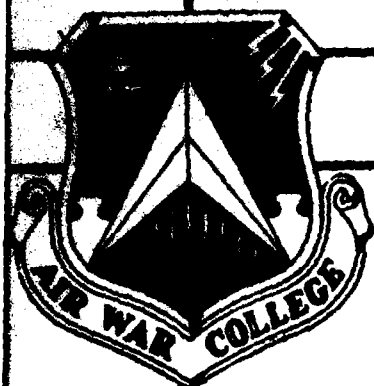


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RESEARCH REPORT

THE ROLE OF THE BRAZILIAN AIR FORCE IN THE
DEFENSE OF THE SOUTH ATLANTIC

LIEUTENANT COLONEL CARLOS M. VALLIM
BRAZILIAN AIR FORCE

1989

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UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

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THE ROLE OF THE BRAZILIAN AIR FORCE IN THE
DEFENSE OF THE SOUTH ATLANTIC

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MAXWELL AIR FORCE BASE, ALABAMA

May 1989

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EXECUTIVE SUMMARY

TITLE: The Role of the Brazilian Air Force in the Defense of the South Atlantic.

AUTHOR: Carlos M. Vallim, Lieutenant Colonel, Brazilian Air Force.

As one of the biggest countries in the South Atlantic region, Brazil has geopolitical, economic, and strategic interests with respect to that ocean. These interests can be threatened by a major maritime conflict in the area, especially if it entails an East-West struggle as the result of the presence of the Soviets in some African countries. By presenting these interests, the possible threats to them, and the Brazilian strategy for dealing with potential threats, the author shows the necessity of giving the Brazilian Air Force a major anti-submarine warfare capability in order to enable it to play the appropriate role in the defense of that maritime area.



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BIOGRAPHICAL SKETCH

Lieutenant Colonel Carlos M. Vallim is a graduate of the Brazilian Air Force Academy, class of 1966. He completed all the military courses required for his career -- the Escola de Aperfeicoamento de Oficiais da Aeronautica (equivalent of the Squadron Officer School) in 1975 and the Escola de Comando e Estado Maior da Aeronautica (equivalent of the Air Command and Staff College) in 1985. After finishing the latter, he became an instructor there, as well as liaison officer to the Brazilian Escola de Guerra Naval (Navy War College). As a pilot, he served as flight instructor for the Brazilian Air Force Academy, an operational pilot, and instructor for Search and Rescue and Reconnaissance. He is also operationally qualified in Aerial Transport. His work experience includes personnel, logistics, materiel, and flight safety areas.

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CHAPTER I
INTRODUCTION

This is an essay about the strategic importance of the South Atlantic to Brazil in particular and to the Western nations in general. Its objective is to address the role that the Brazilian Air Force can play in supporting the country's strategy for the region. That strategy aims at pursuing Brazilian interests, with regard to the ocean in a peaceful way and defending those interests in case of conflict.

Chapter II deals with the geopolitical economic, and strategic South Atlantic Ocean. It addresses each of the three realms in turn.

Chapter III examines the Law of the Sea approved by the United Nations Conventions, 30 April 1982 and the ramifications of the Law for Brazil in relation to the South Atlantic Ocean. The convention covered the use of the seas for navigation, overflight, exploration and exploitation of natural resources, fishing, conservation, pollution, and so on.

Finally, Chapter IV sets forth the reasons why the Brazilian Air Force needs to be prepared to participate in a collective

effort to defend the South Atlantic Ocean. It begins with a short historical review of the contributions of the Brazilian Air Force to operations on the South Atlantic during World War II. Then Brazil's strategy for that ocean is assessed. In light of that strategy emphasis is given to the need to increase the resources of the Brazilian Air Force to make it more effective in supporting the Brazilian interests in the South Atlantic.

CHAPTER II

THE IMPORTANCE OF THE SOUTH ATLANTIC

The fact that water covers two thirds of the Earth would be sufficient to show the importance of the oceans. However, regarding the geopolitical, economic, and strategic interests, the oceans assume a fundamental role in the life of the nations, since the oceanic regions constitute an important way of international communication, an abundant source of food, a huge reserve of raw materials, and a valuable means of defense or power projection. Therefore, this chapter will focus this issue in relation to the South Atlantic, within the Brazilian perspectives.

Geopolitical Consideration

The South Atlantic is a mass of the water surrounded by three continental fronts -- South America, Africa and Antarctica. In geopolitical terms, it has three important means of communication with other major bodies of water on a planet: the passage to the Pacific through the Strait of Drake; the passage

to the Indian Ocean around the Cape of Good Hope; and the passage to the North Atlantic on the narrowing between South America and Africa, in the axis Natal-Dakar, respectively in Brazil and Senegal.

In fact, there is a curious physiographic aspect to the world map. The Atlantic coast lines, both along the American continent and along the complex litoral of Europe-Africa, are impressively coincident. Each protrusion from one side coincides with a recess of another side and vice-versa -- indicating that at one time America, Africa, and Europe were one continent, according to the theory of the continental drift of the German geophysicist Alfred Wegener(1). Natural forces broke down that primitive continent in a distant point of the Earth's geological evolution, causing the appearance of the Atlantic. The American, European, and African coast lines of today are the result of the fracture line. This produced, perhaps, an important geopolitical consequence: the Atlantic Ocean seems to join much more than isolate its surrounding continents.

