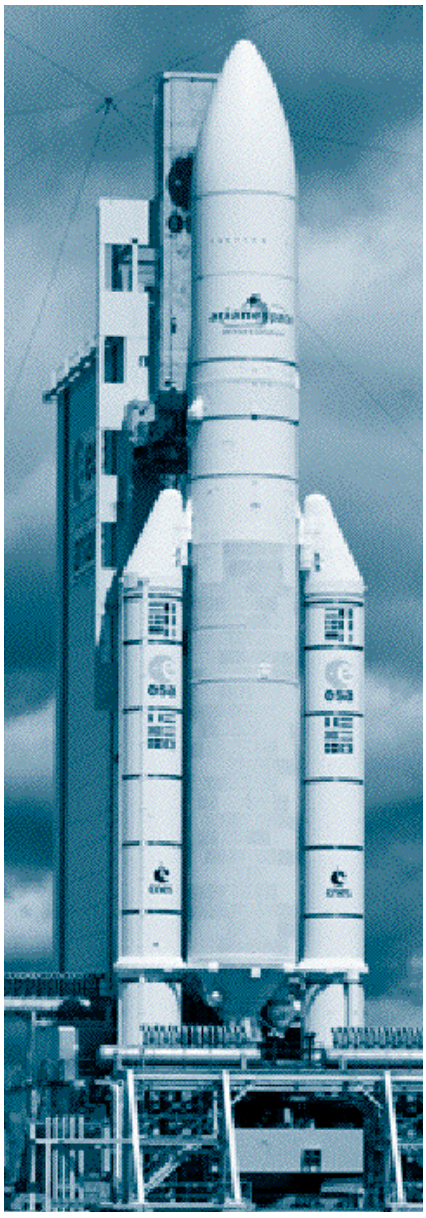
SATELLITES FOR SPAIN AND SOUTH KOREA

Arianespace will orbit two communications satellite on its sixth launch of the year: Hispasat 1E for the Spanish operator Hispasat, and Koreasat 6 for the Korea Telecom Corporation.



The choice of Arianespace by leading space communications 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.

Hispasat 1E will be the sixth Spanish satellite launched by Arianespace. In 1992 and 1993 the European launcher orbited Hispasat 1A and 1B. Then in 1995 and 1996 Hispasat and its subsidiary Hisdesat called on Arianespace to launch the XTAR-Eur and Spainsat satellites. Most recently, Arianespace launched the Amazonas-2 satellite for Hispasat in October 2009.

Hispasat 1E was built by Space Systems/Loral using an LS 1300 platform, and will weigh 5,320 kg at launch. Carrying 53 active Ku-band transponders and additional Ka-band capacity, this powerful satellite will give Hispasat additional capacity, plus an expanded range of video and data transmission services, with European and pan-American coverage. The satellite's design life is 15 years, and it will be positioned in geostationary orbit at 30 degrees West.

Koreasat 6 is the second satellite that Arianespace will launch for the South Korean operator, after Koreasat 3 in 1999. In June 2010, Arianespace launched the COMS-1 multimission satellite for the Korea Aerospace Research Institute (KARI).

Koreasat 6 was built by Thales Alenia Space using a Star-2 platform from Orbital Sciences Corporation of the United States. Weighing nearly 2,850 kg at launch, it is equipped with 30 active Ku-band transponders. Koreasat 6 will provide broadcasting and communications services across all of South Korea from its orbital position at 116 degrees East. Its design life exceeds 15 years.

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

1. Mission profile

The 199th Ariane mission will place two communications satellite into geostationary transfer orbit: Hispasat 1E for the Spanish operator Hispasat, and Koreasat 6 for the Korea Telecom Corporation.

This will be the 55th Ariane 5 launch.

The launcher will be carrying a total payload of 9,259 kg, including 8,170 kg for the Hispasat 1E and Koreasat 6 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.

Injection orbit

Perigee altitude	***250 km***
Apogee altitude	***35,786 km at injection***
Inclination	***3° degrees***

The lift-off is scheduled on the night of December 28 to 29, 2010 as soon as possible within the following launch window:

Launch opportunity

	Universal time (GMT)	*Paris & Madrid time*	*Kourou time*	*Washington time*	*Seoul time*
Between	*9:26 pm*	*10:26 pm*	*6:26 pm*	*4:26 pm*	*6:26 am*
and	*10:15 pm*	*11:15 pm*	*7:15 pm*	*5:15 pm*	*7:15 am*
on	*December 28, 2010*	*December 28, 2010*	*December 28, 2010*	*December 28, 2010*	*December 29, 2010*

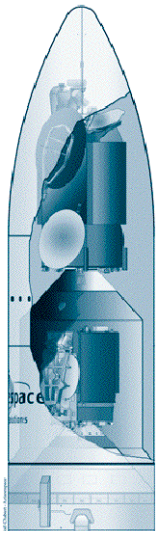
Configuration of Ariane payload

The Hispasat 1E satellite was built by Space Systems/Loral in Palo Alto, California, for the operator Hispasat.

