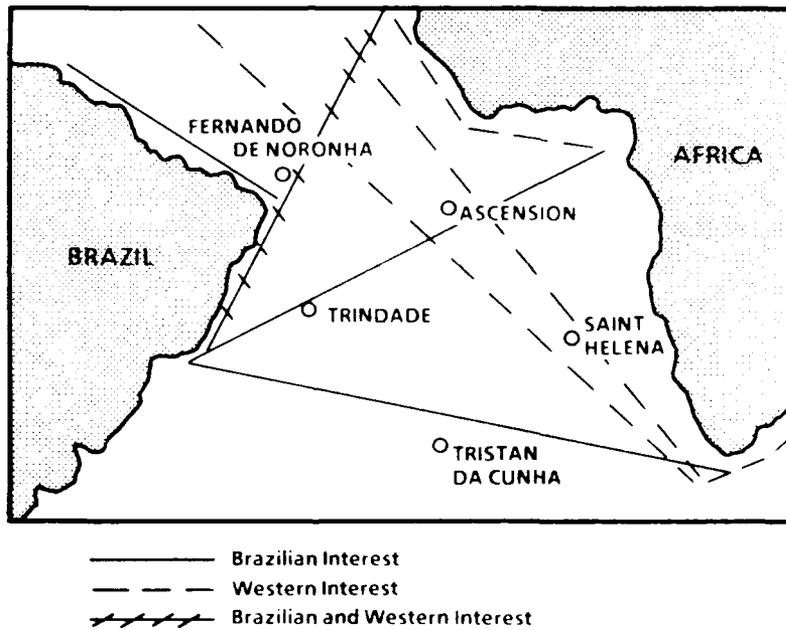
Such considerations on the possible positions for military basing in the South Atlantic region, if compared with *Soviet Military Power's* charts, will enable us to recognize the vulnerability of the maritime routes of this ocean as a whole.

In *Figure IV-4*, the main routes of Brazilian and Western World interest are shown. Those of particular interest to Brazil have already been examined. As for those of interest to the Western World as a whole, the routes "Cape of Good Hope--Cape Verde" and "Cape of Good Hope--United States" carried 66 percent and 26 percent of the European and North American imports of petroleum in 1980, respectively. Also, the most important maritime areas of concentration of sea lines of communication pass close to the Brazilian northeast salient and the large Brazilian port complexes.

All these critical areas and selected routes are vulnerable to submarine interdiction, the form of warfare which is the least affected by the existence of nearby bases. Support to submarines from South Atlantic ports will help to intensify the threat, thereby reducing the transits between their bases and the operating areas. The complexity of the submarine requires more than routine port facilities. Submarine tender-ships must be stationed in the area or the ports must have special support installations established.

The threat from surface forces, including air-naval forces, is, in its turn, reasonably conditioned by the positioning of the bases.

Figure IV-4
Main Trade Routes on the South Atlantic



Source: Robert J. Branco, *The United States and Brazil: Opening a New Dialogue*, NDU Press, 1984

Also, the employment of at-sea supply ships provides the concept of nearby bases a wide flexibility, in the sense that a base on the Indian Ocean (Aden, for example) could be helpful to support forces on the South Atlantic, provided mobile-support exists. However, this form of support lacks credibility if the "side" that depends on it, like the Soviet Union for example, does not possess effective naval superiority in the area of operations. Therefore, from the Soviet perspective, to position base support facilities on the South Atlantic itself would be far more desirable.

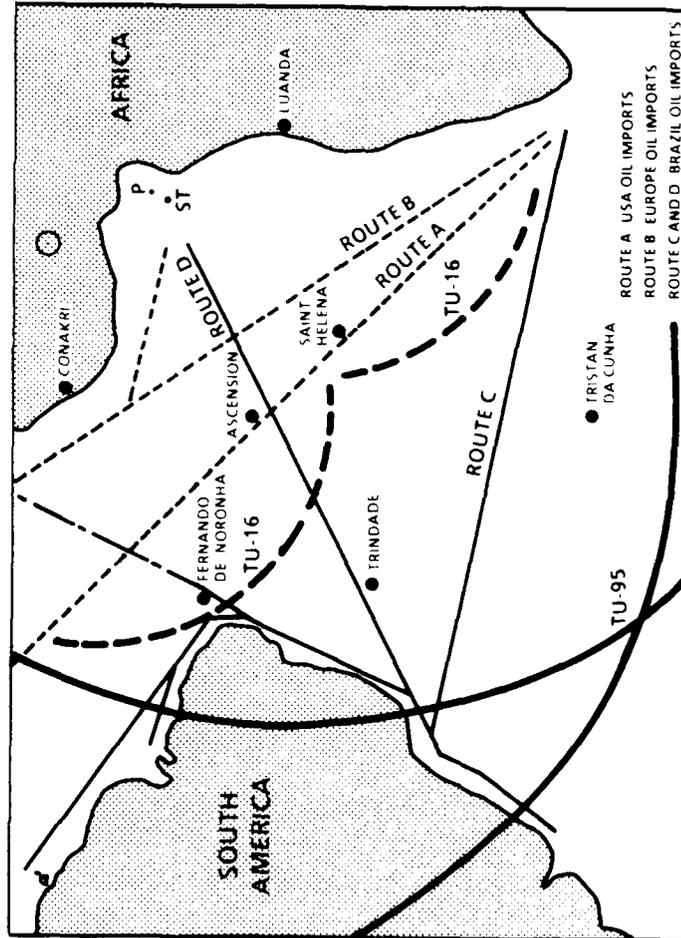
The threat from the air is most strongly conditioned by the existence of nearby bases. As an example, if we consider Conakri (Guinea) and Luanda (Angola) as bases from which Soviet airplanes could operate, we will see that the South Atlantic and the east coast of Brazil, including the northeast salient, will be within the reach, for example, of the TU-95 (BEAR) and TU-16 (BADGER) (Figure IV-5). Aircraft surveillance and aircraft coordination with submarines, in addition to the data collected by satellites, would provide the Soviet Union with an excellent coverage of the vital South Atlantic.

On the other hand, we must consider that the utility of such bases depends on the political reliability of the cooperating state and the military defensibility of the location itself, which can only be determined as a result of the specific situation arising from each conflict.

Therefore, asking if the bases that could perhaps become available to the Soviet Union in the Sub-Saharan Atlantic Africa would be reliable and defensible in a war between the Western and Communist blocs is worthwhile. I think the reader will agree that the following questions are, therefore, pertinent:

- Would it be viable for the Soviet Union to maintain their maritime traffic SLOCs to support such bases, starting from the Arctic or from the Pacific, through areas where the naval and the air-naval powers of the West seem to be superior today?
- What is the degree of commitment upon which the Soviet Union could count from other countries, particularly Cuba, Nicaragua, and those of the SOLANT, during a serious international crisis or a global war?
- To what extent will the areas under Cuban influence be secure for the Soviets without a Cuban presence?

Figure IV-5
 SOVIET COVERAGE OF THE SOUTH-ATLANTIC
 (TU-95 AND TU-16 AIRCRAFTS)



Therefore, under the light of this Soviet threat example we are using, as long as the Western Bloc maintains superiority on the sea, at least at great distances from the Eurasian Soviet bases as is the case with the South Atlantic, the hypothetical positions for Soviet support, for instance, on the South Atlantic African coastline, would only be useful and secure for a long period, if the Communist Bloc could add them, by means of continuous land occupation, to its already existing possessions. This, logically, seems very improbable to me. This does not mean, however, that the theme in discussion lacks importance, for the use of nearby bases would call for intensive regional participation at least in the beginning of a conflict. Besides, it facilitates the air and naval presence in peace-time, which, as I stated earlier, induces concerning political consequences regarding indirect strategy to which Brazil is submitted.

