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NATIONAL INTELLIGENCE SURVEY

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49

Armed Forces

NATIONAL INTELLIGENCE SURVEY PUBLICATIONS

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This chapter was prepared for the NIS by the Defense Intelligence Agency. Research was substantially completed by June 1973.

BRAZIL

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Armed Forces

A. Defense establishment

The Brazilian regular military establishment is a conventional force of 245,700 men and is the largest in Latin America. It consists of an army of about 160,000 men equipped with light armor and field artillery up to 155-mm, a navy of 42,500 men (including 13,000 marines and a tiny naval air arm) and 22 major combatant ships, and an air force of 39,200 men and nearly 870 aircraft. These three services are supplemented by state paramilitary forces called the military police, whose strength totals 184,000 men. (S)

Under the 1967 Constitution, the mission of the armed forces is "to defend the country and to guarantee the constituted powers and law and order." The armed forces are capable of maintaining internal security and defending the country against attack by neighboring countries, but they are not capable of successfully defending against sustained attack by a major military power. They could conduct effective offensive operations against any neighboring country, except possibly Argentina, but would be seriously handicapped by logistic difficulties when operating from other than the southern portion of the country. If outside logistic support were provided, they could assist materially in hemispheric defense and provide a small expeditionary force. (S)

Among the strengths of the armed forces are a strong *esprit de corps*, the discipline of the enlisted men and their capacity for operating under conditions of physical hardships, the generally high educational level among the officers, and the relatively wide experience acquired by some officers in operations during World War II, the Dominican Republic crisis, and the United Nations peace-keeping mission in the Gaza Strip. Weaknesses include the dependence upon foreign sources for major military equipment, particularly for sophisticated aircraft and naval ships; the scarcity of specialists, technicians, and highly qualified noncommissioned officers; the frequent turnover of conscripts; and the heterogeneous nature of the equipment. (S)

Brazil is a member of the Organization of American States (OAS) and of the Inter-American Defense

Board, an organization that plans for the joint defense of the Western Hemisphere. It is a signatory of the Rio Pact of 1947, an agreement among the American states for mutual support against aggression, and is a charter member of the United Nations. Brazil has, however, steadfastly refused to sign the Nuclear Nonproliferation Treaty because it could restrict Brazil's future development of nuclear power. (C)

Brazil traditionally has considered itself to be a leader of Latin America. Particularly since 1964, Brazilian military men have been concerned over the growing Communist/Socialist influence in South America, and in 1971-72 they extended covert and overt support to forces fighting those influences in Uruguay and Bolivia. The military establishment, which has consistently sided with the U.S. position on Cuba and Castroist subversion, opposed the efforts of Peru and Chile in 1971-72 and the efforts of other Latin American countries in 1973 to have Cuba readmitted to the OAS. The armed forces are very strongly anti-Communist. (S)

1. Military history (C)

The armed forces trace their traditions to the colonial period, primarily to the war against the Dutch, who captured Recife in 1624 and controlled the entire northern coast until 1654. Brazilians credit local Brazilian forces with expelling the Dutch and consider this struggle to be the earliest source of the national pride that still dominates military thought and ideals. The army was formed in May 1821 and the navy in July 1822, as the crown prince (later Emperor Pedro I) developed his power base in preparation for national independence from Portugal on 7 September 1822. The navy, however, has precedence among the military forces, inherited from the Portuguese Navy as a reward for protecting the previous Emperor Joao VI in his flight to Brazil in 1807-08 to escape Napoleon's invasion of Portugal. Service academies were originally established in Rio de Janeiro for the Portuguese forces—the Naval Academy on 30 January 1808 and the Military Academy in 1810.

The first military air unit—one aviation company—was organized within the army in February 1915. Both

the army and navy had their own air units during the 1920's and 1930's. Decree No. 3,730 of 18 October 1941 established the air force as a separate ministry.

United States-Brazilian military relations have been exceptionally close, particularly since World War II. A U.S. military attache was first assigned to Brazil in 1898, and the U.S. Navy has had a mission at Rio de Janeiro since 1922, except for a brief period in 1931-32. The first U.S. Army mission arrived in early 1939, replacing a French military mission which had been there since 1920. An Army Air Corps mission arrived in 1941. In May 1942, to facilitate military cooperation, the two countries established the Joint Brazil-United States Defense Commission (JBUSDC) in Washington and the Joint Brazil-United States Military Commission (JBUSMC) in Brazil each headed by the head of the delegation of the country where it is located. The commission in Brazil became the agency for in-country training and planning assistance for the preparation of the Brazilian Expeditionary Force. Under the terms of a 1952 Mutual Assistance Agreement, the Brazilian Armed Forces receive grant training and credit assistance for the purchase of materiel and services. The head of the Rio-based JBUSMC is a Brazilian four-star general or flag officer.

The Brazilians adopted U.S. training and teaching methods during WW II and in 1948 asked the United States to help establish the Superior War School, which has been very influential in developing Brazilian military thought. Although present U.S.-Brazilian military ties show signs of wear—partly because of U.S. refusal to sell sophisticated military weapons—there is no other country that rivals the United States in influence in Brazil.

During the 19th century Brazil fought three wars. In 1825-28, it fought Argentina in an unsuccessful effort to retain Uruguay as part of Brazil. In 1851-52 Brazil supported a revolutionary movement to overthrow the Argentine government of Juan Manuel Rosas and end his claim to Uruguay. In 1864, when alleged ill-treatment of Brazilians led to Brazilian invasion of Uruguay and a retaliatory Paraguayan invasion of Brazil, Brazil found itself again at war and, in alliance with Argentina and a new Uruguayan government, defeated Paraguay in the bloody War of the Triple Alliance of 1864-70. Since that time, Brazil has prided itself on peaceful relations with all neighbors, resolving all its boundary disputes without armed conflict, although always more or less in its own favor.

Brazil has had much more experience in modern warfare than any other Latin American country. It was the only area country to take an active part in World War I. Following German sinking of Brazilian

ships, war was declared (October 1917), a conscription act was passed, physicians and a few military observers were sent to Europe, and the navy provided minesweeping and convoy protection off the coasts of Brazil and Africa. During World War II, Brazil supplied the army's 25,000-man 1st Expeditionary Division and the air force's 1st Fighter Group (25 aircraft), which fought with distinction in 1944-45 in Italy. The navy engaged in combined operations with the U.S. Navy and provided patrol and convoy protection in the South Atlantic. From 1957 to 1967, Brazil maintained an army battalion in the U.N. Emergency Force in the Gaza Strip between Egypt and Israel, and from 1964 through 1967 a Brazilian was in command of all U.N. troops in the area. An air force contingent, including transport and helicopter pilots, served with the U.N. Command in the Congo in 1960-64 and also carried out regularly scheduled operations in support of the Brazilian Forces in the Gaza Strip. In 1965-66, Brazil provided the commanding officer and a contingent of over 1,000 men for the Inter-American Peace Force in the Dominican Republic. Brazil also has participated in the U.N. peace mission on Cyprus.

During the constitutional monarchy (1822-89) the military did not assume a political role; the first military intervention into political affairs occurred in 1889, when the armed forces, with extensive civilian support, overthrew the monarchy and substituted a republican form of government. Pressures for social and political changes in the system that evolved over the next 30 years culminated in the revolt of disgruntled "young turks" known as *tenentes* (lieutenants) in 1922, 1924, and 1927, and in 1930 they combined with civilian elements to force the resignation of the President and the selection of Getulio Vargas as his successor.

Since 1930 the armed forces have intervened in government three times—in 1945 to oust the Vargas dictatorship, in 1954 to prevent the government leadership from subverting the electoral process, and in 1964 to preclude the Goulart government from becoming a leftist dictatorship. The military's concept of its role in the political process—guardian of the Constitution and defender of the nation—has been recognized by successive constitutions and has received public acceptance. Whenever the armed forces consider the Constitution or the fundamental institution of the nation are threatened, this role takes precedence over loyalty to the administration in office. Reluctance of the armed forces to set up a military government is evidenced by the immediate return of the government to civilian rule in 1945 and 1954 and

the strong legalistic sentiment in the army that frustrated abortive coups by small military elements against the inauguration of Juscelino Kubitschek in 1955 and Joao Goulart in 1961. The armed forces were very slow to move against Goulart and did not act until the leftists in his government had aroused widespread alarm in the civilian population and were moving openly to destroy the discipline and effectiveness of the armed forces themselves. The deeply entrenched power of ultraleftist and corrupt political elements finally convinced military men that they should adhere to the widespread civilian consensus for reform of the political system to preserve the country's traditional values and to save it from bankruptcy and civil war.

The armed forces have contributed substantially to the country's technological development. Traditionally, many engineers and technicians have received their training in armed forces schools, which include the best technical school in the country. Active and former military officers hold key positions in many fields in both private and state-run businesses, including the state oil company, PETROBRAS. The military forces have been deeply involved in civic action programs (Figure 1) since the end of the last century and are currently playing the major role in the drive to develop the Amazon Basin and other interior regions. The military establishment has been the dominant force in guiding the development of road networks and air service in the country.

A large percentage of Brazil's population supports the current military-backed government. This backing ranges from active support from many businessmen, industrialists, investors, civilian government administrators, and large numbers of politicians to generally passive support from the urban and rural masses. An accurate measure of public support has never been possible because of the political apathy of most of the population and their susceptibility to manipulation through chicanery by politicians. Some polls and other indicators point to broad acceptance of the present regime. Most lower class Brazilians seem to feel that they are better off than they have ever been. Their outlook for future socioeconomic improvement is essentially optimistic. They have confidence in the basic honesty and ability of the post-1964 governments. The population-at-large retains painful memories of the dangerous and impoverished conditions which existed immediately prior to March, 1964.

Since the 1964 Revolution, the armed forces have retained the ultimate power in the country even though day-to-day government is carried out by competent civilians. There are no active duty military



FIGURE 1. Army medical civic action team prepares for mass inoculation in remote area (U/OU)

men in the Cabinet. The President, Vice President, and six of the 16 Cabinet ministers, however, are retired military officers, and the chiefs of the National Intelligence Service and the Military Household of the Presidency, both of whom are considered to have Cabinet status, are active military officers. Within the armed forces, the army is clearly the dominating force; the last three Presidents have been army men, and a retired army general, Ernesto Geisel, has been selected by President Medici, with the approval of senior military officers, to become the next President in March 1974. There are no important challengers to the continuation of the existing military-civilian combination, under which the armed forces insure political stability and civilian technocrats concentrate on producing sustained economic growth and meaningful social reform.

2. Command structure (C)

The President is Commander in Chief of the Armed Forces. He directs all activities concerned with national security and appoints the service ministers and chiefs of staff. In wartime, he prescribes the

operational missions of the armed forces and assigns the forces to the various areas of operations. He is assisted in these responsibilities by the Presidential Military Household, the National Security Council, the Armed Forces General Staff, and the National Intelligence Service (Figure 2). There is no overall defense ministry.

The Presidential Military Household serves as the personal military staff of the President, assisting him on military matters, including relations with high military authorities, assuming responsibility for his safety, and managing the administrative aspects of the Presidency—vehicles, aircraft, personnel, and real estate.

