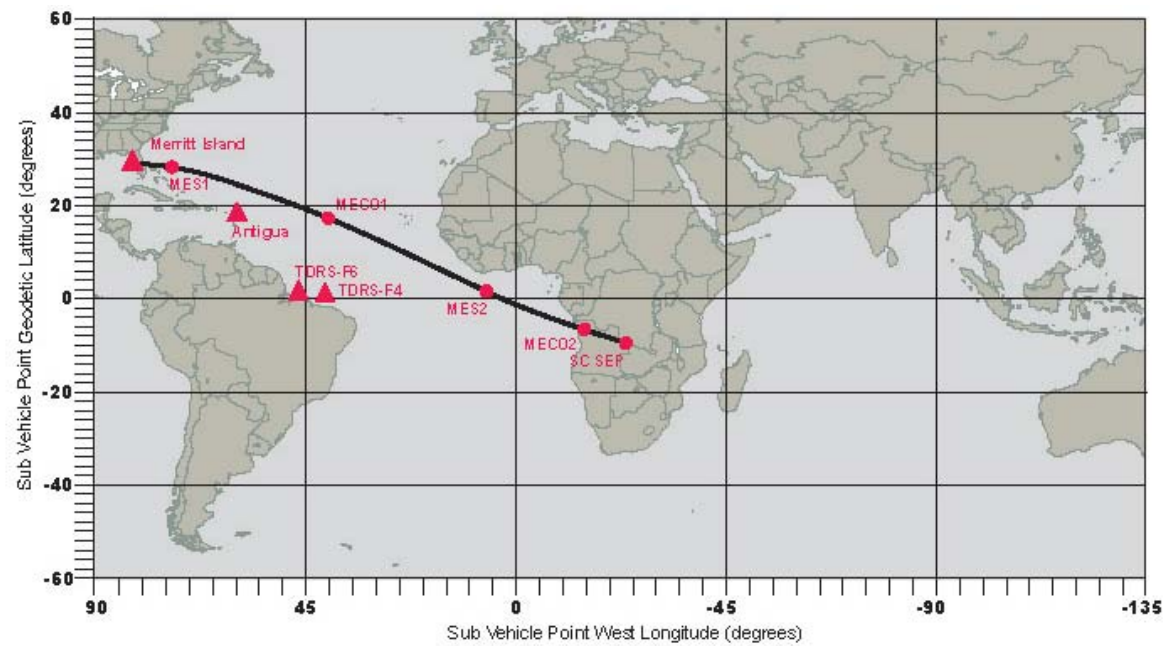


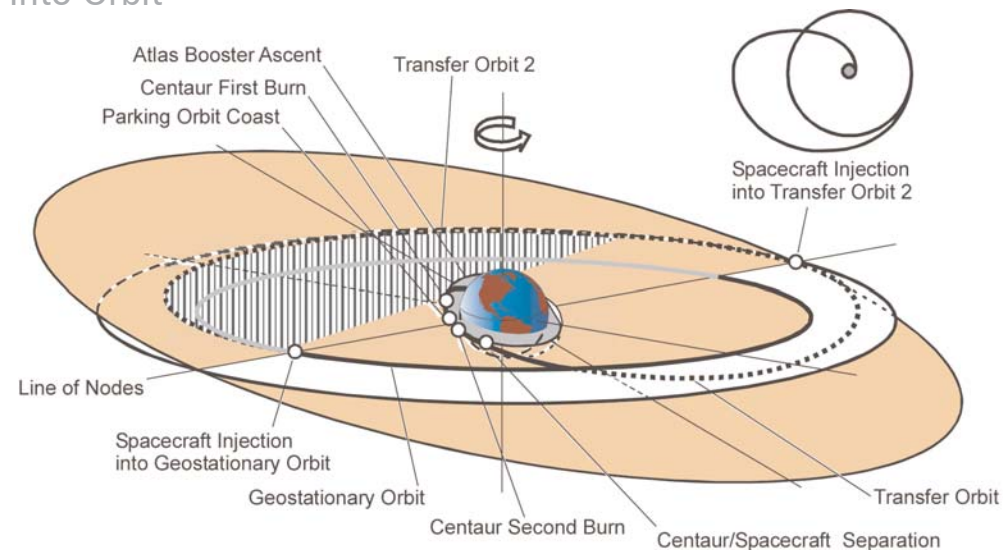
## MISSION PROFILE

The Atlas V 431 launch vehicle will place the EADS Astrium-built Inmarsat 4-F1 satellite into orbit for Inmarsat. The Atlas V launch vehicle will lift off from Launch Complex 41 at Cape Canaveral Air Force Station, Florida. The super-synchronous transfer orbit mission design will use a parking orbit ascent trajectory design with two Centaur burn phases. The satellite's attitude and orbital control system will perform a series of burns to raise perigee and reduce apogee to circularize the orbit, while also reducing inclination, thus placing the spacecraft into a geosynchronous orbit. The duration of the mission, from liftoff to satellite separation, is approximately 32 minutes.

