

OCTOBER 2021  
LAUNCH KIT  
**VA255**



# MISSION DESCRIPTION

Arianespace's eleventh launch of 2021 with the second Ariane 5 of the year will place its satellite passengers into geostationary transfer orbit. The launcher will be carrying a total payload of approximately 11,210 kg.

The launch will be performed in Kourou, French Guiana.



## DATE AND TIME

Liftoff is planned on **Friday, October 22, 2021**, as early as possible within the following launch window:

- Between 09:01 p.m. and 11:30 p.m. Washington, D.C. time, during the night of October 22 to 23
- Between 10:01 p.m. and 00:30 a.m. Kourou time, in the night of October 22 to 23
- Between 01:01 a.m. and 02:30 a.m. Universal time (UTC), on October 23
- Between 03:01 a.m. and 05:30 a.m. Paris time, October 23
- Between 10:01 a.m. and 12:30 p.m. Tokyo time, October 23



## MISSION DURATION

The nominal duration of the mission (from liftoff to separation of second satellite) is: **38 minutes and 41 seconds.**



## SATELLITES

- Satellite: SES-17
- Customer : Thales Alenia Space for SES
- Satellite: SYRACUSE 4A
- Customer: Thales Alenia Space for the DGA



## TARGETED ORBIT

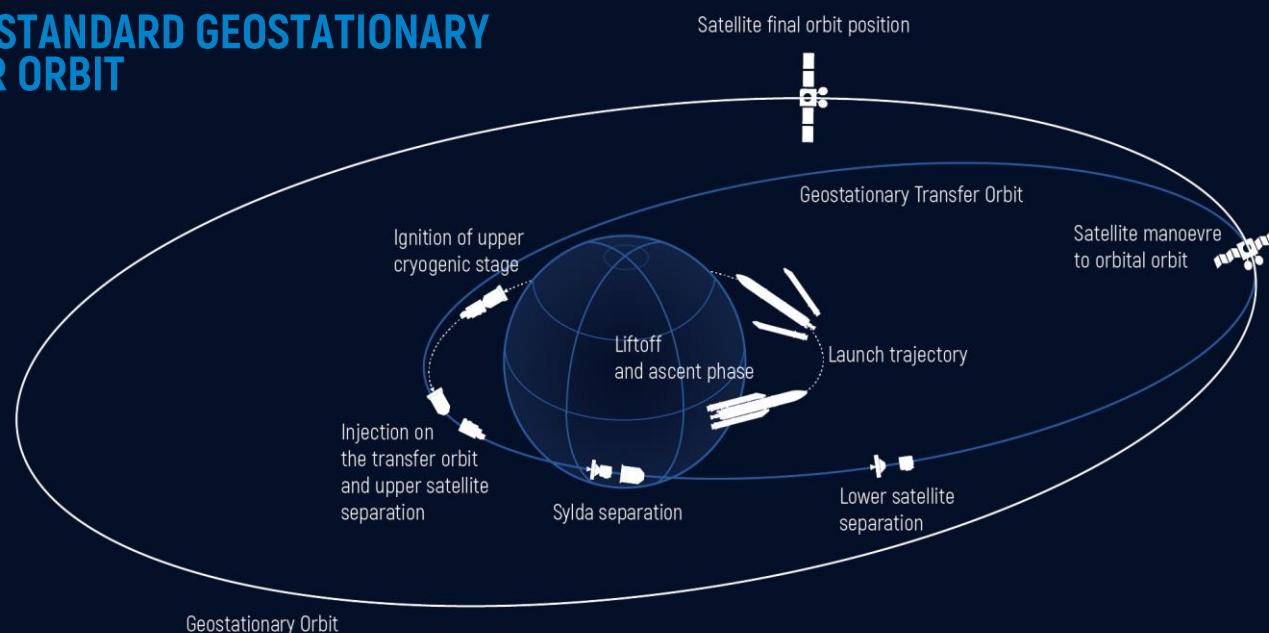
- Perigee altitude: 250 km.
- Apogee altitude: 35 200 km.
- Inclination : 6° degrees



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## ARIANE 5 STANDARD GEOSTATIONARY TRANSFER ORBIT



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# SES-17 SATELLITE

## DELIVERING UNPRECEDENTED CONNECTIVITY ACROSS THE AMERICAS



### DID YOU KNOW?

SES-17 is the third geostationary Thales Alenia Space's satellite that will join the SES's fleet launched by Arianespace. Thales Alenia Space previously built ASTRA5A, launched in 1997, and AMC5, launched in 1998 as well as the O3b constellation (20 satellites in Medium Earth Orbit).

Thales Alenia Space is also currently manufacturing SES-22 and SES-23, two geostationary communications satellites designed to provide digital broadcasting services over North America.