The National Security Council, a cabinet-level agency, advises the President on matters of strategy, security, war planning, and the conduct of war. The council consists of the President, as its head, the Vice President, the Cabinet Ministers, the Director of the National Intelligence Service, the Chief of the Armed Forces General Staff, the Chiefs of Staffs of the Army, Navy, and Air Force, the chiefs of the Presidential Civil and Military Households, and such other high-ranking officers and officials as the President may appoint. A Council Secretariat prepares national security studies on a continuing basis. It operates under the Chief of the Military Household who is the Secretary of the National Security Council.

The Armed Forces General Staff has no peacetime supervision or control over the individual services, except that the Chief of the Armed Forces General Staff exercises control in matters affecting more than one service. The Armed Forces General Staff prepares plans involving wartime joint organization and employment of the armed forces, provides staff support for wartime operational command of the armed forces, and assists in total mobilization of the nation in time of war. It is, however, beginning to explore the possibilities of peacetime joint activities in the fields of communications, logistics, and medicine. The Chief of the Armed Forces General Staff is a general or flag officer appointed by the President, and the Chiefs of Staff of the Army, Navy, and Air Force work closely with him through assigned general/flag officer representatives on the Staff. Subordinate to the Armed Forces General Staff are the Superior War School, the Brazilian-U.S. Executive Committee for Mapping, Brazilian participation in International Military Sports, the new Armed Forces Hospital in Brasilia, the Brazilian delegations to the Joint Brazil-United States Military Commission (JBUSMC), and Joint Brazil-United States Defense Commission (JBUSDC), the Inter-American Defense Board (IADB) the three defense zones, and, in time of war, the theaters of operations.

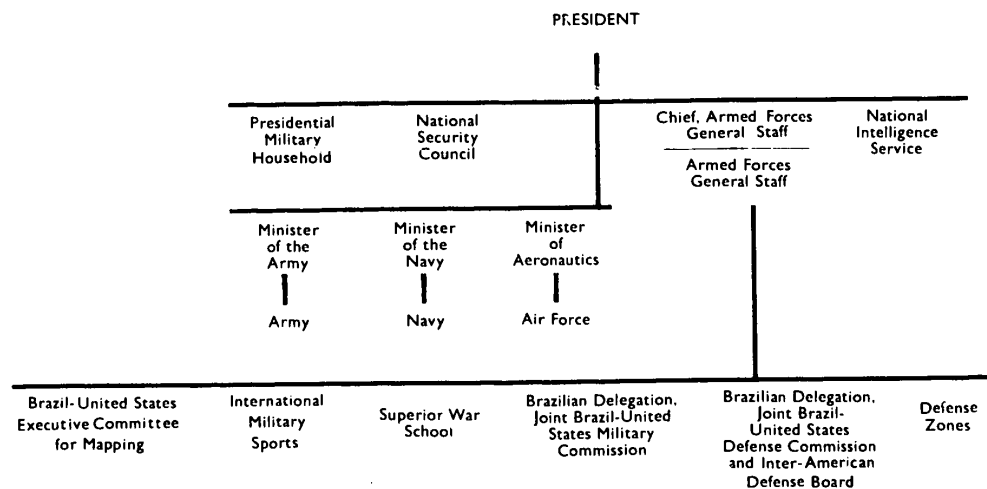


FIGURE 2. National defense organization (C)

In peacetime, nuclei (small permanent units) of defense zone commands prepare coordinated plans for the defense of their respective areas, including plans for mobilization and wartime operational command of all forces within the area. In wartime, the defense zones are to become joint commands directly subordinate to the Chief of the Armed Forces General Staff, with the Armed Forces General Staff providing operational staff support. The defense zones would be commanded by the ranking officer within the zone, regardless of his service. The defense zone commander would be assisted by a joint staff and would exercise operational command over all combat and support forces within the zone. Within each zone, each service would establish a coterminous zone, exercising command over all forces of its service within the zone. All national territory that becomes part of an active war zone would be withdrawn from the affected defense zones and incorporated in a separate new joint command known as a "theater of operations," with its commander also directly subordinate to the Chief of the Armed Forces General Staff.

Except for the wartime functions of the Armed Forces General Staff, none of the President's staff elements has operational control over the armed forces. Final responsibility and authority in army, navy, and air force matters are vested, respectively, in the Minister of the Army, the Minister of the Navy, and the Minister of Aeronautics. Though these positions theoretically are civilian posts, they involve active command over the respective services and traditionally are filled by senior, usually retired, military officers.

B. Joint activities

1. Military manpower (S)

As of 1 July 1973, Brazil had slightly over 23 million males between the ages of 15 through 49. A breakdown of these males by 5-year age groups is shown in the following tabulation:

AGE	TOTAL MALES	MAXIMUM NUMBER FIT FOR MILITARY SERVICE
15-19	5,748,000	4,080,000
20-24	4,597,000	3,120,000
25-29	3,364,000	2,260,000
30-34	2,906,000	1,905,000
35-39	2,491,000	1,495,000
40-44	2,144,000	1,245,000
45-49	1,830,000	960,000
Total, 15-49	23,080,000	15,065,000

All Brazilians aged 17 to 45 are liable for military service, but women are exempted in peacetime. About 1,131,000 men will reach military age (18) annually in the period 1974-76. Of men between 15 and 49, about 65% are fit for military service. From 85,000 to 87,000 conscripts are inducted in two increments each year for a 12-month tour of duty. The major portion is for army service; the air force and navy sometimes take a small percentage. Actual conscript service normally is 10 months, but can be extended up to 18 months by order of the President. Some 4,000 men of each year's conscript class elect to remain in the service. Direct volunteering from civilian life is permitted, the minimum age being 17 years; enlistments are for 2 years for ranks through corporal and 3 years for higher ranking NCO's. Usually about 18 or 19 years old, most conscripts come from middle-class or poor families. In many cases, they are illiterate or barely literate, and they generally are smaller in stature and are in much poorer physical condition than enlisted men in the U.S. armed services. Many have had little schooling, few have useful manual skills, and some are ignorant even of the elementary rules of hygiene. They are responsive to discipline but tend to be unenthusiastic and lacking in initiative.

Morale and discipline are normally high in Brazil's armed forces. Morale deteriorated badly during the regime of President Goulart (1961-64), but recovered rapidly after his ouster and the institution of a number of steps aimed at boosting morale. These steps included a return to the policy of making assignments and promotions on the basis of merit instead of politics, an increase in housing for officers and noncommissioned officers, especially in the more remote outposts, and an attempt to keep pay and allowances abreast of Brazil's chronic inflation. Some frustration still remains over the matter of obsolete equipment, specifically in the specialized sector of the artillery arm, but this is being improved in all services.

The reserve system provides little more than a poorly organized pool of manpower. Qualifying as a trained reservist by graduation from reserve courses or attendance at citizen training camps is a common way of avoiding conscription. Reservists receive little, if any, further training. Their main duty is to report to their respective posts on 16 December of each year to update their records.

2. Strength trends (S)

The strength of the armed forces has remained consistently above 200,000 throughout the last decade. Army strength has ranged from slightly under

140,000 to 160,000 (except for 1971) and constitutes almost two-thirds of the total force. In 1957 the navy and air force were nearly equal in personnel strength. The navy grew relatively rapidly thereafter, until it approached 40,000 in 1965. The air force experienced a gradual expansion beginning in 1963 and slightly exceeded the navy's strength from 1971 to 1973, when its strength again fell below that of the navy. In early 1969 the President signed a decree directing the increase of marine corps strength to 15,000 men; the decree is presently being implemented. The approximate strengths of the armed forces for the years 1962-73 are shown below.

The paramilitary state military police forces (*policia militar*—not to be confused with the regular army military police, *policia do exercito*) have increased from 50,000 in 1954 to a present strength of 184,000. These forces are considered a part of the army reserve system but come under the operational control of the Minister of the Army only in time of emergency or war. Otherwise, they are subordinate to the state or territorial governors.

3. Training (C)

Though military training in Brazil is good by South American standards, it is inadequate to meet the needs of a modern armed force. Too much emphasis is placed on classroom instruction, and training is handicapped by the low educational level of the trainees and by a shortage of equipment, facilities, and practical exercises. Training in the armed forces is all the formal education many conscripts ever get, and in spite of its shortcomings from a military standpoint, it does yield national benefits—it serves to improve the literacy rate, to give many men some job skill, and to help instill in them some sense of national identity.

All three services send some officers and enlisted men abroad for professional and technical training,

but the number remains very small because of cost. Many men of all three services have been trained at U.S. service schools, both in the United States and in the Canal Zone, and a few officers have attended French and German military schools. In many cases foreign-trained personnel are assigned to key staff and faculty positions in the training systems or serve elsewhere as instructors.

Many of the service schools, especially those for officers, are in the Rio de Janeiro area. Training above the service level is given at the Superior War School in Rio de Janeiro. This is a joint-services school under the Armed Forces General Staff and offers three types of courses—a war college course, a course in joint command and staff procedures, and a materiel-mobilization course—all 10 months in length. The war college course can accommodate a class of about 55 students; over half of such a class normally are leading civilians, governmental and nongovernmental.

Generally, throughout the Brazilian armed services, there has been little concern about joint training although since 1968 increased emphasis has been placed upon such training (Figure 3), and in early 1972 some joint-force operations were conducted against small suspected insurgent groups in northeastern Brazil.

4. Military budget (U/OU)

Annual budgets for the armed forces are prepared within each of the separate service ministries. Following presidential approval, these budgets are incorporated in the central government budget, which is forwarded to the Congress for *pro forma* review.

Brazil's military budgets are the highest in Latin America in absolute terms, although not as a percentage of the country's gross national product (GNP). During the 3-year period 1969-71, military budgets averaged 2.2% of the GNP; during the period

YEAR	ARMY	NAVY	(MARINES*)	AIR FORCE	TOTAL
1962	150,000	35,100	(9,000)	28,900	214,000
1963	150,000	35,100	(10,000)	25,900	211,000
1964	150,000	35,300	(10,000)	28,000	213,300
1965	138,500	38,800	(10,000)	30,000	207,300
1966	154,500	39,900	(9,500)	32,000	226,400
1967	139,000	39,900	(10,000)	34,000	212,900
1968	150,000	39,200	(10,000)	36,000	225,200
1969	155,000	39,200	(10,000)	38,350	232,550
1970	155,000	39,200	(10,000)	37,800	232,000
1971	167,000	42,200	(13,000)	42,500	251,700
1972	150,000	42,200	(13,000)	43,200	235,400
1973	160,000	46,500	(13,000)	39,200	245,700

*Included in total navy strength.

FIGURE 3. Troops in joint army-marine exercise in Amazon region (U/OU)



1966-68, they averaged 3% of the GNP. Since 1968, military appropriations have increased at an average annual rate of 33.5% as a result of chronic inflation. Military pay and allowances were adjusted upward in 1970 by nearly 36%; the annual increase in cost for service and maintenance activities has been about 20%, which is equal to the general price level increase. Expenditures for strictly military purposes are less than the total announced military appropriations because perhaps one-third of military expenditures are used for a number of nonmilitary functions. About one-half of the nonmilitary expenditures have been funneled through the air force to subsidize civil airlines, construct civil airports, and maintain nonmilitary services such as flight control and airmail; both the army and navy administer funds for the construction and maintenance of roads, railroads, navigable waterways, and ports. The military budgets for 1970-72 are shown in Figure 4.