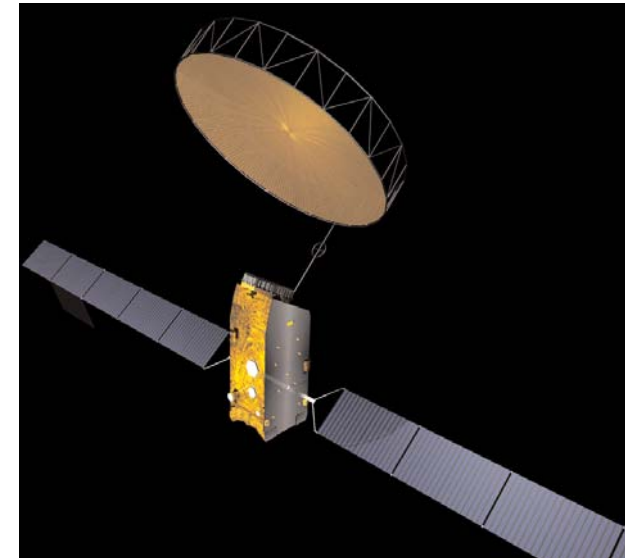
### Atlas Ascent Ground Track



### Insertion Into Orbit



## THE SATELLITE



**Satellite Operator:**

Inmarsat Ltd.  
www.inmarsat.com

**Satellite Manufacturer:**

EADS Astrium  
www.astrium.eads.net

**Platform:**

Eurostar E3000

**Separated Mass:**

5,945 kg

**Design Life:**

13 Years

**Mission:**

The Inmarsat 4-F1 satellite, the largest and most powerful commercial communications satellite ever launched, will support Inmarsat's new Broadband Global Area Network (BGAN) service, delivering high-speed data (up to 432 kbit/s) and voice, simultaneously through one terminal, to almost anywhere on the planet. BGAN will also be compatible with third-generation cellular systems.



