TWO TELECOMMUNICATIONS SATELLITES READY FOR LAUNCH

Arianespace will orbit two telecommunications satellites on its sixth Ariane 5 launch of the year: Eutelsat 21B for the European operator Eutelsat, and Star One C3 for the American manufacturer Orbital Sciences Corporation and the Brazilian operator Star One.

The choice of Arianespace by the world's leading space telecommunications operators and manufacturers is clear international recognition of the company's excellence in launch services. Based on its proven reliability and availability, Arianespace continues to confirm its position as the world's benchmark launch system.

Ariane 5 is the only commercial satellite launcher now on the market capable of simultaneously launching two payloads.

Arianespace and Eutelsat have developed an exceptional and uninterrupted relationship over the last 27 years, with more than half of the Eutelsat fleet orbited by the European launcher. Eutelsat 21B will be the 26th satellite launched by Arianespace for Eutelsat.

Built by Thales Alenia Space using a Spacebus 4000 C3 platform, Eutelsat 21B will weigh about 5,000 kg at launch. It is fitted with 40 active Ku-band transponders, and will be positioned at 21.5 degrees East. Eutelsat 21B will deliver telecommunications services, data services for corporate networks and governmental administrations and IP access in Europe, North and West Africa, the Middle East and Central Asia. It offers a design life exceeding 15 years.

Star One C3 is the 9th Brazilian satellite to use the European launcher, following the six Brasilsat satellites and Star One C1 and C2. Star One is the largest satellite service provider in Latin America.

Built by Orbital Sciences Corporation in Dulles, Virginia, Star One C3 is based on a Star-2 platform. It will weigh 3,225 kg at liftoff. Star One C3 will be positioned in geostationary orbit at 75 or 84 degrees West. Equipped with 28 C-band and 16 Ku-band transponders, it will provide direct TV broadcast, telephone and long-distance domestic communications services for Brazil and South America.

Follow the launch live on internet broadband
at www.arianespace.com
(starting 20 minutes before lift-off)

1. Mission profile

The 210th Ariane mission will boost two telecommunications satellites into geostationary transfer orbit: Eutelsat 21B for the European operator Eutelsat, and Star One C3 for the American manufacturer Orbital Sciences Corporation and the Brazilian operator Star One.

This will be the 66th Ariane 5 launch.

The launcher will be carrying a total payload of 9,216 kg, including 8,250 kg for the Eutelsat 21B and Star One C3 satellites, which will be released into their targeted orbits.

The launch will be from Ariane Launch Complex No. 3 (ELA 3) in Kourou, French Guiana.

Targeted orbit

Perigee altitude	***249.4 km***
Apogee altitude	***35,925 km at injection***
Inclination	***2° degrees***

The lift-off is scheduled on the night of November 9 to 10, 2012 as soon as possible within the following launch window:

Launch opportunity

	Universal time (GMT)	*Paris time*	*Kourou time*	*Washington time*	*Rio time*
Between	*9:05 pm*	*10:05 pm*	*6:05 pm*	*4:05 pm*	*7:05 pm*
and	*10:51 pm*	*11:51 pm*	*7:51 pm*	*5:51 pm*	*8:51 pm*
on	*November 9, 2012*	*November 9, 2012*	*November 9, 2012*	*November 9, 2012*	*November 9, 2012*

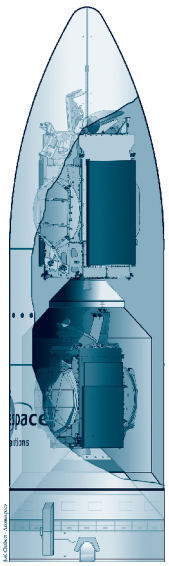
Payload configuration

The Eutelsat 21B satellite was built by Thales Alenia Space in Cannes, France, for the European operator Eutelsat.

Orbital position: 21.5° East

The Star One C3 satellite was built by Orbital Sciences Corporation in Dulles, Virginia (United States) for the Brazilian operator Star One.