The geological characteristics of the North Hemisphere, in ancient times, facilitated exploration enterprises through the Bering Strait and the adjoining lands and waters of the continental hemisphere. This allowed the presence of Nordics and Asians in North America even prior to the navigation era. However, in the Southern Hemisphere, the continents are more isolated by the oceans, and it was only in modern days, when the advances of the navigation techniques made possible the ocean

trips, that the South Atlantic Ocean became important as a means of communication between Europe and the communities of the Indian and the Pacific Oceans.

In the age of the great discoveries, the South Atlantic played an important role in the efforts of the European nations, especially Portugal and Spain, to find a new way to India, in order to restore the profitable trade lost after the fall of Constantinople to the Ottoman Turks. As the Mediterranean began to lose its economic importance, the Atlantic became Europe's focus of interest, and for the first time the South Atlantic took on a geopolitical role as way of communication to remote regions of the globe.

Subsequently, the construction of the Suez and Panama Canals put aside the waters of the South Atlantic as navigation routes. Nevertheless, the situation has shifted again in recent years. As a result of endless political crisis in the Arab World, there has been increased uncertainty about the use of the Suez Canal. In regard to the Panama Canal, the future is also uncertain for the Americans after 1999, when the administration of the Canal will pass to Panama. Consequently, the South Atlantic has emerged once more as the best alternative for communications with the Persian Gulf and other important areas to its east. To take a long route to this area, the great Western powers tried to find a way of making oil shipments less expensive. This necessity, and the advances in sea transport technology, led to the appearance of the huge supertankers which today dominate this

kind of transportation. The supertankers hindered any possibility of return to the Suez route, for that canal does not permit operations of ships with capacity beyond 150,000 tons. Consequently, the geopolitical vocation of the South Atlantic, with renewed resort to the Magellan-Cape routes, emerged again.

Another important strategic aspect of the South Atlantic relates to topography. The ocean has depths up to 5000 meters relatively short distances from the South American and the African coasts. They are the depressions of Brazil and Argentina, at one side, and of the Congo and the Cape on the other side. These deep basins constitute ideal hideouts for modern submarines, from where they can come up to attack isolated ships, convoys, and oil rigs, and then return to a safer place in deep waters.

The islands of the ocean also have strategic value. That of Ascension Island to the English campaign in the South Atlantic was during the Falklands/Malvinas War for example, was considerable. The islands can be either advance posts into the ocean or bases for the control and protection of the sea lines of communication (SLOCs).

The Soviet Union^o has long realized the strategic importance of the South Atlantic. This is true not only for scientific exploration of the Antarctica but also in relation to dominance of the three passages of that ocean. The geostrategic triangle formed by Angola-Mozambique in Africa and Novozarevskaja in the Antarctica coincides exactly with the Cape passage. The Soviet

bases of Druznaya and Bellingshausen, and the Polish base of Arctowski in the Antarctica form a second triangle in the Strait of Drake. Finally, Cuba-Nicaragua-Guinea/Bissau form a third triangle in the region where the Atlantic is relatively narrow. From a geopolitical standpoint, these assets give the USSR a strategic position from which it might assert control over that maritime area. This doubtless could affect seriously the interests and national security of the Western countries in that maritime area.

Economic Aspects

Fishing Although being one of the oldest economic activities of mankind, fishing today remains very important for most countries. Indeed, the waters of the oceans are tremendously rich in maritime life, which provides a great source of food to man.

However, the quantity of fish shoals in the oceans is determined by several factors. These include water temperature, salinity, depth, light conditions, maritime streams, type of continental shelves, etc.

Along the Brazilian coast of the South Atlantic, the conditions of the water define two different fishing zones. In the South, the colder temperatures of the water makes it reasonably attractive for fishing. The north has hotter and less productive fishing waters.

Brazil's fishing areas are not as plentiful as those of Chile, Peru, and Ecuador, where a cold stream makes the Pacific waters highly productive for fishing; however, Brazil has some

excellent fishing grounds along its coast. Large quantities of swordfish and whales are caught off the northeast coast, in the states of Paraiba and Rio Grande do Norte. Shrimp are found along the coast of the states of Maranhao, Ceara, and Bahia, in the northeast. The same region is known as a lobster producer and exporter. Large shoals of tuna have been discovered off the coast of the state of Rio Grande do Sul, in the southern most part of Brazil, and attracted the interest of foreign fishing companies. Many fishing boats of other countries have been caught fishing illegally, especially off the southern coast.

The fishing industry in Brazil has shown a growth tendency, and currently its production amounts to about a million tons. Part of this production is consumed internally, and the surplus is exported. Nowadays, exports from the Brazilian fishing industry yield a surplus greater than \$100 million a year, which shows its importance to the country(2).

In 1984, the Brazilian motorized fishing fleet consisted of 4,096 industrial fishing boats and 6,255 non-industrial fishing boats that contributed to a production of 870,000 tons of fish and other sea by-products, the majority of which originated in Brazilian fishing grounds(3). Nevertheless the country has not been able to fully utilize the commercial potential of its fishing grounds due to economic limitations.

Mineral Resources Beyond the living resources, the oceans have a variety of minerals beneath the surface of their waters. Large quantities of metals, accumulated at the bottom of the seas, can

compensate for the world's shortage of raw materials and, consequently, have attracted the interests of most nations.

