A DUAL LAUNCH FOR GLOBAL COMMUNICATIONS

Arianespace will orbit two communications satellites on its fourth Ariane 5 launch of the year: INTELSAT 20 for the international satellite operator INTELSAT, and HYLAS 2 for the European operator Avanti Communications.

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 and handling a complete range of missions, from launches of commercial satellites into geostationary orbit, to dedicated launches into special orbits.

Arianespace enjoys a long-standing relationship of mutual trust with INTELSAT. Since 1983, Arianespace has launched 52 satellites for this leading international operator.

Positioned at 68.5 degrees East, INTELSAT 20 will provide a broad range of communications services for Europe, the Middle East, Russia and Asia. INTELSAT 20 is a very powerful satellite built by Space Systems/Loral of the United States. Weighing over 6,000 kg at launch, it will deliver video, telephone and data transmission services. It will also enable INTELSAT to extend its global C and Ku-band coverage. INTELSAT 20 will replace the INTELSAT-7 and INTELSAT-10 satellites.

HYLAS 2 is the second satellite to be launched for new European operator Avanti Communications. Avanti also called on Arianespace to launch its first satellite, HYLAS 1, in November 2010.

HYLAS 2 was built by Orbital Sciences Corporation using a Star-2.4E platform, and is equipped with 24 Ka-band transponders. The satellite will provide high-speed data services across all of Europe, Africa and the Middle East. HYLAS 2 will weigh about 3,300 kg at launch and offers a design life exceeding 15 years.

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

1. Mission profile

The 208th Ariane mission will place two communications satellites into geostationary transfer orbit: INTELSAT 20 for the international satellite operator INTELSAT, and HYLAS 2 for the European operator Avanti Communications.

This will be the 64th Ariane 5 launch.

The launcher will be carrying a total payload of 10,182 kg, including 9,405 kg for the INTELSAT 20 and HYLAS 2 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	***249.5 km***
Apogee altitude	***35,934 km at injection***
Inclination	***6° degrees***

The lift-off is scheduled on the night of August 2 to the morning of August 3, 2012 as soon as possible within the following launch window:

Launch opportunity

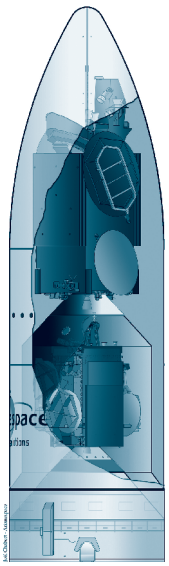
	Universal time (GMT)	*Paris time*	*Kourou time*	*Washington time*	*Tokyo time*
Between	*8:54 pm*	*10:54 pm*	*5:54 pm*	*4:54 pm*	*5:54 am*
and	*9:51 pm*	*11:51 pm*	*6:51 pm*	*5:51 pm*	*6:51 am*
on	*August 2, 2012*	*August 2, 2012*	*August 2, 2012*	*August 2, 2012*	*August 3, 2012*

Payload configuration

The INTELSAT 20 satellite was built by Space Systems/Loral in Palo Alto, California for the operator INTELSAT.

Orbital position: 68.5° East

The HYLAS 2 satellite was built by Orbital Sciences Corporation in Dulles, Virginia, for the European operator Avanti Communications.



2. Range operations campaign: ARIANE 5 - INTELSAT 20 & HYLAS 2

Satellites and launch vehicle campaign calendar

Ariane activities	*Dates*	*Satellites activities*
Campaign start review	*June 5, 2012*	
EPC Erection	*June 5, 2012*	
EAP transfer and positioning	*June 6, 2012*	
Integration EPC/EAP	*June 7, 2012*	
ESC-A and VEB Erection	*June 12, 2012*	
	June 26, 2012	*Arrival in Kourou of INTELSAT 20 and beginning of preparation campaign in building S5 C*
	July 6, 2012	*Arrival in Kourou of HYLAS 2 and beginning of preparation campaign in building S5 C*
Roll-out from BIL to BAF	*July 16, 2012*	
	July 13-17, 2012	*INTELSAT 20 2 filling operations*
	July 18-20, 2012	*HYLAS 2 filling operations*