Orbital position: 75° or 84° West



2. Range operations campaign: ARIANE 5 - Eutelsat 21B & Star One C3

Satellites and launch vehicle campaign calendar

Ariane activities	*Dates*	*Satellites activities*
Campaign start review	*September 3, 2012*	
EPC Erection	*September 3, 2012*	
EAP transfer and positioning	*September 4, 2012*	
Integration EPC/EAP	*September 5, 2012*	
ESC-A and VEB Erection	*September 7, 2012*	
	October 8, 2012	*Arrival in Kourou of Eutelsat 21B and beginning of preparation campaign in building S1B*
Roll-out from BIL to BAF	*October 9 2012*	
	October 12, 2012	*Arrival in Kourou of Star One C3 and beginning of preparation campaign in building S5A*
	October 22-24, 2012	*Eutelsat 21B filling operations*
	October 24-26, 2012	*Star One C3 filling operations*

Satellites and launch vehicle campaign final calendar

J-11	*Thursday October 25, 2012*	*Eutelsat 21B integration on adaptor (PAS)*
J-10	*Friday October 26 2012*	*Eutelsat 21B transfer to Final Assembly Building (BAF)*
J-9	*Saturday October 27, 2012*	*Eutelsat 21B integration on Sylda and Star One C3 integration on adaptor (PAS)*
J-8	*Monday October 29, 2012*	*Fairing integration on Sylda and transfer Star One C3 to Final Assembly Building (BAF)*
J-7	*Tuesday October 30, 2012*	*Star One C3 integration on launcher*
J-6	*Wednesday October 31, 2012*	*Upper composite integration with Eutelsat 21B on launcher and ESC-A final preparations*
J-5	*Friday November 2, 2012*	*ESC-A final preparations*
J-4	*Monday November 5, 2012*	*Launch rehearsal*
J-3	*Tuesday November 6, 2012*	*Arming of launch vehicle*
J-2	*Wednesday November 7, 2012*	*Arming of launch vehicle* *Launch readiness review (RAL) and final preparation of launcher*
J-1	*Thursday November 8, 2012*	*Roll-out from BAF to Launch Area (ZL), launch vehicle connections and filling of the EPC liquid helium sphere*
J-0	*Friday November 9, 2012*	*Launch countdown including EPC and ESC-A filling with liquid*

3. Launch countdown and flight events

The countdown comprises all final preparation steps for the launcher, the satellites and the launch site. If it proceeds as planned, the countdown leads to the ignition of the main stage engine, then the two boosters, for a liftoff at the targeted time, as early as possible in the satellites launch window.
The countdown culminates in a synchronized sequence (see appendix 3), which is managed by the control station and onboard computers starting at T-7 minutes.
If an interruption in the countdown means that T-0 falls outside the launch window, then the launch will be delayed by one, two or more days, depending on the problem involved, and the solution developed.

Time	*Events*
- 11 h 30 mn	*Start of final countdown*
- 7 h 30 mn	*Check of electrical systems*
- 4 h 50 mn	*Start of filling of main cryogenic stage with liquid oxygen and hydrogen*
- 3 h 20 mn	*Chilldown of Vulcain main stage engine*
- 1 h 10 mn	*Check of connections between launcher and telemetry, tracking and command systems*
- 7 mn 00 s	*"All systems go" report, allowing start of synchronized sequence*
- 4 mn 00 s	*Tanks pressurized for flight*
- 1 mn 00 s	*Switch to onboard power mode*
- 05.5 s	*Command issued for opening of cryogenic arms*
- 04 s	*Onboard systems take over*
- 03 s	*Unlocking of guidance systems to flight mode*