However, if we look closer at the recent Soviet movements, we will see that, according to J. Merino, the example of "threat" so far used in my discussion becomes important: the Soviet fleets seem to have expanded beyond their traditional operating areas. The Pacific fleet is being deployed from the Sea of Japan to the Western Pacific and Indian Oceans; the Black Sea fleet is passing into the Mediterranean; the Baltic fleet has deployed to the North Sea and the North Atlantic Ocean joining the Northern fleet from its Arctic Ocean bases. Having increased their forces remarkably, the Soviets seem now to plan, according to news published in the press, to create another fleet, the fifth, based in the Gulf of Guinea, probably to operate in the South Atlantic Ocean, which is, indeed, a region overlooked by both superpowers.

This information leads me to believe that the Soviet Navy would no longer have the task of defending the Soviet Union's coastline as its primary mission. In support of this theory, Merino cites the following concerning the composition and deployments of the Soviet offensive force:

- a balanced surface force of aircraft carriers, guided-missile cruisers, and escort ships capable of facing the US carrier-battle groups;
- a large number of guided-missile and attack submarines capable of becoming the most serious threat to any opposing ships; and
- naval aviation equipped with Backfire strike aircraft which have a great radius of operation and are equipped with long-range "stand-off" weapons.

If, for example, we observe the shipping lanes among the United States, Western Europe, and Japan, we will find they are almost all within the Backfire's range. The characteristics of this aircraft are such that it seems to have been specifically designed for a long-range offensive role, and, in this case, obviously has among its purposes that of interdiction of the sea lines of communications of the Western World.

At this point, the naval philosophy of Admiral Sergei Gorshkov, Chief of the Soviet Navy, as presented in his book *Sea Power of the State*, seems appropriate to consider. In it, Gorshkov shows a clear understanding of his fleet's striking power, and also of multiple ways in which it can be employed. In his opinion, it is essential for his naval forces to be able to "offer the states depending on the Soviet Union a decisive measure of support and to control the sea-lanes of the world."

Meanwhile, through permanent vigilance of all the oceans, either with intelligence gathering ships or reconnaissance aircraft and satellites, the Soviet Union has under observation every warship or task-force at sea of the United States and its allies, and is observing the merchant ship movements.

As a consequence, if we turn our focus to the defense of the South Atlantic region, we can state that, in a global confrontation, once hostilities have been initiated and the war at sea spreads, Western naval forces do not seem to be in a position to be able to contend with the Soviet offensive against their sea lines of communications in this area. We will discuss this assertion next.

What Is There?

The North Atlantic Treaty Organization (NATO), the inter-American systems of defense, the Pacific Security Treaty (ANZUS), and the South-East Asia Treaty Organization (SEATO) are the main military defense alliances of the non-communist world that have Atlantic powers among their members. Let's examine, very concisely, the first two.

NATO, An Alliance At Risk

The restricted authority of the United Nations, the European Post-War weakness, American weapon capabilities--conventional

and nuclear--and its consciousness of the necessity to help the defenseless "old-world" were among the considerations that, within the ideal of peace called for by the UN Charter and confronted by such events as the Communist "coup d'etat" in Czechoslovakia and the Soviet blockade of Berlin, led to the establishment in 1949 of NATO. Considered as one of the most important military alliances in the history of inter-state relations, that treaty was an evolutionary development of the Brussels Treaty (1948) whose members agreed that an armed attack against one or more of them, in Europe or North America, should be considered an aggression against them all. Its area of concern was defined in its text with the Tropic of Cancer established as its southern limit.

Nevertheless, in 1950, the Korean war evidenced several weaknesses of NATO in the face of increasing Communist power. Since then, confidence and solidarity in the North Atlantic Alliance have progressively diminished. In addition, the French withdrawal from NATO military activities in 1966 as well as the growing suspicion that the United States would not engage in a total nuclear war if a critical situation arose in Europe were some of the important factors that resulted in 1967 in NATO's new strategic concept of flexible response.

To what extent West Europe and the United States can resolve their various differences remains to be seen. Nowadays, the North Atlantic Alliance may have lost some of its solidarity, but there is still a great deal of common ground.

Inter-Americanism, An Incomplete System

The idea of a unity of interests of the countries of the American continents, Pan Americanism, received its first impetus from the so-called Monroe Doctrine which rejected all interference in American hemispheric affairs by outside powers. This cooperation and solidarity existing among the American countries and their progressive inter-relationship in several fields of human activities have resulted in an Inter-American defense system. This concept involves, beyond the responsibilities and principles so far assumed by the people of the Americas, entities such as the Organization of American States (OAS) and the Inter-American Defense Board (IADB).

The IADB is merely an advisory organization for coordination of defense measures, but the OAS is a forum where all subjects of

Inter-American interest are discussed, and, among them, those of collective security. Its basic purpose is to maintain continental peace and security through the peaceful solution of members' misunderstandings and by organizing "solidarity actions" among them in the event of external aggression. Although not a defensive military alliance, mainly because it does not define a specific enemy, the OAS is, however, the embryo of a protection system for South Atlantic maritime traffic. Its charter, signed in 1948, includes in its provisions the Inter-American Treaty of Reciprocal Assistance (ITRA), which came into force in that same year.

The ITRA defines a security zone whose purpose is to coordinate the procedures of the Inter-American System if an "external attack" occurs to any of its members. Furthermore, it is lacking in military effectiveness, because the system can only be activated through a consultative committee, which then will adopt the necessary initiatives, characterizing the ineffectiveness of this organization.

Militarily speaking, the incompleteness of organizations for the defense of the South Atlantic may even result in the loss of navigational freedom in the whole Atlantic Ocean, since the Suez and Panama canals are particularly vulnerable. Because commercial navigation from the Atlantic through the Arctic Ocean is unlikely, the closure of those canals would leave the North Atlantic Ocean and the Mediterranean Sea with only one access route to the non-Atlantic world--the "strait" between the Northeast region of South America and the Northwest area of Africa (the "Interior Sea" theory, previously mentioned in this paper). In this situation, all the maritime traffic from and to this interior sea would have to pass through that "gate," which, therefore, can be considered as a focal area, where any disturbance of the status quo will have repercussions on all other oceans. By similar reasoning the South Atlantic Ocean is influenced by the political-military situations on the other oceans. This is the case, for example, with the Indian Ocean, where tensions arising from naval escalation by the superpowers will naturally reverberate in the South Atlantic. Being an important traffic route of supplies and raw materials for the East and the West, the South Atlantic Ocean will acquire vital strategic value for any powers fighting in the Indian Ocean.

Thus, the South Atlantic could well become a critical theater as was the North Sea in World War I or the Mediterranean Sea in

World War II. In the case of a third world war, I believe that the South Atlantic Ocean could become the "Sea of the Decision."

