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INTRODUCTION

The National Defense Strategy (END) has, as one of its structuring axes, the strengthening of the Defense Industrial Base (BID), which ensures the support to the needs of technologically advanced defense products and highly trained professionals. These technologies reduce foreign dependency and keep the operational requirements of the Brazilian Armed Forces.

The role performed by the Ministry of Defense (MD), by means of the Secretariat of Defense Products, is to align the relationship between the enterprises and the Armed Forces, in order to develop these technologies, the industrialization of new products and their dual use (civil and military) in the Brazilian society.

Therefore, the BID, formed by the integrated set of public and private companies, encourages the national economic development and contributes to the country's foreign commerce. It is responsible for more than 60 thousand direct jobs, accounting for 4% of the Gross Domestic Product (GDP) and moving around R$ 200 billion in the national economy.

The MD counts on representative entities of the Defense Industrial Base, which are directly related to companies, such as the Brazilian Association of Defense and Security Materiel Industries (ABIMDE), the National Union of Defense Industries (SIMDE), the National Confederation of Industry (CNI), the Brazilian Association of Machinery and Equipment Industry (ABIMAQ) and the Brazilian Chemical Industry Association (ABIQUIM), as well as the Federations of Industries of the federal states, by means of their respective Defense Committees (COMDEFESA).

The Joint Defense Industry Commission (CMID) is the highest level forum for conducting the BID policy. Its purpose is to advise the State Defense Minister, foster the National Defense Industry and promote the integration between the MD and public and private agencies and entities concerning the BID.

The established partnerships leverage the Armed Forces' strategic projects, especially in three important sectors for the National Defense - nuclear, cyber and space. The mastery of new technologies and the increase of productivity and diversity in the Brazilian industry ensure the Forces operational capacity.

The Defense sector requires policy, economics and strategy from the State. Avoiding conflicts and preserving sovereignty demand a permanent readiness effort, to ensure the quick deployment response of the Armed Forces. Only continued investments of time and resources in the Armed Forces' modernization projects can guarantee the country's deterrent power.

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MINISTRY OF DEFENSE

JOHNSON / BRAZILIAN AIR FORCE

SGDC-1

GEOSTATIONARY SATELLITE FOR DEFENSE ANDA STRATEGIC COMMUNICATIONS

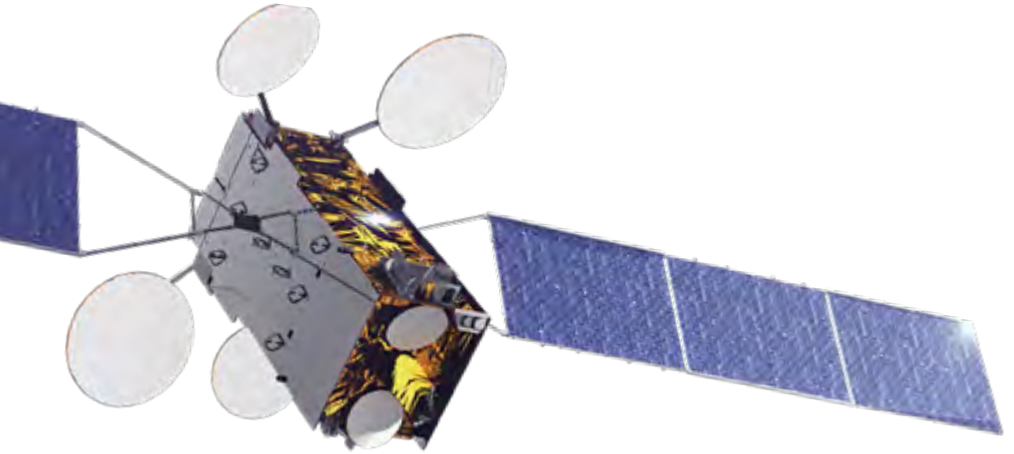
DEFENSE

Targeting to provide a secure way to the Brazilian government explores its own communications, the first Geostationary Satellite for Defense and Strategic Communications (SGDC-1) has become as a partnership between the Ministry of Defense and the Ministry of Science, Technology, Innovations.