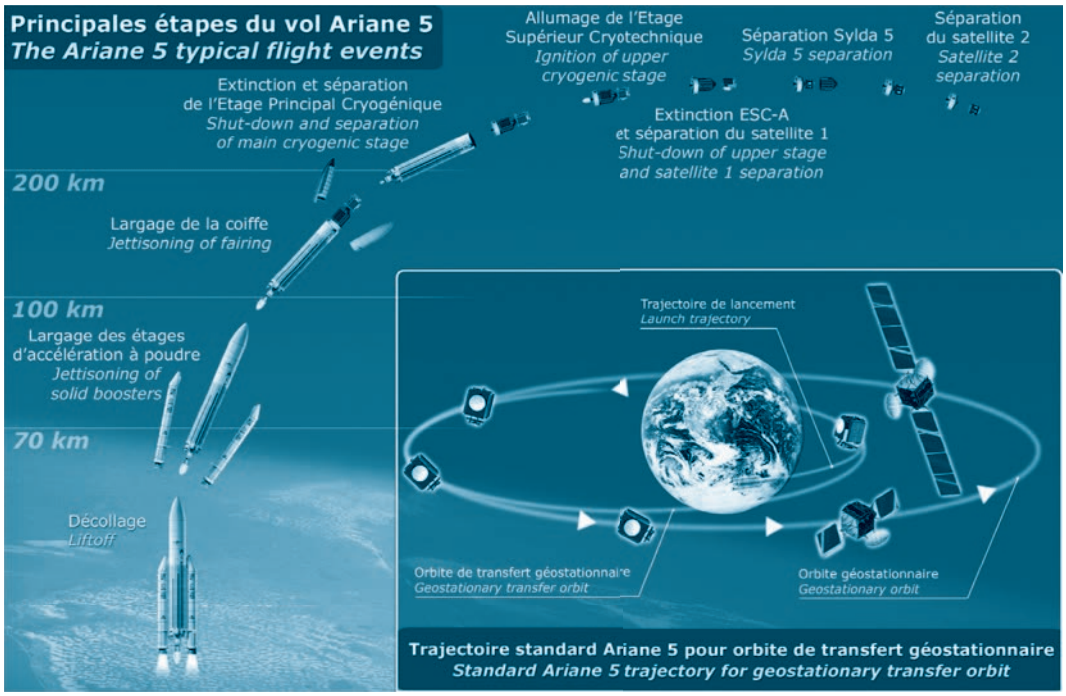
HO	*Ignition of the cryogenic main stage engine (EPC)*	*ALT (km)*	*V. rel. (m/s)*
+ 7.05 s	*Ignition of solid boosters*	*0*	*0*
+ 7.3 s	*Liftoff*	*0*	*0*
+ 12.6 s	*End of vertical climb and beginning of pitch rotation (10 seconds duration)*	*0.090*	*36.9*
+ 17 s	*Beginning of roll manoeuvre*	*0.339*	*74.3*
+ 2 mn 22 s	*Jettisoning of solid boosters*	*67.9*	*2018*
+ 3 mn 28 s	*Jettisoning of fairing*	*115.2*	*2349*
+ 7 mn 43 s	*Acquisition by Natal tracking station*	*180.4*	*5304*
+ 8 mn 51 s	*Shut-down of main cryogenic stage*	*178.7*	*6917*
+ 8 mn 57 s	*Separation of main cryogenic stage*	*178.7*	*6944*
+ 9 mn 01 s	*Ignition of upper cryogenic stage (ESC-A)*	*178.6*	*6946*
+ 13 mn 25 s	*Acquisition by Ascension tracking station*	*163.8*	*7567*
+ 18 mn 18 s	*Acquisition by Libreville tracking station*	*195.7*	*8329*
+ 23 mn 04 s	*Acquisition by Malindi tracking station*	*445.1*	*9065*
+ 24 mn 58 s	*Injection*	*654.6*	*9352*
+ 28 mn 03 s	*Separation of **Eutelsat 21B** satellite*	*1132.2*	*8960*
+ 29 mn 36 s	*Separation of Sylda 5*	*1426.8*	*8735*
+ 33 mn 17 s	*Separation of **Star One C3** satellite*	*2217.6*	*8183*
+ 48 mn 47 s	*End of Arianespace Flight mission*	*6116.7*	*6199*