<b>SATELLITE</b>	SES-17
<b>CUSTOMER</b>	SES
<b>MANUFACTURER</b>	Thales Alenia Space
<b>MISSION</b>	Telecommunications
<b>MASS AT LAUNCH</b>	6 411 kg.
<b>PLATFORM</b>	SpaceBusNeo200
<b>COVERAGE AREA</b>	North America, South America, Atlantic Ocean and the Caribbean
<b>LIFETIME</b>	15 years

**SES-17** satellite: This High Throughput telecommunication satellite provides excellent coverage over the Americas, the Caribbean and the Atlantic Ocean and has been designed to transform the aviation connectivity landscape, address data demands across maritime, government and enterprise segments, as well as to accelerate digital inclusion initiatives. It features almost 200 spot beams, the power of which can be dynamically adjusted in step with customers' changing requirements. It is also the first SES satellite to have a totally digital payload, powered by an advanced digital transparent processor (DTP), enabling far greater flexibility and efficiency than previously available. The satellite will form a multi-orbit network adaptable to varying bandwidth and latency requirements, operating with SES's next generation non-geosynchronous satellite system, O3b mPOWER.

The Thales Alenia Space's 5th generation Digital Transparent Processor (DTP) embarked on SES-17 allows for easy frequency conversions as well as unlimited gateway switching and traffic routing. Combined to flexible amplifiers, it will meet customer's changing requirements and real time traffic demands.

- Since 1984, SES has entrusted 42 satellites to Arianespace, demonstrating the trust of this strong relationship.
- SES-17 will be the 164<sup>th</sup> Thales Alenia Space satellite to be launched by Arianespace; there are currently four Thales Alenia Space satellites in Arianespace's backlog, including SES-17.



# SYRACUSE 4A

## CONNECTING FRENCH MILITARIES ALL AROUND THE WORLD



### DID YOU KNOW?

Thales Alenia Space is a trusted partner of the French Armed Forces. Over the years, it has manufactured 12 satellites for the French Ministry of Armed Forces.

The Syracuse IV defense communications satellite segment, comprising two satellites, Syracuse 4A and Syracuse 4B, was built by a consortium formed by Thales Alenia Space and Airbus Defence and Space. Thales Alenia Space is in charge of the Syracuse 4A satellite and the payloads for both satellites, Airbus Defence and Space providing the platform for Syracuse 4B as well as elements for both payloads.



<b>SATELLITE</b>	SYRACUSE 4A
<b>CUSTOMER</b>	Thales Alenia Space (end customer: DGA)
<b>MANUFACTURER</b>	Thales Alenia Space
<b>MISSION</b>	Telecommunications
<b>MASS AT LAUNCH</b>	3852 kg.
<b>PLATFORM</b>	SpaceBus Neo 100
<b>COVERAGE AREA</b>	Undisclosed
<b>LIFETIME</b>	15 years

**SYRACUSE 4A** satellite: This military communications satellite, commissioned by the French Armament General Directorate DGA, will allow to connect the armed forces together when deployed. At sea, in the air or on the ground, militaries need secured and powerful communication means in order to be able to exchange information with the command center. Thanks to its state-of-the-art equipment (anti-jamming antenna and digital transparent processor on board), SYRACUSE 4A will guarantee a high resistance to extreme jamming methods. At the service of France's sovereignty, the satellite will also support NATO and European-led operations.

Developed under the leadership of the DGA in close coordination with the national center for space studies (CNES), the Space Command of the French Air and Space Force and the other armed forces, SYRACUSE 4A was built by Thales Alenia Space. In the upcoming years, two other military telecommunications satellites will join it in order to create a constellation that will serve the needs of the Armed forces in an ever-growing digitalization of the battlefield. SYRACUSE 4A will connect most naval vessels, moving armored vehicles or aircraft: in particular Griffon armored vehicles, upcoming Suffren attack submarines or the tanker Phoenix.

In order to complete this new generation of satellites, the DGA also contracted Thales to renew the ground segment with the construction of 200 new stations in order to provide state of the art capabilities to the French Armed Forces.

- SYRACUSE 4A will be the 165<sup>th</sup> Thales Alenia Space satellite to be launched by Arianespace.
- This satellite will be the 46<sup>th</sup> one that Arianespace launches for French Institutions.

# ARIANE 5 LAUNCHER

## RECORDS

This 111<sup>th</sup> Ariane 5 mission will mark three new milestones for the heavy-lift European launcher: it will carry an overall performance of approximately 11.2 metric tons, the combined mass of its two payloads will be 10.263 metric tons and the launcher will be precisely 1.5 m taller than usual.



### Fairing

(RUAG Schweiz AG)  
Height: 17 m.  
Mass: 2.4 t.

### PA – Payload adaptors (2)

(Airbus Defence and Space - ASE)  
(RUAG Space AB)  
Mass: 202 kg.