This broad picture may explain why an inter-American committee decided, in 1965, to activate a regional organization for controlling the maritime traffic in the South Atlantic region: the ORGACONTRAMAS. This organization consists of a Joint Chiefs of Staff of the navies of the Maritime Area of the South Atlantic (AMAS) and a Coordinator of this Area (CAMAS), in peace-time, who will then act as an Area Commandant when, by common agreement, this is decided by the government's party to the arrangement.

Attached to CAMAS, for coordination purposes, are Local Commandants of Operational Control (COLCO), whose functions are established by the Joint Chiefs of Staff of the navies of the area. The CAMAS and the COLCOs were effectively activated in 1967 and have been responsible for several exercises involving control and protection of the sea lines of communication in the region. Although only the navies of Argentina, Brazil, Paraguay, and Uruguay are included, this system is today the link which attenuates, to some extent, the existing inattention to the South Atlantic and permits the establishment of a defense doctrine for the area.

The organization of the Maritime Area of the South Atlantic (AMAS) functions on three levels:

- on the CAMAS level, through doctrinal studies and coordination;
- on the AMAS' COLCO level, through participation in international exercises, as well as daily exchange of information on maritime traffic and studies on common procedures;
- on the ORGACONTRAMAS level of each country, through the dissemination of doctrine, through the training of the components of the respective ORGACONTRAMAS, and through the planning of support measures necessary for an efficient mobilization of the National Organization of Naval Control of Maritime Traffic.

The activities of this regional organization are being developed in tasks assigned to CAMAS and agreed, if unanimous, in each COLCO meeting, which takes place every two years at the time of the rotation of the incumbent coordinator. Presently, CAMAS is in

correspondence with the Commander-in-Chief of the Atlantic Fleet (CINCLANTFLT) of the US Navy, on the level of Supreme Commandant of Maritime Area. The existence of this organization and its exercises have contributed to define the lateral maritime limits between COLCO Brazil and COLCO Uruguay, as well as between COLCO Uruguay and COLCO Argentina, limits of which condition the transfer of operational control.

Also, the eastern limit (24° west) of the ITRA has not been recognized as limits for CAMAS oversight. Thus, CAMAS actions may be extended up to the African coast.

The important development is that, although some problems of lack of definition of limits of areas between the Argentinian and the Uruguayan COLCOs still exist, as well as the lack of definition as to the southern limit of the CAMAS area (between Argentina and Chile), the relationship between CAMAS, COLCO Argentina, COLCO Brazil, COLCO Uruguay, and ORGACONTRAMAS Assuncao (Paraguay), as well as the relationships between CAMAS and CINCLANTFLT have been highly fruitful. Among other things, this has resulted in

- an increase in the exchange of information related to SOLANT maritime traffic and the establishment of regional norms of understanding;
- approval of complementary procedures to Allied Tactical Publication - 2;
- internal stimulus to the improvement of the ORGACONTRAMAS--for example, the installation of a system for automatic data processing; and
- reciprocity of regional coordination with NATO, generating exchanges, facilitating the exchange of information on the maritime traffic and the interchange of publications. In relation to Naval Control of Maritime Traffic, the advancements were great and that the organization is in a position to be able to participate in exercises of Naval Control of Maritime Traffic on equal terms with NATO.

However, these measures alone are not enough to assure a durable peace in the South Atlantic region.

What Could Be There?

Absolute command of the sea is no longer possible, mainly because of the technological advances which brought about inventions such as nuclear submarines, Sea Launched Ballistic Missiles, and formidable developments in the electronics field leading to high performance satellite surveillance techniques. All this notwithstanding, the control and protection of the vital sea trade of the Atlantic community has to be achieved even without absolute command of the sea. Because the costs involved in the maintenance and use of armed forces is considerable, they confront societies with profound dilemmas. With few exceptions, restricted to the wealthy nations, the strategic geographical position and the heavy dependency on sea trade of the majority of the South Atlantic states impose a dilemma between external security and internal development; these countries cannot afford the costs of building a navy adequate for the protection of all their interests. As a consequence, the posing of questions such as "Why do we need a Navy?" becomes pertinent and could create an attitude of uncertainty both within and outside their navies. However, as the oceans become both a greater source of wealth and provide a greater medium for conflict, new technologies for war at sea are being introduced by several nations, particularly the traditional Western naval powers and the Soviet Union. Taken together, these technologies, if widely exploited, could have several important implications for naval strategy. In its turn, strategy deeply affects the choice of options, mainly for the medium and small powers. From another point of view, mankind is already worried about depleting land resources and has recently turned to the sea in search of replacements. As a consequence, the ocean resources may become a new reason for national confrontation. Territorial limits have been claimed by some countries up to 200 miles off their coastlines. Viewed as economic zones, these areas are expected to become vital to their claimants' economic growth—and in some cases, survival. The nations total maritime power must then be directed toward the protection or control of this area of national interest, thus justifying the existence of small navies and retention of some old ships.

Therefore, the navies should progressively be used for protection and/or control of territorial waters. Experience has shown that, strictly from the military point of view, one of the best ways of resisting a threat, whether external or internal, is by presenting on one hand a united and credible force and on the other hand by keeping the true spirit of nationality alive. In its

turn, the South Atlantic coastal community is becoming more conspicuous on the world scene. However, its development and security balance is heavily dependent upon its export/import shipments which, in turn, rely on maritime transportation. As the navies in this area are not powerful enough by themselves to protect their own sea trade along the extensive routes concerned, the ideal alternative for achieving this protection could be the integration of efforts.

Further defense considerations in the region must start from the establishment of realistic geographical limits of jurisdiction, within which effective measures could be taken in the event of an external attack. Therefore, considering the area not covered by NATO and taking into account the ITRA and ANIC's weaknesses, an ideal concept of a South Atlantic-region-of-interest, for the purpose of control and defense, should cover all the maritime area south of the Tropic of Cancer, the east coast of South America, the west coast of Africa, and the coast of Antarctica facing South America.

From previous considerations, one could imagine that what would be needed in the Atlantic was not another nuclear armory, which would have doubtful utility as a deterrent and be totally useless as a defense, but a non-nuclear system, strong enough to deter aggression at its own level and able to offer an effective fighting force if deterrence should fail. This should not necessarily mean any substantial increase in the level of forces, but can be achieved by the use of resources already in existence. Absolute command in this particular sea could not be attained but should enable the control of defined areas during the necessary periods of time and for a set purpose.

This could mean, therefore, among other ideal solutions, either the establishment of an organization similar to that in the North, which would integrate all forces and defense facilities available in the South--a South Atlantic Treaty Organization--or the constitution of a surveillance/defense system which could have effective control over the South Atlantic area, by using modern detection technology and modern combat forces--navy and air force, mainly--which would permit adequate capability of reaction.

Such "ideal" solutions, however attractive they may seem from a military standpoint, pose many problems for actual implementation for political and logistical reasons.

Solutions and Their Main Constraints

(a) South Atlantic Treaty Organization

Ideally, the integration of the southern part of the Atlantic under an organization such as the South Atlantic Treaty Organization (SATO) could strengthen the friendships among the nations involved. This could also contribute to the settlement of interests concerned with territorial waters disputes and should be able to provide strength to help fill the defense gap of the Atlantic with an allied naval presence, which could be useful as a persuasive deterrent to war. Still, under an ideal perspective, vis-a-vis NATO, such a defense system--strong by integration and cohesive in face of common threats and interests--could prove to be an intermediate step for a future Atlantic association for the protection of that vital ocean as a whole, i.e., an Atlantic Treaty Organization (ATO). Furthermore, if we think in politico-military and global terms, using the Soviet threat example, we can say that the Soviet capacity to breach physical barriers means that Western vigilance should be worldwide. Therefore, this ideal strategic concept of common defense should be extended to the other oceans, leading to a link with the alliances and defense systems such as ANZUS and SEATO, to constitute a real chain for protection of the non-communist nations' sea trade.