4. Flight trajectory of Eutelsat 21B & Star One C3

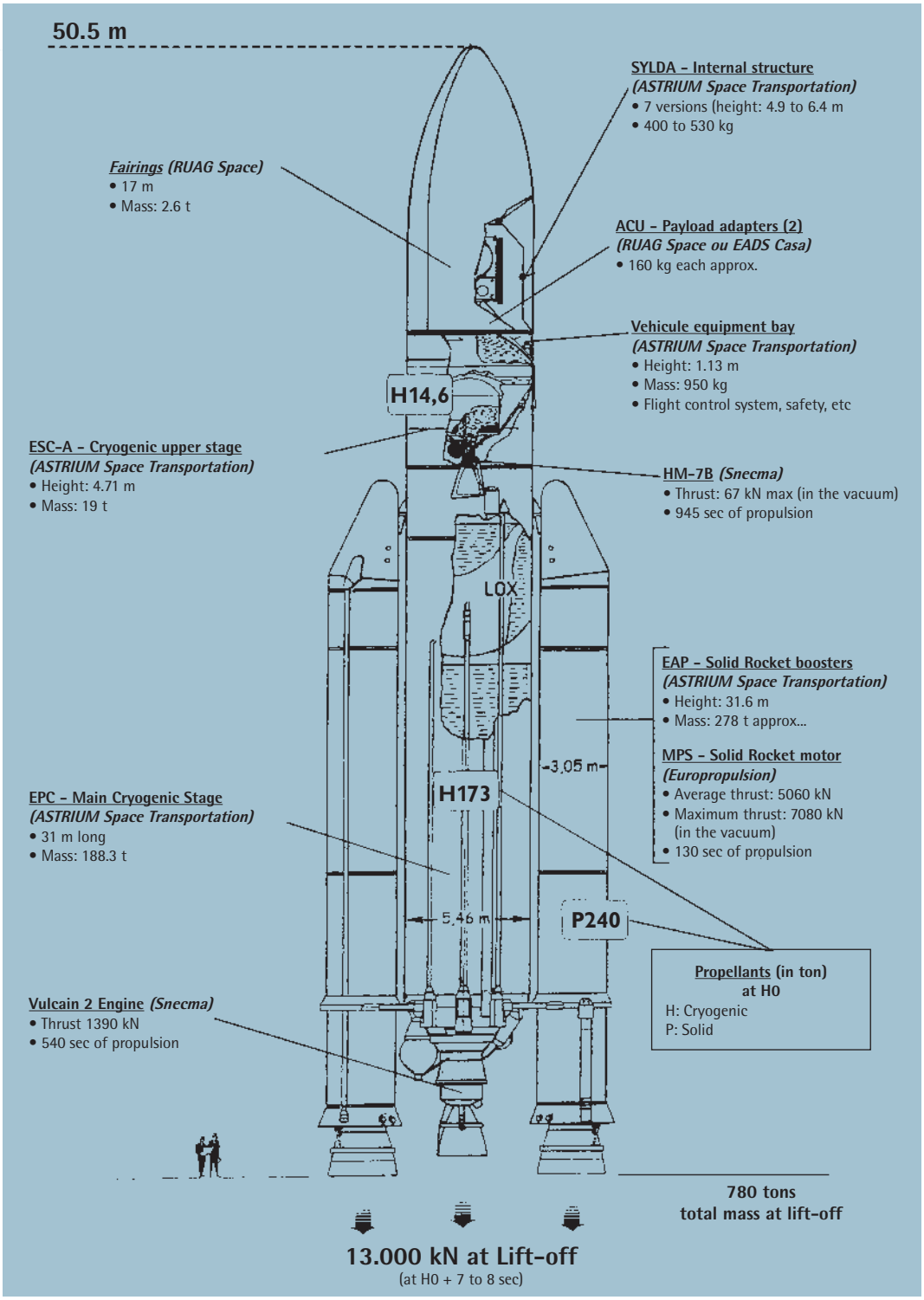
The launcher's attitude and trajectory are totally controlled by the two onboard computers, located in the Ariane 5 vehicle equipment bay (VEB).
7.05 seconds after ignition of the main stage cryogenic engine at T-0, the two solid-propellant boosters are ignited, enabling liftoff. The launcher first climbs vertically for 6 seconds, then rotates towards the East. It maintains an attitude that ensures the axis of the launcher remains parallel to its velocity vector, in order to minimize aerodynamic loads throughout the entire atmospheric phase, until the solid boosters are jettisoned.
Once this first part of the flight is completed, the onboard computers optimize the trajectory in real time, minimizing propellant consumption to bring the launcher first to the intermediate orbit targeted at the end of the main stage propulsion phase, and then the final orbit at the end of the flight of the cryogenic upper stage. The main stage falls back off the coast of Africa in the Atlantic Ocean (in the Gulf of Guinea).

On orbital injection, the launcher will have attained a velocity of approximately 9352 meters/second, and will be at an altitude of about 654 kilometers.
The fairing protecting the Eutelsat 21B and Star One C3 spacecraft is jettisoned shortly after the boosters are jettisoned at about T+208 seconds.