The project has received investments about BRL 2.7 billion including the satellite itself, the entire associated ground division, as well as the access to critical space technologies, throughout technology transfer programs.

The satellite has a payload controlled by Telebras and intended for strategic communications by the government and the National Hi-speed Internet Program, and also another payload dedicated exclusively to the Ministry of Defense use, meeting the needs of the Military System Command and Control.

Indeed, the satellite contributes to increase the effectiveness of interagency operations, including border protection, peace-



keeping missions, Law and Order Assurance activities, rescue operations on high sea, and the safety of airspace, covering the Brazilian territory and its strategic surroundings.

Currently, there have been already delivered two Space Operations Centers, one in Brasília (main) and another in Rio de Janeiro (secondary), from which the teams of the Ministry of Defense and Telebras control the SGDC-1.

The offset carried out of the SGDC-1 met, among others, the goals of the Strategic Space Systems Program (PESE). The program includes the manufacturing of other satellites in association with the domestic industry.

H-XBR PROJECT

The HX-BR project wishes to provide the Brazilian aerospace industry the technology needed for helicopters design and production of.

The project includes the manufacture of 50 medium-sized helicopters for general use by the Brazilian Armed Forces and the Government. A Consortium formed by the companies AIRBUS HELICOPTERS and HELIBRAS (Itajubá-MG) was contracted for this purpose, including an offset program.

The sum of 50 H-225M aircraft are intent to be delivered: 16 to the Brazilian Navy, 16 to the Brazilian Army and 18 to the Brazilian Air Force, two dedicated exclusively to support the President of Brazil.

The Project includes the integration of specific armaments, logistics support, training and qualification of human resources and technology transfer, which enables Brazil to conceive, develop and produce medium-sized helicopters.

The H-225M performs tactical transport missions, troops and cargo, in-flight refueling, search and rescue in combat and maritime patrol. In addition, the helicopter can be employed in humanitarian aid and logistics transport missions.

Operating from a huge variety of airfields and offshore, these aircraft are capable of all-weather operations, including the night vision goggles functionality. The range of over 280 nautical miles can be extended by the ability to be refueled in flight.

The first helicopter was delivered in 2014, assembled and tested in Brazil. The mission system was developed with the participation of the national industry, which includes integration of electronic warfare sensors, weapons and sea radar.