Satellites and launch vehicle campaign final calendar

J-11	*Wednesday July 18, 2012*	*INTELSAT 20 integration on adaptor (ACU)*
J-10	*Thursday July 19 2012*	*INTELSAT 20 transfer to Final Assembly Building (BAF)*
J-9	*Friday July 20, 2012*	*INTELSAT 20 integration on Sylda*
J-9 bis	*Saturday July 21, 2012*	*HYLAS 2 integration on adaptor (ACU)*
J-8	*Monday July 23, 2012*	*Fairing integration on Sylda - HYLAS 2 transfer to Final Assembly Building (BAF)*
J-7	*Tuesday July 24, 2012*	*HYLAS 2 integration on launcher*
J-6	*Wednesday July 25, 2012*	*Upper composite integration with INTELSAT 20 on launcher*
J-5	*Thursday July 26, 2012*	*ESC-A final preparations and payloads control*
J-4	*Friday July 27, 2012*	*Launch rehearsal*
J-3	*Monday July 30, 2012*	*Arming of launch vehicle*
J-2	*Tuesday July 31, 2012*	*Arming of launch vehicle* *Launch readiness review (RAL) and final preparation of launcher*
J-1	*Wednesday August 1, 2012*	*Roll-out from BAF to Launch Area (ZL), launch vehicle connections and filling of the EPC liquid helium sphere*
J-0	*Thursday August 2, 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*

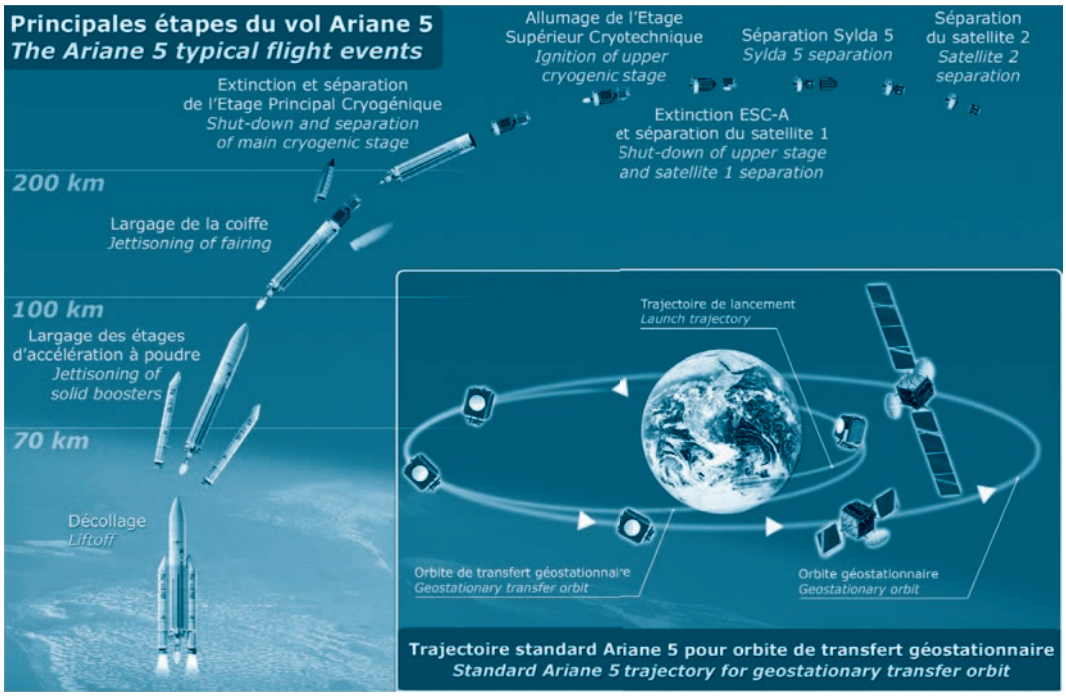
HO	*Ignition of the cryogenic main stage engine (EPC)*	*ALT (km)*	*V. rel. (m/s)*
+ 7.05 s	*Ignition of solid boosters*	*0*	*0*
+ 7.3 s	*Liftoff*	*0*	*0*
+ 12.6 s	*End of vertical climb and beginning of pitch rotation (10 seconds duration)*	*0.090*	*37.5*
+ 17 s	*Beginning of roll manoeuvre*	*0.339*	*75.7*
+ 2 mn 21 s	*Jettisoning of solid boosters*	*67.1*	*2009*
+ 3 mn 16 s	*Jettisoning of fairing*	*107.5*	*2258*
+ 8 mn 12 s	*Acquisition by Natal tracking station*	*157.9*	*5782*
+ 8 mn 57 s	*Shut-down of main cryogenic stage*	*155.6*	*6915*
+ 9 mn 03 s	*Separation of main cryogenic stage*	*155.6*	*6941*
+ 9 mn 07 s	*Ignition of upper cryogenic stage (ESC-A)*	*155.6*	*6943*
+ 13 mn 53 s	*Acquisition by Ascension tracking station*	*141.1*	*7628*
+ 18 mn 29 s	*Acquisition by Libreville tracking station*	*173.8*	*8328*
+ 23 mn 12 s	*Acquisition by Malindi tracking station*	*413.5*	*9033*
+ 25 mn 27 s	*Injection*	*658*	*9352*
+ 28 mn 01 s	*Separation of INTELSAT 20 satellite*	*1049*	*9028*
+ 33 mn 02 s	*Separation of Sylda 5*	*2059*	*8290*
+ 34 mn 17 s	*Separation of HYLAS 2 satellite*	*2345*	*8103*
+ 44 mn 32 s	*End of Arianespace Flight mission*	*4906*	*6720*