Orbital position: 30° West

Koreasat 6 was built by Orbital Sciences Corporation in Dulles, Virginia, and Thales Alenia Space in Cannes, France, for the operator Korea Telecom Corporation.

Orbital position: 116° East



2. Range operations campaign: ARIANE 5 - Hispasat 1E & KOREASAT 6

Satellites and launch vehicle campaign calendar

Ariane activities	*Dates*	*Satellites activities*
Campaign start review	*November 10, 2010*	
EPC Erection	*November 10, 2010*	
EAP transfer and positionning	*November 11, 2010*	
Integration EPC/EAP	*November 12, 2010*	
ESC-A and VEB Erection	*November 15, 2010*	
	November 20, 2010	*Arrival in Kourou of Hispasat 1E and beginning of preparation campaign in building S1 B*
	November 26, 2010	*Arrival in Kourou of KOREASAT 6 and beginning of preparation campaign in building S1 B*
Roll-out from BIL to BAF	*December 3, 2010*	
	December 11-15, 2010	*Hispasat 1E filling operations*
	December 15-18, 2010	*KOREASAT 6 filling operations*

Satellites and launch vehicle campaign final calendar

J-11	*Thursday, December 16*	*Hispasat 1E integration on adaptor (ACU)*
J-10	*Friday, December 17*	*Hispasat 1E transfer to Final Assembly Building (BAF)*
J-9	*Saturday, December 18*	*Hispasat 1E integration on Sylda*
J-8	*Sunday, December 19*	*Fairing integration on Sylda and KOREASAT 6 integration on adaptor*
J-8a	*Monday, December 20*	*KOREASAT 6 transfer to Final Assembly Building (BAF)*
J-7	*Tuesday, December 21*	*KOREASAT 6 integration on launcher*
J-6	*Wednesday, December 22*	*ESC-A final preparations and payloads control*
		Upper composite integration with Hispasat 1E on launcher
J-5	*Thursday, December 23*	*Launch rehearsal*
J4/J-3	*Friday, December 24*	*Arming of launch vehicle*
J-3/J-2	*Sunday, December 26*	*Arming of launch vehicle*
		Launch readiness review (RAL) and final preparation of launcher
J-1	*Monday, December 27*	*Roll-out from BAF to Launch Area (ZL), launch vehicle connections*
		and filling of the EPC liquid Helium sphere
J-0	*Tuesday, December 28*	*Launch countdown including EPC and ESC-A filling with liquid*
		oxygen and liquid hydrogen