However, this reasoning is purely idealistic, because a real implementation of a SATO and, later on, of an ATO would certainly present extraordinary political obstacles. Among these obstacles are the Brazilian government's very clear and strong position against the SATO concept. As published in the Brazilian newspaper *O GLOBO* on February 2, 1984, the Brazilian government vehemently opposes the idea of forming a South Atlantic defense pact. That view, attributed to a spokesman for the Brazilian Ministry of Foreign Affairs (ITAMARATY), asserted that the Brazilian purpose is "to maintain the South Atlantic region free from confrontations"; it is to be used only for the economic development of the countries which surround that ocean. Still, according to this spokesman, the South Atlantic is an area of priority concern to Brazil from the standpoints of economics, ecology, communications, transport, and, obviously, also of military strategy.

This posture maintains continuity with the principles of self-determination and non-intervention which have been repeatedly espoused by Brazil in its foreign policy.

The other "ideal" solution for the defense of the South Atlantic, the so-called "protection system," deals with the assembly of a network of sensors which, on the bottom line, would allow for control of the area.

(b) A Detection System

Modern technology allows us to admit the conception of a system for the control of the whole South Atlantic area. Several sensors installed at certain strategic locations in the region would allow the efficient and constant follow-up of practically all the maritime and air activities in the area in focus.

Thus, submersed sensors (sonars and hydrophones for submarine detection) installed on the ocean floor between the South American and West African coasts, in conjunction with other similar sensors located in the islands of Fernando de Noronha, Trindade, Ascension, Saint-Helen, Tristan da Cunha, South Sandwich, South Georgia, and Falkland/Malvinas, as well as along some points of the eastern South American, western African, and Antarctica coasts, would permit a good coverage of submarine activities in the area.

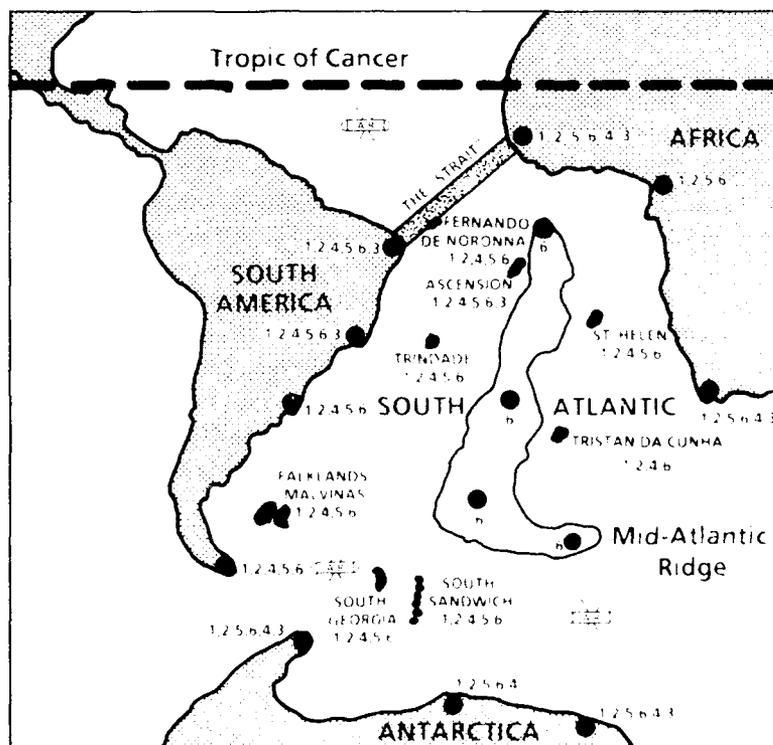
The same land points and islands mentioned above could also provide sites for radar and/or radiogoniometric detection. Those sensors, if installed on land or aboard blimps, would provide information that could be transmitted by satellites and conveniently dispensed through the region. Moreover, add to all of this the recent conquests and the future improvements in the fields of electro-magnetic energy (several types of blockades by generating magnetic fields as well as "vision" through the oceans of submerged objects), and of electronics. As a consequence, such a fixed network of air (satellites), surface (radars and radiogoniometers), and submersed (fixed sonars) information, joined with a routine patrol made by ships and airplanes (particularly the VSTOL) operating with logistical support on the mentioned islands as well as on the South American, western African, and northern Antarctica coasts, would allow the detection and the tracking of anything that would move in the area of the South Atlantic.

Figure IV-6 is a picture of this ideal concept.

However, assembling such a system would represent great expenses as well as intricate political constraints. In terms of costs, *Trindade, Saint-Helen, and Tristan da Cunha* would have to set up large construction projects for the building of landing strips and adequate facilities for supporting, docking, and supplying ships (in the sole case of *Trindade Island*, the construction of a landing strip would cost, as mentioned before, around 300 million dollars), and such installations already exist in *Fernando de Noronha and Ascension Islands*. In political terms, considering that financial resources would, necessarily, be obtained from other countries, especially the United States, for the construction of such facilities, it seems logical to me to admit that this would be done through a demand of previous understanding which would include the permission for the use of such facilities for all of those countries that cooperated in and/or paid for it. In the Brazilian case, this would lead to an impasse, inasmuch as, according to the doctrine of the Brazilian government, the occasional use of Brazilian facilities by men and equipments from other countries should never be the object of any previous understandings on the part of Brazil. This should be examined on a case by case basis, in the light of political considerations of the *Brazilian interest, and in the firm understanding that the "occasional" use would be neither regular nor frequent but instead subjected to a Brazilian agreement and in situations of emergency, when a stated need happens, all in accordance with the Brazilian national interest.*

The existence of a large divergence between the *ideal* and the *possible or real* should be realized when we deal with the security of the South Atlantic. In other words, it is a problem that still has to be resolved.

Figure IV-6
An "Ideal" System for the Control
of the South-Atlantic



- LEGEND:**
- 1 = Radar
 - 2 = Balloon/Zeppelin
 - 3 = Satellite Capability
 - ⊞ = Satellite
 - 4 = Ship Support
 - 5 = Aircraft Support
 - 6 = Sonar Hydrophone
 - = Point of Land

The Divergence and the Problem to be Solved

The essence of the question of international security is placed today, in a general sense, along an East-West axis between the United States and the Soviet Union. This is because I believe that the superpowers are today the only international actors that not only can initiate and conduct a conflict on a global scale, but also possess the option to interfere actively in different regions of the planet.

Thus, I believe that Latin America will continue to be seen as a pawn in a global game and not as a region that has its own aspirations. The present state of relations between the United States and Latin America has shown that, contrary to what happened soon after the Second World War, the United States no longer has the motivation to provide Latin America with the vital inputs that it needs in the fields of politics, security, and economy.

Politically speaking, to think in terms of a "special relationship" between the United States and a few countries of Latin America does not seem possible to me. The global involvement of the United States itself prevents this, a result of the great number of "special relationships" which the United States has established throughout the world, with Western Europe, Israel, Saudi Arabia, Japan, etc.