Special attention has been given to the so-called "polymetallic nodules", which are deposits of metals on or just below the surface of the deep sea-bed, in some parts of the oceans, including the South Atlantic. These nodules bring together large quantities of common minerals, like cobalt, copper, nickel, and especially manganese.

Another important mineral resource is salt. This is extracted in large quantities in the northeast and southeast shores of Brazil. It is employed largely today in chemical industries.

Some elements derived from the South Atlantic's sea water-- like bromine, magnesium, and phosphorite -- have become important raw materials in the production of fertilizers. In addition, huge concentrations of calcareous-type seaweeds are encountered along the Brazilian coast, from the Amazon River mouth, in the north, to the state of Rio de Janeiro, in the southeast. This calcareous substance has large application in the enrichment and stabilization of acid soils, making possible their transformation into good land for agriculture and cattle growing. These reserves are the biggest deposits of calcareous substance in the world, and it is estimated that the available quantities in Brazil's continental shelf would fertilize the soil of a region the size of the Amazonic Region.

However, the most important economic activity undertaken on

the Brazilian continental shelf has been that associated with exploration and exploitation of oil. Brazil still is highly dependent on imports of crude oil, and Brazilian authorities have striven to increase internal production in order to reduce the heavy expenditures of foreign exchange to buy oil abroad. The limited potential of oil and gas reserves on land led Brazilian technicians to concentrate more efforts on continental shelf. Off shore exploration began in 1968, first along the coast of the states of Espirito Santo and Sergipe. However, after the world oil crisis in 1973, it spread to other parts of the Brazilian continental shelf, where research had indicated the possibility of the presence of oil.

As a result of these efforts, the production of oil and gas has increased significantly in Brazil. Between 1982 and 1986, oil production rose from 267,644 to 592,708 barrels per day, and gas production, from 3,028 to 5,686 million cubic meters. Approximately 70 percent of the oil and 60 percent of the gas produced in 1986 originated from Off-shore(4).

The constant development of more advanced technologies in the oil-producing sector will permit oil exploration in deeper waters, bringing Brazil new possibilities for the achievement of self sufficiency in crude oil. Therefore, Brazil has great interest in reserves of oil and gas in its continental shelf.

The oceans, doubtless, have in their bed a vastness of resources that can supply mankind with food, minerals and chemicals, as the land resources become exhausted. This

consideration led the United Nations to promote a Convention in order to control the use of these resources.

Strategic Importance

The sea is not an objective in itself, it is not a territory to be occupied like land; its importance is fundamentally dependent upon its usefulness -- or its essentially -- as an economic means of communication, as a source of resources, and as a transit area for power projection, both offensive and defensive(5).

Looking at Brazil's extensive Atlantic Ocean coast, one can obviously see its importance to the country. The Atlantic has indeed played an important role in Brazil's history, culture, and economy. It was, for centuries past, the only way Brazil had to communicate with most of the overseas countries, as well as with the distant parts of its territory. Nowadays, this importance is not less than it used to be. In fact, it has grown immensely in the political, strategic, and economic realms. This will be discussed in the paragraphs that follows. According to Rear Admiral Mario Cesar Flores, two factors are critically important to define the ability of one state to control maritime areas for its own benefit, and to deny them to opponent states. These factors are: "mobile forces and support positions"(6). A maritime strategy is based on the interplay between security and the denial of the use of the sea, by means of preparing and employing that combination.

Therefore, a nation must project its maritime forces and establish support points conveniently located, in order to be able to project power and, thus, to implement its maritime

strategy. A good example of this concept is, the buildup of maritime forces and maintenance of base facilities in strategic areas worldwide, by the superpowers in the pursuit of their strategic goals.

Now, what are the Brazilian interests in the South Atlantic area in this light? They can be defined as follows:

1. Defense of Brazilian territory, air space, and territorial waters;

2. Exploitation of natural resources along the continental shelf and other areas in accordance with international laws;

3. Free use of the ocean as a means of maritime and air communications and trade;

4. Participation in the exploration of the Antarctic continent. From my point of view, these are legitimate interests because of the extensive Brazilian coast along the South Atlantic Ocean, the dependency of the nation on its territorial waters, and the strong geopolitical attraction between Brazilian territory and the sea. Indeed, despite the immense hinterland, the majority of the Brazilian population lives near the coast.

Brazil has equal interest in the living and mineral resources, especially in the oil that exists in the continental shelf. Much of the potential of these resources remains unexplored or partially explored, because of economic costs or the lack of the required technology to exploit them. Obviously, these resources must be preserved for future generations, when new technologies will make possible their exploration.

The maritime lines of communication are essential to the Brazilian economy, for more than 95 percent of the country's foreign trade, both exports and imports, are travels by sea(7). The fact that Brazil cannot produce all the oil it needs makes it highly dependent upon imported oil. This comes from several parts of the world: Africa, North America, South America, Asia, and Europe. The overall quantity imported in 1986 was roughly 35 million cubic meters(8), the equivalent of 63 percent of the crude oil consumed in the country. Therefore, Brazil cannot do without oil and other imported products, and, as some other countries, it needs to export part of its production to obtain the necessary revenues for its economy. The Brazilian fleet of tankers (FRONAPE) transported in 1986 a total cargo of approximately 80 thousand metric tons(9), while the maritime transport by the Brazilian merchant fleet was nearly 10 million tons.