### SYLDA – Internal structure

510 kg

### Vehicle equipment bay

Height: 1.13 m.  
Mass: 1,100 kg.

### ESC-D – Cryotechnic upper stage

Height: 4.71 m.  
Mass: 19 t.

### HM-7B engine

Thrust: 67 kN. (in vacuum)  
995 sec. of propulsion

### EPC – Cryogenic main stage

Height: 31 m.  
Mass: 190 t.

### EAP – Solid rocket boosters

Height: 31.6 m.  
Mass: 277 t.

### Vulcain 2 engine

Thrust: 1,410 kN. (in vacuum)  
520 sec. of propulsion

### MPS – Solid rocket motor

Average thrust: 5,060 kN.  
Max thrust: 7,080 kN. (in vacuum)  
133 sec. of propulsion



13,000 kN. at liftoff (at T+7.3 sec)



## DID YOU KNOW?



ArianeGroup, as prime contractor for Ariane 5, leads a number of European companies in launcher production, including management of upgrades and the flight software for each mission. This team effort underpins the success of Ariane 5.

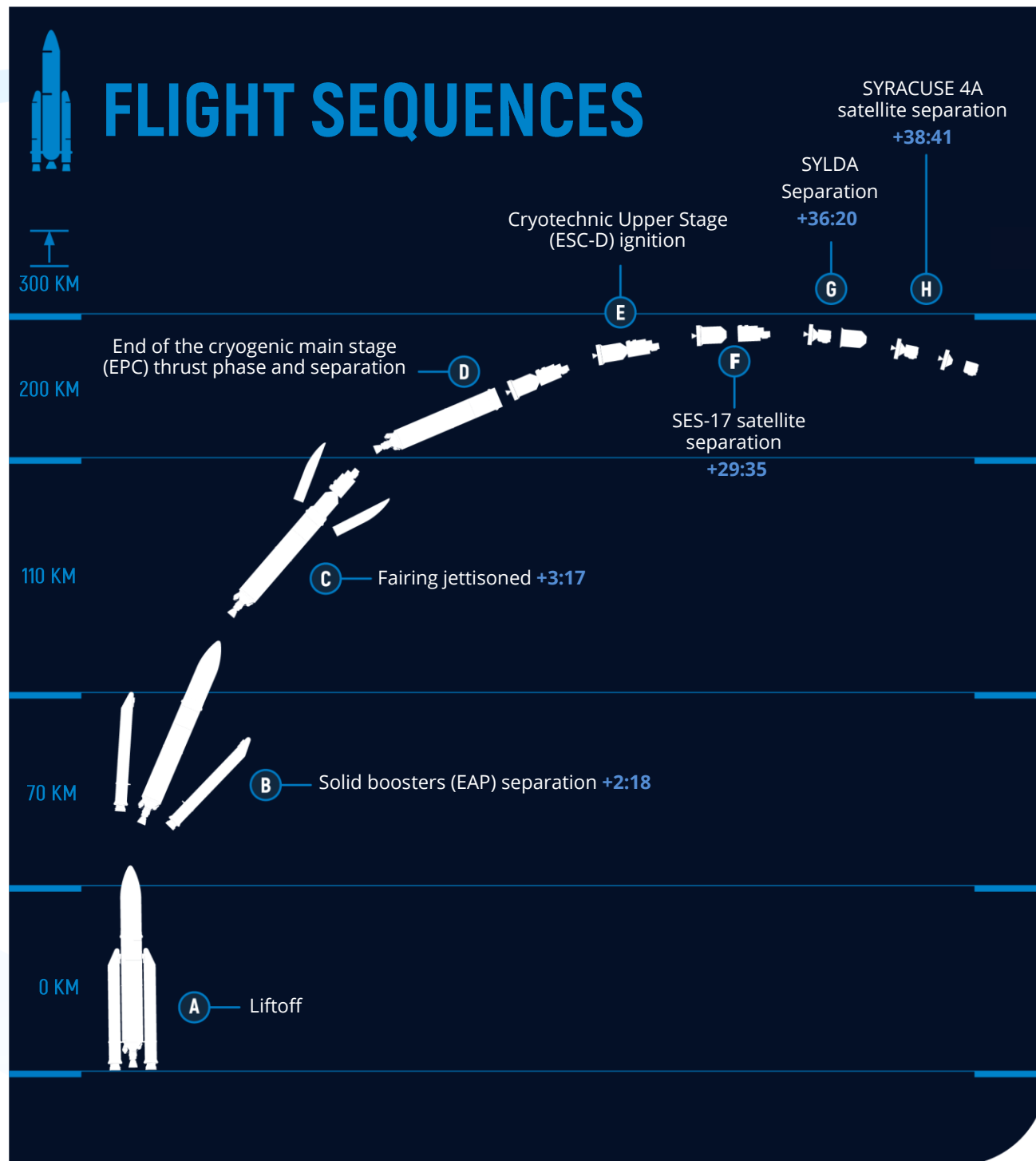
ArianeGroup's responsibilities on Ariane 5 include structures and equipment, propulsion systems, integration of the different stages and integration of the launcher at the Guiana Space Center in French Guiana. It coordinates more than 600 European companies contributing to the launcher, including some 350 small and medium-size enterprises.