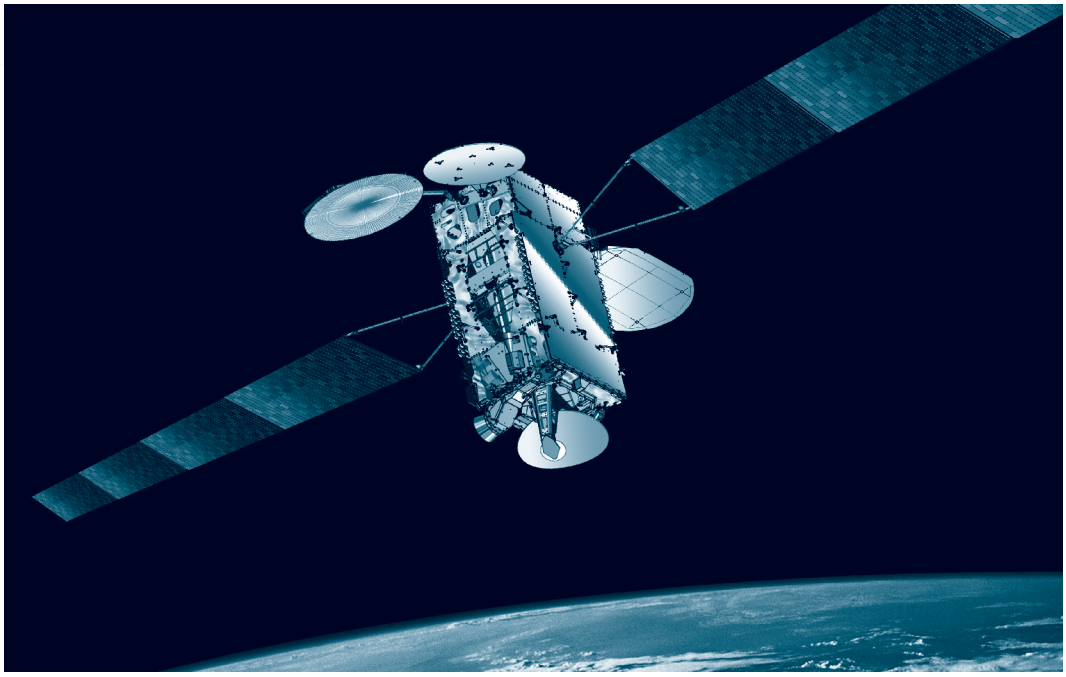
Standard Ariane 5 trajectory for geostationary transfer orbit



5. The Ariane 5-ECA (Industrial prime contractor: ASTRIUM Space Transportation)



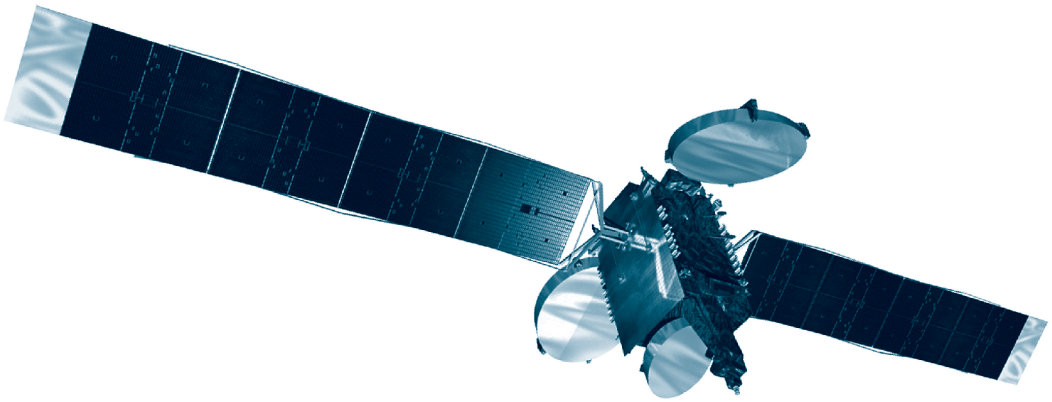
6. The Eutelsat 21B satellite



Customer	***Eutelsat***	
Prime contractor	*Thales Alenia Space*	
Mission	*Telecommunications, data and broadband services*	
Mass	*Total mass at lift-off* *Dry mass*	*5,012 kg* *2,060 kg*
Stabilization	*3 axis stabilized*	
Dimensions *Span in orbit*	*5.1 x 2.0 x 2.2 m* *37 m*	
Platform	*Spacebus 4000 C3*	
Payload	*40 Ku-band transponders*	
On-board power	*12 kW (end of life)*	
Life time	*15 years +*	
Orbital position	*21.5° Est*	
Coverage area	*North and Western Africa, the Middle East and Central Asia.*	