In terms of security, the protection of the "nuclear umbrella" seems marginal as a result of the existing parity between the superpowers. Thus, to try to preserve the present situation is far more important to Brazilian interests, and makes Brazil an improbable target in case of a nuclear conflict. This avoids concessions to the United States of marginal strategic value to Brazil but places Brazil directly within the line of strategic-nuclear confrontation with the USSR. On the other hand, the capacity of

conventional intervention by the United States is admittedly limited because of internal and regional considerations.

Insofar as the economic field is concerned, we know that the Latin American countries depend on a variety of external inputs (technology, finance, energy, etc.). However, the global commitments of the United States and its own economic needs prevent the concentration in Latin America of its economic and commercial interests.

During the last decade, the Latin American countries (Brazil in particular) have conquered entirely new economic and political obstacles not only in Inter-American relationships but also with Western Europe and in the rest of the Third World, particularly in Africa and in the Middle East. The result of these initiatives has been an increase in the capacity for diplomatic maneuvering which, to a certain extent, has limited the North American capacity to influence them and has generated disagreements of several types.

The Great Divergence: The Positions of Brazil and the United States Toward the South Atlantic

We know that internal circumstances in the United States make projecting a military presence into Latin America difficult; examples are Cuba, El Salvador, and, now, Nicaragua. As a result, in the specific field of projection of naval power, the United States feels that a need exists for development of joint programs involving the operations of Latin American navies in the South Atlantic. The best evidence of this is that formulations dealing with the South Atlantic periodically conceived by North American policy makers seem to be conceived within this context. Within these several occasions, let us emphasize two. The first took place in Washington, DC during a recent conference of American Armies. At that time, US Defense Secretary Caspar Weinberger, stated that he personally favored the conclusion of a "Pact of the South Atlantic," with the participation of South Africa. The second, during the Fourth International Symposium of Maritime Power, took place in Newport, RI; there Admiral Harry D. Train II stated, among other views, that a decline existed in the naval power of the Western World, including the collective maritime superiority of the Western maritime nations. He also commented on the existence of an intense struggle for the domination of the seas; he declared that the USSR now has a "new" naval power which it "obviously" wanted to use to intimidate the nations of

the Third World. Later, Admiral Train defended the containment of Cuban and Soviet activities in the South Atlantic through "efforts of unified cooperation of all the South American countries." This was accomplished by placing maritime patrol aircraft on land bases and developing "base-islands" in the South Atlantic, forces sufficient to deter the threat of Soviet domination of that area. Based on this, I conclude that, to the North Americans, the Atlantic is seen more like NATO's flank, as a transit area for oil tankers and, eventually, as an alternate route for NATO's air-naval forces to the Persian Gulf. This is because I believe that Western military policy is formulated based on a concept of interdependence of the theaters of naval and air-naval actions among the Middle East, the Persian Gulf, the Indian Ocean, the Southwest of Africa, and, ultimately, the South Atlantic.

However, the South Atlantic is more important to Brazil than to any other Western country. It is not only a matter of commercial concern, but with military implications as well. Brazil cannot deal with the South Atlantic as one region among others; on the contrary, Brazil gives the region a very high priority. This priority has been emphasized during the frequent declarations, in the highest levels of the Brazilian government, that Brazil has a special interest in its foreign policy for Latin America and Africa, for its neighbors on this side and on the other side of the Atlantic Ocean, and consequently for the oceanic area which the nation faces. As one may see, Western nations, the United States included, should understand and accept this Brazilian priority, which means to say that, in the case of the South Atlantic, the interests defined by the Western world including the United States, are the ones that should be coordinated with the Brazilian interests and not vice-versa.

Thus, this places before us the question of South Atlantic security.

SATO's Inviability

Security on the high-seas in peacetime is a function of world common interest, manifested in the doctrine of freedom of navigation and through the principles contained in the charter of the United Nations. As to freedom of navigation, similar points of view have been expressed by the two superpowers during the UN conference on the "Law of the Sea." As previously discussed, other maritime areas in addition to the South Atlantic are not

affected by treaties or military pacts. This is the case of the Indian Ocean, the Persian Gulf, and a large portion of the Pacific. Moreover, the weaknesses of the existing pacts are flagrant. Therefore, to question whether the military pacts should be considered not as rules but as exceptions would be valid. In fact, if we presuppose the hypothesis of a naval incident which might question the universally accepted principle of freedom of navigation on the high seas, and on which international commerce depends, the resulting situation would be so grave that the question would immediately move from the limited scene of the occurrence to the level of global confrontation. Under such circumstances, the idea of a South Atlantic pact--SATO--as a deterrent element, although acceptable from the military standpoint, seems to be fragile, particularly because of the disproportionate qualitative and quantitative difference among the means that could be involved, for the Latin American and African nations own small and technologically poorly armed combatants. On the other hand, the maritime routes whose security is of concern to the United States are not, as we have seen, the routes that are of particular interest to Brazil. As I stated earlier, starting from the Cape of Good Hope, the maritime routes that are of North American interest follow the direction north toward the Gulf of Mexico and Europe, whereas the routes that are of Brazilian interest are turned toward the west, in the direction of the Brazilian coastal areas. The obvious priority to be relegated, in times of crisis, to the routes of northern movement could be justified in quantitative terms; their volume is ten times greater than those that are directed toward the Brazilian coasts. Therefore, Brazil's naval forces, along with other navies in a hypothetical SATO, would be used to defend the northern routes. Such a deployment of forces would not only divert protection of purely Brazilian interests, but also leave far fewer forces available to protect the Brazilian lines of supply and communication. Therefore, if the Inter-American Treaty of Reciprocal Assistance were to be expanded to be organized similarly to NATO, the involved nations would be effectively contributing to the institutionalization of a force disparity between the US, African, and Latin American participants. In the Brazilian cases, this would establish a relationship of cooperation in which Brazil would have the role of a secondary partner, more similar in fact to the Warsaw Pact model than to the NATO model.

In my thinking, other considerations of a political nature also exist which contribute to make impracticable the implementation of a South Atlantic Treaty Organization. One is the eventual

presence of the Republic of South Africa in such a pact. We acknowledge that this situation alone would immediately alienate any idea of participation in such a pact by the Black African nations. This would also mean the lack of support for SATO forces on the west African coast, in addition to possible negative implications it would have for commerce with the African countries.

The conjunction of these factors along with the increasing US military presence in the South Atlantic could create a situation that might be interpreted by the African countries as one of direct threat to them. This possibility would produce a double negative effect: on one hand, some of these African countries might tend to strengthen the now weak links that they have with the Soviet Union; on the other hand, the USSR itself would have a fine opportunity to justify strengthening of its presence in the area and even the initiation of more violent military activity.

Thus, I feel that Brazil would be more prudent to avoid such involvements, since the natural tendency of these African countries in the case of a conflict would be toward neutrality unless they felt themselves, from the beginning, to be militarily threatened by the West. This is because the African countries, like the South American countries, are aware that if they became Soviet bases they would suffer very strong reprisals, given their overwhelming economic dependency on the Western world.