We continuously improve the competitiveness of the Ariane 5 system, while also ensuring that it benefits from the production improvements developed on the Ariane 6 program.

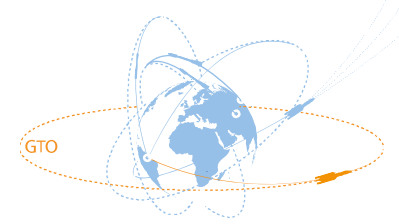
# LAUNCH CAMPAIGN

- 10/22/2021  Start of launch countdown, cryogenic main stage (EPC) and cryogenic upper stage (ESC-A) filling with liquid oxygen and liquid hydrogen. **Liftoff.**
- 10/21/2021  Roll-out from BAF to the launch pad
- 10/20/2021  Launch readiness review and arming of launch vehicle
- 10/18/2021  Dress rehearsal
- 10/15/2021  Composite (SES-17 under fairing) integration on launch vehicle (SYRACUSE 4A under SYLDA)
- 10/14/2021  SYRACUSE 4A integration on launch vehicle
- 10/13/2021  SES-17 integration under the fairing
- 10/12/2021  SES-17 integration on the SYLDA
- 10/10/2021  SES-17 fueling operations
- 10/06/2021  SYRACUSE 4A fueling operations
- 10/05/2021  Transfer from BIL (Launcher Integration Building) to BAF (Final Integration Building)
- 09/23/2021  Arrival of SES-17 in French Guiana
- 09/02/2021  Arrival of SYRACUSE 4A in French Guiana
- 09/02/2021  BIL Campaign start

-  — Launch vehicle operations
-  — Satellite operations



# STAKEHOLDERS OF A LAUNCH



## ARIANESPACE

Arianespace uses space to make life better on Earth by providing launch services for all types of satellites into all orbits.

It has orbited over 940 satellites since 1980, using its family of three launchers, Ariane, Soyuz and Vega, from a launch site in French Guiana (South America) and the Russian cosmodromes in Baikonur and Vostochny.

Arianespace is already marketing Europe's new launchers, Ariane 6 and Vega C.

Arianespace is headquartered in Evry, near Paris, and has a technical facility at the Guiana Space Center, Europe's spaceport in French Guiana, plus local offices in Washington, D.C., Tokyo and Singapore. Arianespace is a subsidiary of ArianeGroup, which holds 74% of its share capital, with the balance held by 15 other shareholders from the European launcher industry.



## ARIANEGROUP

ArianeGroup is the prime contractor for the development and production of Ariane 5 and Ariane 6 launchers. The company coordinates an industrial network of more than 600 companies (including 350 SMEs).

ArianeGroup oversees the entire industrial supply chain, from performance optimization and the corresponding studies associated with Ariane 5 to production, from the supply of mission-specific data and software to the marketing of the launcher through Arianespace. This chain includes equipment and structures, engine manufacturing, integration of the various stages, and launcher integration in French Guiana.

ArianeGroup delivers a flight-ready launcher on the launch pad to its subsidiary Arianespace, which operates the flight from lift-off, on behalf of its customers.



## ESA

The European Space Agency (ESA) is tasked with guiding the development of Europe's space capabilities and making sure that its investments in space benefit the citizens of Europe and worldwide. An international organization with 22 member states, ESA coordinates its members' financial and intellectual resources to conduct programs and activities that largely surpass the scope of action of a single European country. ESA is now coordinating Europe's future launcher programs, Ariane 6 and Vega C. On Ariane 6, ESA supervises the overall launch system procurement and architecture, while European industry builds the launcher, with ArianeGroup as prime contractor and design authority.

ESA also provides the launcher's specifications for institutional missions. Thirteen European countries contribute to funding for the Ariane 6 program, led by France, Germany and Italy, along with Austria, Belgium, Spain, Ireland, Norway, the Netherlands, Romania, Sweden, Switzerland and the Czech Republic.



## CNES

French space agency CNES (Centre National d'Etudes Spatiales) defines national space policy and proposes it to public authorities. CNES oversees the application of this policy in five main areas: Ariane, science, observation, telecommunications and defense.

ESA chose CNES as prime contractor for Ariane 6 ground facilities in French Guiana, including the construction of a new launch pad and development of the existing installations at the Guiana Space Center (CSG).

CNES also supports ESA, as the contracting authority, and ArianeGroup, as prime contractor for launcher development, and is responsible for applying the French law on space operations.