Press Contact
Frédérique GAUTIER
Eutelsat
Media relations
Tel +33 (1) 53 98 46 21 - Fax +33 (1) 53 98 37 88
E-mail : fgautier@eutelsat.fr

7. The Star One C3 satellite



Customers	*Orbital Sciences Corporation and Star One*
Prime contractor	*Orbital Sciences Corporation*
Mission	*Telecommunications*
Mass	*Total mass at lift-off 3,225 kg*
Stabilization	*3 axis stabilized*
Dimensions	*5.43 m x 2.35 m x 3.03 m*
Platform	*STAR-2.4E*
Payload	*28 C-band transponders and 16 Ku-band transponders*
On-board power	*5 kW (end of life)*
Life time	*16 years*
Orbital position	*75° West or 84° West*
Coverage area	*Brazil and Andean region*

Press Contact

Claudia TEIXEIRA
Star One
Diretoria de Comunicação
Tel: + 55 21 2121 9955
E-mail: clate@embratel.com.br

Barron BENESKI
Vice President, Corporate Communications
Orbital Sciences Corporation
Phone (703) 406-5528 - Fax (703) 406-5572
E-mail : Beneski.Barron@Orbital.com

Appendix 1. Arianespace - Eutelsat 21B & Star One C3 launch key personnel

In charge of the launch campaign			
Mission Director	*(CM)*	*Jean-Marc DURAND*	*ARIANESPACE*
In charge of the launch service contract			
Program Director Eutelsat 21B	*(CP)*	*Beatriz ROMERO*	*ARIANESPACE*
Program Director Star One C3	*(CP)*	*Michael CALLARI*	*ARIANESPACE*
In charge of Eutelsat 21B satellite			
Satellite Mission Director	*(DMS)*	*Andrew LINDLEY*	*EUTELSAT*
Satellite Program Manager	*(CPS)*	*Marc ATTANASIO*	*TAS*
Satellite Preparation Manager	*(RPS)*	*Stéphane RAPUC*	*TAS*
In charge of Star One C3 satellite			
Satellite Mission Director	*(DMS)*	*Marcelo LAVRADO*	*STAR ONE*
Satellite Program Manager	*(CPS)*	*Tim HEMKE*	*OSC*
Satellite Preparation Manager	*(RPS)*	*Gene CRANDALL*	*OSC*
In charge of the launch vehicle			
Launch Site Operations Manager	*(COEL)*	*Patrick LUCET*	*ARIANESPACE*
Ariane Production Project Manager	*(CPAP)*	*Pierre-Yves TISSIER*	*ARIANESPACE*
Launcher Production Quality Manager	*(RQLP)*	*Maël MATTOX*	*ARIANESPACE*
Launch Campaign Quality Manager	*(CQCL)*	*Jean-Claude NOMBLOT*	*ARIANESPACE*
In charge of the Guiana Space Center (CSG)			
Range Operations Manager	*(DDO)*	*Jean-Marie BOURGEADE*	*CNES/CSG*
Range Operations Deputy	*(DDO/A)*	*Thierry VALLEE*	*CNES/CSG*

Appendix 2. Launch environment conditions

Acceptable wind speed limits at lift-off range from between 7.5 m/s to 9.5 m/s according to the wind direction. The most critical is a northerly wind. For safety reasons, the wind's speed on the ground (Kourou), and at a high altitude (between 10,000 and 20,000 m) is also taken into account.

Appendix 3. The synchronized sequence

The synchronized sequence starts 7 mn before ignition (T-0), it is primarily designed to perform the final operations on the launcher prior to launch, along with the ultimate checks needed following switchover to flight configuration. As its name indicates, it is fully automatic, and is performed concurrently by the onboard computer and by two redundant computers at the ELA 3 launch complex until T-4 seconds.
The computers command the final electrical operations (startup of the flight program, servocontrols, switching from ground power supply to onboard batteries, etc.) and associated checks. They also place the propellant and fluid systems in flight configuration and perform associated checks. In addition, they handle the final ground system configurations, namely:

- Startup of water injection in the flame trenches and jet guide (T-30 sec).
- Hydrogen aspiration for chilldown of the Vulcain engine in the jet guide (T-18 sec).
- Burnoff of hydrogen used for chilldown (T-5.5 sec).

At T-4 seconds, the onboard computer takes over control of final engine startup and lift-off operations:

- It starts the ignition sequence for the Vulcain main stage engine (T-0).
- It checks engine operation (from T+4.5 to T+7.3 sec).
- It commands ignition of the solid boosters for immediate lift-off at T+7.3 seconds.