International Launch Services



March 2005

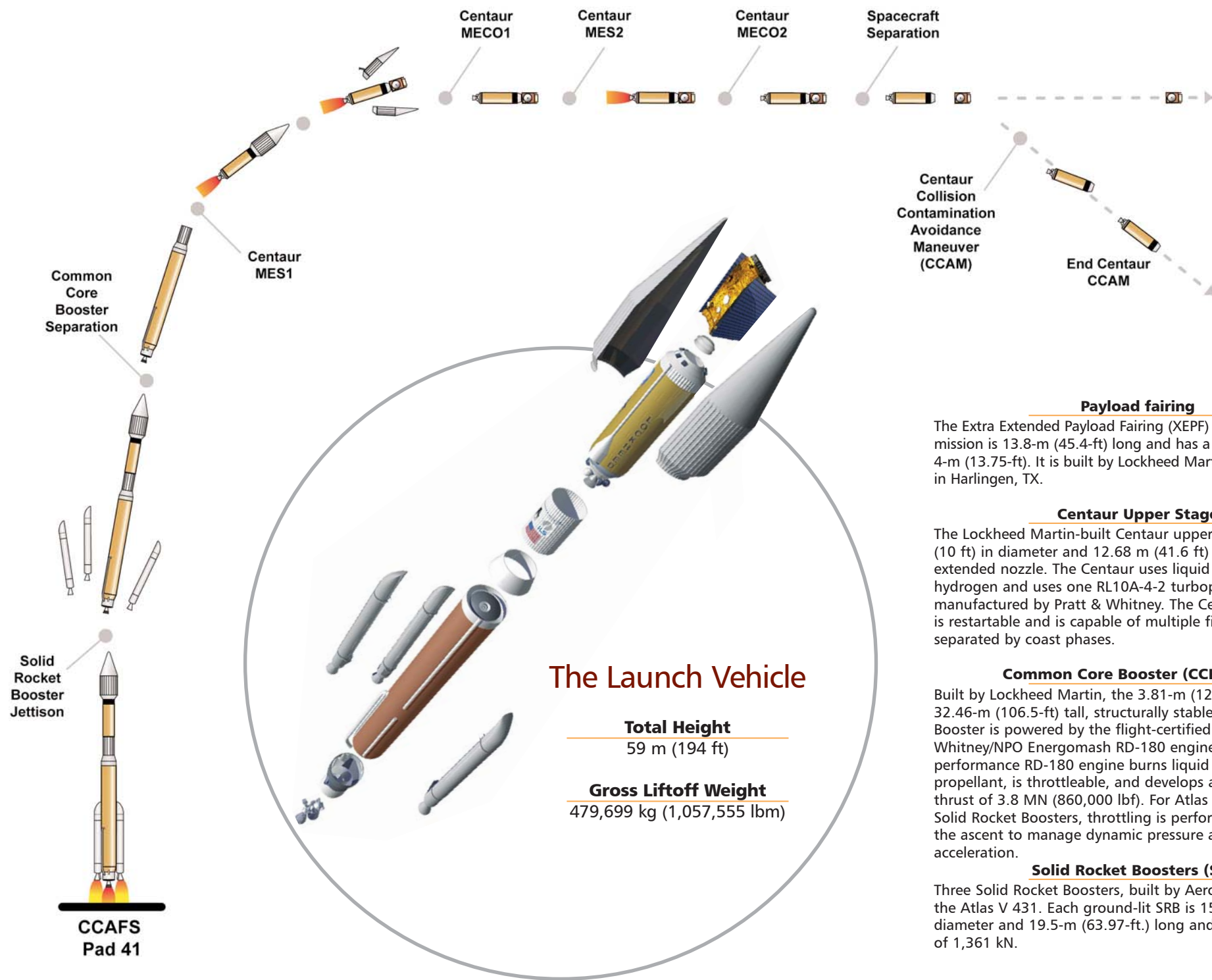
www.ilslaunch.com

## Inmarsat 4-F1

### Mission Overview

- Atlas family has launched a world record-breaking 75 consecutive successful missions
- 5th commercial flight of the Atlas V launch vehicle
- 3rd Atlas launch for Inmarsat
- 3rd ILS launch of 2005

# MISSION ASCENT PROFILE



**Payload fairing**  
The Extra Extended Payload Fairing (XEPPF) used on this mission is 13.8-m (45.4-ft) long and has a diameter of 4-m (13.75-ft). It is built by Lockheed Martin at its facility in Harlingen, TX.

**Centaur Upper Stage**  
The Lockheed Martin-built Centaur upper stage is 3.05 m (10 ft) in diameter and 12.68 m (41.6 ft) in length with the extended nozzle. The Centaur uses liquid oxygen and liquid hydrogen and uses one RL10A-4-2 turbopump-fed engine, manufactured by Pratt & Whitney. The Centaur engine is restartable and is capable of multiple firings in space, separated by coast phases.

**Common Core Booster (CCB) Stage**  
Built by Lockheed Martin, the 3.81-m (12.5-ft) diameter, 32.46-m (106.5-ft) tall, structurally stable Common Core Booster is powered by the flight-certified Pratt and Whitney/NPO Energomash RD-180 engine. The high-performance RD-180 engine burns liquid oxygen and RP-1 propellant, is throttleable, and develops a lift-off (sea-level) thrust of 3.8 MN (860,000 lbf). For Atlas V vehicles with Solid Rocket Boosters, throttling is performed throughout the ascent to manage dynamic pressure and vehicle acceleration.

**Solid Rocket Boosters (SRB)**  
Three Solid Rocket Boosters, built by Aerojet, are used on the Atlas V 431. Each ground-lit SRB is 155-cm (61.07-in) in diameter and 19.5-m (63.97-ft.) long and provides a thrust of 1,361 kN.

## Countdown and Flight Events Summary

Event	HR:MIN:SEC
Guidance Go-Inertial	-0:00:08.0
RD-180 Ignition	-0:00:01.9
T-0 (Engine Ready Point)	-0:00:00.0
Solid Rocket Booster (SRB) Ignition	0:00:00.8
Liftoff	0:00:01.1
SRB Burnout	0:01:31.0
SRB1/SRB2 Jettison	0:02:09.7
SRB3 Jettison	0:02:11.2
Booster Engine Cutoff (BECO)	0:04:27.1
Common Core Booster (CCB) Separation	0:04:33.1
Centaur 1st Main Engine Start (MES1)	0:04:43.1
Payload Fairing Jettison	0:04:51.1
Centaur 1st Main Engine Cutoff (MECO1)	0:14:24.4
Centaur 2nd Main Engine Start (MES2)	0:24:04.0
Centaur 2nd Main Engine Cutoff (MECO2)	0:29:28.0
Spacecraft Separation	0:32:17.0