Syracuse III

Outlook

- France and Italy have signed a contract with Thales Alenia Space and Telespazio to manufacture Sicral 2, a communications satellite that will meet the needs of both France and Italy

- The French government is currently debating whether or not to sell its Syracuse III satellites to a commercial company under a Private Finance Initiative (PFI), similar to the U.K.'s Skynet 5 program

- There have been talks of a fourth-generation Syracuse satellite; however, with Syracuse III satellites not expected to reach the end of their lifespans until 2020, no production is forecast during the next 10 years

Orientation

Description. Syracuse III is being designed as a nuclear-hardened, jam-resistant military telecommunications system for French and NATO forces.

Sponsors. The French Defense Ministry and the French Procurement Agency, Délégation Générale pour l'Armement (DGA).

Status. In operation; first Syracuse III satellite was launched in 2005, while second launched in 2006. Telecom 2D with the Syracuse II payload, also the last in the Telecom 2 series, was launched in 1996. Telecom 2D is currently in an inclined orbit.

Total Produced. Two

Application. The Syracuse III system will provide French and NATO forces with transmission capabilities for secure military and government communications.

Price Range. Based on the $1.4 billion Alcatel Space manufacturing contract, Syracuse III satellites cost about $200 million each.

The total cost of the Syracuse satellite program, including ground segment and launch services, is expected to be $2.9 billion.

Contractors

Prime

Thales Alenia Space	http://www.thaleson-line.com/space, 26 ave JF Champollion, BP 1187, Toulouse, 31037 France, Tel: + 33 05 34 35 36 37, Fax: + 33 05 61 44 49 90, Prime (Spacebus 3000B3 Satellite Platform)

Subcontractor

AMP-C3C	http://www.amp-c3c.com/, Zone d'activites de Courtanboeuf, S. Avenue de l'atlantique, Les Ulis, 91944 France, Tel: + 33 01 69 07 80 93, Fax: + 33 01 64 46 65 21 (Large Fixed

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	Terminals)
In-Snec	http://www.in-snec.com/home/index.htm, 2, rue de Caen, Bretteville l'Orgueilleuse, F-14740 France, Tel: + 33 231 294 949, Fax: + 33 231 806 549 (Large Fixed Terminals)
Indra Espacio SA, Indra Space	http://www.indra.es/servlet/ContentServer?cid=1082106315655&pagename=IndraES/Page/ EstructSubHomeSectorCapacidad&Language=en_GB&pid=1082106315655&c=Page, Mar Egeo, 4 - Pol. Ind. 1, San Fernando de Henares, Madrid, 28850 Spain, Tel: + 34 91 626 90 00, Fax: + 34 91 626 88 90 (Transportable Terminals)
Thales	http://www.thalesgroup.com, 45, Rue de Villiers, Neuilly-sur-Seine, 92526 France, Tel: + 33 1 57 77 80 00, Fax: + 33 1 57 77 86 59 (Syracuse Ground Segment Development; Syracuse III Repair and Maintenance; Syracuse Ground and Space Security Equipment)

Technical Data

Design Features. The Syracuse III satellites use the Alcatel Spacebus 4000B platform with a communications payload tailored to meet French domestic and external requirements. Syracuse III satellites weigh approximately 3,700 kilograms and have a power output of 6 to 9 kW. Spacebus 4000B satellites are designed for a lifetime of 15 or more years.

The Syracuse IIIA satellite features a payload that operates in two frequency bands, extremely high frequency (EHF) and super-high frequency (SHF). In the SHF band, the Syracuse IIIA is equipped with four spot beams and one global beam plus one metropolitan France beam. The SHF band operates in nine 40-MHz channels.   In the EHF band, the Syracuse IIIA is equipped with two spot beams and one global beam. These operate in six 40-MHz channels.

The payload is designed to provide data throughput at a rate of up to several hundred megabits per second and to support multimedia-type services. As a military system, Syracuse III is designed to resist electronic warfare, including both countermeasures and jamming. It is also nuclear-hardened in both the ground and space segments with secure linkage, even in the most unforgiving jamming environment.

Two new EHF ground stations will be installed in France, and Syracuse II anchor stations will be upgraded to support Syracuse III satellites.