4. Flight trajectory of INTELSAT 20 & HYLAS 2

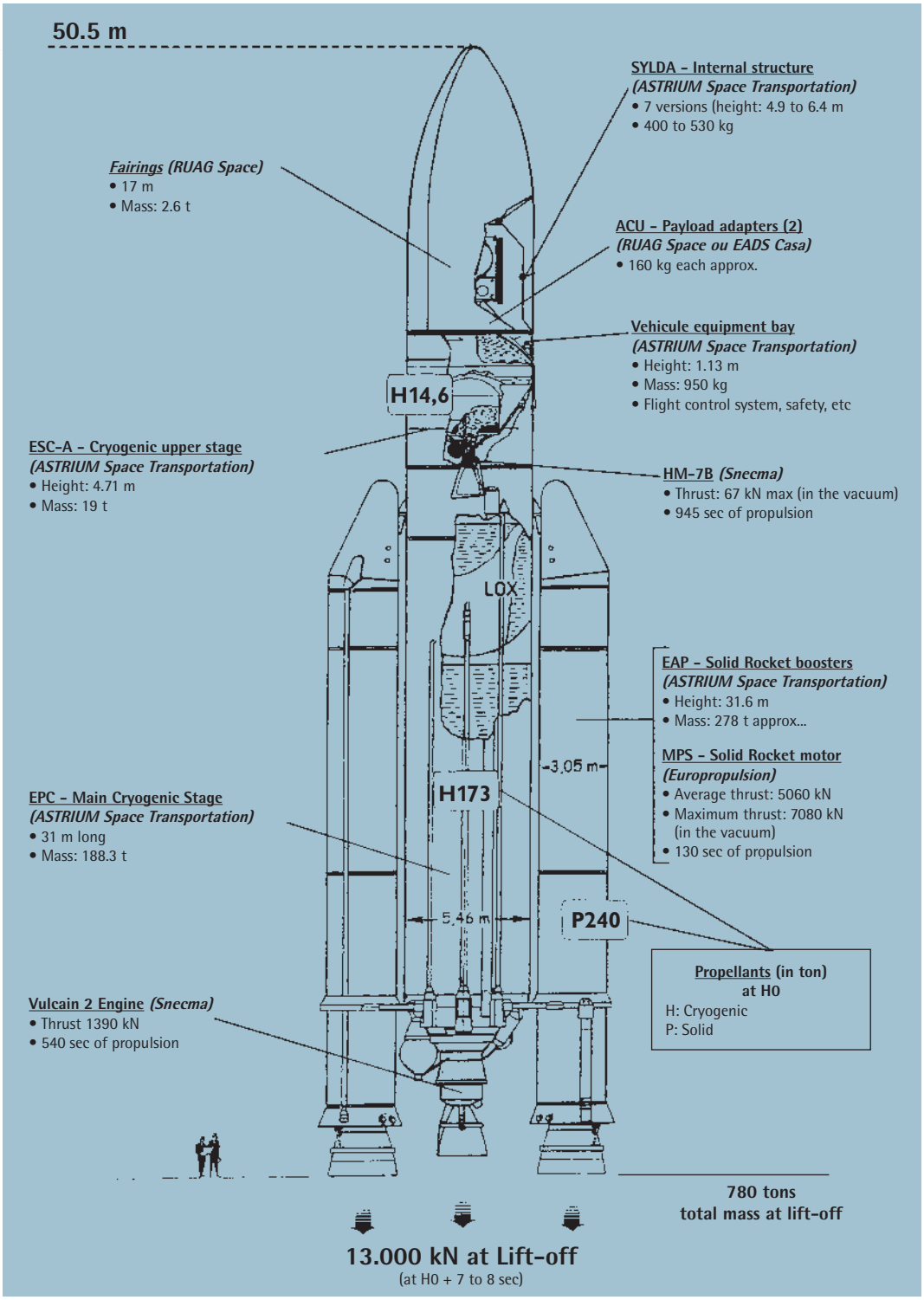
The launcher's attitude and trajectory are totally controlled by the two onboard computers, located in the Ariane 5 vehicle equipment bay (VEB).
7.05 seconds after ignition of the main stage cryogenic engine at T-0, the two solid-propellant boosters are ignited, enabling