5. Economic support and logistics (S)

Brazil produces a large percentage of its ground forces' equipment, including light artillery and smaller weapons. Combat items produced include small arms,

crew-served infantry weapons, antitank rocket launchers, air defense artillery, artillery rocket launchers, and ammunition for the above weapons and for artillery of up through 155-mm. New prototypes have been developed and accepted for wheeled amphibious armored personnel carriers and reconnaissance vehicles. Noncombat materiel produced includes general-purpose vehicles, some types of field communications equipment, engineering items, and virtually all quartermaster requirements. Brazil is not self-sufficient in the production of material for its naval force. Domestic shipyards have assembled naval ships of up to destroyer size from imported prefabricated sections and equipment. The rest of her fleet units have been imported. Aircraft production is largely at assembly operation of imported components. The Aermacchi MB-326 jet trainer/attack aircraft is being produced under an Italian license agreement, and a native-designed light trainer with an imported engine and a light transport are also being produced (Figure 5). In general, Brazil is dependent on foreign sources for its major military items. The United States continues to be a significant supplier, but Western European countries, including

FIGURE 4. Military budgets (U/OU) (Equivalent U.S. dollars*)

SERVICE	1970	1971	1972
Army.....	382,190,875	514,249,220	542,740,435
Navy.....	191,479,935	245,635,215	267,758,050
Air Force.....	195,324,915	251,658,245	275,668,715
Total Military budget.....	768,995,725	1,011,542,680	1,086,167,200
Military budget as percent of central government budget.....	**17.7	**20.9	**18.7
Military budget as percent of GNP.....	2.1	2.4	2.2

*Converted at exchange rates as follows: 1970 at 4.68 cruzeiros per US\$1.00, 1971 at 5.384 cruzeiros per US\$1.00, and 1972 at 6.0 cruzeiros per US\$1.00.

**Purely military expenditures have been variously estimated as 8% to 12% of the central government budget.

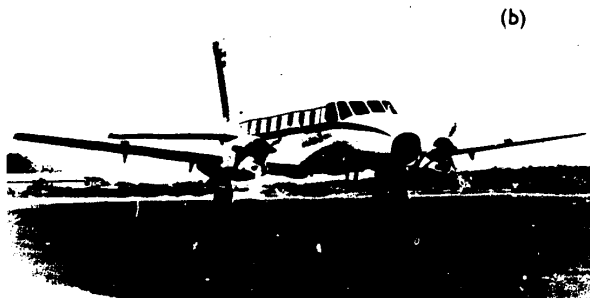
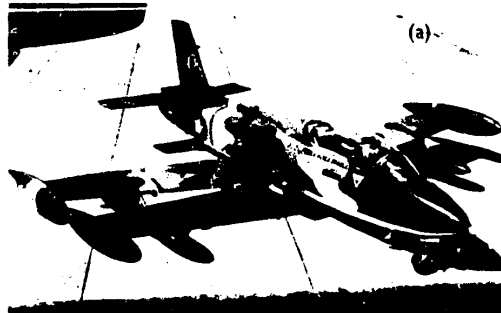
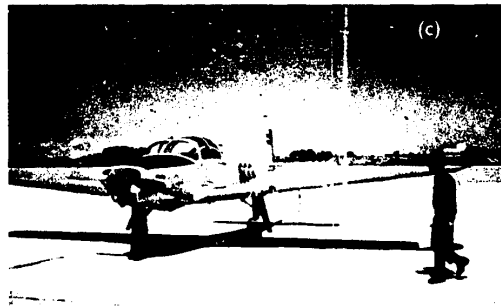


FIGURE 5. The Brazilian aircraft industry is helping supply the needs of the Air Force. Xuvante (a) and Bandeirante (b) are built by Embraer and the T-25 Universal trainer (c) is built by the Neiva Company. (U/OU)



the United Kingdom, have furnished aircraft, naval vessels, and missile systems.

C. Army

The Brazilian Army is the largest in South America. It has a total strength of approximately 160,000, of which about 65,000 are professional officers and career noncommissioned officers. The army is capable of maintaining internal security and of defending Brazil against any combination of other South American countries, but it would not be capable of carrying on sustained operations against substantial forces of a

major military power. It traditionally has considered its principal mission to be defense against possible Argentine attack (though fear of Argentina has long since abated). Consequently, the army's major troop concentration is in southern Brazil. As a part of the army's current reorganization, increasing numbers of troops are to be moved into the northern and western parts of the country. (S)

A significant part of the army's effort is spent on civic action. The army constructs roads, railroads, and dams, performs flood and other disaster relief, and works at suppressing smuggling. It also is active in public welfare and education, and in a number of

remote areas it provides the general population with medical care, instruction in reading, and assistance in land settlement. Since 1961, when it was recognized that the organized rural unrest in the northeast afforded the Communists opportunities for exploitation, the army has given increased emphasis to internal security. This is the primary mission of most of the independent units of less than division size that are scattered throughout the country. The army is capable of controlling any overt internal threat to national security. (S)

In combat capability, the army compares favorably with other South American armies, but, nonetheless, it has a number of serious weaknesses. Many weapons are obsolete (Figure 6), but funds are being budgeted for the acquisition of new equipment, and capabilities should improve markedly in the near future as new materiel is acquired. Combat training is evolving from a theoretical approach to conventional warfare to a heavy emphasis on internal security, including extensive training in counterinsurgency. Several small but successful operations have been conducted against guerrilla training camps and also against groups of suspected subversives in the northeast. The army is weak in organization, planning, and experience for all facets of activities at levels above division and for preparation for combat operations at division level, although the current reorganization of the field army may help to alleviate this situation. It also is weak in noncommissioned officer leadership, particularly in the technical support services. It lacks the weapons and equipment required for mobilization and is dependent upon foreign sources for most heavy military equipment. Excessive illiteracy and frequent conscript turnover do not permit thorough troop training. The army, however, does have certain

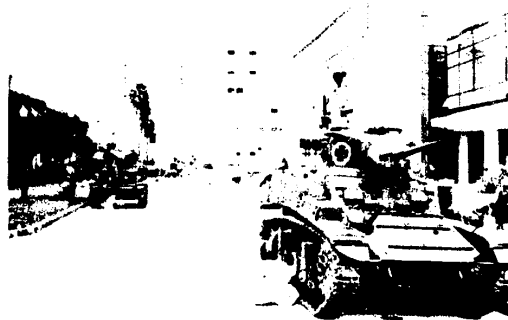


FIGURE 6. World War II (and older) vintage materiel, such as these M3 tanks, is being replaced as a part of the army modernization program (U/OU)

strengths. *Esprit de corps*, particularly among the officers, is strong. Military training for career personnel is good, although weighted on the side of theory. Key senior officers have had expeditionary force and combat experience (in Italy during World War II), and more recently others have acquired valuable experience with the U.N. mission in its 10 years in the Gaza Strip and with the Inter-American Peace Force in the Dominican Republic. Enlisted men are willing, responsive to discipline, and inured to hardship. Brazilian industry supplies most quartermaster items, infantry weapons and ammunition (7-mm to 155-mm), and light military vehicles; it has developed prototype wheeled armored reconnaissance vehicles and wheeled amphibious armored personnel carriers, and it has a large body of skilled mechanics who could be called into the army in a general mobilization. (S)

1. Organization (C)

Control over the army is exercised by the Minister of the Army (Figure 7), who often has been a retired senior army general officer. He is the *de facto* Commander of the Army, directly subordinate to the President, although the army is theoretically subordinate to the Chief of the Armed Forces General Staff for matters affecting other services. The Minister of the Army exercises command directly over the four armies, the Amazonas Military Command, and the Planalto Military Command. He exercises administrative control through six separate and coequal staff agencies—the Army General Staff, the Department of Services, the Department of Engineering and Communications, the Department of Personnel, the Department of Ordnance, and the Department of Training and Research. This organizational structure is reasonably efficient and sufficiently decentralized, and there is effective delegation of authority. Planning for and a small amount of actual streamlining and reorganization in the higher echelons of the Ministry have been in progress since 1967. The streamlining has consisted mainly in delegating authority for making decisions on less important matters to lower level commanders and in reducing the number of elements involved in decisionmaking. For example, only two elements are now involved in officer assignments, whereas six elements formerly were involved. Streamlining and modernizing is a continuing program and has resulted in reorganization at the higher levels.

The chief of staff ranks next to the Army Minister in protocol although he may or may not be the senior general on active duty. The chief of staff is assisted by

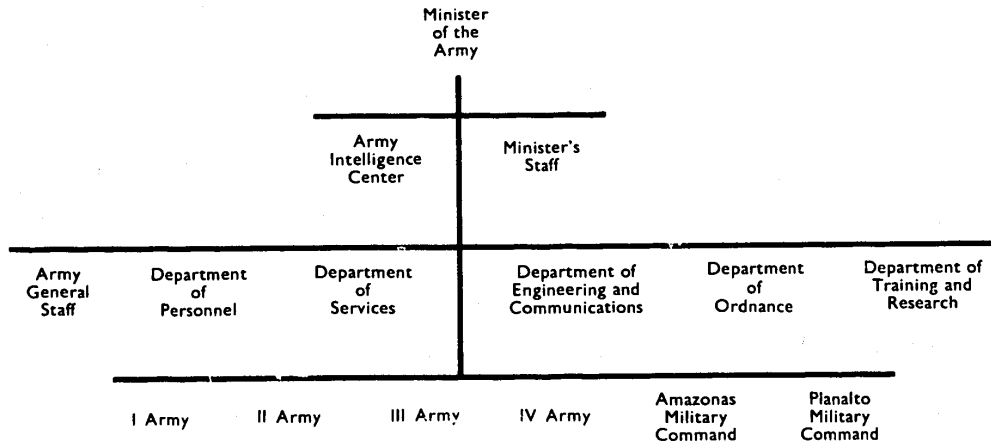


FIGURE 7. Army organization (C)

a vice chief of staff, four deputy chiefs of staff, the Inspector-General of State Militias, the Chief of Cabinet, and eight staff sections. The deputy chiefs of staff do not oversee traditional areas of responsibility but rather are assigned duties as the needs of the service dictate. The duties of the Inspector of State Militias involve studies, collection of data, and preparation of regulations for the organization, control, employment, training, and coordination of State Militias and Fire Departments. He provides training guidance and periodic inspection of their installations and activities, and plans for their utilization in the event of mobilization. The Chief of Cabinet acts as secretary or executive officer for the general staff. The first four of the eight staff sections (known as "E" sections) are equivalent to the former G-staff sections of the U.S. Army: Personnel, Intelligence, Operations and Training, and Logistics. The E-5 deals with Civil Affairs, the E-6 is the Administrative Planning and Budget section, the E-7 is the Organization and Methods section, and the E-8 is concerned with Doctrine, Research and Development. Each of the staff sections is headed by a Colonel.

The Brazilian Army is divided into four numbered armies, the Amazonas Military Command, and the Planalto Military Command. In their respective territorial zones, the commanders of the armies and

the military commands are responsible for the direction, coordination, inspection, training, and logistical activities of subordinate elements. Subordinate to the armies and commands are 12 military regions. The military region commands are primarily nontactical logistic and administrative elements, although they do control "territorial" troop units, including most of the coast and air defense artillery.