At present, the Brazilian merchant fleet is growing at a slow pace, but that pace is expected to rise as soon as the country overcomes its present economic difficulties. Therefore, the freedom to use the sea is imperative to Brazil as well as other countries, since the world economy is becoming increasingly interdependent.

Since hundreds of merchant ships of different flags carrying all kinds of goods and essential raw materials, pass through the sea lines of communications that lay across the South Atlantic, the freedom of navigation on the South Atlantic is also important.

to several other Western countries. The current SLOCs of the South Atlantic are:

- American coastline
 - Straight of Magellan - Trinidad
- African coastline
 - Cape Verde/Dakar - Cape of Good Hope
- European oceanline
 - Brazilian Northeast - Cabo Verde/Dakar
- African oceanline
 - Santos/Rio de Janeiro/Vitoria - Gulf of Guinea
- South African
 - Santos/Rio de Janeiro/Vitoria - Cape of Good Hope
- Rio de la Plata - Cape of Good Hope
- Brazilian Northeast - Cape of Good Hope
- Magellan - Cape of Good Hope
- Antarctic routes

The following routes are those that especially demand our attention:

- Coastal navigation
 - Rio de Janeiro - Rio Grande
 - Rio de Janeiro - Natal
 - Natal - Manaus
- Long Range Navigation
 - Coastal - North America
 - Coastal - Persian Gulf
 - Coastal - North Europe

- Coastal - Mediterranean
- Coastal - South Africa
- Coastal - Orient
- Coastal - Gulf Guinea
- Coastal - Rio de la Plata
- Coastal - Central America(10)

The strategic problem of the South Atlantic Ocean cannot be approached without considering the countries of the west coast of Africa, countries of the east coast of South America, and the Western countries as well. The reason is that the maritime area is so big that its defense could hardly be accomplished by only one country, even a superpower like the United States. Hence, the participation of the South Atlantic countries, and others that have legitimate interests in the security of that maritime area, is indeed necessary to accomplish the task. It must be said, nevertheless, that this contingency does not diminish Brazil's responsibilities toward the region, because of its geopolitical situation and strategic interests. All these interests can be threatened by a Soviet military presence in the region in the event of an East-West conflict, for the Kremlin's strategy for the South Atlantic is for Soviet forces to threaten and disrupt all the sea lines of communication of that ocean. The Western countries, and Brazil in particular, must be especially aware of the USSR's military buildup and strategic positions in the African and Antarctica continents. These represent a potential threat to the West. Recalling the concept

of "mobile forces and support positions", it is not difficult to perceive that the Soviets, establishing their military presence and support bases in that area, aim to control the strategic passages and the South Atlantic sea lines of communications.

Finally, there is the strategic value of the oceanic islands, in both the defensive and offensive sense. One cannot forget the inestimable contribution of Ascension Island (82 square km) to support of the British forces during the Falklands/Malvinas War. Likewise, several other strategic islands can be used as support bases or forward sentinels on the sea to defend the South Atlantic and South America. Two of them, Fernando de Noronha (25 square km) and Trindade (16 square km), belong to Brazil and constitute important assets to the defense of its territorial integrity and other interests. Fernando de Noronha has an airfield, and Trindade, if necessary, can have one in the future, despite the difficulties imposed by its physiography. These islands could be used to support friendly air and naval operations, thereby representing a relevant contribution to the South Atlantic's strategic defense.

CHAPTER III

THE LAW OF THE SEA

One of the main concerns of Brazil has been the solution of its critical economic problems. Despite the ample natural resources of the Brazilian territory and the substantial efforts undertaken by that nation, its economic performance has not improved so far. Among the factors that have contributed to this disappointment we can point out, the insufficiency of oil and the external debt.

In a situation like that, the oceans's waters and resources become relevant assets, as supplier of a considerable variety of living and non-living resources, oil and communication facilities that can help the Brazilian development and the solution of its troublesome economic shortfalls. This way, Brazil is highly interested in the international laws that rule the exploration and the exploitation of the sea's resources.

The Oceans, formed by the liquid mass that occupies three quarters of our planet's surface, have been, historically, the bone of contention and the object of dispute among nations. Since ancient times mankind has realized the importance of the

sea through the primitive activities of fishing and through transport operations close to the coastline. However, the constant evolution of seamanship opened the vastness of the oceans to man, expanding human horizons.

The great maritime discoveries of the end of the fifteenth century resulted in an era of great expansion of overseas commerce and in the establishment of new maritime routes. As expected, the maritime powers of that time started to contest the sovereignty of the seas and of the new lands.

The growth of naval powers created great fears on the part of other nations regarding the security of their merchant fleets. This situation caused Hugo Grocio to create the "Mare Liberum" theory (1635), which advocates the freedom of the oceans for all nations. Nevertheless, the indisputable supremacy of the maritime powers of that period generally prevailed over any principle, harming the interests of other countries.

Notwithstanding, the concept of free navigation, little by little, gained strength and imposed itself worldwide. In the nineteenth century, the concept of the "common heritage of mankind" arose. This concept was taken up by the General Assembly of the United Nations in 1967, and a conference was convened to codify the Law of the Sea. The task, which relied on the participation of many nations, was completed in December 1982, when the Convention on the Law of the Sea and its Final Act was signed by delegates of 119 countries.