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*

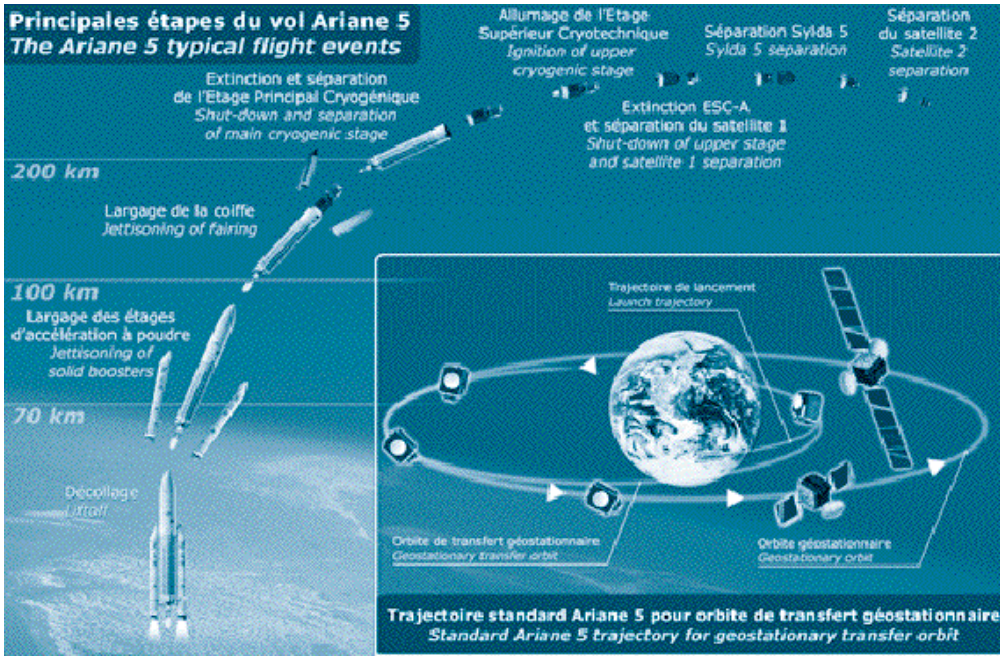
HO	*Ignition of the cryogenic main stage engine (EPC)*		*ALT (km)*	*V. rel. (m/s)*
	+ 7,05 s	*Ignition of solid boosters*	*0*	*0*
	+ 7,3 s	*Liftoff*	*0*	*0*
	+ 12,6 s	*End of vertical climb and beginning of pitch rotation (10 seconds duration)*	*0.091*	*37.4*
	+ 17,1 s	*Beginning of roll manoeuvre*	*0.349*	*75.2*
+ 2 mn	*20 s*	*Jettisoning of solid boosters*	*67.2*	*1990*
+ 3 mn	*09 s*	*Jettisoning of fairing*	*106.4*	*2197*
+ 7 mn	*44 s*	*Acquisition by Natal tracking station*	*171*	*5210*
+ 8 mn	*55 s*	*Shut-down of main cryogenic stage*	*181.2*	*6879*
+ 9 mn	*01 s*	*Separation of main cryogenic stage*	*181.1*	*6906*
+ 9 mn	*05 s*	*Ignition of upper cryogenic stage (ESC-A)*	*181.1*	*6908*
+ 13 mn	*34 s*	*Acquisition by Ascension tracking station*	*162*	*7580*
+ 18 mn	*26 s*	*Acquisition by Libreville tracking station*	*179*	*8190*
+ 23 mn	*09 s*	*Acquisition by Malindi tracking station*	*443*	*9002*
+ 25 mn	*02 s*	*Injection*	*647.2*	*9359*
+ 27 mn	*27 s*	*Separation of Hispasat 1E satellite*	*1012*	*9056*
+ 29 mn	*46 s*	*Separation of Sylda 5*	*1436*	*8729*
+ 34 mn	*12 s*	*Separation of KOREASAT 6 satellite*	*2404*	*8064*
+ 47 mn	*34 s*	*End of Arianespace Flight mission*	*5776*	*6339*

