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GE-7

ASTRA 2B

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ARIANESPACE FLIGHT 130

ARIANE 5 TO LOFT TWO COMMUNICATIONS SATELLITES

Flight 130 marks the third commercial launch of Europe's new heavy launcher. Arianespace is the first company in the world to roll out a new-generation commercial heavy launcher, qualified for all missions.

Ariane 5's debut commercial launch in December 1999 injected the XMM scientific satellite into an elliptical orbit. Flight 130 will loft the telecommunications satellites Astra 2b and GE - 7 into geostationary orbit.

Astra 2B will be the sixth spacecraft launched by Arianespace for Société Européenne des Satellites (SES), following Astra 1A in December 1988, Astra 1B in March 1991, Astra 1C in May 1993, Astra 1D in October 1994 and Astra 1E in October 1995. Built by Astrium, Astra 2B will weigh 3,315 kilograms at liftoff. Designed to operate for more than 15 years, it will broadcast digital TV programs throughout Europe.

GE-7, built by Lockheed Martin, will be the 14th satellite launched by Ariane for American operator GE Americom, following the G-Star, Spacenet, Satcom and GE series satellites. Positioned at 146 degrees West, GE-7 will primarily provide radio and Internet transmission services for North America and the Caribbean.

ARIANESPACE FLIGHT 130

1. ARIANESPACE FLIGHT 130 MISSION

The 132nd Ariane launch (Flight 130/Ariane 506) will use an Ariane 5 to place the ASTRA 2B and GE-7 spacecrafts into a geostationnary tranfer orbit.
The launch will be carried out from the ELA 3 launch complex in Kourou, French Guiana. For Arianespace, this marks the third commercial mission of the new Ariane 5 launcher. Arianespace has performed 6 other launches this year (5 ARIANE 4 and 1 ARIANE 5).
The Ariane 506 launcher will carry a dual payload of 5.969 kg (13,132 lb), including 5.298 kg (11,655 lb) for the satellites.

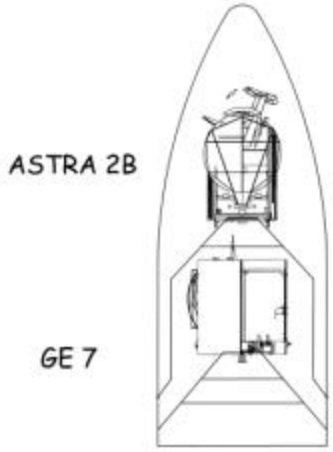
INJECTION ORBIT			
Perigee Altitude	:	560	km
Apogee Altitude	:	35 938	km at injection
Inclination	:	7°	degrés

The lift-off is scheduled on **the night of September 14 to 15, 2000** as soon as possible within the following launch window :

KOUROU TIME
Between 7: 54 pm and 8 : 49 pm
on September 14, 2000

GMT	Paris Time	Washington DC Time
from 10 : 54 pm	**00 : 54 am**	**6 : 54 pm**
to 11 : 49 pm	**01 : 49 am**	**7 : 49 pm**
on September 14, 2000	**on Sept. 14/15, 2000**	**on September 14, 2000**

ARIANE 506 PAYLOAD CONFIGURATION



The ASTRA 2B satellite was built by ASTRIUM in Toulouse (France) for Société Européenne des Satellites (SES).
Operationnal on orbit position: 28.2° East, over Central Africa.

The GE-7 was built by Lockheed Martin Commercial Space Systems in Sunnyvale, USA for Americ an Operator GE Americom.
Operationnal on orbit position: 146° West, over the Pacific Ocean.

2. RANGE OPERATIONS CAMPAIGN : ARIANE 5 - ASTRA 2B/GE-7

The actual work for satellite range operations lasts 27 working days for ASTRA 2B from its arrival in Kourou (before encapsulation)
The actual work for satellite range operations lasts 16 working days for GE-7 from its arrival in Kourou (before encapsulation)
The ARIANE 5 preparation campaign lasts 45 working days .

