Crisis won't affect Brazil's aerospace

by Geraldo Luis Zaraiva Lino

In a recent visit to the Brazilian Aeronautics Agency (Embraer) and the Aerospace Technical Center (CTA), in São José dos Campos, Sao Paulo, Brazilian President José Sarney, said that despite the economic crisis and the financial difficulties hitting the country, the resources to continue the Brazilian aerospace program will not be cut. "What I have seen here surpasses anything I could have imagined," the President said enthusiastically, adding that the visit left him with "an unmistakeable conviction that Brazil will occupy, even in this decade, an important position in aerospace technology."

At Embraer, which marked its 16th birthday, the President got to know the company's new product, the EMB-120 "Brasilia," a pressurized turboprop for 30 passengers, which the Brazilian Air Force and various foreign aviation companies have already bought.

A bit of history

Until 1969, there were different attempts, with varying degrees of success, to start assembly line aircraft production in Brazil. Embraer was set up that year as a mixed-capital firm, allowing Brazil's aeronautics industry to make a qualitative leap and rapidly become competitive with companies in more developed nations.

The first airplane built was the Bandeirante, a lightweight two-motor plane designed by CTA which became a great sales success. Then the Ipanema was launched, a crop-duster. In 1970, the company signed a deal with Aermacchi Italiana to make the MB-326, renamed Xavante. During the 1982 Malvinas War, some of these planes were supplied to Argentina and took part in attacks on the British fleet. In 1975, an accord was signed with the U.S. company Piper, to manufacture light aircraft. The next year the Xingu was launched, a pressurized two-engine executive plane, of which the French navy purchased 41 units for pilot training. Then came the military training plane Tucano, which recently won the international bidding of the British Royal Air Force and is now known as Brasilia.

This year, the first AMX prototype, christened Centauro, an attack jet developed in consortium with the Italian companies Aermacchi and Aeritalia, will fly to Italy. The next international consortium project should be to build a supersonic pursuit plane to replace the Mirage III and the F-5E of the Brazilian Air Force.

The first step in developing Brazil's space program was the creation in 1954 of the study group of the National Council of Investigations and the Brazilian Air Force, under Brig. Gen. Oswaldo Baloussier, who was responsible for the first conceptual studies of the program. In 1961, theory turned into practice, with the creation of the National Commission of Space Activities, whose first director was Col. Aldo Vieira da Rosa.

In 1965, construction began on the launch base of Barreira do Inferno, in Rio Grande do Norte. The highly favorable geographical position of the base, just five degrees from the earth's magnetic equator, led NASA to set up a cooperation accord to study ionospheric phenomena at altitudes below 200 kilometers.

The first rockets launched were all imported, mainly from the United States, and the first launch was on Dec. 16, 1966. Starting with the creation of IAE, the Sonda Program began, a project for building rockets in Brazil.

Sonda I is a rocket capable of reaching an altitude of 70 km with a payload of 5 kg. Sonda II can reach 180 km with a paylod of 50 kg. These rockets basically developed Brazil's own capacity to elaborate projects.

Sonda III, which first flew in 1976, is a meteorological rocket; it can reach 600 km of altitude with a payload of 128 kg. Sonda IV, launched in 1984, is more ambitious, and represents a fundamental step in the project of the Vehicular Satellite Launcher (VLS). It can carry a 300 kg payload to 1,000 km, and is being used to test various indispensable orientation mechanisms for launching satellites.

Once the Sonda Program ends, tests will start with the VLS, made up of four Sonda IV rockets, which will carry the first Brazilian satellite into space in 1989. Its mission is to find out about the country's natural resources, complementing U.S. satellite data.

The perspective opening up to Brazilian space exploration is cooperation with other Ibero-American countries, as proposed at the Second Regional Seminar for the Implementation of Space Activities on the Continent, held in May 1983 in São José dos Campos. At that time the possibility of technology transfer to the countries of the region which are underdeveloped in this sector was discussed, as well as a broad personnel training program to be carried out in the most advanced centers of Brazil, Argentina's National Commission of Space Investigations, and the Colombian Space Center. This could be the first step toward an Ibero-American space agency, whose research will already be quite advanced.

The results obtained in space research have already had important applications in other sectors of Brazilian industry, the benefits of which are paying back the investments in aerospace activities dozens of times over. As examples, we could cite high-resistence steels, seamless metal pipes, ultralight fiberglass structures, and heat isolaters for high temperatures.