Variants/Upgrades

Telecom 1A/B/C/2A/B/C/D

Syracuse II
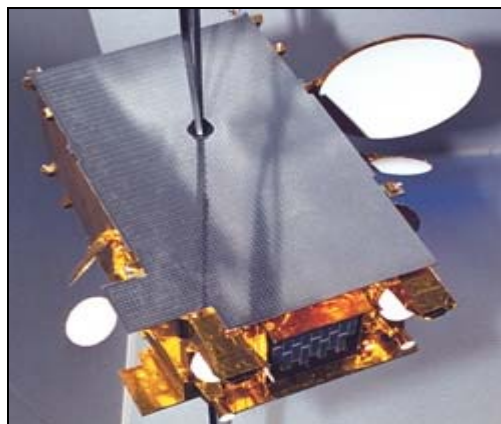
The Syracuse IIIA uses a Spacebus 4000B platform.

Source: Alcatel Space

Program Review

Background. Because the first two Syracuse generations shared a satellite platform with France Telecom, which had its own civilian telecommunications payload, the heritage of the Syracuse III system begins with the French Telecom system.

Telecom is a national French satellite project that provides a domestic business communications network capable of carrying a wide range of digital services. These include data, telephone, and TV services that are distributed among a large number of Earth stations located on the subscriber's premises. The Telecom network is also used for military communications within France, and for the improvement of telephone and TV links to overseas territories in the Caribbean Sea and Indian Ocean. Development of the Telecom program began as a competitive requirement for a French satellite-based telecommunications system, with Matra chosen as prime contractor in 1979. Final development began in 1980.

Matra/Alcatel Selected for Telecom 2. In 1987, Matra and Alcatel were selected as prime contractors for the second-generation Telecom spacecraft, Telecom 2. The overall contract value was $620 million.

Although the same C-, Ku-, and X-band links were used for civil and military applications, Telecom 2 spacecraft were not based on the same European Communication Satellite (ECS) platform bus as the Telecom 1 series, but instead used the Eurostar bus, developed by Satcom International (now Astrium). Alcatel Space supplied the Telecom 2 payload systems, including the Syracuse II package.

Telecom Replacement Gets Official Moniker

Systeme de Radio-Communications Utilisant un Satellite (Syracuse) is the satellite radio communications system operated by the French Defense Ministry using the dedicated military payload section of the Telecom series craft, the 8/7-GHz band. Specific administrative responsibility for the military applications of the Telecom series satellites is held by the French Government Délégation Générale pour l'Armement (DGA).

Fixed ground stations and mobile ground stations (4-WD VLRA vehicles or all-terrain trucks), which are C-160F Transall-transportable, form the Earth segment of the military network. There are also shipborne stations that are capable of operating the network. The system operates with more than 100 ground stations. Further improvements to the Syracuse system payload on Telecom 2 satellites were made under the Syracuse II

update program. When compared with the earlier Syracuse system, the Syracuse II system allows communications with submarines and aircraft at higher transmission rates.

Syracuse III Design Studies. In 1999, Alcatel Space and Matra Marconi Space started work on parallel studies to define what would become the Syracuse III system. The studies produced two firm-fixed-price bids for the prime contract late in 1999.

Enter Syracuse III. In 2000, the French Defense Procurement Agency awarded Alcatel Space the contract to provide the in-orbit delivery of the Syracuse IIIA military satellite, as well as necessary upgrades of the current ground segment. Syracuse IIIA is based on Alcatel's Spacebus 4000B3 satellite bus and entered service in 2005. The contract, valued at approximately EUR1.4 billion ($1.226 billion), also includes options for the in-orbit delivery of a second (launched in 2006) and third (not yet procured) Syracuse III satellite, as well as operational maintenance of the system until 2018.

Alcatel/Thales Develop Modem for Syracuse III. Alcatel Space (now Thales Alenia Space) and Thales developed the secure high-speed modem for Syracuse III, dubbed Modem XXI, which augments the military satellite's anti-jamming functions. Thales developed the hardware, while Alcatel oversaw validation and system performance. First shipsets were delivered in 2004.

Second Syracuse Ordered

In January 2004, the DGA exercised the option for the procurement of the second Syracuse III satellite known as IIIB. The contract followed the order for the first satellite in 2000 and continued the partnership with Alcatel Space. Alcatel Space served as prime contractor for the Syracuse III program and was tasked with not only satellite construction but also in-orbit delivery and provision of satellite and mission control centers. Syracuse IIIB was delivered in 2006.