■ SATELLITE AND LAUNCH VEHICLE CAMPAIGN CALENDAR

ARIANE ACTIVITIES	DATES	SATELLITE ACTIVITIES
CAMPAIGN START REVIEW	May 29, 2000	
EPC Erection	May 30	
EAP transfer and positionning	June 2	
Integration EPC /EAP	June 2	
	June 5	ASTRA 2B arrival in Kourou and beginning of its preparation in the S1 building
EPS Erection	June 7	
Integration equipement bay	June 7	
	June 13	GE-7 arrival in Kourou and beginning of its preparation in the S1 building
	June 28	Beginning of GE-7 filling operations in S3 Building
	June 30	Beginning of ASTRA 2B filling operations in S3 Building
ROLL-OUT FROM BIL to BAF	July 6	
Launch campaign Hold	July 26	
Re-start of launch campaign	August 24	

D-9	Mon.	Sept.	4	Transfer and integration lower payload on launcher
D-8	Tues.	Sept.	5	Transfer and integration upper payload on launcher
D-6	Thurs.	Sept.	7	Filling of SCA with N2H4
D-5	Fri.	Sept.	8	Filling of EPS stage with MMH and N2O4
D-4	Sat.	Sept.	9	LAUNCH REHEARSAL
D-3	Mon.	Sept.	11	Launcher and satellite arming
D-2	Tues.	Sept.	12	LAUNCH READINESS REVIEW (RAL) and final mechanical preparation of lancher.
D-1	Wed.	Sept.	13	ROL-OUT FROM BAF to LAUNCH AREA and filling of the EPC Helium sphere
D0	**Thurs.**	**Sept.**	**14**	**LAUNCH COUNTDOWN** including EPC filling with liquid oxygen and liquid hydrogen

3. FLIGHT 130 COUNTDOWN

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 solid 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.