After a number of fits and starts, a massive reorganization of the field forces was begun in early 1972. In the new structure, the highest tactical echelon remains the numbered army. Below the numbered armies, the division remains the basic major unit and the echelon directly responsible for tactical training of troops. There are eight divisions, including four so-called "army" divisions, which have grown out of the army reorganization. These "army" divisions resemble small corps in that their only permanent feature is the headquarters element, which has very limited responsibility for administrative and logistical matters and concentrates on training and tactical operations. They are flexible units, controlling from two to five highly mobile combat brigades. The brigades in the reorganized army will be composed of a set number of battalions (two to five, depending on local conditions) and will not be subject to further tailoring. They are to be administratively and logistically self-sufficient.

2. Strength, composition, and disposition¹ (S)

The army has an authorized peacetime strength of about 179,000, but in recent years the actual maximum strength has ranged from 150,000 to 167,000. The mid-1973 strength was 160,000—17,500 officers and warrant officers, 49,000 NCO's, 3,000 officer candidates, 37,500 volunteer privates, and 53,000 conscript corporals and privates. Conscripts are inducted in two increments per year, in January and May, and normally serve for 10 months. The distribution of personnel by branch is fairly well balanced; almost 90% of army personnel are in the combat arms, and the remainder are in the service branches.

The army is organized into eight divisions (three infantry, one cavalry, four "army"), a total of 16 brigades (13 divisional: three infantry, two motorized infantry, four armored infantry, three mechanized infantry, one armored cavalry; three separate: one airborne, one infantry, one mixed). There are also three frontier groups and one school unit group under the divisions (all brigade equivalent). The remaining units are two separate regiments (one cavalry guards and one mechanized cavalry); two engineer construction groups; one coast artillery group; and 34 separate battalions (seven infantry, one coast artillery, one field artillery, one air defense artillery, five military police, one combat engineer, two railroad engineer, three signal, three infantry guards, three frontier, and seven jungle).

Slightly more than one-third of the army's troops are concentrated in the three southern States of Parana, Santa Catarina, and Rio Grande do Sul, one-third are in the four key industrial and agricultural states around Rio de Janeiro and Sao Paulo, one-sixth are in northeastern Brazil, and a little less than one-sixth are spread throughout the rest of the country.

The reorganization is to take place over a 3-year period and will result in a considerable redeployment of units. In general, the plans call for the development of modern, highly mobile units having increased firepower, a shift from emphasis on troop strength in the south to increases in strength in Brasilia and in the north and northeast, and a reduction and eventual abolition of outmoded activities such as coast artillery and horse cavalry. These plans, under consideration for several years, are now being rapidly implemented, a number of new brigades and divisions have already

¹For current information, see the semiannual *Military Intelligence Summary* and the quarterly *World-Wide Strength Estimates, Order of Battle Summary, Foreign Ground Forces*, both published by the Defense Intelligence Agency.



FIGURE 8. M113 escorted by Brazilian Army "Dragoons of Independence" carrying remains of Emperor Pedro I to final resting place in Rio de Janeiro (U/OU)

been activated, and a sizable quantity of medium tanks, armored personnel carriers, and field artillery pieces have been purchased from the United States to equip the new units.

The army is equipped primarily with U.S. materiel, including all of its armor (mostly M3, M4, and M41 tanks and M113 armored personnel carriers) (Figure 8) and half of its field artillery (mostly 75-mm guns and howitzers and 105-mm (Figure 9) and 155-mm



FIGURE 9. Guncrew firing a 105-mm howitzer (U/OU)

howitzers), much of it dating from World War II. There is also a large quantity of European materiel, much of it obsolete, including a mixed arsenal of coast artillery pieces ranging from 57-mm to 12 inches. In addition, there is a substantial quantity of domestically produced small arms and transport vehicles. There are major shortages of antitank and air defense artillery and some shortages of field artillery, although the latter will be somewhat alleviated by new acquisitions from the United States.

The army reserve is entirely a standby force. Reserve 2d lieutenants makeup a portion of the active-duty junior officer corps, but they have a limited active-duty requirement and no ready-reserve commitment. Army reservists are classed in three groups. The first consists of those fully trained as a result of completion of active army service (estimated 1,115,000). Of this group, conscripts released in the past 5 years (estimated 400,000) are subject to immediate recall. The second group consists of those with limited military training, e.g., the states' military police and graduates of reserve schools and centers (estimated 225,000). The third group consists of all able-bodied Brazilians aged 17 to 45 who have not had military training.

3. Training (C)

The training system provides primarily theoretical instruction. Instructors are qualified, but training suffers from a number of handicaps—insufficient funds, a shortage of facilities, much obsolete and nonstandard equipment, the low educational level of trainees, and insufficient practical field exercises.

Prior to World War II, training followed European patterns, particularly French, but during and after the war U.S. methods were introduced—especially since the establishment of the Joint Brazil-United States Military Commission in 1942 and the Military Assistance Advisory Group (MAAG) (now called a Military Group) in Brazil in 1952—and they gradually have become predominant in the Brazilian training system. Units supported by the U.S. Military Assistance Program (MAP) have followed U.S. Army training programs since 1953.

The first month of the normal 10-month conscript training cycle is devoted to adaptation to army life. It is followed by an 8-week basic training period, an 8-week advanced individual training period, and then small unit training. The training year culminates with maneuvers—battalion, division, and, at times, army size. Except for units receiving training assistance under MAP, most units have few combined-arms or joint field exercises.



FIGURE 10. Army paratroopers (U/OU)

Noncommissioned officers of the combat arms are trained in the School of Sergeants of Arms at Tres Coracoes, Minas Gerais. Advanced and specialized courses are provided in armor, coast artillery, medical, veterinary, physical education, communications, specialist training, airborne (Figure 10), jungle warfare (Figure 11), and air defense artillery schools.

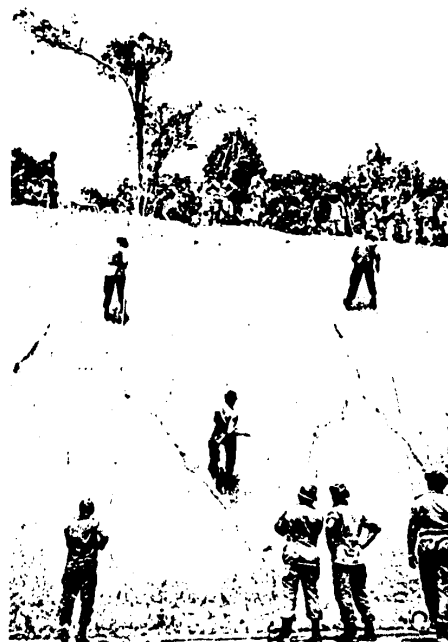


FIGURE 11. Troops in training at the Jungle Warfare School near Manaus (U/OU)

Most officers received their military schooling at the Military Academy of Agulhas Negras, at Resende, near Rio de Janeiro. Higher training for officers is provided first at various branch schools, then at the Officers Advanced School, at Vila Militar, near Rio de Janeiro, and at the Army Command and General Staff School, at Rio de Janeiro. Specialized training for engineers is provided at the Military Institute of Engineering, also at Rio de Janeiro. Selected officers receive more advanced training, along with officers from the other services and leading civilians, at the Superior War School, in Rio de Janeiro. Many officers have had advanced branch and general staff training in the United States; some officers and noncommissioned officers have been trained at the U.S. Army School of the Americas, in the Canal Zone. In many cases, U.S.-trained personnel are themselves assigned as instructors in the Brazilian Army system. A small number of officers are sent to French and German military schools, and several have attended other Latin American senior military schools, often on an exchange basis.

Reserve basic training is provided annually to about 16,000 volunteers, who avoid conscription by attending one of the 200 local citizens' military training centers on weekends for a year. Those who fail may take the course a second time; if they fail again, they are drafted. The training is generally limited to rifle marksmanship and close order drill.

Training for noncommissioned officer reservists is provided at regional centers collocated with regular army units. The year-long course consists of two parts—full-time training for 3 months and 4 hours each Sunday for the remainder of the year. The training includes specialization in chemical warfare, motorized and mechanized equipment, medicine, engineering, communications, and photointelligence. Graduates become third sergeants (reserve), and if vacancies in the reserve officer training course exist, these third sergeants may transfer to the second year of that program.

Training of reserve officer candidates is provided by reserve officer training centers and reserve officer training nuclei. This training provides a 2-year program for selected applicants. The centers, which are independent organizations located in all but two military regions, conduct courses for the various arms and services. The nuclei are associated with specific army units and train candidates in the branch of their respective units. Graduates of this training are commissioned second lieutenants (medical graduates, first lieutenants) in the reserve. No regular or refresher

training is required of any reservist, but a number of courses at army schools are open to those reserve officers who wish to take them.

4. Logistics (C)

Equipment and supplies are grouped for logistic purposes into the five classes formerly used by the United States Army. Responsibility for army peacetime procurement is divided among four agencies of equal level under the Ministry of the Army. The Army General Staff determines the operational requirements for items, the characteristics they are to have, and the quantities to be procured; makes allocations to units; and exercises general staff supervision over the programming of manufacturing. The Department of Services establishes the specifications for quartermaster, transport, medical, and veterinary material, and orders and receives these items. The Department of Ordnance sets specifications for weapons and automotive equipment, orders and receives these items, and superintends army production facilities and civilian industries producing army materiel. The Department of Training and Research conducts research and development, working closely with the two aforementioned departments. Planning for requisitions in wartime is the responsibility of the Requisitions Commission of the Ministry of the Army.

The Department of Services is responsible for organizing materiel depots and for supervising storage by the services. It operates two central storage depots and has depots in most of the military regions. Once materiel is issued to a region, it is dropped from overall accountability, and there is no system of replacement of items salvaged by turn-in. Supply officers of the military regions normally have records of what has been issued to units, including that issued to the state military police organizations within the region. The Central Armament Depot, in Rio de Janeiro, is the supply and storage organization of the Department of Services. This depot receives, classifies, stores, maintains, and repairs ordnance materiel; provides materiel to regional depots; and, when necessary, supplies materiel directly to units. The field distribution of POI, (Class III supplies) is handled through the Quartermaster Service and distributed from army to division to small units. This logistics system is responsive to the maintenance needs of the Brazilian Army. Supply distribution is adequate for peacetime requirements. Maintenance is excellent, and there is no shortage of such items as vehicle spare parts. Brazil is not yet self-sufficient in the production

of all types of materiel for its army, but it is largely self-sufficient in such items as quartermaster supplies, small arms, crew-served infantry weapons, antitank and artillery rocket launchers, air defense artillery, ammunition of up to 155-mm, general-purpose vehicles, and some communications equipment. There is a pilot project to develop and produce modest quantities of its own wheeled armored reconnaissance and amphibious armored personnel carrier vehicles, and in 1973 the army plans to deploy Brazilian-made 108-mm area-saturation type rockets and to begin testing French-purchased ROLAND missiles and West German COBRA anti-tank missiles for eventual production and deployment.

As part of its overall responsibility for formulating general plans for mobilization and wartime operations, the Armed Forces General Staff is responsible for preparing plans for transportation between the zone of the interior and theaters of operations, for providing supplies to the troops in areas of operations, and for equipping the expanded armed forces on mobilization. Within the broad outline set by the Armed Forces General Staff, the Army General Staff is responsible for planning the mobilization, organization, training, and use of the army and its reserves, including the preparation of plans for supply and movement.