Any shutdown of the synchronized sequence after T-7 mn automatically places the launcher back in its T-7 min configuration.

Appendix 4. Arianespace and the Guiana Space Center

Arianespace was founded in 1980 as the world's first launch Service & Solutions company. Today, Arianespace has 21 shareholders from ten European countries (including French space agency CNES with 34%, Astrium with 30%, and all European companies participating in the construction of Ariane launchers).
Since the outset, Arianespace has signed more than 350 launch contracts and launched 307 satellites. More than two-thirds of the commercial satellites now in service worldwide were launched by Arianespace. The company posted sales of 1013 million euros in 2011.

At January 1, 2012, Arianespace had 330 employees, working at the company's headquarters in Evry (near Paris), the Guiana Space Center in French Guiana, where the Ariane, Soyuz and Vega launch pads are located, and offices in Washington, D.C., Tokyo and Singapore.
Arianespace offers launch Service & Solutions to satellite operators from around the world, including private companies and government agencies. These Service & Solutions call on three launch vehicles:
- The Ariane 5 heavy launcher, operated from the Guiana Space Center in Kourou, French Guiana.
- The Soyuz medium launcher, currently in operation at the Baikonur Cosmodrome in Kazakhstan and the Guiana Space Center.
- The Vega light launcher, launched also from the Guiana Space Center.

With its family of launchers, Arianespace won over half of the commercial launch contracts up for bid worldwide in the last two years. Arianespace now has a backlog of more than 40 satellites to be launched.

The Guiana Space Center: Europe's Spaceport

For over 30 years, the Guiana Space Center (CSG), Europe's Spaceport in French Guiana, has offered a complete array of facilities for rocket launches.
It mainly comprises the following:
- CNES/CSG technical center, including various resources and facilities that are critical to launch base operations, such as radars, telecom network, weather station, receiving sites for launcher telemetry, etc.
- Payload processing facilities (ECPU), in particular the S5 facility.
- Ariane, Soyuz and Vega launch complexes, comprising the launch zones and launcher integration buildings.
- Various industrial facilities, including those operated by Regulus, Europropulsion, Air Liquide Spacial Guyane and Astrium, which contribute to the production of Ariane 5 elements. A total of 40 European manufacturers and local companies are involved in operations.

Europe's commitment to independent access to space is based on actions by three key players: the European Space Agency (ESA), French space agency CNES and Arianespace.

ESA is responsible for the development of the Ariane, Soyuz and Vega programs at the Guiana Space Center. Once these launch systems are qualified, ESA will transfer responsibility to the operator Arianespace. ESA has helped change the role of the Guiana Space Center, in particular by funding the construction of the launch complexes, payload processing buildings and associated facilities. Initially used for the French space program, the Guiana Space Center has gradually become Europe's own spaceport, according to the terms of an agreement between ESA and the French government.
To ensure that the Spaceport is available for its programs, ESA takes charge of the lion's share of CNES/CSG fixed expenses, and also helps finance the fixed costs for the ELA launch complexes.

French space agency CNES plays several roles at the Space Center.
- It designs all infrastructures and, on behalf of the French government, is responsible for safety and security.
- It provides the resources needed to prepare the satellites and launcher for missions.

Whether during tests or actual launches, CNES is also responsible for overall coordination of operations. It collects and processes all data transmitted from the launcher via a network of receiving stations, to track Ariane, Soyuz and Vega rockets throughout their trajectories.
In French Guiana, Arianespace is the contracting authority in charge of operating the family of three launchers, Ariane, Soyuz and Vega.

Arianespace supervises the integration and functional checks of the Ariane launcher, built by Astrium as production prime contractor, in the Launcher Integration Building (BIL). It then carries out acceptance tests of the launcher at the same time as satellite preparations in the Payload Preparation Complex (EPCU), operated by the Guiana Space Center (CSG). Arianespace next oversees final assembly of the launcher and integration of satellites in the Final Assembly Building (BAF), followed by transfer of the launcher to Launch Zone No. 3 (ZL3), and then final countdown and liftoff from Launch Complex No. 3 (CDL3). Arianespace has created a top-flight team and array of technical resources to get launchers and satellites ready for their missions. Building on this unrivalled expertise and outstanding local facilities, Arianespace is now the undisputed benchmark in the global launch services market.