As to the Soviet presence in the South Atlantic, an important consideration here is that there has never been a serious Soviet military threat to Brazil nor to South America. No cases of naval incident involving Soviet ships and commercial or military vessels in the South Atlantic exist. The South Atlantic is still an area where the Soviet presence may be considered relatively small and where support facilities for the Soviet forces are meager. Thus, at the moment, the possibility of the communist bloc selecting this theater to initiate a naval incident is slight. Also, the involvement of Brazil in such an alliance as SATO would involve the use of Brazilian islands for American air and naval forces which would increase international tensions in this area. Undoubtedly, the climate of peace and cooperation which are essential to the development of Brazil's foreign policy would be negatively affected. A military alliance in the SOLANT area would naturally subordinate the national interests of the smaller partners to the global needs of the US-USSR confrontation.

As I have postulated, the objectives, the means, and the doctrines of the hypothetical employment of Brazilian and North American armed forces in the South Atlantic are divergent. However, no contradictions exist as to its final goals; mutual information and cooperation already take place in specific sectors. Therefore, the reason for such divergence seems to be the result of differing foreign policy and strategic orientations on the part of Brazil and the United States. For Brazil the problem is, in essence, the establishment of its own autonomous and independent presence in the region; for the United States, the central problem is the strategic confrontation with the USSR, in which the South Atlantic region plays a secondary role.

One should have no doubt whatsoever of the commitment of the West on the part of Brazil. However, Brazil naturally participates in the protection and defense of the South Atlantic as a result of its specific interests, thus preserving its capacity in the international arena for independent and non-aligned action. Moreover, that Brazil present itself on the international scene with its own voice and identity is in Brazilian interest, and the interests of the Western World as a whole, including the United States.

All of these arguments evidence that cooperation between the Brazilian and North American navies must always be developed according to prior political dimensions and that, for all practical purposes, this does not mean that Brazil's armed forces will not be employed for the convenience of its North American counterparts. More specifically, one must recognize that the use of Brazilian personnel, material, and installations by the American military will not be subject to prior agreement on the part of the Brazilian government. Each case should be examined in the light of Brazilian political-military benefits or interests. Such a stance seems to be prudent; otherwise, during occasions of increased international tension, the Brazilian government might be required to adopt positions which would be completely outside of its own control or its power of influence. I doubt that the United States would be ready to initiate a nuclear war in response to a Soviet attack on a Brazilian/American organization and/or base located on Brazilian territory.

A Problem To Be Solved

At this point the reader might ask what can be done to protect the Western interests in the security of the South Atlantic. I know

that I have not advanced any concrete answers. In fact, the solution to the problem is a function of military cooperation between the United States and the countries of the region, in particular, Brazil. At the moment, it is a problem still to be solved.

A general goal of Brazilian foreign policy is to refute the state of affairs in which nations automatically commit themselves, by dint of treaty and alliance, to certain courses of action once specified conditions or circumstances have materialized. In other words, Brazilian equipment and military installations should always remain under the command and control of Brazilians, to be employed according to Brazilian interests.

All of this does not mean, of course, that we wish to transform the South Atlantic into a "mare nostrum" controlled by a regional version of the Monroe Doctrine. The implementation of effective control of the area to establish an adequate assembly of sensor systems, which could include air (satellites, airplanes, balloons, etc.), land (radars, etc.), and sea-based (ships, fixed sonars, etc.) installations, seems acceptable to us. Likewise, we also believe the cooperative formulation of military strategies which address the effective defense of the national interests of the SOLANT countries, in the case of a common threat, but always recognizing the sovereignty of the nations involved to be acceptable.

More than all of this, however, a natural regional preoccupation with avoiding potentially dangerous situations in the process of development of the South Atlantic area exists. As a major sponsor of this policy, that this maritime area be kept free of international confrontations is in the national interest of Brazil so that its character as an instrument of peaceful exchange and progress of the nations that surround it is maintained.

Selected Bibliography

Adams, Noah. "Earth's Future: Nuclear Technology" (WETA Radio--All things Considered). *Current News, Special Edition*. No. 1243. Washington, DC. January 3, 1985.

Agencia Alema de Imprensa. *A industria militar en America Latina*. Hamburgo, Alewauke. 29 Agost 1984.

Agres, Ted. "Soviet Navy completing four tunnels to hide subs." *Washington Times*, p. 1. Washington, DC. 27 March 1984

Andrews, Walter. "Navy Policy Cited for Lack of Diesel Subs." *Washington Times*, p. 4. 30 March 1984.

Araujo, Joao G. M. "A Organizao Regional da Area Maritima de Atlantic Sul." (Lecture.) Rio de Janeiro, Brazil. 28 October 1983.

Auburn, F. "Gas y Petroleo Frente a la Costa ("off-shore") en la Antartida." *Editorial Pleamar*, p. 161-194. Argentina. 1983.

Balmaceda, Hector M. *Tendencia Geopoliticos en el Atlantico Sur*. (No other references)

Baker, P. Warren. "Next: A Resource War?" *Sea Power*, p. 55, October 1980.

Banco do Brasil. *Brazil, The New Power*. Brasil. (No date)

Barbola, Luiz. "Itamaraty may faz objecat." *Jornal de Brasil*. Rio de Janeiro, Brazil. (No other reference.)

Beargie, Tony. "What Ship, Where Bound? U.S. Maritime Trade Routes Around the World." *Sea Power*, p. 38-45. May, 1984

Bennett, Charles E. *Revival of Merchant Marine Imperative*. ROA, National Security Report. Vol. 2, No. 4. Washington, DC. July 1984

Bonturi, Orlando P. *Command of the Sea as one Component of Maritime Strategy*. Royal Naval Staff College. London, November 1976

Relagoes Interuocionais: Alianeo Militares de ? ocidental e a protecat da rotos maritimos de Atlantico Sul. Brazilian Naval War College. Rio de Janeiro, Brazil. 1974.

The Future Influence of South America on International Affairs. Royal Naval Staff Coliege. London, 1976.

Brabosa, Luiz. Administrcal de Canal de Panama. Viasita de Colegio Interamericano de Defesa ao Panama. Washington, DC. 21 Marco 1984.

Branco, Robert J. *The United States and Brazil: Opening a New Dialogue*. National Defense University Press, Washington, DC. May 1984.

Brandt, Thomas C. "Military Uses for Space." *America Plans for Space*, pp 81-92. National Defense University Press, Washington, DC. 1986.

Breves, Everaldo. "O projeto da Construcat de um Novo Canal ao Nivel dos Oceano Atlantico e Pacifico no Panama." *Revista de Club Militar*. Rio de Janeiro, Brazil. Maio/Junbr 1982.

Brooke, Jim. "Dateline Brazil: Southern Superpower." *Foreign Policy*, no. 44. New York. Fall 1981.

Brown, Gail W. "Outward Access Strategy Readied by USSR for Nonfuel Minerals." *American Metal Market*. 19 June 1980.

Bruzzi, Fernando. "A Geopolitica do Com Sul." Brazilian Naval War College. Rio de Janeiro, Brazil. 1982.

Caminha, Joao Carlos G. "As Fragilidades de Poder Naval Brasileiro." *Jornal de Brasil Especial*. Rio de Janeiro, Brasil. 23 January 1983.

----- *O Mar*. Palestra para a Universidade Federal de Santa Catarina. Florianopolis, Brasil. 1980.

Comite Nacional Brasileiro, Conferencia Mundial de Energia. *Recursos Energeticos do Brasil*. Rio de Janeiro, Brazil. Maio, 1970.

Carvalho Filho, Milton X. *As Conferencios Navas Interamericanas e a Posica Brasileira*. Marinba de Brasil, Brasilia, D. F. 18 Maio 1983.