NATO Satcom Post-2000. In May 2004, the NATO Command, Control, and Communications Agency selected the joint French-Italian-U.K. bid to provide NATO satellite communications requirements over the course of the following 15 years. The Italian Sicral, the French Syracuse III, and the U.K.'s Skynet 5 will replace the aging NATO IV satellites and continue service through 2019.

Launch Contracts. In December 2003, Arianespace signed a contract to launch the second Syracuse III

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satellite. Syracuse IIIB was launched on an Ariane 5 in 2006 from the Guiana Space Center in Kourou, French Guiana. Arianespace launched the Syracuse IIIA in 2005 and IIIB in 2006.

<u>First Syracuse III Operational</u>. The Syracuse IIIA was successfully launched from Kourou, French Guiana, on October 13, 2005. In December 2005, the French DGA accepted the spacecraft after it had been system-qualified by Alcatel Alenia Space (now Thales Alenia Space). Operation of the satellite began in mid-November. After the DGA accepted the spacecraft from Alcatel Alenia Space, it was then delivered to the French armed forces.

The French government is currently debating privatizing the Syracuse III satellite system. Under the plan, the French government would sell satellites to a private operator and then lease them back, similar to the British Private Finance Initiative (PFI) in which the government leases the Skynet 5 satellites from Astrium Services. The French military has said that it would sell the two Syracuse III satellites, as well as the French payload aboard the Franco-Italian Sicral 2 satellite, for about EUR400 ($503 million). The military would then lease back about 90 percent of the capacity for 15 years for a total of EUR800 million ($1 billion). The commercial operator would be allowed to lease the remaining 10 percent to third parties. The French National Assembly has questioned the deal, and a signing is far from certain.

In May 2010, Italy and France signed a contract with Thales Alenia Space and Telespazio to develop and manufacture a Sicral 2 satellite. This confirms that France will not build a Syracuse IIIC, but rather will cooperate with Italy on the Sicral program to meet its satellite communications needs. France will own its own payload on board Sicral 2.

Timetable

Month	Year	Major Development
	1999	Project definition studies begun for Syracuse III system
	2000	Alcatel Space awarded contract to supply Syracuse IIIA
	2004	End of Telecom 2C design life
Oct	2005	Syracuse IIIA launched on an Ariane 5
Aug	2006	Syracuse IIIB launched on an Ariane 5

Forecast Rationale

With the launch of Syracuse IIIB and its delivery into operational service, France's next order of business was to figure out how best to provide in-orbit redundancy and supplemental demand should the need arise. The primary debate was between purchasing an additional Syracuse III satellite or jumping aboard Italy's Sicral program. In the end, the French military decided the most cost-effective method of expanding in-orbit communications capability was to join Italy. The two nations awarded a contract to Thales Alenia Space and Telespazio in May 2010 to build Sicral 2, which will carry payloads for both France and Italy.

Currently, the French government is debating a sale of the Syracuse III network to a commercial operator under a Private Finance Initiative (PFI). Under the plan, which would be similar to the British Skynet 5 program, the French government would sell Syracuse IIIA and IIIB, along with its payload aboard Sicral 2, to a private company and lease back capacity. The private company would then be able to sell any extra capacity to third parties. Implementation of this plan is far from certain, as the French National Assembly has demanded a number of assurances before agreeing to vote in favor of the proposal.

There has been some talk of a fourth-generation Syracuse satellite system. However, such a system would be extremely expensive. Gerard Petitalot, a senior space advisor to the French Defense Ministry, has stated that there is a strong chance the Syracuse IV will be funded by some alternative to a conventional government purchase. Some possibilities include a PFI or a multinational system. France and Italy have already worked together on the Sicral 2 and Athena-Fidus. More cooperation could be called for in the future.

Whatever funding method is chosen, no production is forecast to take place during the 10-year forecast period.

With Syracuse III satellites launched in 2005 and 2006, a new satellite will probably not be needed until 2020, when the two satellites will reach the end of their expected 15-year lifespan.

Ten-Year Outlook

No production forecast from 2010-2019.

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