This Convention sets forth rules governing things such as

the limits of national jurisdiction over ocean spaces, access to the seas, navigation, protection and preservation of the marine environment, exploitation of living resources, scientific research, sea-bed mining, exploitation of non-living resources, and settlement of disputes. Moreover, it establishes new international bodies to carry out functions for the realization of specific objectives. The basic principles that guided the work of the conference, according to the current UN Under Secretary General, were the balance of rights and duties and respect for the rights of others(11).

Among the various resolutions adopted by the Convention, the ones of major interest to Brazil in the context of the current discussion are:

-- Coastal states have Sovereignty over a territorial sea of 12 nautical miles. This territorial sea comprises the sea space and the corresponding air space sea-bed, and subsoil.

-- Each coastal state has a contiguous zone with the maximum extension of 24 nautical miles (or 12 nautical miles beyond the limit of the territorial sea). Here the coastal state may exercise control to avoid infringement of its customs, fiscal, immigration, or sanitary laws (and regulations) within its territorial sea, as well as to punish the infringer.

-- A continental shelf, comprising the sea-bed and subsoil of submarine areas, that extends beyond the territorial sea of the coastal state throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a

distance of 200 nautical miles the baselines established in accordance with the Convention. The distance of the legal continental shelf can extend up to 350 nautical miles, according to some criteria. Coastal states have the sovereign right to explore and exploit their continental shelves' natural resources. - Finally, an exclusive economic zone (EEZ) of 200 nautical miles from the baselines defined by the Convention was established for coastal states. A coastal state possesses sovereign rights to explore, exploit, conserve, and manage the natural resources of the waters, sea-bed and subsoil, as well to produce energy from the water, currents, and winds in this zone. In addition, it has jurisdiction over marine scientific research, protection and preservation of the maritime environment, and other functions provided in the Convention.

It is important as well to note the creation of two international bodies. The international sea-bed authority administers the common heritage of mankind, and the International Tribunal for the Law of the Sea settles disputes on the matter.

These various provisions of the Convention of the Law of the Sea give Brazil substantial interests related to the South Atlantic. It is worth emphasizing that they assure Brazil of rights in an area of approximately three million square kilometers, which will certainly play an important role in the development of a better future for the nation.

To take advantage of the resources there, Brazil has to define and implement an adequate policy toward the South

Atlantic. This police must address not only the economic issues but also the geopolitical and strategic ones. In doing so, it must use all instruments of national power (political, economic, psychosocial, technological and military) to guarantee the country's interests and the peaceful use of the South Atlantic, according to the precepts of international respect and cooperation.

CHAPTER IV
THE STRATEGIC ROLE OF THE BRAZILIAN
AIR FORCE IN THE SOUTH
ATLANTIC OCEAN

Brazil is by far the largest country in the South Atlantic area. It also has the longest coast line in that ocean. So, one cannot deny its significant geopolitical influence in the region. Moreover, the country's location and its coastal characteristics give it strategic importance, enabling it to control a great portion of that ocean and, in particular, the narrow zone between Natal and Dakar. These geostrategic advantages were proven in World War II, when the US 4th Naval Squadron operated from bases in the Brazilian Northeast to patrol the Atlantic, in order to block the crossing of Axis forces, to fight hostile submarines, and to control maritime traffic and convoys in the Natal/Dakar narrows area. The geographic location of the Brazilian Northeast was also important to the "African airlift", known as the "Springboard of Victory" in support of campaigns in Europe and North Africa. That region remains strategically important, despite the greater endurance of modern aircraft.

However, the defense of the South Atlantic is not related

only to the geographic position of the Brazilian Northeast. The West standpoint must regard also the freedom of navigation on the high seas and (through the passages of the Cape of Good Hope and of the Strait of Drake.

Consequently, this chapter will discuss the reasons that recommend the reinforcement of the BAF's capability to patrol and defend the South Atlantic, based in the geopolitical, economic, and strategic consideration and the provisions of the UN Convention on the Law of the Sea presented previously. The Brazilian strategy for the region, the possible threat and the rationales that justify a more effect role of the Air Force in the defense of the South Atlantic will be addressed in the following sections.

Brazilian Strategy for the Region

In this decade the failures of the Soviet economy have contributed to the rise of international skepticism about the threat posed by the Marxist-Leninist regime in the USSR. General-Secretary Mikhail S. Gorbachev is trying to adopt economic reforms in order to prevent the declining of the Soviet national power.

However, the USSR's economic misfortunes do not mean that it is abandoning its worldwide strategic goals, or even its military posture. In regards to the South Atlantic Ocean, it is important to remember that the USSR has managed to spread its influence in the African continent, exploiting the national liberation movements to achieve strategic positions in the region. In fact,

Soviet bases or access to port facilities in Africa, Antarctica, and Central America enable the USSR to control such key points as, for example, the strategic passages of the South Atlantic.

Nevertheless, US foreign policy is concentrated in areas that American policymakers perceive as more threatening. Consequently, the tendency has been to forget areas considered of minor or remote threats like the South Atlantic.