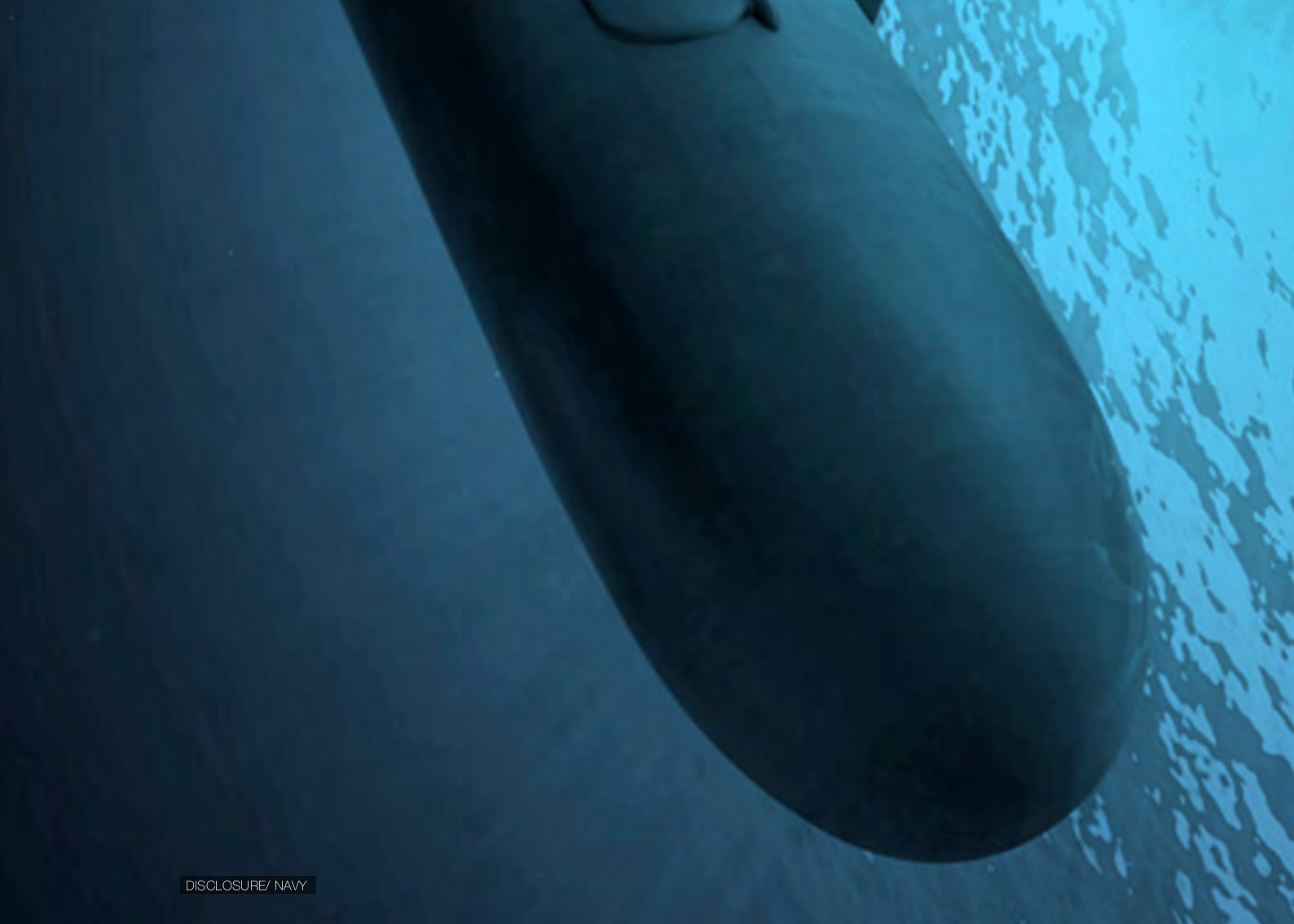
In 2015, the Brazilian Air Force received its first aircraft in the operational version, with self-protection capabilities, in-flight refueling. It has also equipment that expand the Armed Force's operational capability.

So far, 36 aircraft have been delivered: 10 to the Brazilian Navy, 12 to the Brazilian Army, 12 to the Brazilian Air Force and 2 to the Special Transport Group of the Brazilian Air Force, that gives support to the President of Brazil.

JOHNSON / BRAZILIAN AIR FORCE

Strategic Projects

BRAZILIAN NAVY



DISCLOSURE/ NAVY

“TAMANDARÉ”
CLASS FRIGATES

The Brazilian Navy, under the “Construction of the Core of Naval Power” Strategic Program, and as a result of an immediate need to renew the Naval Force, develops the Project to obtain, by construction, the “Tamandaré” Class Frigates.

This Project aims to acquire four versatile ships, endowed with high combat power, capable of protecting the extensive Brazilian Maritime Area, with more than 5.7 thousand km² - “Blue Amazon”; to conduct Search and Rescue operations; monitoring and combating pollution, piracy, illegal fishing, among other threats; and meeting the international commitments assumed by Brazil.

The ships will be built in Brazilian national territory, between 2025 and 2028, with high levels of nationalization of components and equipment, in addition to the transfer of technology. This fact will contribute to the generation of jobs and to the strengthening of the shipbuilding industry and the Brazilian Defense Industrial Base.

The “Tamandaré” Class Frigates Program applies, since its conception, good practices of governance and transparency, observing the guidelines of Brazilian government entities with expertise in technical and legal aspects such as: AGU, CGU, TCU and BNDES.