D. Navy

The Brazilian Navy is one of the largest navies in South America. It is capable of defending the country and its shipping from seaborne attack by any neighboring country but could offer little more than token resistance to a modern naval force of comparable size. Its missions are to protect sea communications, ocean and coastal shipping, and river traffic and to defend the country against attack from the sea. Brazil's claim in 1971 of a 200-mile territorial sea has greatly expanded the navy's patrol responsibilities. In addition, it is committed to the defense of the Western Hemisphere in a patrol and antisubmarine warfare (ASW) capacity and gives great emphasis to these two tasks in naval procurement and training. (S)

ASW support is a joint navy and air force responsibility, because the President in 1965 decreed that all fixed-wing military aviation, including that on the aircraft carrier, would be the responsibility of the air force and that naval aviation would be restricted to helicopters. A law passed in 1969 provided for a separate coastal command headquartered at Salvador to support ASW. Presumably Recife and Florianopolis

would be subordinate headquarters under the new command, but to date the law has not been implemented. ASW capabilities have been limited by obsolescent equipment but are generally considered to be good. (S)

A 13,000-man marine corps exists, but its capabilities are limited by the navy's inability to support an amphibious landing larger than battalion size. (C)

A paucity of naval base facilities, especially outside of the Rio de Janeiro area, has been a serious handicap in naval operations. The navy is carrying out a program of developing outlying bases (notably at Belem, Salvador, Natal, and Recife), as well as improving the relatively extensive facilities in Guanabara Bay, at Rio de Janeiro. There are drydocks in Rio de Janeiro, Belem, and Aratu capable of handling the largest naval ships, and naval and commercial facilities capable of handling all but the largest ships have been developed or are being built at other ports. (S)

The shore establishment of the navy consists of a dozen naval bases and activities. The principal naval center is at Rio de Janeiro, where Guanabara Bay, one of the best naturally protected deepwater harbors in the world, affords excellent natural advantages. The naval facilities include the Naval Headquarters, subordinate naval operating bases, a large naval shipyard, major training centers, and extensive supporting activities. Facilities at the other bases and activities are much less extensive. (U/OU)

The navy's overall capability is limited by obsolete ships and equipment, lack of funds, and dependence upon foreign sources for many material items. Most combatant ships are of World War II construction, but an ambitious new ship construction program should replace or supplement older ships during the 1970's. Officer and enlisted personnel are well trained and technically qualified but many lack practical experience. Morale normally is very good, although the men would prefer more modern equipment and pay commensurate with that of civilians of similar ability and responsibility. (C)

1. Organization (C)

Governmental supervision of the navy is vested in the Minister of the Navy, who traditionally is a senior (usually retired) naval admiral and is the actual commander of the navy. He reports directly to the President; but for interservice matters, the navy is subordinate to the Chief of the Armed Forces General Staff. On matters of general policy, the Minister of the

Navy exercises direct control over the naval administrative and technical organizations through four officers—the Secretary General of the Navy, the Director General of Navy Material, the Director General of Navy Personnel, and the Director of Navigation (Figure 12). The minister exercises operational control over the naval, naval air, and marine forces through the Chief of the Naval Staff, who is responsible for training, readiness, and employment. The Naval Staff is composed of three sections—Organization, Intelligence, and Operational Analysis. Also subordinate to the Chief of the Naval Staff are the Naval War College and the Navy Research Institute.

The Chief of the Naval Staff delegates authority for operational matters to the Commander of Naval Operations. Presently both positions are held by one officer, but it is planned that a separate Commander of Naval Operations will be appointed and will remain at the headquarters in Rio de Janeiro in operational control of the naval forces. The Fleet is composed of several commands: the Fleet Command (made up of the carrier and cruisers), Destroyer Force, Submarine Force, Fleet Auxiliary Group, and Mine Force. The Commander in Chief of the Fleet also has operational control over the naval air arm. Other

operational forces afloat are the Transport Force, the Hydrographic Service, two coastal patrol forces, and two river flotillas (the patrol forces and river flotillas are subordinate to four of the naval districts).

The Ministry of the Navy and the Naval Staff are located in Brasilia. The headquarters and staff of the Commander of Naval Operations, as well as the headquarters of the operating forces and the main naval base, are at Rio de Janeiro.

Brazil is divided into six naval districts and two separate commands. The sites of the district headquarters are as follows: 1st Naval District, Rio de Janeiro; 2d, Salvador; 3d, Recife (with a subordinate Natal Naval Command); 4th, Belem; 5th, Florianopolis; and 6th, Sao Paulo (with a subordinate Ladario Naval Command). The Manaus Naval Command is headquartered at Manaus. The Brasilia Naval Command headquarters is at Brasilia. Naval district commandants exercise command over the ships, installations, establishments, forces, and naval personnel assigned to their districts. They have administrative control over the personnel assigned to installations that are operationally under the directorates, the Minister of the Navy, and independent naval commands (forces afloat).

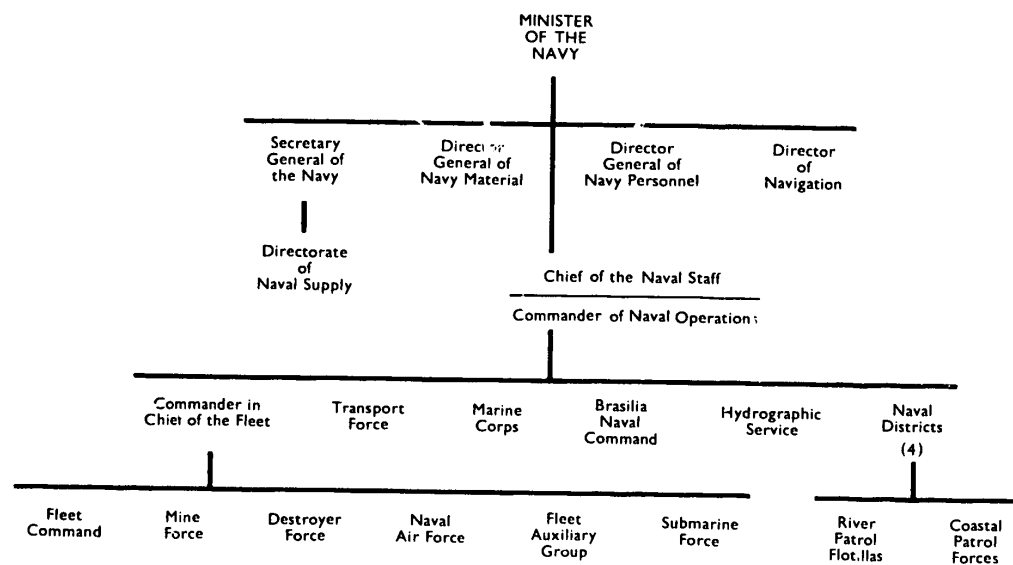


FIGURE 12. Navy organization (C)

Work is progressing satisfactorily on the construction of a new naval base at Aratu. The drydock, capable of handling the navy's aircraft carrier, is already in commission. The Mine Force has moved to Aratu and ultimately will be followed by the Transport Force. The major combatants apparently will remain at Rio de Janeiro for an indefinite period.

2. Strength, composition, and disposition² (S)

The personnel strength of the navy is approximately 46,500 (3,500 officers and 43,000 enlisted men), including about 13,000 in the marine corps (650 officers and 12,350 enlisted men) and 84 in the naval air arm. About 12,500 officers and enlisted men serve afloat. Most naval and marine personnel, afloat as well as ashore, are based in Rio de Janeiro and its environs.

The inventory of the Brazilian Navy includes about 130 naval vessels. In addition, the air arm has 28 helicopters. The ship inventory is as follows: one ASW-support aircraft carrier (CVS) (formerly the British Navy's H.M.S. *Vengeance*, launched in 1944, commissioned in the Brazilian Navy in 1960, displacement tonnage at full load about 19,900 tons), one light cruiser (CL), 11 destroyers (DD), four destroyer escorts (DE), four submarines (SS) (Figure 13), two small submarine chasers (PCS), six patrol boats (PB), one river gunboat (PR), four coastal minesweepers (MSC), four inshore minesweepers (MSI), two tank landing ships (LST), two surveying ships (AGS), nine coastal surveying ships (AGSC), one oceanographic research ship (AGOR), one oiler (AO).

²Current ship, aircraft, and personnel strengths may be obtained from the *Military Intelligence Summary*, published semiannually by the Defense Intelligence Agency. Ship characteristics may be found in *Naval Ship Characteristics, Western Hemisphere (less U.S.A.)*, ST-11B-08-40-70-INT, 1 September 1970, published by the Naval Scientific and Technical Intelligence Center.

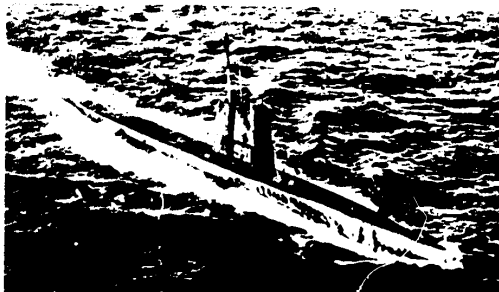


FIGURE 13. The *Rio Grande do Sul* was acquired by Brazil from the United States in 1972 (U/OU)

four transports (AP), three auxiliary ocean tugs (ATA), 10 fleet ocean tugs (ATF) designated as corvettes by the Brazilian navy, one battle damage repair ship (ARB), one floating drydock (ARD), two small auxiliary floating drydocks (AFDL), 24 amphibious warfare craft, and 35 service craft. The material condition of the ships ranges generally from fair to good.

The major part of the Brazilian fleet is based at Rio de Janeiro, the main naval base. A river gunboat and a yard oiler are based at Ladario, on the Rio Paraguai near the junction of the Brazil-Bolivia-Paraguay borders.

Four fleet ocean tugs and several patrol boats are based at Belem; all of the mine force and two fleet ocean tugs are based at Aratu; three patrol boats, two fleet ocean tugs, and one floating drydock are based at Natal.

3. Training (C)

Most schools and training establishments are under the technical control of the Director of Naval Training, subordinate to the Director General of Navy Personnel, who establishes the curriculums and requirements for admission. Schools normally are subordinate to the commandant of the naval district in which they are located.

Most enlisted men receive basic training at the apprentice seamen schools. These schools offer a 10-month program that has courses in general grammar school subjects, elementary seamanship, and physical education. Literacy is a prerequisite for entrance, but many recruits have had minimal schooling, and the navy tries to provide the equivalent of a primary-level education. The effectiveness of basic training is seriously impaired by this situation, as well as by shortages of equipment and of qualified instructors. Candidates who successfully complete the course at one of the schools must agree to serve for 3 years thereafter. In some years the navy accepts a small number of conscripts who demonstrate above average ability at these schools for further training and voluntary service.

Enlisted personnel are selected for specialist training on the basis of their service records and tests. Before selection they must have served 5 years in the fleet, and at the end of the basic course in their specialty they normally return to the fleet for 5 or 6 additional years. Those who have advanced in rating and have good service records are then eligible for advanced specialist training. Basic specialist training usually is given to men in the rate of seaman, and advanced training, in the rate of petty officer second class or

above. Theoretical instruction and practical training are good, and all the specialist schools produce competent enlisted specialists.