Carvalho, Sergio A. M. *O Papel da Empresa Privada Brasiluro*. Palestra realizada en Eserlo de Comand e Entrd-Maios de Aeronautica. Rio de Janeiro, Brazil. 20 Ago 1984.

Coelho, A. "Antartida: Desafio a Criatividade." *Revista Maritima Brasileira*, p. 109-118. Rio de Janeiro, Brasil. Out/Nov/Dez 1983.

Coelho, Carlos, R. S. *Espaco Maritimo de Atlantico Sul*. Brazilian Naval War College. 27 April 1981.

Coelho, Dimas L. S. "O Saliente Nordeste Brasileiro no Estrategico da defesa Continental " *Revista Maritime Brasileiro*, no 10, 11 & 12 Out, Nov, Dez 1983

De Grasse, Robert Jr. & Daggett, Stephen. "An Economic Analysis of the President's Strategic Defense Initiative: Costs and Cost Exchange Ratios" (Council on Economic Priorities (undated)). *Current News, Special Edition*, No. 1243, p. 35-46. 3 January 1985.

Descartes. *Politica y Estrategia (No ataco, critico)*. Buenos Aires, Argentina. 1953.

Douglas, Martin. "Naval Lessons from the South Atlantic." *Jane's Defence Weekly*, p. 42-45. London. 7 April 1984.

Dzidzienyo, Anani. *Relaciones Africanas y Latino Americanas Contemporaneas: Problemas y Perspectivas*. Brown University Providence, Rhode Island. 1971.

Elster, J., Panje, D., & Roellke, D. *Strategic Assessment of the South Atlantic Region*. Presearch Inc., Technical Report No. 549. February 1982.

Facanha, Diva, Fendt, Roberts, Kwako, Thomas, & Perry, William. *Brazil Economic Report*. Center for Strategic & International Studies, Georgetown University. Washington, DC. October and November 1984.

Fairhall, David. "Strategic lessons from South Atlantic." *The Guardian*. London, England. 15 December 1982.

Ferreira, Domingos P. C. B. *The Navy of Brazil: an emerging power at sea*. National Security Affairs Issue Paper No. 83-1. National Defense University. Washington, DC. 1983.

Fink, Donald E. "Availability of Strategic Materials." *Aviation Week & Space Technology*, pp. 42-46. 5 May 1980.

Frankel, Glenn. "S. Africa, U.S., Angola to join in peace effort." *The Washington Post*, p. A40. 16 February 1984.

Freitas, Paulo Irineu R. *Uso do Mar*. Rio de Janeiro, Brazil. (No other references.)

Gelb, Leslie H. "Is the nuclear threat manageable?" *New York Times Magazine*, pp. 26-32, 34-36, 65, 80, 92. 4 March 1984.

Gomes, Luis F. *Ilha de Trindade: meta i defender Atlantico Sul*. Jornal de Brasil. 13 Marco 1982.

Gorman, Paul F. "U.S. Security Interests in Central America." Caribbean Basin Symposium. Lecture by the Commander-in-Chief of the USA Southern Flank. Norfolk, Virginia. 18 January 1984.

Goshko, John M. "Australia deals a new blow to Anzus alliance." *Washington Post*, p. A1. 7 February 1985.

Grabendorff, Wolf. *La Politica Exterior Brasileira entre el Primer y el Tercer Mundo*. (No other references.)

Granada, Fray L. de. *El Control del Trapico Maritimo en el Atlantico Sur*. Comand Naval de Transit Maritimo, Jefatura de Operaciones del EMGA. Argentina. (No other references.)

Halloran, Richard. "U.S. Forces May Lack Resources to Carry on a War, Officers Say." *New York Times*, p. 1. 14 May 1984.

Hayes, Margaret D. *Brazil y el Atlantico Sur: cambios en las perspectivas de un problema que se vislumbra*. The Johns Hopkins University School of Advanced International Studies. Washington, DC. 14 March 1978.

Herzberg, Robert. *Soviets Launch Minerals War. Control of Sea Lanes Critical to Reds' Conquest Plans*. US House of Representatives. Committee on Interior and Insular Affairs. (No other references.)

Hiatt, Fred. "Cuban Navy Reported Growing." *Washington Post*, p. A14. Washington, DC. 26 January 1984.

Hilton, Stanley. "Las relaciones Argentino-Brasilena: el punto de vista de Brazil." *Editorial Pleamar*, pp. 27-42. Argentina. 1983.

Hurrell, Andrew. "The Politics of South Atlantic Security; a Survey of Proposals for a South Atlantic Treaty Organization." *International Affairs*, Vol. 59, No. 2. London. Spring 1983.

Karam, Alfredo. "Marinha de Brasil: Atnalidades e Perspectivas." (Lecture on the Brazilian Naval War College.) Rio de Janeiro, Brazil. 31 Agosto 1984.

Kelly, Daniel. "A new look at the ocean floor." *Surveyor*, Vol. 18, No. 1. American Bureau of Shipping. February 1984.

Kimball, Lee. "La carrera por la pesca antarctica esta in marcha." *Editorial Pleamar*, pp. 195-223. Argentina. April 1983.

Kintner, William R. "Soviet Expansion in the Mediterranean Region" (*Crossroads*, No. 13, 1984). *Current News, Special Edition*, No. 1220. Washington, DC. 1 November 1984.

Kipp, Jacob W. *Naval Art and the Prism of Contemporaneity: Soviet Naval Officers and the Lessons of the Falklands Conflict*. Texas A&M University Strategic Studies SS 83-2. October 1983.

Krulak, V. H. "Panama: Strategic Pitfall." *Strategic Review*. Washington, DC. Winter 1976.

Koburger, Charles Jr. "Protection of Merchant Shipping." *Navy International*, pp. 593-596. October 1980.

Lehman, John F. Jr. *High Technology Essential to Provide a Capable Navy*. ROA, National Security Report, Vol. 2, No. 4., pp. 2-4. Washington, DC. July 1984.

Leighton, Marian. "Soviet Strategy towards Northern Europe and Japan" (*Survey*, Vol. 27, Autumn-Winter 1983). *Current News, Special Edition*. Washington, DC. 15 February 1984.

Mallin, Jay. "Brazil, US to exchange weapons data." *Washington Times*, p. 6. 15 February 1984.

-----, "Oil, Fuel Alcohol Ease Nation's Debt." *Washington Times*. Washington, DC. 23 February 1984.

Mark, Hans. "Warfare in Space." *America Plans for Space*, pp. 13-32. National Defense University Press, Washington, DC. 1986.

Martin, Everett. "Brazil's Fledgling Arms Industry Making a Hit with Weapons - Hungry Third World Armies." *Wall Street Journal*, p. 18. USA. 4 January 1985.

McConagha, Alan. "New Sub Expands Cuban Naval Force." *Washington Times*, p. 1. 15 February 1984.

McCoy, Floyd & Rabinowitz, Philip. *The Evolution of the South Atlantic*. Lamont-Doherty Geological Observatory of Columbia University. New York. (No other references.)

McDonald, Jim. "Multiple Problems: Confront Trans-Pacific Trade Routes." *US News and World Report*, Vol. 47, No. 1. February/March 1984.

McDonald, Wesley L. Seventh Inter-American Naval Intelligence Conference. Opening remarks by CINCLANTFLT. (No date.)