Tamandaré Corvette

PROSUB - DEFENSE AND SOVEREIGNTY

In order to contribute with defense and sovereignty over Brazilian Jurisdictional Waters, the Brazilian Navy has concentrated its efforts on the Submarine Development Program (PROSUB), which will expand the Force's operational capacity to protect and preserve our Blue Amazon.

As part of the Program "Avançar", from the Federal Government and under the coordination of the Navy Command, the PROSUB, created in 2008, comprises the construction of an Industrial Infrastructure and Support for the operation and maintenance of submarines, the construction of four conventional submarines and the construction project of the first Brazilian submarine with nuclear propulsion.

Supported by three pillars: technology transfer, except in the nuclear area, nationalization of equipment and systems, and personnel training, the Program is enabling the first industrial complex and logistical support dedicated to naval means with nuclear propulsion in the southern hemisphere.

Built in an area of 750 thousand square meters, the Itaguaí Naval Complex will house the industrial and support infrastructure, composed of a Steel Structures Manufacturing Unit (UFEM), two shipyards, one for construction and another for maintenance, a naval base, a Specialized Maintenance Complex, two dry docks, workshops, administrative areas, 13 piers and one shiplift - with a capacity to support 8 thousand tons, in addition to an Instruction and Training Center for submarine crews.

The first of four Brazilian conventional submarines (S-BR), the Submarine "Riachuelo" (S-40), was launched to the sea on December 14th, 2018. For 2020 is expected the "Humaitá" (S-41), followed by the "Tonelero" (S-42), in 2021 and the "Angostura" (S-43), in 2022. The first Brazilian submarine with nuclear propulsion (SN-BR), main scope of the program, will be named "Álvaro Alberto", a tribute to the Admiral who was the pioneer in the use of nuclear technology in the country.

As a reference to the transfer of technological training, can be mentioned the conclusion, in January 2017, of the basic project, developed by a highly qualified team of engineers, composed of military and civilians from the Brazilian Navy.

The completion of the Program will also strengthen several sectors of the national industry of strategic importance for the country's economic development. Prioritizing the acquisition of components manufactured in Brazil, the PROSUB promotes the development of the Defense Industrial Base, which encompasses the sectors of electronics, mechanical (fine and heavy), electromechanical, chemical and the Brazilian Naval Industry.

Additional Information: www.prosub.mar.mil.br

Steel Structure Manufacturing Unit (UFEM), Itaguaí - RJ

PNM - NAVY'S NUCLEAR PROGRAM

Beginning in 1979, the Navy's Nuclear Program (NNP) covers two major projects: the nuclear fuel cycle domain and the development of an embedded nuclear plant for submarines, which includes the previous construction of a prototype on land, the Nuclear-Electric Power Generation Laboratory (LABGENE).

The domain of the difficult process of uranium enrichment by ultracentrifugation, a technology with high added value, was reached by the Brazilian Navy, in 1988.

Based on this technology, the Brazilian Navy started to collaborate with the Nuclear Industries of Brazil (NIB) and, since 2000, has supplied ultracentrifuges to its industrial plant in Resende (RJ), where nuclear fuel is produced for the nuclear power plants of Angra dos Reis, a good example of the dual use of this technology.

For the society, another benefit of this Program was the launching of the Foundation Stone of the Brazilian Multipurpose Reactor (RMB), in June 2018, which will make Brazil self-sufficient in the production of radioisotopes - a fundamental input for the manufacture of radiopharmaceuticals of great importance for the treatment of diseases in several areas of Medicine, such as cardiology, oncology, hematology and neurology. In addition, the RMB will have numerous applications, such as research in the nuclear area.

At the same time, the integration tests for LABGENE's turbogenerators began - the first nuclear power plant fully designed

in the country. Just a few countries in the world have been able to conquer these technologies to date.