From the Brazilian standpoint, the defense of the South Atlantic is highly important strategically, not only to Brazil but also to other Western countries. The main concern has been the growing influence of the Soviet Union in the countries of West Africa as well as the Soviet military buildup, making USSR able to deploy naval forces to critical points of the region. This situation contradicts Brazilian interests in the region, for Brazil, despite having diplomatic relations with USSR is predominantly a Western-oriented country.

Brazilian foreign policy pursues not only its own interests but also international economic cooperation and the participation of regional countries in South Atlantic security. Brazil's willingness to promote regional and worldwide cooperation, as well as the participation of the Brazilian Navy in combined naval exercises for the defense of the South Atlantic with other navies of the continent, shows this posture clearly.

But, taking into consideration that the Soviet presence in Africa can be harmful to the stability of the region, Brazilian foreign policy seeks to tighten Brazil's historical and cultural

ties with the Black African countries in order to replace Soviet influence. In my opinion, this is a mature approach to an important problem. The defense of that maritime area is essential not only to Brazil but to all the Western countries.

Briefly, one can state that the Brazilian interests toward the South Atlantic are:

- Defense of its territory, air space, and territorial sea;
- Exploration and exploitation of the sea resources within the country's Exclusive Economic Zone;
- Free and peaceful use of international waters and air space;
- Maintenance of peace in the region (keeping it out of the East-West struggle);
- International cooperation to develop the region's countries;
- Exploration of the Antarctic.

In line with these interests and the peaceful nature of the Brazilian people, Brazil's national strategy can only be defensive in nature. With respect to the South Atlantic, this strategy aims at the defense of national interests in this region and respect for international laws.

Brazilian Army General Carlos Meira Mattos (Retired) considers that, in case of a global conflict, Brazilian strategy toward the South Atlantic cannot be separated from a general strategy for the region, and he argues that the best way to defend Brazilian interests will be to integrate Brazil with other nations in a "defensive community". In this case, Brazil must be prepared to share responsibility for South Atlantic security with

other countries in the Americas and Africa; moreover, it would not be wise to rely on allied forces for the protection of its maritime interests(12).

Another strategist, Brazilian Air Force Lt. Gen. Nelson Freire Lavenere-Wanderley, holds that the theater of operations that concerns Brazil in the South Atlantic extends southwards of the line that ties Trinidad to Cape Verde. This area is quite below the Tropic of Cancer, the southern line of the NATO area(13).

From my viewpoint, a coherent Brazilian strategy for the South Atlantic Ocean must necessarily envisage an adequately equipped, and trained Air Force and Navy to face the challenges imposed by that broad scenario. Otherwise, it will be impossible individually or collectively to defend Brazilian interests there.

This strategy must seek the participation of the South Atlantic countries, including those of Africa, and of the United States. Finally, it must seek peace in the region and observance of the international laws.

The Brazilian Air Force and the South Atlantic Defense

The Brazilian Air Force was created on 20 January 1941, having the new service incorporated the personnel, equipment, and air base facilities of the Army and Navy Air Corps.

The new Air Force did not have to wait long to be engaged in combat. At the end of the same year, the Japanese Air Force attacked Pearl Harbor, causing heavy material and human losses. This aggression against a friendly nation made the Brazilian

government sever relations with Germany, Italy, and Japan on 28 January 1942. As a result, in the following months, German submarines (U-boat) sank several Brazilian merchant ships in Atlantic waters, culminating with the sinking of five Brazilian ships in August of the same year and heavy number of fatalities. These events induced Brazil to declare war against the Axis.

At that time, the Brazilian armed forces were not adequately prepared and equipped for the great task that they were about to face. This was particularly true of the Air Force, since it was in process of organization. However, as result of a cooperation agreement, signed on 23 May 1942, a Joint Brazilian-United States Commission was created to study common problems of defense. As a result, Brazil and the United States agreed that the South Atlantic's area, adjacent to the Brazilian coast, would be a joint responsibility that Brazil would be responsible for its own territorial defense, and that Brazilian and American forces would cooperate on the defense of Brazil's coastal areas.

In 1942, despite the lack of adequate aircraft, the Brazilian Air Force started air surveillance operations along Brazil's coast, from Rio de Janeiro to the north, in order to protect maritime navigation and chase German submarines. Simultaneously, the Brazilian military started their training in modern combat aircraft provided by the Americans.

The operations for SLOCs protection performed by the Brazilian Air Force in World War II were roughly limited to the seabelt around the Brazilian coast. However, the intensification

of the anti-submarine war (ASW) campaign in 1943 spread the air and naval operations to a broader maritime area of the Atlantic Ocean, between Brazil and Africa. This required the desviation of ships and aircraft to distances hundreds of miles off the Brazilian shore to fight hostile submarines, and localize enemy ships transporting raw material from Asia and Oceania, around the south of Africa and through Atlantic waters, to German harbors in Europe.

The experience of the Brazilian Air Force made clear the great importance of air power in ASW campaign and in the surveillance of large oceanic areas. Furthermore, it proved the value of strategically located facilities for air-sea operations by land-based aircraft on the continent and in the islands.

It is important to emphasize that the cooperation between Brazil and the United States contributed significantly to the defense of the South Atlantic, proving to be the best way of defending that vast strategic oceanic area.