-----, "U.S. Security in the Caribbean. A maritime perspective." Caribbean Basin Symposium. Lecture by CINCLANTFLT. Norfolk, Virginia. 18 January 1984.

Merino, J. "The Sea of Decision." *Proceedings*, pp. 91-96. March 1983.

Meyer, Cord. "Iran-Iraq: the threat to the West." *New York Post*, p. 31. 20 March 1984.

Moneta, Carlos J. "Aspectos Conflictivos de las Relaciones Afro-Latinoamericanas: Las Vivculaciones Politicas, Economicas y Militares de la Republica Sudafricana con los Países del Atlantico Sur Latinoamericano." *Editorial Pleamar*. Argentina. 1983.

... "Perspectiva Historica de las Relaciones EUA - America Latina, a la luz de la situacion actual." *Editorial Pleamar*, pp. 13-26. Argentina, 1983.

Moreira da Silva, Paulo de C. *Usos do Mar*. Cominato Interministerial para os Recursos de Mar. IPqM. 1978.

Moorer, Joseph P. "U.S. Navy Strategy of the Future." *Strategic Review*. Washington, DC. Spring 1976.

Nacht, Michael. "Will the Pacific Alliance Endure?" *Defense Planning for the 1990s, and the Changing International Environment*, pp. 255-271. National Defense University Press, Washington, DC. 1984.

Nelson-Horchler, Joani & Mazzone, Laures. "South America: Still a good bet?" *Industry Week*, pp. 31-40. 22 August 1983.

Netto, Delfim. "Brasil: o Esforco para superar dez anos de crise mundial." (Lecture with Questions and Answers.) Caimara dos Deputados. Brasilia, D. F. Agosto 1983.

Nitze, P & Sullivan, L & The Atlantic Council Working Group. *Securing the Seas: The Soviet Naval Challenge and Western Alliance Options*. Westview Press, Boulder, Colorado. 1979.

Palma Lima, Fernando. *O Brasil no Dialogo Norto-Sul*. Brasilia, D. F. 1983

Pfaltzgraff, Robert L. Jr. "The Atlantic Alliance: Looking Ahead." *Defense Planning for the 1990s and the Changing International Environment*, pp. 87-108. National Defense University Press, Washington, DC. 1984.

Pincus, Walter. "Our Carrier Armadas Could Sink the Budget." *Washington Post*, p. C1. 25 March 1984.

Pine, Art. "Can Central America Absorb More U.S. Aid? Many Experts Say No." *Wall Street Journal*. 7 February 1984.

Quester, George H. "The Future of the American Nato Commitment." *Defense Planning for the 1990s and the Changing International Environment*, pp. 109-138. National Defense University Press, Washington, DC. 1984.

Ranger, David. "Future Influence of South America on World Affairs." Royal Naval Staff College. London, England. 1976.

Reis, E. "Ilha de Ascensa, o maior parta-avioes no Atlantico." *Jornal O Globo*. Rio de Janeiro, Brazil. 2 Maio 1982.

Rogers, Bernard W. *NATO's Nuclear Forces Cannot Compensate for our Conventional Force Weaknesses*. ROA, National Security Report, Vol. 2, No. 4, Washington, DC. July 1984.

Rowley, Storer. "Critics launch new attack on 'Star Wars' defense." *Chicago Tribune*, p. 4. 18 March 1984.

Santa Cruz, Anibal P. "The Political Economy of Import-Substituting Industrialization in Latin America." *Quarterly Journal of Economics* 82, pp. 8-32. February 1982.

Schofield, B. B. "The Strategic Importance of the Southern Oceans." *General Military Review*. Editions Berger-Levrault, Paris, France. July 1971.

Schultz, James B. "Air Force, Navy narrow requirements for space-based radar" (*Defense Electronics*, October 1984). *Current News, Special Edition*, No. 1243. Washington, DC. 3 January 1985.

Schumacher, Edward. "3 Small Islands Loom Large in Argentine Leader's Plans." *New York Times*, p. A16. 5 February 1984.

Shultz, Richard. "The role of external forces in third world conflicts" (*Comparative Strategy*, Vol. 4, No. 2, 1983). *Current News, Special Edition*. Washington, D.C. 15 December 1983.

Silveira, Fernando M. "O Crescimento da Importaveia Estrategica do Atlantico Sul." *Revista d Clube Naval*, No. 269, pp. 3-6. Rio de Janeiro, Brazil. 1983.

Smith, William E. "Moscow's Muscle Flexing." *Time*. 16 April 1984.

Sparks, Allister. "Angola, South Africa reach quick accord on truce procedures." *Washington Post*. 29 February 1984.

Steele, George P. "Warnings from the South Atlantic." *Forum-Orbis*, pp. 573-578. Fall 1982.

Train, Harry D. "IV International Symposium on Maritime Power." Lecture by the US Navy Commanding Officer of the Naval Allied Forces in the Atlantic. Newport, RI. July 1981.

Tulchin, Joseph. *La ralacion Argentino-Brasilena. Punto de Vista Argentino*. University of North Carolina. Brazil and Argentina Symposium. 7 February 1978.

Unwin, P. J. "Brazil, a Maritime Role in the South Atlantic." *Navy International*, pp. 4-6. London, England. December 1976.

US Department of the Army. Corps of Engineers. *Waterborne Commerce of the United States*, Part 5, National Summaries. Fort Belvoir, Virginia. 1980.

US Department of the Navy. *Understanding Soviet Naval Developments*, 4th edition. Washington, DC. January 1981.

US Department of Transportation. *United States Oceanborne Foreign Trade Routes*. U.S. Government Printing Office, Washington, DC. April 1983.

Vanneman, Peter & James, Martin. "The Soviet Intervention in Angola: Intentions and Implications." *Strategic Review*. Washington, DC. Summer 1976.

Vidigal, Armando A. F. *A Evolucao de Pensamento Estrategico Naval Brasileiro*. Rio de Janeiro, Brazil. Abril, 1982.

Wall, Patrick. "The Vulnerability of the West in the Southern Hemisphere." *Strategic Review*. Washington, DC. Winter 1976.

Warner, John W. "Global Maritime Strategy Supports Deterrence Through Readiness." *Amphibious Warfare Review*, Vol. 2., No. 2. 2 November 1984.

Williams, John H. "Buying and Selling Arms in South America: A Tale of Three Countries." *Armed Forces Journal International*, pp. 106-112. Washington, DC. December 1984.

Wilson, Warren. "U.S. and Soviets in 'resource war.'" *Star-Tribune*, p. A16. Casper, Wyoming. 21 June 1980.

Wood, David. "Soviet Naval Task Force Headed into Caribbean." *The Patriot*, p. 1. Harrisburg, Pennsylvania. 17 March 1984.

Zumwalt, Elmo, R. Jr. "Blockade and Geopolitics" (*Comparative Strategy*, Vol. 4, No. 2). *Current News, Special Edition*. Washington, D.C. 15 December 1983.

BRAZIL
AND THE VITAL
SOUTH ATLANTIC

*Composed with 11 on 13 text and 13 point display lines in
Modern*

*Cover art by Juan Medrano
with display lines in Zapf Book Medium
Line art by James Price*

*Editorial Reader:
Lieutenant Commander Al McAloon, USN (Ret.)
Designed and edited by L. J. Conk and George Maerz
Editorial Assistant: Yvette Hemphill*