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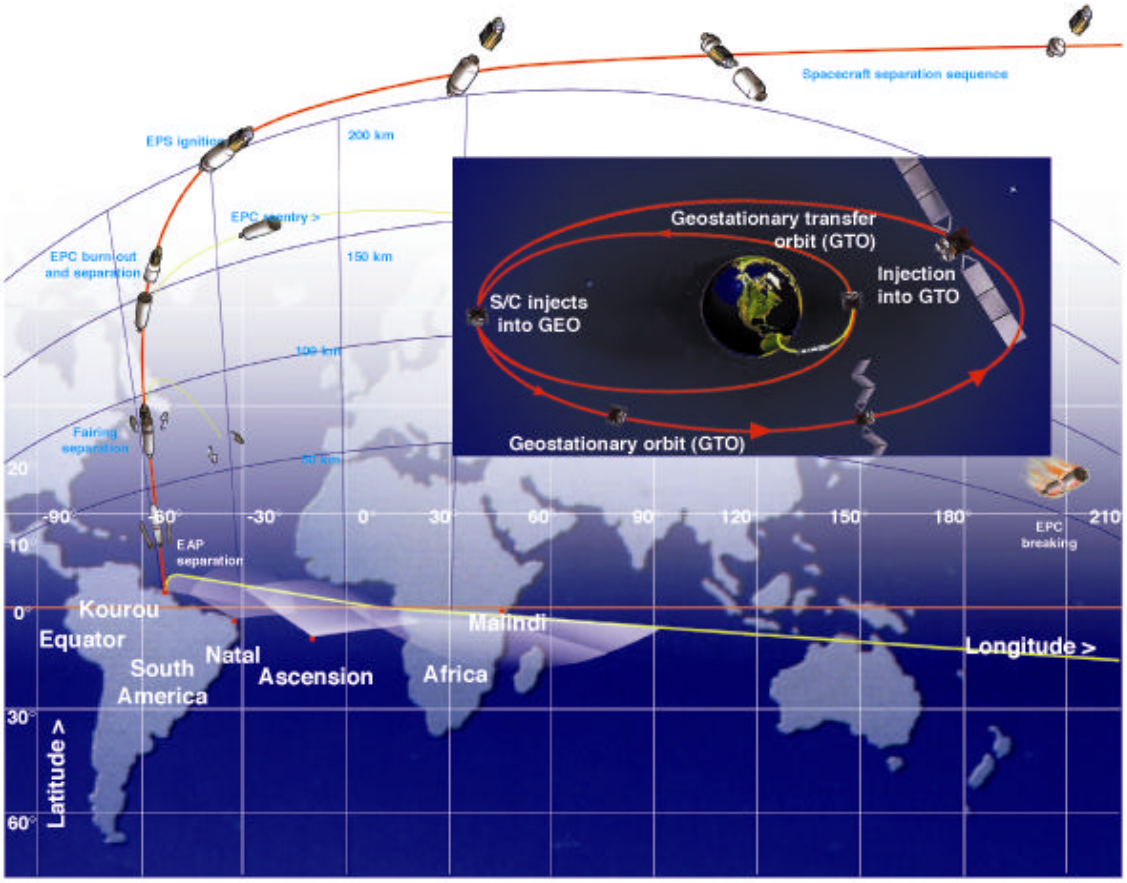
TIME	EVENTS
- 9 h 00 mn	Start of final countdown
- 7 h 30 mn	Check of electrical systems
6 h 00 mn	Check of connections between launcher and telemetry, tracking and command systems
- 5 h 20 mn	Start of filling of main cryogenic stage with liquid oxygen and helium
- 3 h 20 mn	Chilldown of Vulcain main stage engine
	"All systems go" report, allowing
- **7mn 00 s**	**START OF SYNCHRONIZED SEQUENCE**
- 37 s	Start of automated ignition sequence
- 22 s	Authorization for control handover to onboard computer
- 9 s	Unlocking of inertial guidance systems
- 3 s	Onboard systems take over, and two inertial guidance systems switched to flight mode
H0	**IGNITION of the cryogenic main stage engine (EPC)**
+ 7,0 s	Ignition of solid boosters
+ **7,3 s**	**Liftoff**
+ 13 s	End of vertical climb and beginning of pitch rotation (10 seconds duration)
+ 17 s	Beginning of roll maneuver
+ 2 mn 25 s	Jettisoning of solid boosters
+ 3 mn 22 s	Jettisoning of fairing
+ 8 mn 34 s	Acquisition by Natal tracking station
+ 9 mn 57 s	Extinction of main cryogenic stage
+ 10 mn 03 s	Separation of main cryogenic stage
+ 10 mn 10 s	Ignition of storable propellant stage
+ 13 mn 02 s	Acquisition by Ascension tracking station
+ 22 mn 16 s	Acquisition by Malindi tracking station
+ 27 mn 17 s	Extinction of storable propellant stage
+ **28 mn 42 s**	**Separation of ASTRA 2B satellite**
+ 30 mn 28 s	SYLDA 5 separation
+ **37 mn 39 s**	**Separation of GE-7 satellite**
+ 54 mn 08 s	End of ARIANESPACE Flight 130 mission