Shortly after the experience acquired in the South Atlantic air war operations as well as the participation of the Brazilian First Fighter Group(14) in the campaign in Europe during World War II was very important to shape the new Brazilian Air Force and its doctrinal basis.

However, as Brazil has enjoyed a peaceful situation in South America -- thanks to the absence of border disputes or quarrels with neighboring countries -- and faced economic constraints the Brazilian armed forces have been kept at levels below the

strategic needs of the country. The concept of "a maximum of development with a minimum of security" defined the inclination of successive governments. They allocated the largest possible portion of the national resources to boost the economy, while spending nothing more on defense than the necessary to maintain a minimum of security. Thus, the country has spent less than 1 percent of gross national product (GNP) a year on defense.

Nevertheless, taking into consideration Brazilian interests in the South Atlantic Ocean, one must conclude that both the Brazilian Navy and the Air Force are insufficient to accomplish their tasks. The extension of Brazil's Atlantic coastline is approximately 7,200 kilometers (4,500 miles), which entails an Exclusive Economic Zone greater than three million square kilometers (1,158,306 square miles). If one were to be concerned only with Brazilian interests related to this Exclusive Economic Zone, the necessity of reinforcing the resources of both forces is obvious.

But, what about the overall security requirements? For example, in case of conflict how would those services be able to defend the strategic interests of the country beyond the limits of the Exclusive Economic Zone, which are not inconsiderable in large portions of the South Atlantic? Lessons learned in World War II showed the possibility of a conflict encompassing a wide area of the South Atlantic. Were this eventuality to occur again, appropriate forces would be needed to meet the operational requirements to fight enemy forces in a broader maritime area.

Soviet leaders have realized that effective naval power can offer multiple opportunities to implement a nation's objectives worldwide. No wonder the Soviets have endeavoured to increase the USSR's presence in the South Atlantic countries of Africa by filling the vacuum left by the British, the French, and the other European countries. As a result, several facilities have become available to Soviet ships and aircraft, and the strategic balance of the South Atlantic has changed radically. Soviet long-range aircraft, warships and submarines operating from bases in West Africa can interfere and harass all maritime navigation in the South Atlantic. And, it's important to say that the Soviets have the ability to support their forces with sophisticated means, including satellites.

In case of a global conflict, or even a regional one, the strategic importance of the South Atlantic will grow tremendously, particularly if the Suez Canal is closed. The SLOCs can be seriously jeopardized by the Soviets, and the maritime flow of raw materials and oil needed by Western countries, including Brazil, can be disrupted, resulting in dangerous consequences to their economy.

The strategic defense of the region must take into consideration two conflict scenarios: one along the South America coastline and the other in middle of the South Atlantic Ocean. The first scenario, more limited in nature, ties in closely with the defense of Brazilian territory making possible the employment of land-based fighter aircraft and helicopters to attack enemy

ships. The second scenario, which covers a more distant and broader oceanic area in the high seas, is of interest to all the Western countries, due to the dependency of the West on strategic raw materials and oil that are shipped through the South Atlantic SLOCs. War operations in such an area (ASW, surveillance, patrol, and attack) call for long-range aircraft and warships. However, in both areas, anti-submarine warfare can only be fought by aircraft and ships carrying adequate equipment and weapons. In this last regard, the state of the art of technology considerably increased the capacity and the importance of land-based patrol aircraft. Thus, the Brazilian Air Force must not forget the importance of these aircraft to the strategic defense of the South Atlantic.

The strategic responsibility of Brazil in the South Atlantic tends to grow as its foreign trade increases and its economy becomes more internationally interdependent. Hence, the potential threat presented by the presence of alien military powers on the other side of the ocean must be addressed carefully.

A sound strategy for the region cannot forget the importance of the Atlantic African countries. In connection the friendship and cultural ties between Brazil and most of these countries represent a great asset for bringing these countries to the Western sphere of influence, by giving them necessary political and economic support. One must realize that the contribution that they can make to the South Atlantic defense is essential.

Brazilian authorities must then be aware of their responsibilities in formulate an adequate policy to protect the country's interests in the South Atlantic. To accomplish this objective Brazil must seek to better equip the Brazilian Air Force and the Navy, giving them an efficient anti-submarine warfare capability to meet the possible challenges in the South Atlantic.

Brazilian Air Force Lt. General Nelson Freire Lavenero Wanderley (retired) showed a far-reaching vision of the problem regarding a coherent Brazilian strategy for the South Atlantic in the following statement:

The Brazilian Air Force, in planning its air operations, should give due priority to air operations in the South Atlantic; in studying these operations, it should adopt a broad outlook to ward the problem; it would be a very serious mistake to plan air operations in the South Atlantic giving priority only to the coastal maritime belt or even to only the 200 miles of the continental sea; it would mean to risk leaving the Brazilian Air Force absent from the most important areas for Brazil in the South Atlantic; it would be to condemn the Brazilian Air Force to become once more too dependent upon our powerful allies in the event of a war (15).

To carry out a military strategy based largely on air power, the government must focus on providing the Brazilian Air Force with the capability of fighting enemy forces near the Brazilian coast and on high seas. This will entail the growth of Air Force resources such as long-range maritime patrol aircraft, attack aircraft, adequate weaponry, electronic warfare, C3I, and base facilities in Brazilian territory and other friendly countries if necessary. Moreover, an increase in the number tankers will be necessary to support air operations over the ocean.