Others positive aspects of investing in nuclear energy are the nationalization of processes and industrial equipment, the innovations resulting from the program's partnerships with universities and research institutes and the generation of direct and indirect jobs. There are also the direct effects of the program in achieving the country's independence in sensitive technologies and in the development of the Defense National Industry.

Construction of the first PROSUB (S-BR1) conventional submarine at UFEM, in Rio de Janeiro

Strategic Projects

BRAZILIAN ARMY

FELIPE BARRA/ MINISTRY OF DEFENSE

GUARANI

ARMY STRATEGIC PROGRAM

The program “Guarani” started in 2012. It was designed to equip the Brazilian Army with a modern family of armored vehicles on wheels to meet the doctrinal requirements and fulfill the missions of external defense and protection of the Brazilian society.

Besides armored protection, the “Guarani” brings added values, such as weapons, command and control and communications systems, by means of transfer of technology and technical qualification of national labor, also contributing to the generation of jobs and income.

The Program has already created 2,890 direct and indirect jobs and involved the participation of 125 companies that supply inputs, 90% of which of national origin.

The vehicles are integrated by modern weapon systems, with selective lethality capacity, and a flexible command and control system, in order to allow them to act in a wide spectrum in conflicts.

The new family of mechanized vehicles includes an average subfamily, with versions for reconnaissance, personnel transport, mortar, rescue, command post, fire range station, workshop and ambulance. It also has a light subprogram, with versions for reconnaissance, anti-car, light mortar, radar,

command post and advanced observation. Conceived by the Army's Science, Technology and Innovation System, the program "Guarani" was developed in partnership with several national companies.

In July 2019, the 400th vehicle was delivered, out of 1,580 units, which are expected to be in use in the different military units by 2040.

About 90% of the components used to manufacture Guarani are made in Brazil

DISCLOSURE - IVECO

SISFRON

INTEGRATED SYSTEM OF BORDER SURVEILLANCE

Brazil, a country of continental dimensions, has 16,886 kilometers of border with ten South American countries. The Brazilian Army, aware of the necessity of strengthening the State's presence in the region, created the Integrated System of Border Surveillance (SISFRON), with the dual purpose of supporting the defense of the national territory integrity against external threats and cross-border crimes, acting alone or in coordination with agencies, within the scope of the Border Integrated Protection Program.

SISFRON is the largest land border surveillance program carried out in the planet. It comprises the acquisition and the integration of sensing equipment, tactical communications, secure data transmission network, decisions support, operations support, engineering and other complementary actions.

In addition, it was given major priority to the acquisition of Brazilian products in the composition of the System, so granting the enterprise the characteristic of being a strong inducer of the Industrial Defense Base and, consequently, of regional and national development. In this context, in the first phase of the Program (pilot project), about 70% of the means were obtained from investments in national companies. The acquisitions from abroad resulted in relevant transfer of technology, generating around 8,432 jobs per year.

Currently, the SISFRON pilot project is implemented in about 650 kilometers of the Brazilian border strip, under the responsibility of the 4th Mechanized Cavalry Brigade, in the southwest of Mato Grosso do Sul state, beginning in the city of Dourados. Subsequently, the Program is to be expanded, in order to cover the borders of the states of Mato Grosso, Paraná, Santa Catarina and the northern region of the country.

In May 2018, the Army accomplished a successful Technical-Operational Validation Exercise. Around 500 military personnel and 145 vehicles were employed in the activity, in day and night operations, testing sensors, tactical communications system, secure data transmission network and means of decision support.

DISCLOSURE / BRAZILIAN ARMY

CYBER DEFENSE

In order to ensure that strategic information flows quickly and safely, in an increasingly connected and digitally vulnerable world, the Army's Cyber Defense Strategic Program (Prg EE Def Ciber) was conceived. This program placed Brazil in the restricted group of national and international organizations, with the capacity to develop measures to protect its computerized systems.

When this Project was created, it was soon noticed the necessity of an organism responsible for exercising governance, in a collaborative way, among vectors naturally designed to compose the cyber field defense. This need was met in 2010, with the creation of the Cyber Defense Center (CDCiber).