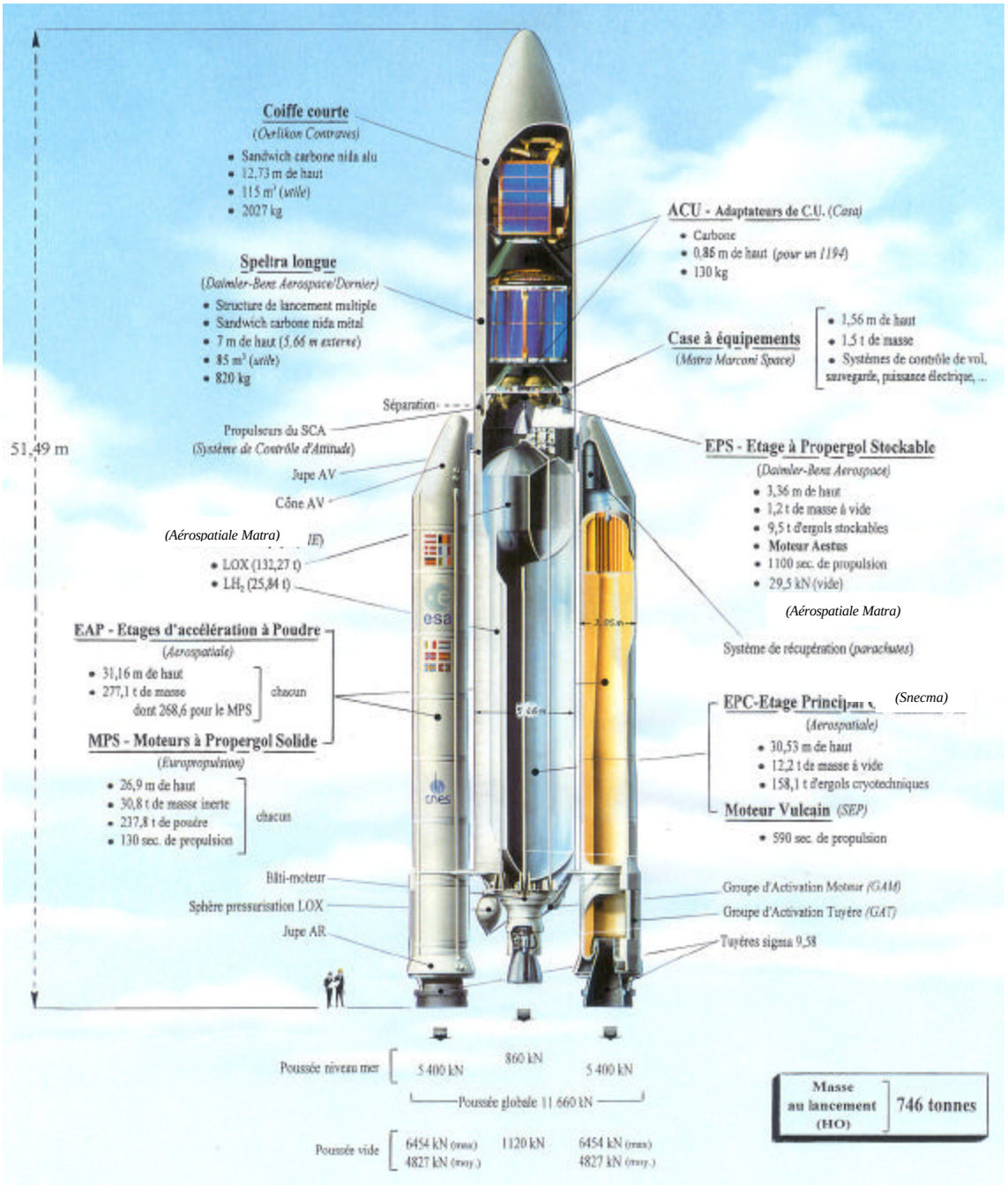
4. FLIGHT 130 TRAJECTORY:

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 5 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 computer optimizes 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 upper (storable propellant) stage.
The main stage falls back off the coast of the Galapagos Islands in the Pacific Ocean. On orbital injection, the launcher will have attained a velocity of approximately 9,000 meters/second, and will be at an altitude of about 1,566 kilometers.
The fairing protecting the Astra 2b spacecraft is jettisoned shortly after the boosters are jettisoned (GE-7 still protected in the SYLDA 5 until the injectio), at about T+200 seconds.

STANDARD ARIANE 5 TRAJECTORY FOR GEOSTATIONARY TRANSFER ORBIT



5. THE ARIANE 5 LAUNCH VEHICLE



6. THE ASTRA 2B SATELLITE *(updated september 12, 2000)*

CUSTOMER: Société Européenne des Satellites S.A. (SES) - Luxembourg

MISSION: Broadcasting and Multicasting of digital TV, radio, multimedia and Internet services

PRIME CONTRACTOR: Astrium (Toulouse, France).

MASS : - Total mass at lift-off 3 300 kg (7,260 lb)	**DIMENSIONS :** - Dimensions at launch : 2,8 x 1,7 x 2,5 m - Span in orbit 32 m
STABILIZATION : 3 axis	
ON-BOARD POWER : 7 800W (at BOL)	**LIFE TIME :** 15 years
PLATE-FORM : EUROSTAR 2000+ **PAYLOAD :** 28 Ku-Band transponders (30 for the first years), each with 109 watts of power Bandwidth per channel : 26 MHZ in FSS and 33 MHz in BSS Frequency bands : 11.7 to 12.75 GHz	
ORBITAL POSITION : 28.2° East. over Central Africa	