Part of these military aircraft and items of equipment can be supplied by Brazilian national industry, but the bulk of them will have to be procured from abroad. To accomplish this task a judicious study will be necessary in face of the great number of military products available today in the international market.

CHAPTER V

CONCLUSIONS

This study has shown in different ways the importance of the South Atlantic Ocean. Strategically, that ocean is the waterway through which flow the essential raw materials and oil coming from the Middle East, Asia and the Pacific to the Western economies. The South Atlantic waters and seabed under Brazil's jurisdiction also constitute a huge reserve of food, minerals and oil to be exploited in the present and preserved for the future.

From a geostrategic point of view, Brazil has a role to play in the South Atlantic. The strategic position that it occupies in relation to that ocean, as well as its importance in the regional context, means that the country has to take some initiatives and assume responsibilities towards the region, in order to protect its interests there and contribute to regional security.

However, the Brazilian armed forces must be better prepared to face this enormous task. During World War II operations against the Axis, the naval forces in the South Atlantic showed the importance of land-based, long-range, and specially-equipped aircraft to fight against hostile submarines and ships in a large

naval theater of operations. Identical requirements can be expected in a modern conflict involving the same maritime area, for the developments in military technology have greatly increased the operational capability of combat ships and aircraft. To keep pace with this challenge, the Brazilian Navy and Air Force need to improve their capability to combat hostile forces that might eventually threaten Brazilian territory or national interests.

Concerning the South Atlantic Ocean, Brazilian interests comprise both the territorial waters and seabed, corresponding to the Exclusive Economic Zone, and the high seas. The country's dependence on imported oil, on international trade, and on maritime resources makes it highly susceptible to threats coming from the sea. Without appropriate protection, Brazilian tankers, off-shore oil rigs, and merchant ships are especially vulnerable to submarine attacks. Consequently, the defense of the Brazilian interests can only be effective if the country has the military capability to deter hostile sea attacks.

Since Brazil has traditionally fostered friendly relationships with all countries, particularly those on the American continent, the increasing Soviet presence in Western Africa represents the only potential threat to its interests in the region. Despite its peaceful nature, Brazil must be prepared to meet this potential threat.

In this regard, to protect national interests in the South Atlantic, special attention must be paid to the role of air

power. These interests require higher investments to expand the war fighting capability of the Brazilian Air Force (and Navy for sure). With respect to the Air Force in particular, it is essential to recognize the fundamental importance of a long-range, land-based anti-submarine aircraft, to operate both near and at long distances from the Brazilian coast. Aircraft of this sort could be deployed to airport facilities on the Atlantic side of friendly African countries, thereby rendering a valuable contribution to the collective effort of protecting the West against a common enemy. Therefore, the importance and friendship of these countries must be taken into account.

It is important to emphasize that this work is not meant to present a project of reequipping the Brazil Air Force with a new ASW aircraft. Rather, it seeks to offer some rationale to help decisionmakers define a sound strategy to reshape the Air Force so that it can effectively accomplish its mission of protecting Brazilian interests in the South Atlantic. In my opinion, this is a matter that requires great priority, for an effective ASW capability, to cover a large maritime area, cannot be implemented in a short period of time. Consequently, we must plan in advance, in order to have the appropriate means to protect our national interests in an emergency.

NOTES

1. Alfred Wegener, The Origin of Continents and Oceans, Trans. John Biram (New York: Dover, 1966), p. 17.
2. Agenda Exame (Sao Paulo: Editora Abril, 1986), p. 132.
3. Tenente-Coronel-Aviador Cesar Costa, "A Forca Aerea Brasileira e o Atlantico Sul, Importancia e Necessidades" (Universidade da Forca Aerea, ECEMAR, 1986), pp. 1-13.
4. Petrobras, Anuario Estatistico 1986 (Rio de Janeiro: SERCOM, 1986), p. 20.
5. Contra-Almirante Mario Cesar Flores, "Importancia Estrategica do Atlantico Sul; Protecao a Navegacao," Caderno de Estudos Estrategicos, Setembro 1982, p. 6.
6. Ibid, p. 5.
7. Cesar Costa, "A Forca Aerea Brasileira e o Atlantico Sul, Importancia e Necessidades", pp. 1-7.
8. Petrobras, Anuario Estatistico 1986, p. 20.
9. Ibid, p. 18.
10. Source: Brazilian Navy.
11. The Law of the Sea, United Nations Convention, (London: Croom Helm, 1983), p. xxiv.
12. Carlos de Moura Mattos, Estrategias Militares Dominantes, (Rio de Janeiro, Biblioteca do Exercicio Editora, 1986), pp. 82-85.
13. Tenente-Brigadeiro Nelson Freire Lavenere-Wanderley, "O Brasil e o Atlantico Sul; Operacoes Aereas," Caderno de Estudos Estrategicos, Janeiro 1982, p. 34.
14. The Brazilian Air Force 1st Fighter Group, equipped with F-47 "Thunderbolt", was integrated into the Mediterranean Tactical Air Force, XXII Tactical Air Command, in Italy.

15. Tenente-Brigadeiro Nelson Freire Lavenero-Wanderley.
"O Brasil e o Atlantico Sul; Operacoes Aereas," p. 28.

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