Besides establishing Cyber Defense structures, the project has also enabled the national development of important softwares, such as the Cyber Operations Simulator (SIMOC). SIMOC allows those responsible for National Cyber Defense to improve techniques and tools to prevent, detect and mitigate attacks on data networks. It also identifies vulnerabilities, creates protection mechanisms and trains people.

In 2014, an ordinance from the Ministry of Defense established rules to enhance the Cyber Defense sector in the country. In 2016, based on this new guidance, the Cyber Defense Command (ComDCiber) was created to be a joint organism that counts on officers and NGOs from the three Armed Forces.

The Army, as the leader of the Defense strategic cyber sector, has been updating its program, working in several areas, in

order to deploy this military capacity, and conducting, among other activities: the organization of the CDCiber, the planning and execution of cyber security of networks and corporate systems, the development of secure systems, the improvement of the training structure for operational preparation and employment, the production of knowledge generated by the cyber source and the structure of scientific research in the cyber field. All of these initiatives are leveraging the combat power of the Land Force, providing freedom of action in cyberspace, apart from encouraging and inducing the development of national technological capacity.

Strategic Projects

BRAZILIAN AIR FORCE

SGT BATISTA / BRAZILIAN AIR FORCE

KC-390

MILLENIUM PROJECT

The largest military aircraft ever produced in Brazil, the KC-390 Millenium represents a milestone in the excellence of project management in the Brazilian Air Force. This is because it manages to combine the best requirements and offset packages in order to improve sectors of the Brazilian Defense Industrial Base. Altogether, more than 50 Brazilian companies participate in the project, which also has the collaboration of Argentina, Portugal and Czechia.

The project includes the development and acquisition of 28 aircraft with capacity to carry cargo and troops to the entire Brazilian territory, or anywhere in the globe, when necessary. The aircraft will also be able to refuel other aircraft in flight, perform aeromedical evacuation, launch skydivers and fire fighting in flight.

Considered as the new backbone of military transport aviation in Brazil, the aircraft has the ability to operate in the most diverse scenarios and configurations. Due to its capacity to transport up to 50.700lbs, the aircraft is able to deliver large equipment such as armaments and even the Brazilian Army's Guarani Armored Fighting Vehicle (AFV).

In 2014, the Brazilian Air Force signed a contract for the acquisition of 28 aircraft with the company EMBRAER. In early 2015, the KC-390's first flight was carried out, starting the testing phase of the two prototypes. The contract provides a logistics support package, including spare parts and maintenance.

The test flight phase is scheduled to end in 2021 and, once completed, will enable the project to compete in the world market.

In the last few months, the most important milestones reached were:

- 06/27/20 - Delivery of the third KC-390 Millennium multi-mission aircraft.
- Participation of the aircraft KC-390 Millenium in the government operation to delivery material and supplies to face the COVID-19 pandemic throughout the country.
- Lebanon mercy mission - Transport of materials, medicines, health equipment and food.

SGT BATISTA / BRAZILIAN AIR FORCE

F-39 E/F
GRIPEN PROJECT

Brazil considers that Defense is one of the main sectors able to push forward technology and innovation, increase the export of products with greater added value and bring benefits to the Brazilian economy. Therefore, when making purchases of military equipment, the country seeks to become increasingly competitive with cooperation agreements that enable huge technological growth.

In this context, the F-X2 project has started from the Brazilian Air Force requirements to substitute fighter aircrafts and aim to incorporate important technological advances in the Brazilian Industrial Defense Base.

As in the 1980's, when Brazil jointed into a historic partnership with Italy in the AMX Program, bringing the knowledge to Brazil produce jets, now a cooperation agreement with Sweden takes the country to a new level in the aerospace industry.

Signed in 2014 by the Brazilian Air Force, the contract with the Swedish company SAAB provides for the acquisition of 36 aircraft Gripen, 28 single-seat units and 8 two-seaters.