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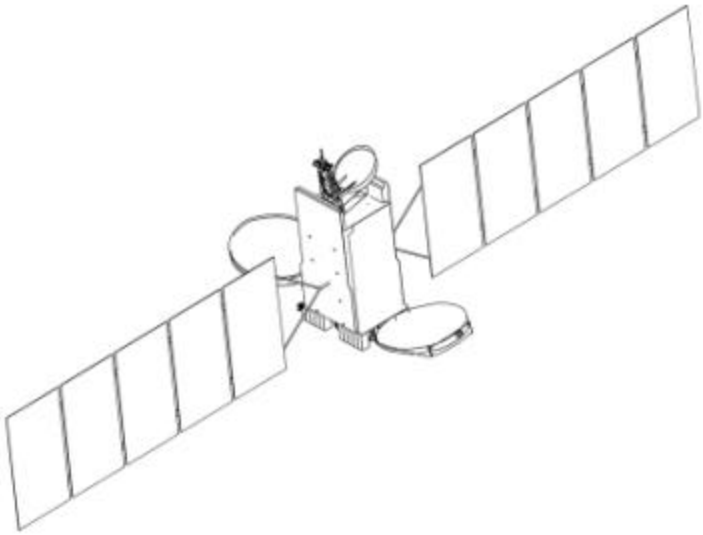
7 THE GE-7 SATELLITE



CUSTOMER : GE American Communications, Inc.

PRIME CONTRACTOR: Lockheed Martin (LMMS).

MISSION: Télécommunications satellite.

MASS: - Mass at Lift off 1 935 kg (4,362 lb) - Dry Mass 912 kg (2,006 lb)	**DIMENSIONS:** - Height : 4.10 m - Diameter : 3.60 m - Length when deployed 14,50 m
STABILIZATION: 3 axis	
ELECTRICAL POWER : 3.3 kW (at BOL)	**LIFE TIME:** 15 vears
PLATFORM : A2100 (A) **PAYLOAD:** 24 transponders in C band, each with 20 watt power Uplink frequency band : 5900-6425 MHz Downlink frequency band : 3700-4200 MHz	
ORBITAL POSITION : 146° West. above the Pacific Ocean	

Press Contact :

Monica MORGAN, GE AMERICAN COMMUNICATIONS, INC.
Tel (00-1) (609)987-4143 / e-mail : monica.morgan@gecapital.com

ANNEXES

ANNEX 1 ARIANESPACE FLIGHT 130 KEY PERSONNEL

In charge of launch campaign			
Mission Director	(CM)	**Philippe ROLLAND**	ARIANESPACE
In charge of the lauch service contracts			
ASTRA 2B Mission Manager and Ariane Payload Manager	(RCUA)	**Véronique SEGUIN**	ARIANESPACE
GE-7 Mission Manager	(RCUA/A)	**Christophe BARDOU**	ARIANESPACE
In charge of the ASTRA 2B satellite			
Satellite Mission Director	(DMS)	**Wiener KERNISAN**	SES
Satellite Project Manager	(CPS)	**Etienne VERCRUYSSE**	ASTRIUM
Satellite Preparation Manager	(RPS)	**Eric ROUCHOUSE**	ASTRIUM
In charge of the GE-7 satellite			
Satellite Mission Director	(DMS)	**Dennis HUYLER**	GE AMERICOM
Satellite Project Manager	(CPS)	**Joe RICKERS**	LOCKHEED MARTIN
Satellite Preparation Manager	(RPS)	**R.WELLER/C.ADDIS**	LOCKHEED MARTIN
In charge of the launch vehicle			
Launch Site Operations Manager	(COEL)	**Jean REBEU**	ARIANESPACE
Chef de Projet ARIANE Production	(CPAP)	**Jean-Jacques AUFFRET**	ARIANESPACE
In charge of the Guiana Space Center (CSG)			
Range Operations Manager	(DDO)	**Michel DEBRAINE**	CNES/CSG
Flight Safety Officer	(RSV)	**Stanislas BLANC**	CNES/CSG

ANNEX 2 LAUNCH ENVIRONMENT CONDITIONS

Acceptable wind speed limits at liftoff range from between 9 m/s to 14 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 into account.