4. Flight trajectory of Hispasat 1E & KOREASAT 6

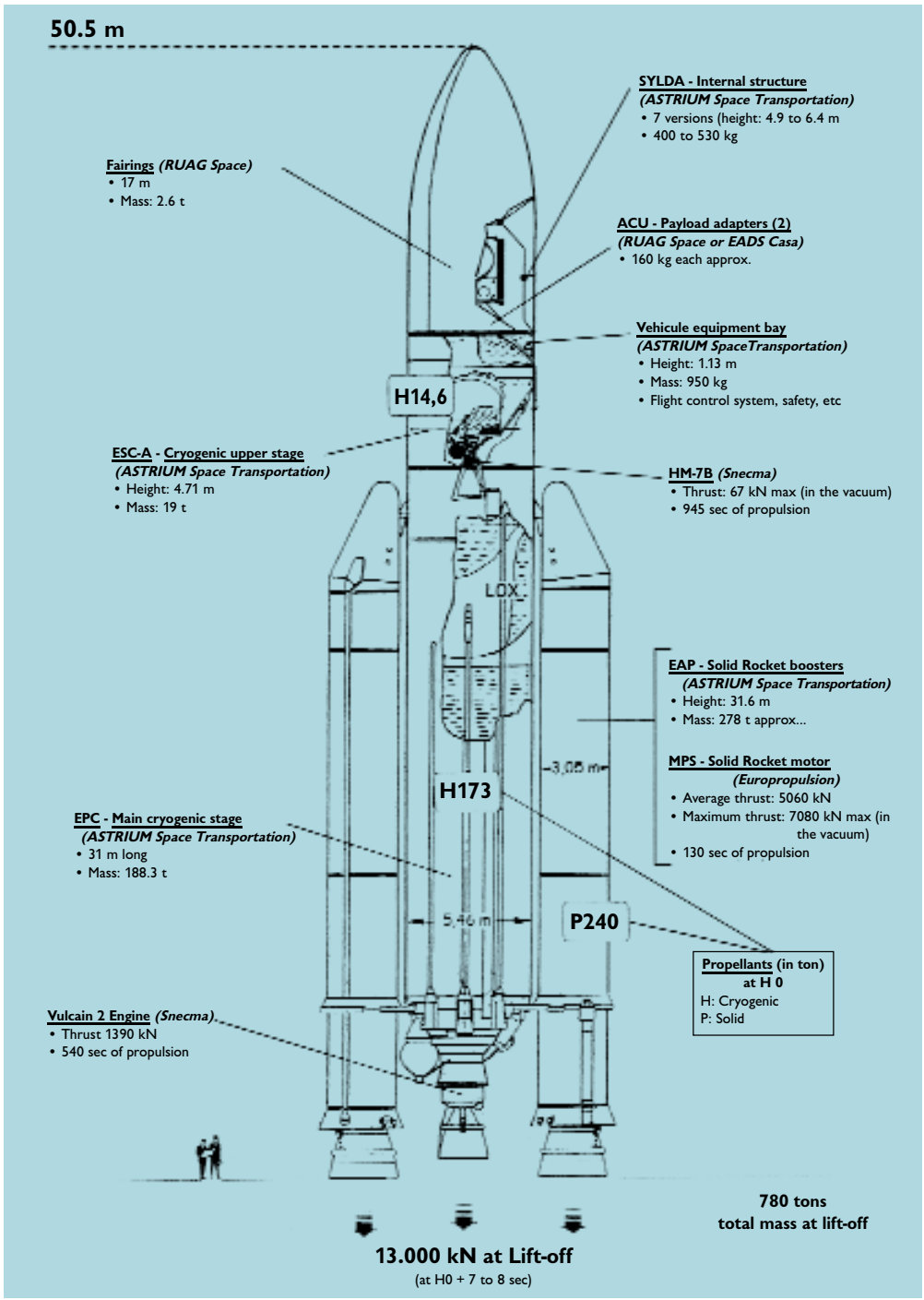
The launcher's attitude and trajectory are totally controlled by the two onboard computers, located in the Ariane 5 vehicle equipment bay (VEB).
7.05 seconds after ignition of the main stage cryogenic engine at T-0, the two solid-propellant boosters are ignited, enabling liftoff. The launcher first climbs 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 9359 meters/second, and will be at an altitude of about 647 kilometers.
The fairing protecting the Hispasat 1E and KOREASAT 6 spacecraft is jettisoned shortly after the boosters are jettisoned at about T+189 seconds.

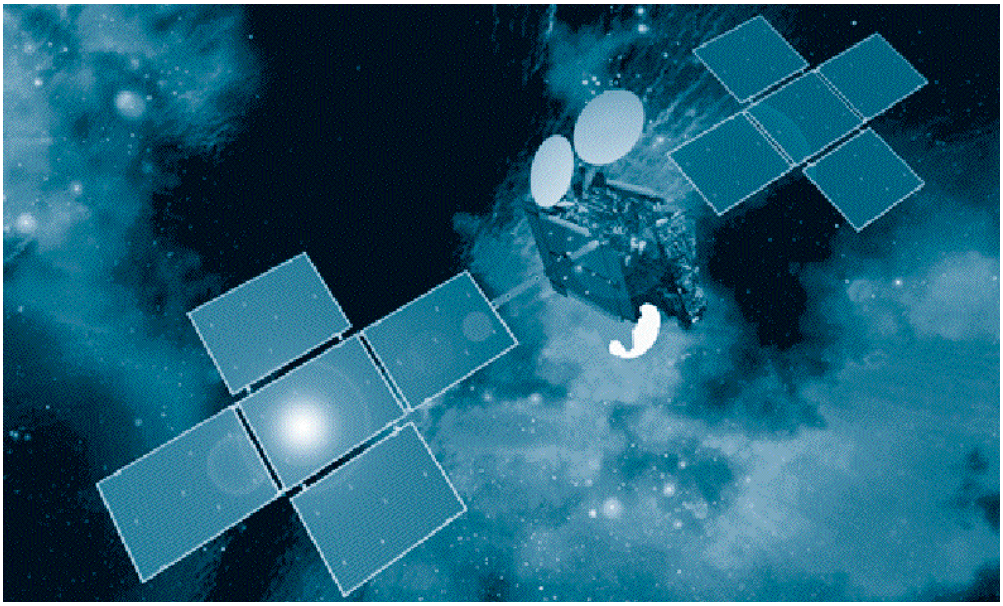
Standard Ariane 5 trajectory for geostationary transfer orbit