liftoff. The launcher first climbs 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 658 kilometers.
The fairing protecting the INTELSAT 20 and HYLAS 2 spacecraft is jettisoned shortly after the boosters are jettisoned at about T+196 seconds.

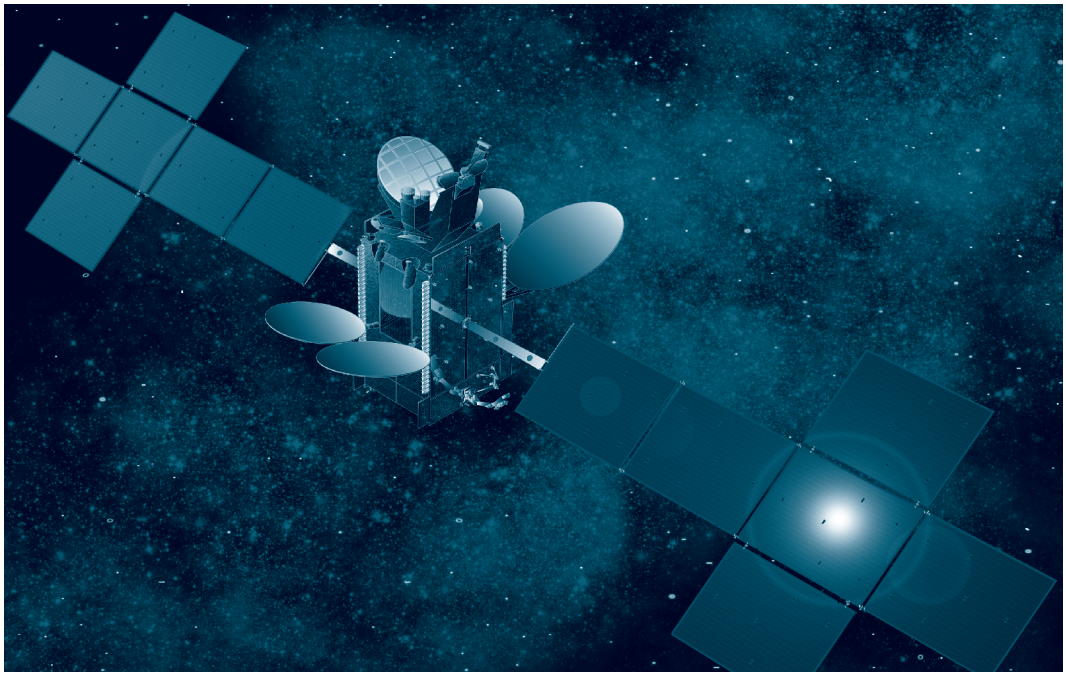
Standard Ariane 5 trajectory for geostationary transfer orbit