ANNEX 3 THE SYNCHRONIZED SEQUENCE

The synchronized sequence starts 7 minutes 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 a redundant computer at the ELA 3 launch complex until T-5 seconds.

The computer commands the final electrical operations (startup of the flight program, servocontrols, switching from ground power supply to onboard batteries, etc.) and associated checks. It also places the propellant and fluid systems in flight configuration and performs associated checks. In addition, it handles the final ground system configurations, namely:

- Startup of water injection in the flame trenches and jet guide (T-30sec)
- Hydrogen aspiration for chilldown of Vulcain engine in the jet guide (T-18sec)
- Burnoff of hydrogen used for chilldown (T-7sec).

At T-3 seconds, the onboard computer takes over control of final engine startup and liftoff operations:

- It starts the ignition sequence for the Vulcain main stage engine (T-0)
- It checks engine operation (from T+4 to T+7 sec)
- It commands ignition of the solid boosters for immediate liftoff at T+7.5 seconds.

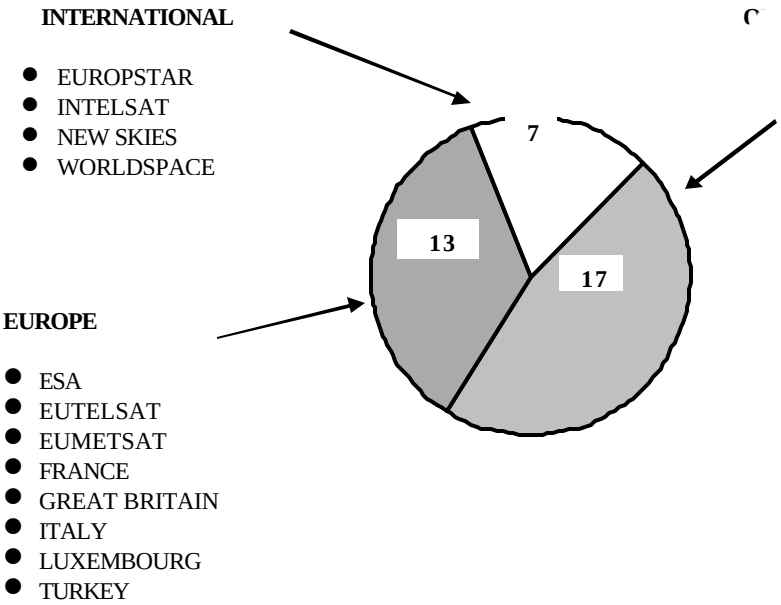
Any shutdown of the synchronized sequence up to T-7 seconds automatically places the launcher back in its T-7min00sec configuration.

ANNEX 4 ARIANESPACE ORDER BOOK

To date **173** satellites and **34** auxilliary payload have been launched by ARIANESPACE.

Out of **211** launch services contracted since 1981 by ARIANESPACE and **before** Flight 130, **37** satellites and **9** ATV launches remain to be launched.

EUROPE **13 SATELLITES**	**OUTSIDE EUROPE** **24 SATELLITES**
ASTRA 2B, 2C, X & 2D ENVISAT-1/PPF EURASIASAT 1 EUROBIRD MSG-1 & 2 SICRAL SKYNET 4F SPOT 5 STENTOR + 9 ATV launches	**INTERNATIONAL ORGANIZATIONS : 7 satellites** AMERISTAR (Worldspace) EUROPESTAR FM1 INTELSAT 902, 903, 904 New Skies Satellites KTV 1 & 7 **OTHERS: 17 satellites** ANIK F1 & F2 (Canada) BSAT 2A & 2B (Japan) **GE-7**, 8 & TBD (USA) INSAT 3A (India) ISKY 1 & 2 JC SAT 8 (Japon) LORALSAT 3 (USA) L-STAR A & B (Thailand/Laos) N-SAT 110 (Japan) OPTUS C1 (Australia) PAS-1R (USA)
35%	**65%**



ANNEX 5 ARIANESPACE, ITS RELATIONS WITH ESA & CNES

FROM A PRODUCTION BASE IN EUROPE, ARIANESPACE, A PRIVATE COMPANY, SERVES CUSTOMERS ALL OVER THE WORLD

ARIANESPACE is the world's first commercial space transportation company, created in 1980 by 36 leading European aerospace and electronics corporations, 13 major banks and the French space agency CNES (Centre National d'Etudes Spatiales).