Candidates for commissions in the line, supply corps, and marine corps pursue a 4-year course at the Naval Academy in Rio de Janeiro. This is followed by a year of practical training consisting of a training voyage for line and supply officer candidates and of schooling at marine corps installations that is generally similar to that of the U.S. Marine Corps for marine officer candidates. Commissioning as naval or marine ensign follows the completion of this training.

The Naval War College at Rio de Janeiro offers eight courses, each approximately of 10 months' duration. These include preliminary command, command, and advanced command courses for line and marine corps officers and preliminary and special staff and service courses for supply, medical, and engineer officers. All preliminary courses may be taken by correspondence. More advanced staff training is given at the joint Superior War School in Rio de Janeiro.

Shipboard training is limited largely to on-the-job training. Underway training consists of short cruises from Rio de Janeiro, and tactical problems occasionally have been held with visiting U.S. Navy fleet units. Gunnery practice and realistic force training are hampered by a shortage of ammunition. Extended exercises are discouraged because of the heavy cost that is entailed by a law providing for a very generous extra allowance for personnel when their ship is outside Brazilian territorial waters for more than 30 days. A change in this law has been proposed which would extend to 60 days the period before the extra allowances are paid. Such an amendment would permit the fleet to undertake longer exercises without excessive personnel costs.

U.S. Navy training influence is strong—their has been a U.S. naval mission in Brazil almost continuously since 1922, and the Brazilian Navy has relied heavily on the United States for training and advice. In addition to the mission, there is a U.S. Naval Communications Technical Group that gives training support. Small numbers of naval personnel are trained in the United States. Combined U.S.-Brazilian exercises such as the annual UNITAS, VERITAS, and SPRINGBOARD operations benefit Brazilian naval training and promote close ties between the two navies.

4. Logistics (C)

The Directorate of Naval Supply (Figure 12), under the Secretary General of the Navy, has overall

responsibility for procuring, maintaining, and distributing nonengineering supplies and spare parts. The Director General of Navy Material is concerned with aircraft, ordnance, electronic equipment, and naval machinery. Purchasing commissions are maintained in London and Washington, D.C., to buy directly from manufacturers.

The navy has approximately 30 days' supply of ammunition, fuel, spare parts, and provisions on hand at all times, and the fleet can maintain itself at sea cruising at 14 or 16 knots without refueling for approximately 5 days. The navy has one tanker, the *Marajo* (10,668 deadweight tons), commissioned in 1968. The navy is able to refuel the carrier and the two cruisers at sea from this tanker, thus extending fleet time at sea to about 10 days. With outside logistical support, the fleet could stay at sea about 20 days, but at the end of that period the material condition of the ships would require their return to base. Combat would materially shorten these estimates.

The Naval Arsenal at Rio de Janeiro, the navy's major shipyard, has an extensive complex of facilities. It has assembled destroyers from imported components and has built a number of ships, including patrol escorts and coastal surveying ships. It can overhaul and repair any ship in the Brazilian Navy. Naval or commercial drydocks in Rio de Janeiro, Aratu (near Salvador), and Belem can accommodate any of the naval ships, including the aircraft carrier; additional drydocking facilities are available at Natal for smaller ships. Work on the naval base at Aratu is progressing; the drydock and most supporting shops have been completed. In 1972 the scheduled periodic repair of naval transports was initiated, and plans call for all ships other than the aircraft carrier, cruisers, and submarines to undergo scheduled yard periods there. The mine force has already been stationed at Aratu, and it is probable that the Transport Force will be there by 1974 and certain combatants by 1979. The growth of commercial shipbuilding (and of support industries, such as those building large marine diesel engines) is enhancing shipyard capabilities. Steam turbine propulsion units and sophisticated armament and electronic equipment, however, will still have to be imported for some years. Brazil has the capability to construct ships for both commercial and military purposes. Under an ambitious 10-year shipbuilding program that includes construction in foreign and domestic yards, the navy plans to modernize the force and replace most of the older ships. Under this program, the largest navy ship built in-country to date, the 10,668-deadweight-ton fleet oiler *Marajo*, was built by the Ishikawajima Shipyard in Rio de

Janeiro and completed on 22 October 1968. Six 95-foot patrol boats of U.S. Coast Guard design were built and launched in Brazil in 1970 and 1971. A total of six 55-foot hydrographic survey boats of Brazilian construction joined the fleet by the end of 1971. Two shallow-draft, 208-foot, 668-ton river patrol craft designed for Amazon operation were launched in June 1972. Named the *Pedro Teixeira* and *Raposo Tavares*, they probably will be based at Manaus in early 1974.

A contract valued at about \$250 million was signed in late 1970 with Vosper Thornycroft, Ltd., of the United Kingdom for the construction of six Vosper Thornycroft Mark 10 destroyer escorts of about 3,200 tons each. Four ships (*Niteroi*, *Defensora*, *Constituintico*, and *Liberal*) are to be built at Southampton, two equipped for ASW patrol and two for general purposes. The remaining two, the *Liberal* and the *Uniao*, are being built in Brazil and will be configured for ASW. The construction of the first of the British-built ships began in early 1972, and construction in Brazil at the Rio de Janeiro Naval Arsenal began on 11 June 1972. The building time per ship is approximately 4 years, and the last vessel is scheduled for completion in 1979 or 1980. The new destroyer escorts are scheduled to replace some of the Acre and Fletcher class destroyers now in the fleet.

Three Oberon class submarines have been ordered in the United Kingdom, with deliveries anticipated in the 1973-75 period. A nucleus crew went to England early in July 1972 for training and to accept the first boat, the *Humatta*, which was received in March 1973. The second, the *Tonelero*, was launched on 22 November 1972, and the third boat, the *Riachuelo*, was ordered in August 1972. Both of the older submarines in the fleet were decommissioned during 1972. They have been replaced by four Guppies from the United States.

Four Schutze class 255-ton minesweepers were built in West Germany, and all four are now based at the Navy's new facility at Aratu. A contract for two additional units was recently signed. Deliveries are expected by late 1973.

On 13 March 1972, the Navy contracted for the construction at the McLaren Shipyard in Niteroi of three 152-foot river patrol ships. These vessels will displace 200 tons (light) and are to be completed by 3 December 1973. They will be named *Roraima*, *Rondonia*, and *Amapa*, after the Amazonian Territories in which they will operate. Construction and repairs for all naval ships are still largely dependent on the import of special components and equipment.

18

Naval supply facilities are concentrated in Rio de Janeiro. These include ammunition storage on several islands in Guanabara Bay, 56,000 tons of fuel storage (two 16,000-metric-ton and two 12,000-metric-ton tanks), spare parts, food, clothing, and general stores storage facilities. Small supply facilities are at Ladario, Val-de-Caes (near Belem), Recife, Salvador, and Natal.

5. Marine corps (S)

The Corps of Naval Riflemen (Fusiliers), or marine corps, is administratively subordinate to the Ministry of the Navy and operationally subordinate to the Commander of Naval Operations. The primary missions of the marine corps are to provide security and defense of naval installations and to conduct land and amphibious operations essential to the prosecution of naval campaigns. The General Command headquarters of the marine corps is at Rio de Janeiro. The commandant exercises direct command over the major marine units, all at Rio de Janeiro, that comprise the Fleet Marine Force (a regimental landing team of about 3,000 men which provides a mobile amphibious force in readiness and is the nucleus of a marine amphibious division); a security force, designated the Central Marine Barracks; and the Marine Corps Schools, Recruit Training Center, and Rifle Range Detachment. Other marine battalions, companies, and smaller units are assigned to various naval district commanders to be stationed as security units in the naval facilities or are embarked in the larger ships to provide a light infantry potential. Security detachments are located in Rio de Janeiro, Salvador, Recife, Manaus, Natal, Belem, Santos, Uruguaiana, Ladario, and Brasilia.

The personnel strength of the marine corps is approximately 13,000—650 officers and 12,350 enlisted men. In early 1969 the President approved an increase in the corps strength from 10,000 to 15,000, but this increase is being effected slowly because of insufficient funds, a shortage of officers, and the unavailability of ships for amphibious and combined operations. By U.S. standards, the marines are moderately well trained and are in a fair state of readiness (Figure 14). They could conduct an amphibious landing with up to two battalions, if the necessary sealift, air, naval gunfire, and logistic support were available.

6. Naval air arm (S)

The naval air arm, a small, integral part of the Brazilian Navy, is under the Commander in Chief of

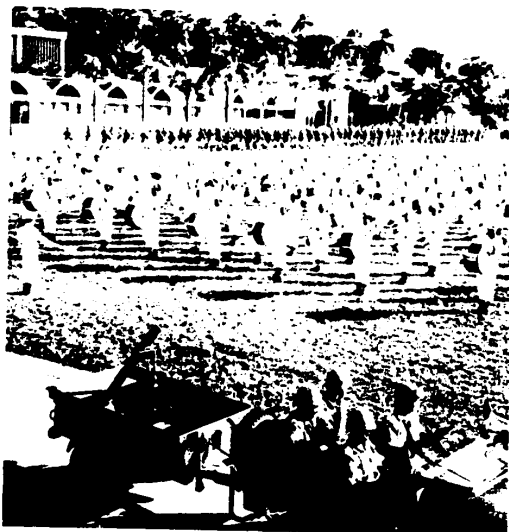


FIGURE 14. Marine Corps infantry unit on parade. Vehicle in foreground is 1/4-ton truck of mortar section. (U/OJ)

the Fleet, who, in turn, is subordinate to the Commander of Naval Operations. It is composed of 84 naval air personnel and 28 helicopters, formed into three helicopter squadrons. Under the President's order in January 1965 resolving the embarked aviation dispute, the navy turned over to the air force all its fixed-wing aircraft and received all ASW helicopters in the air force inventory. Joint usage of the carrier, the *Minas Gerais*, has resulted in improved ASW capability, but further training and newer equipment are necessary to develop this capability to its full potential. The carrier is based at Rio de Janeiro. Naval aircraft not embarked on it normally are based nearby at Sao Pedro d'Aldeia Naval Air Station (at Cabo Frio). The Minister of the Navy has authorized the purchase of 18 Bell Jet Ranger (TH-57) helicopters as the initial increment in a planned total purchase of 36. The first 18 will be assigned a training function; the remaining 18 will be used as utility aircraft.