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



6. The INTELSAT 20 satellite



Customer	*INTELSAT*	
Prime contractor	*Space Systems / Loral*	
Mission	*Telecommunications satellite*	
Mass	*Total mass at lift-off* *Dry mass*	*6,094 kg* *2,989 kg*
Stabilization	*3 axis stabilized*	
Dimensions *Span in orbit*	*8.2 x 3.5 x 3.2 m at launch* *32.4 m*	
Platform	*1300*	
Payload	*60 Ku-band transponders, 24 C-band transponders and 1 Ka-band transponder*	
On-board power	*19.3 kW (end of life)*	
Life time	*24 years*	
Orbital position	*68.5° Est*	
Coverage area	*Europe, Africa, Middle East, Russia, Asia*	

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7. The HYLAS 2 satellite

Customer	*AVANTI Communications*	
Prime contractor	*Orbital Sciences Corporation*	
Mission	*Broadband and data communications services*	
Mass	*Total mass at lift-off* *Dry mass*	*3,311 kg* *1,532 kg*
Stabilization	*3 axis stabilized*	
Dimensions	*4.8 x 2.5 x 3.3 m*	
Platform	*STAR-2.4E*	
Payload	*24 Ka-band transponders*	
On-board power	*5.140 kW (end of life)*	
Life time	*15 years*	
Coverage area	*Europe, Middle East, East Africa and Southern Africa*	

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Appendix 1. Arianespace - INTELSAT 20 & HYLAS 2 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 INTELSAT 20	*(CP)*	*Beatriz ROMERO*	*ARIANESPACE*
Program Director HYLAS 2	*(CP)*	*Christophe BARDOU*	*ARIANESPACE*
In charge of INTELSAT 20 satellite			
Satellite Mission Director	*(DMS)*	*Todd SCHILB*	*INTELSAT*
Satellite Program Manager	*(CPS)*	*Grand GOULD*	*SS/L*
Satellite Preparation Manager	*(RPS)*	*Frank BRYAN*	*SS/L*
In charge of HYLAS 2 satellite			
Satellite Mission Director	*(DMS)*	*Lucy EDGE*	*AVANTI*
Satellite Program Manager	*(CPS)*	*Michael MAGOFFIN*	*OSC*
Satellite Preparation Manager	*(RPS)*	*Jim JONES*	*OSC*
In charge of the launch vehicle			
Launch Site Operations Manager	*(COEL)*	*Jean-Pierre BARLET*	*ARIANESPACE*
Ariane Production Project Manager	*(CPAP)*	*Marc ROY*	*ARIANESPACE*
Launcher Production Quality Manager	*(RQLP)*	*Christophe BESNARD*	*ARIANESPACE*
Launch Campaign Quality Manager	*(CQCL)*	*Marylène MATHONNET*	*ARIANESPACE*
In charge of the Guiana Space Center (CSG)			
Range Operations Manager	*(DDO)*	*Aimée CIPPE*	*CNES/CSG*
Range Operations Deputy	*(DDO/A)*	*Antoine GUILLAUME*	*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 303 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.