The 53 shareholder partners in ARIANESPACE represent the scientific, technical, financial and political capabilities of 12 countries : Belgium, Denmark, Germany, France, Great Britain, Ireland, Italy, Netherlands, Norway, Spain, Switzerland and Sweden.

In order to meet the market needs, ARIANESPACE operates throughout the world: in Europe, with its head office located near Paris, France at Evry, in North America with its subsidiary in Washington D.C. and in the Pacific Region, with its representative offices in Tokyo, Japan, and in Singapore.

ARIANESPACE employs a staff of 350. Share capital totals FF 2,088 million.
ARIANESPACE is in charge of these main areas:

- markets launch services to customers throughout the world.
- finances and supervises the construction of ARIANE expendable launch vehicles.
- conducts launches from the Europe's spaceport of Kourou in French Guiana.
- insures customers for launch risks.

Personalized reliable service forms an integral part of ARIANESPACE launch package. It includes the assignment of a permanent team of experts to each mission for the full launch campaign.

The world's commercial satellite operators have contracted to launch with ARIANESPACE. This record is the result of our company's realistic cost-effective approach to getting satellites into orbit.

RELATIONS BETWEEN ESA, CNES AND ARIANESPACE

Development of the Ariane launcher was undertaken by the European Space Agency in 1973. ESA assumed overall direction of the ARIANE 1 development program, delegating the technical direction and financial management to CNES. The ARIANE 1 launcher was declared qualified and operational in January 1982. At the end of the development phase which included four launchers, ESA started the production of five further ARIANE 1 launchers. This program, known as the "promotion series", was carried out with a management arrangement similar to that for the ARIANE 1 development program
In January 1980 ESA decided to entrust the commercialisation, production and launching of operational launchers to private-law industrial structure, in the form of the ARIANESPACE company, placing at its disposal the facilities, equipment and tooling needed of producing and launching the ARIANE launchers.
ARIANE follow-on development programs have been undertaken by ESA since 1980. They include a program for developing uprated versions of the launcher : ARIANE 2 and ARIANE 3 (qualified in August 1984); the program for building a second ARIANE launch site (ELA 2) (validated in August 1985); the ARIANE 4 launcher development program (qualified on June 15th, 1988); and the preparatory and development program of the ARIANE 5 launcher and its new launch facilities: ELA 3 (qualified on November, 1997). All these programs are run under the overall direction of ESA, which has appointed CNES as prime contractor.
In general, as soon as an uprated version of the launcher has been qualified 5Oct ; 1998), ESA makes the results of the development program together with the corresponding production and launch facilities available to ARIANESPACE.

ESA is responsible (as design authority) for development work on the ARIANE launchers. The Agency owns all the assets produced under these development programs. It entrusts technical direction and financial management of the development work to CNES, which writes the program specifications and places the industrial contracts on its behalf. The Agency retains the role of monitoring the work and reporting to the participating States.
Since flight 9 ARIANESPACE has been responsible for building and launching the operational ARIANE launchers (as production authority), and for industrial production management, for placing the launcher manufacturing contracts, initiating procurements, marketing and providing Ariane launch services, and directing launch operations.

USE OF THE GUIANA SPACE CENTER

The "Centre Spatial Guyanais" (CSG), CNES's launch base near Kourou, has all the equipment needed for launching spacecraft -radar tracking stations, telemetry receiving stations, a meteorology station, a telecommand station, safety facilities, etc...
It became operational in 1968 for the purpose of the French National Space Program.
ESA has built its own launch facilities, the ELA 1, ELA 2 and ELA 3 (for ARIANE 5) complexes and the EPCU payload preparation complex inside the CSG compound, becoming the Europe Space Port. Using these launch pads requires, especially during launch operations, support from the CSG's technical and operational facilities. The French Government has granted ESA the right to use the CSG for its space programs. In return, ESA shares in the costs of operating the CSG.
ARIANESPACE directly covers the costs of use, maintenance and upgrading of the Ariane launch sites and the payload preparation complex.