E. Air force

The Brazilian Air Force is the largest air force in South America and, despite budgetary limitations and shortcomings in logistics and training, its general air capabilities are among the best in South America. Nonetheless, it would be ineffective against attack by a major airpower. The missions include air defense, support of ground forces, internal security, protection

of coastal shipping and the sea approaches, assistance in Western Hemisphere defense, and providing government air transportation where private airlines do not operate. It also is tasked with the provision of civil aviation services of the types performed in the United States by the Federal Aviation Administration and the Civil Aeronautics Board. (S)

The fighter squadrons, equipped with Lockheed T-33 jet aircraft, have proven their effectiveness in ground-support exercises. The T-33's were augmented, in 1972, and early 1973 by the local assembly of 42 of a planned total of 112 Aeromacchi MB-326 armed jet trainers to be in inventory by 1978. The pilots are proficient and frequently give excellent demonstrations of precision aerobatics in formation. The jet pilots have attained a high order of accuracy in air-to-ground firing with machineguns and rockets and in low-level bombing with napalm and high-explosive bombs. Although all fighter squadrons conduct tactical training, the absence of mobile air-ground radio equipment precludes fully effective, closely integrated support of ground forces. Special counterinsurgency squadrons of armed North American T-6 aircraft have increased the air force's counterinsurgency capability. The air force does not envision the strategic employment of its bombers—they are used mainly for training, reconnaissance, and communications. Even though the B-26 aircraft underwent extensive modifications at Tucson, Arizona, in 1968 and 1969, they still have only a minor bombing capability. The younger officers would like to have a modern medium bomber as a needed deterrent to possible attack. (S)

In air defense, the air force is beginning to develop a capability with the receipt in late 1972 of 16 French Mirage (Figure 15) all-weather interceptors and the installation of a combined air defense and air traffic control radar network in the Rio de Janeiro-Sao Paulo-Brasilia triangle. The air defense center will be at the new Mirage base at Anapolis, about 60 miles southwest of Brasilia. Air defense weapons, however,

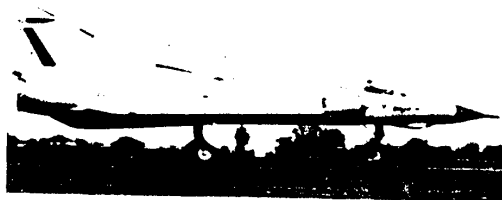


FIGURE 15. French Mirage III's became operational in the Brazilian Air Force in 1973 (U/OJ)

are obsolescent and few in number, and there is no coordinated air defense artillery command. Reconnaissance squadrons have minimum capability and are limited to visual observations and vertical photography; they can provide effective reconnaissance for army units. The search and rescue unit could support the ground forces. (S)

Air force capabilities for antisubmarine warfare (ASW) are slight—the land-based patrol force has been stripped of ASW gear and is only suitable for visual patrol of Brazil's extensive coastline, and its aircraft are obsolescent; the carrier-based ASW capabilities are good, but this force is small. Capabilities for antishipping operations, aerial mining, and support of amphibious operations are slight, and there are no signs that any significant improvements can be expected in the near future. (S)

The air force can fulfill its own air transport requirements and also can provide airlift for army paratroop operations and aerial resupply. It has successfully executed drops of as many as 300 paratroopers. In an emergency, air force air transport capabilities could be augmented considerably by the civil airfleet, one of the largest in the world. (S)

Under terms of a 1962 Mutual Defense Assistance Agreement with the United States, the Brazilian Air Force has received both grant aid and reimbursable military assistance. Spare parts, electronic equipment, and technical advice are also provided under the MAP. A small number of men are sent abroad for advanced pilot training and for maintenance and supply operations training at U.S. Air Force schools. (S)

1. Organization (C)

The air force has been undergoing organizational changes in response to Presidential Decree No. 60,521, of 31 March 1967, titled Basic Organizational Structure of the Ministry of Aeronautics. The decree called for a reorganization to take place over a period of 5 years. The new organization has largely taken form. Although additional changes, realignments, and reassignments of duties are expected as the new organization is tested, the basic structure will remain essentially as it is now (Figure 16).

The Brazilian Air Force is headed by the Minister of Aeronautics, traditionally a senior (and usually retired) air force general, who reports directly to the President. He is the actual commander of the air force, but on matters affecting other services, the air force is subordinate to the Chief of the Armed Forces General Staff. The Minister of Aeronautics is assisted by the General Staff of Aeronautics, which is concerned

mainly with planning and training. He directs his organization through three general commands (Air, Personnel, and Support) and two departments (Research and Development, and Civil Aeronautics). Brazil is divided into air zones for logistics purposes only; the zones do not exercise command over tactical units. The air zone headquarters, each the most important air center in its zone, are as follows: 1st Air Zone, at Belem (Val-de-Caes Airbase); 2d, at Recife (Guararapes Airbase); 3d, at Rio de Janeiro (Galeao Airbase); 4th, at Sao Paulo (Cumbica Airbase); 5th, at Porto Alegre (Gravatá Airbase); and 6th, at Brasilia (Brasilia Airbase). Air zone commanders are general officers and are under the General Support Command, but they also coordinate with the other commands and the General Staff for Aeronautics. Under the General Air Command are four operational commands, and under these are groups, theoretically composed of two squadrons each, although many have only one squadron. The air force reorganization provided for air brigades to exercise command over several groups, but these higher command elements have not been activated.

2. Strength, composition, and disposition³ (S)

The air force has a personnel strength of approximately 39,200—about 5,200 officers and warrant officers and 34,000 enlisted. There are 1,620 pilots, over 200 of them jet-qualified. The inventory includes about 570 aircraft, including about 180 jets and 73 turboprops; about 680 are operationally assigned. U.S.-built aircraft make up the predominant part of the inventory. U.S. aircraft represented in the greatest numbers are the Douglas C-47, North American T-6, Beechcraft C-45, Lockheed T-33A, Cessna T-37, and Fairchild Packet (C119G), and about 70 Bell (Figure 17) and Sikorsky helicopters; there are lesser numbers of Cessna O-1A's, Beechcraft H-18S's, Douglas B-26's, Grumman S-2A's and HU-16A's, Lockheed P-2E's, and C-130's. The largest number of non-U.S.-built planes are the Brazilian-built Embraer's, Neiva's, and Aerotec's and the Brazilian-assembled Aermacchi's. The remainder is made up of French-built Morane-Saulnier MS-760's and Fouga Magister CM-170's and small numbers of British (Hawker-Siddeley Avro 748's, Vickers Viscounts, and British Aircraft Corporation's BAC-111's) and Canadian (De Havilland CC-115's and DH-125's) aircraft.

³For current, detailed information, see the *Military Intelligence Summary*, published by the Defense Intelligence Agency. Details on selected airfields are given in the Transportation and Telecommunications chapter of this General Survey.

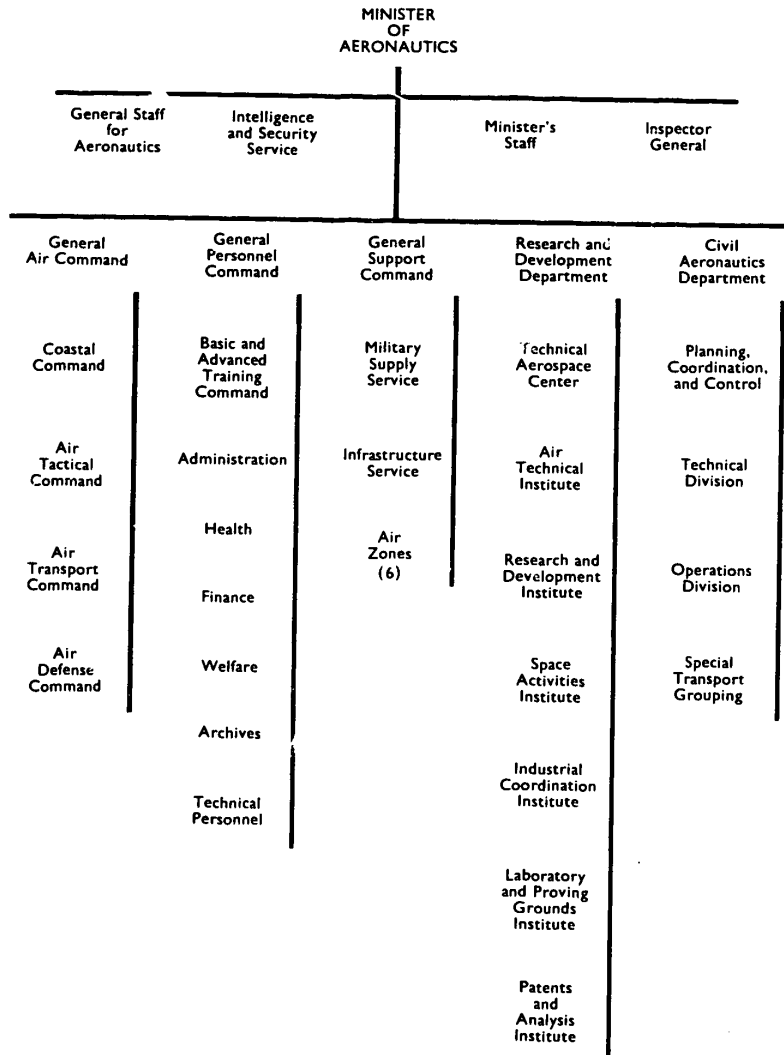


FIGURE 16. Air Force organization (C)

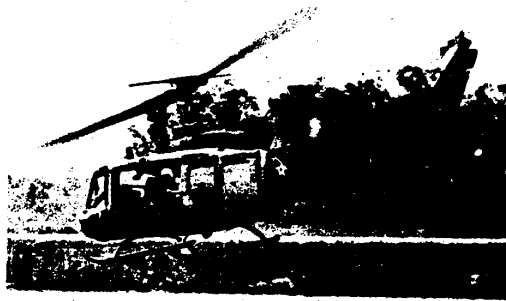


FIGURE 17. Helicopters, such as this Bell UH-1D, are playing an increasingly important role in the Brazilian Air Force (U/OU)

Types of tactical units, the types of aircraft assigned, and locations of the units are shown below.

Most personnel are volunteers and most officers are graduates of military schools, but a few are from the universities or the professions.

Until recently the air force had no organized reserve unit. To provide a pool of trained personnel for emergencies and a means for expansion which was otherwise lacking, an aviation reserve cadre was

established in 1965. In addition, a list of former air force personnel is maintained, but these men are reserves in name only; no duties are required of them, although some do periodically serve with the air force on a voluntary basis. Recall to active duty in an emergency would be on an individual basis. Commercial airline pilots and men who have received flying training in Brazilian aeroclubs are technically members of the air force reserve.

3. Training (C)

The air force operates a well-rounded school system for both officers and enlisted men. The principal shortcoming is the absence of a program to provide progressive training in a particular specialty to men at different levels of experience and ability. Inefficient administration and the low educational level of the average trainee are additional handicaps. The U.S. MAP is aimed at improving the training system and expanding capabilities.