The Swedish company SAAB is responsible for developing the aircraft in partnership with the Brazilian aerospace industry, which is being prepared to produce parts and assemble the last Gripen units here in Brazil, as result of a technology

transfer program. The delivery of the first batch of aircraft is scheduled for October 2021.

The supersonic multi-role F-39 Gripen fighter will be used by Brazilian Air Force in air defense, attack and recognition missions, including airspace policing measures and other related to the Aerospace Power employment.

Thanks to a national strategy to support the industry, Brazil currently has trained companies that could be included in the offset package dealt by the Brazilian Air Force and Saab, allowing the Brazilian Defense Industrial Base to take part in the Gripen NG development process.

The technology transfer program consists of about 60 key projects. The most expressive is the Gripen Design and Development Center (GDDN), located at the EMBRAER factory unit located in Gavião Peixoto (SP).

More than 350 Brazilian professionals, including engineers, technicians and pilots from the Brazilian Air Force and SAAB's partner companies in Brazil were on-the-job trained in Sweden, under Swedish technicians oversee. Subsequently, these professionals will be employed directly in the Gripen aircraft manufacturing in Brazil. This process is part of the technology transfer programs, in which skills and knowledge will be acquired by the Brazilian industry, enabling the final assembly of these aircraft in Brazil. The contract also provides logistics support and the acquisition of the initial Gripen's armament package.

The contribution of this project is to further strengthen the Brazilian air defense and to leverage business opportunities

for the Brazilian aeronautical industry through technical and commercial cooperation between Brazil and Sweden.

In the last few months, the most important milestones reached were:

- Preparation of the production line scheduled to work at the EMBRAER factory unit located in Gavião Peixoto (SP) to allow the high-tech components production and flight tests, starting in September 2020.

- Beginning of industrial production of fuselage and wing parts at SAM plant, located in São Bernardo do Campo-SP.

Gripen NG is the only fighter aircraft in the Southern Hemisphere capable of supersonic speeds over long distances

JOHNSON / BRAZILIAN AIR FORCE

PESE

STRATEGIC SPACE SYSTEMS PROGRAM

The Program's objective is ensuring Brazil's autonomy in manufacture, launch, space systems operation and replacement, based on the development of dual-use products, for military and civil use and improve the country's technological and industrial sovereignty. That is the goal of the Strategic Space Systems Program (PESE), a Ministry of Defense Program that establishes a strategy for deployment of space systems, based on projects of development communications, remote sensing and geolocation satellites, launch vehicles, among others.

PESE is part of the National Space Activities Program (PNAE) that establishes the strategy for implementing dual-use space systems (civil and military). The Program aims to promote scientific, technological and industrial development in order to assure the outer space pacific exploitation.

As established by the National Defense Strategy (END), it is up to the Brazilian Air Force, in partnership with the Brazilian Space Agency (AEB), through a scientific-technological interaction with the Defense Industrial Base in order to conduct projects related to this strategic sector.

Due to its large territorial dimensions and biodiversity, Brazil

demands huge communications, meteorology and image production systems, in addition to strategic data services obtained from the satellites technology That must be a domain of the Brazilian State. Furthermore, space monitoring is an integral and indispensable condition for the strategic tasks that guide the Brazilian Air Force, namely: multiple and cumulative surveillance and air superiority.

In global scenario, where few countries hold managerial, operational, technological and industrial ability in the outer space, Brazil needs to enhance efforts among different institutions. PESE also have the perspective to unit efforts to optimize material and human skills for the Brazilian Welfare.

On the 05/13/2020, the Brazilian Air Force, in partnership with the CENSIPAM, started a bid process to acquire a satellite with capacity to take images that can help governmental actions in the Brazilian Amazon and in the Brazilian Exclusive Economic Zone.

MINISTRY OF DEFENSE

MINISTER OF DEFENSE
José Múcio Monteiro Filho

Defense Special Social Media Advice
Updated on February 2023