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



6. The Hispasat 1E satellite



Customer	**HISPASAT**	
Prime contractor	*SPACE SYSTEMS LORAL*	
Mission	*Telecommunications*	
Mass	*Total mass at lift-off*	*5 320 kg*
	Dry mass	*2 175 kg*
Stabilization	*3 axis stabilized*	
Dimensions	*5.4 x 2.8 x 2.2 m*	
Span in orbit	*26.7 m*	
Platform	*LS 1300*	
Payload	*53 Ku-band transponders*, additional Ka-band capacity	
On-board power	*12.4 kW (end of life)*	
Life time	*18 years*	
Orbital position	*30° West*	
Coverage area	*Europe & Americas*	

Contact Presse

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7. The KOREASAT 6 satellite

Customer	***KOREA TELECOM***	
Prime contractor	*ORBITAL SCIENCES CORPORATION and THALES ALENIA SPACE*	
Mission	*Telecommunications*	
Mass	*Total mass at lift-off*	*2 850 kg*
	Dry mass	*1 150 kg*
Stabilization	*3 axis stabilized*	
Dimensions	*4.3 x 2.3 x 3.2 m*	
Span in orbit	*18 m*	
Platform	*STAR-2*	
Payload	*30 Ku-band transponders*	
On-board power	*5307 W (end of life)*	
Life time	*15 years minimum*	
Orbital position	*116° West*	
Coverage area	*South Korea and neighbouring countries*	

Press Contact

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Appendix 1. Arianespace Hispasat 1E & KOREASAT 6 launch key personnel

In charge of the launch campaign			
Mission Director	*(CM)*	*Didier SAID*	*ARIANESPACE*
In charge of the launch service contract			
Program Director Hispasat 1E	*(CP)*	*Jérôme RIVES*	*ARIANESPACE*
Program Director KOREASAT 6	*(CP)*	*Véronique LOISEL*	*ARIANESPACE*
In charge of Hispasat 1E satellite			
Satellite Mission Director	*(DMS)*	*Antonio ABAD*	*HISPASAT*
Satellite Program Manager	*(CPS)*	*Eric ELLER*	*SSL*
Satellite Preparation Manager	*(RPS)*	*Roy CARLISLE*	*SSL*
In charge of KOREASAT 6 satellite			
Satellite Mission Director	*(DMS)*	*Young Wook WON*	*KT*
Satellite Program Manager	*(CPS)*	*William COOK*	*OSC*
Satellite Program Manager	*(CPS)*	*Pierre ORTOLO*	*TAS*
Satellite Preparation Manager	*(RPS)*	*James JONES*	*OSC*
In charge of the launch vehicle			
Launch Site Operations Manager	*(COEL)*	*Jean-Pierre BARLET*	*ARIANESPACE*
Ariane Production Project Manager	*(CPAP)*	*Denis SCHMITT*	*ARIANESPACE*
Launcher Production Quality Manager	*(RQLP)*	*Damien GILLE*	*ARIANESPACE*
Launch Campaign Quality Manager	*(CQCL)*	*Fabrice DALTROFF*	*ARIANESPACE*
In charge of the Guiana Space Center (CSG)			
Range Operations Manager	*(DDO)*	*Emmanuel SANCHEZ*	*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 beforre 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 reduntant 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, it handles 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 24 shareholders from ten European countries (including French space agency CNES with 34%, EADS with 30%, and all European companies participating in the construction of Ariane launchers).
Since the outset, Arianespace has signed more than 300 launch contracts and launched 287 satellites. More than two-thirds of the commercial satellites now in service worldwide were launched by Arianespace.
The company posted sales of 1046 million euros in 2009.
At January 1, 2010, Arianespace had 323 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 under the responsibility of Starsem, a Euro-Russian subsidiary of Arianespace, it will be launched from the Guiana Space Center starting in 2011.
- The Vega light launcher, to be launched from the Guiana Space Center starting in 2011.

Arianespace has also signed a mutual backup agreement with Boeing Launch Services and Mitsubishi Heavy Industries, through an entity called the Launch Services Alliance. This arrangement guarantees that customers' payloads will be launched in case the chosen launcher is unavailable for technical reasons.
With its family of launchers and this backup agreement, 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 launch complexes (ELA), comprising the launch zone and launcher integration buildings.
- Various industrial facilities, including those operated by Regulus, Europropulsion, Air Liquide Spacial Guyane and EADS, which contribute to the production of Ariane 5 elements. A total of 40 European manufacturers and local companies are involved in operations.

The Guiana Space Center is preparing to welcome two new launch vehicles, Soyuz and Vega. The Soyuz launch complex (ELS) and the Vega launch complex (SLV) are now under construction.
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 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 rockets throughout their trajectory.
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 EADS 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.