Initial aircrew and groundcrew training are conducted in four schools under the supervision of the Basic and Advanced Training Command, one of the elements of the General Personnel Command. The Air Cadet Preparatory School, at Barbacena, Minas Gerais, about 120 miles north of Rio de Janeiro, prepares students for admission to the Air Academy by

UNITS	AIRCRAFT	LOCATIONS
4 fighter squadrons	T-33A (Figure 18), Aermacchi MB-326	Santa Cruz Airbase (AB), Rio de Janeiro; Pinto Martins AB, Fortaleza; Canoas AB, Porto Alegre
2 bomber squadrons	B-26	Guararapes AB, Recife; Cumbica AB, Sao Paulo
6 air zone transport squadrons	PE-1-5A, C-45, C-47, Beech Queen Air 65, Beechcraft H-18S, T-6, Neiva Regente	Val-de-Caes AB, Belem; Canoas AB, Porto Alegre; Guararapes AB, Recife; Galeao and Santos Dumont AB's, Rio de Janeiro; Marte AB, Sao Paulo; Canoas AB, Porto Alegre; Brasilia AB, Brasilia
3 squadrons of the transport groups	C-130, DC-6B, Avro 748	Galeao AB, Rio de Janeiro
4 troop transport squadrons	C-119, C-115 Buffalo	Campo dos Afonsos AB, Rio de Janeiro; Ponta Pelada AB, Manaus; Campo Grande AB, Campo Grande
2 special transport squadrons	Viscount HS-125, BAC-111, Bell Jet Ranger	Brasilia AB, Brasilia; Galeao AB, Rio de Janeiro
1 embarked aviation squadron	S-2A	Santa Cruz AB, Rio de Janeiro
3 counterinsurgency (COIN) squadrons	T-6	Santa Cruz AB, Rio de Janeiro; Cumbica AB, Sao Paulo; Canoas AB, Porto Alegre
3 reconnaissance search and rescue squadrons	C-130, P-2E, HU-16A, UH-1D	Guararapes AB, Recife; Dois de Julho AB, Salvador; Florianopolis AB, Florianopolis
2 composite reconnaissance and attack squadrons	UH-1D, Bell Jet Ranger 206A, Neiva Regente ELO, T-6 or Xavante T-26	Santa Maria AB, Rio Grande; Santa Cruz AB, Rio de Janeiro
1 liaison and observation squadron	O-1A Bird Dog, Regente ELO, T-6	Canoas AB, Porto Alegre; Campo dos Afonsos AB, Rio de Janeiro; Sao Pedro da Aldeia AB, Cabo Frio



FIGURE 18. Air Force cadets train on T-33's at Fortaleza (U/OU)

providing the equivalent of a secondary school education in a 3-year course open to qualified volunteers and conscripts. The Air Academy at Pirassununga (275 miles west-northwest of Rio de Janeiro), trains pilots and administrative officers in a 3-year course following their completion of a 1-year course at the Natal Military Pilot Training Center. Air Academy graduates make up the professional officer corps. The Airmen Specialist School, at Guaratingueta, Sao Paulo (125 miles west of Rio de Janeiro), provides a 2- to 3-year course in such specialties as aircraft maintenance, gunnery, communications, photography, weather observation, and control tower operation. The Officer's Specialist and Infantry Guard School, at Curitiba, Parana (about 200 miles southwest of Sao Paulo), trains specialists in a 3-year course in such fields as airbase security, aircraft maintenance, traffic control, and communications.

Operational training is the responsibility of the air zones and operational commands. Advanced training is provided by the Air Command and General Staff School, which is under the General Staff of Aeronautics, and more advanced training is provided by the joint Superior War School. Advanced technical training is available at the Aeronautical Institute of Technology, at Sao Jose dos Campos, about 50 miles northeast of Sao Paulo.

In anticipation of receipt of the Mirage interceptors in 1972, a number of air crews were sent to France for training.

Brazilian Air Force training is supplemented by the advisory support of the U.S. Air Force Mission in Brazil and by the training of selected students in U.S. Air Force schools in the United States and the Canal Zone. Training opportunities provided by the MAP have been only partially utilized, however, mainly because of the relatively high cost of training in the United States and the difficulty in finding English-speaking trainees.

Informal preparatory training is available through the aeroclubs. These are officially encouraged and partially subsidized by the government and are regulated by the Department of Civil Aviation. There is no reserve training system, but some former officers voluntarily take training in the regular air force establishment.

4. Logistics (C)

Logistics is the responsibility of the General Staff for Aeronautics. Plans to meet logistic requirements are submitted to the Minister of Aeronautics for approval; once approved, they are executed by the appropriate commands. The General Support Command is responsible for procurement, storage, and distribution of all ordnance, technical and nontechnical supplies, uniforms, and individual equipment. The Ponta dos Manguihos Depot at Rio de Janeiro is the main processing center and general warehouse for the system; a total of five major and at least one minor depot, most of them at or near a zone headquarters airbase, provide logistic and maintenance support to their respective zones. Each air force unit down to squadron has a supply section.

The five major depots, all performing major aircraft maintenance and inspection and repair for the air force, are as follows: (1) Guararapes Airbase (Recife) maintains T-33's and B-26's; (2) Campo dos Afonsos Airbase Maintenance Depot (Rio de Janeiro), the second largest facility, services light aircraft, helicopters, C-119's, and Buffaloes; (3) Galeao Airbase (Rio de Janeiro) services C-130's, Skytrains, T-21/22's, AVRO 748's, and DC-6B's; (4) Lagoa Santa Airbase (near Belo Horizonte) maintains T-6's; and (5) Sao Paulo Maintenance Depot (Marte Airbase, near Sao Paulo), the largest depot, maintains T-37's, P-2's, S-2A's, and HU-16's. Marte Airbase, the keystone of the maintenance system, is well equipped, and the quality of its work is high. It has an engine test cell which handles both reciprocating and jet engines. Val-de-Caes Airbase (Belem) has a capability for minor repairs and maintains PBY's. Commercial facilities in Petropolis also are used for the overhaul of air force aircraft. The air force has the capability to perform all types of maintenance, but lack of tools and other equipment has adversely affected maintenance of some aircraft provided under the U.S. military aid program. Organizational maintenance is qualitatively good, but the lack of adequate field and depot maintenance creates relatively heavy workloads within the squadrons. Depot-level repair is of good quality. A good overhaul facility for ground communications and electronic equipment is lacking.

In general, the air force logistic organization is characterized by poor planning and control. A major task of the U.S. Air Force section of the Joint Brazil-United States Military Commission has been to improve supply procedures and organization, but over the years the results have been disappointing.

Brazil is heavily dependent upon foreign sources for military aircraft and related equipment. In the past, most aircraft were imported from the United States, but small numbers have been bought in the United Kingdom, other Western European countries, and Canada. Three Brazilian companies, all producing aircraft for the Brazilian Air Force, are located at Sao Jose dos Campos, in the State of Sao Paulo. The first of these, EMBRAER (*Empresa Brasileira de Aeronautica S.A.*), is government owned and currently is producing the Bandeirante light transport and 112 EMB-326 Xavante (the Italian Aermacchi MB-326 being assembled under license) (Figure 19) armed jet trainers. The second, *Sociedade Aerotec, Ltda.*, has produced 70 T-23 Uirapuru primary trainers for the air force. The third, *Sociedade Construtora Aeronautica Neiva, Ltda.*, has produced quantities of two models of the Regente utility aircraft and is beginning production of the Neiva Universal basic trainer. The air force has decided to proceed with a \$300 million modernization plan, which would include the purchase of nine C-130 transports and three squadrons (48 aircraft) of F-5's from the United States.

All aviation gasoline and jet fuels are imported. The country's stringent economic situation has so curtailed

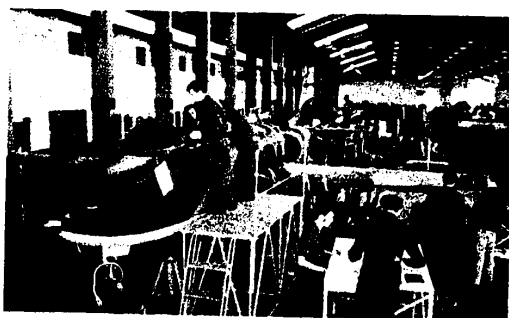


FIGURE 19. Xavantes, the Brazilian version of the Aermacchi MB 326, move along the Embraer production line at San Jose dos Campos (U/OU)

procurement of aviation fuel that flying time is kept low in tactical units and to an absolute minimum in nontactical units.

F. Paramilitary (C)

The paramilitary forces of Brazil consist of the state military police organizations (often called state militias) that exist in each of the nation's 22 constituent states and 4 territories. These forces ordinarily are subordinate to the state and territorial governors, but they are considered to be part of the Brazilian Army reserve and receive some direction from the army. Their aggregate strength is about 184,000 men. Normally the military police are formed into infantry or cavalry units of battalion size or smaller. The larger forces usually are concentrated in population centers, whereas small units are posted in the less populated areas. Armament consists of small arms, including, in some states, small numbers of machineguns. The condition of equipment varies from state to state but generally ranges from fair to poor. The organization, training, and operational capabilities of these forces were improved as a result of the U.S. AID Public Safety Program, which was terminated in Brazil effective 30 June 1972.

The effectiveness and quality of the military police vary widely from state to state. In Guanabara, Sao Paulo, Rio Grande do Sul, and Minas Gerais, they are generally well organized, fairly well trained, and in possession of modern equipment. Even though the militarized police in the smaller and poorer states suffer from personnel and equipment deficiencies, they have shown themselves capable of coping with local security situations. The military police do not concern themselves with conventional combat roles as part of the Army in time of mobilization. Instead, training is focused almost exclusively on the police internal security mission at the local level. This realistic outlook, as well as improved standardization of organization, training, and equipment, has been forged by the Inspector General of (State) Military Police, in the Army General Staff. The Federal Police Academy, in Brasilia, also is contributing to increased professionalism and improved effectiveness among state military police forces through courses at the academy and training furnished by mobile training teams.

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Places and features referred to in this chapter (u/ou)

	COORDINATES	
	° 'S.	° 'W.
Aratu.....	12 49	38 27
Barbacena.....	21 14	43 46
Belém.....	1 27	48 29
Belo Horizonte.....	19 55	43 56
Brasília.....	15 47	47 55
Cabo Frio.....	22 53	42 01
Campo Grande.....	20 28	54 40
Curitiba.....	25 25	49 15
Florianópolis.....	27 35	48 34
Fortaleza.....	3 43	38 30
Guaratinguetá.....	22 49	45 13
Ladário.....	19 01	57 35
Manaus.....	3 08	60 01
Natal.....	5 47	15 13
Petrópolis.....	22 31	43 10
Pirassununga.....	21 59	47 25
Pôrto Alegre.....	30 04	51 11
Recife.....	8 03	34 54
Resende.....	22 28	44 27
Rio de Janeiro.....	22 54	43 14
Rio Grande.....	32 02	52 05
Salvador.....	12 59	38 31
Santos.....	23 57	46 20
São José dos Campos.....	23 11	45 53
São Paulo.....	23 32	46 37
Três Corações.....	21 42	45 16
Uruguiana.....	29 45	57 05
Val-de-Cães.....	1 23	48 29
Vila Militar.....	22 52	43 24

Selected airfields

Anapolis.....	16 15	48 58
Brasília.....	15 52	47 55
Campo Fontenella (Pirassununga).....	21 59	47 20
Campo Grande.....	20 28	54 40
Campo dos Afonsos.....	25 52	43 23
Canoas.....	29 55	51 11
Cumbica.....	23 23	46 29
Dois de Julho.....	12 55	38 20
Florianópolis.....	27 35	48 33
Galeão.....	22 49	43 15
Gravatá.....	29 57	51 08
Guararapes.....	8 08	34 55
Lagoa Santa.....	19 39	43 57
Marte.....	23 30	46 38
Pinto Martina.....	3 47	38 23
Ponto Pelada.....	3 08	59 59
Sao Pedro d'Aldeia.....	22 48	42 07
Santa Cruz.....	22 56	43 43
Santos Dumont.....	22 54	43 09
Santa Maria.....	29 43	53 41
Val-de-Caes.....	1 23	48 33

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