Backgrounder

Defense, Space & Security
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SES's O3b mPOWER Satellites

Description and Purpose: In Sept. 2017, SES ordered seven medium earth orbit (MEO) Boeing satellites. The O3b mPOWER satellites carry Boeing's most advanced digital payload. Once in service, the fleet will complement SES's existing MEO to deliver ubiquitous coverage, ultimate flexibility and massive throughput for SES Network's customers, serving dynamic and rapidly growing markets of mobility, fixed data and governments around the world.

Customer: Continuing a relationship spanning more than 25 years, SES, a world-leading satellite operator providing reliable and secure satellite communications solutions, with this latest contract, has now ordered 19 satellites from Boeing. The O3b mPOWER satellites support the SES Networks business unit, which serves fixed data, mobility and government customers with high-performance data services. SES Networks is comprised of SES's existing data business and the recently acquired O3b Networks, the only operator of MEO satellites.

General Characteristics: The full seven-satellite fleet is scheduled for delivery by 2021. The O3b mPOWER satellites will be built using electronics from the flight-proven Boeing 702 satellite platform, customized to support the unique MEO environment and mission requirements, including the ability to launch up to four spacecraft at a time, depending on launch vehicle. The constellation will have approximately 30,000 fully-shapeable and steerable beams that can be shifted and switched in real time to align with customers' quickly changing growth opportunities, making it a highly flexible and bandwidth-efficient system. O3b mPOWER will provide unrivalled coverage to an area of nearly 400 million square kilometres (approx. 154 million square miles).

Technology Advantages:

- The satellites will incorporate Boeing's most-advanced digital payload, a design that is highly modular and scalable for all orbital applications.
- The design features high bandwidth capacity, with full flexibility to use power and bandwidth resources to support market needs.
- The digital payload enables global connectivity for fixed and mobile services, with on-board intelligence to minimize ground control interaction.

- The system capacity grows with the addition of satellites to the constellation, while maintaining efficient use of gateway and ground network resources.

Background: Beginning in 1990, Boeing has built 12 satellites for SES. SES ordered its first satellite from Boeing, called Astra 1C, in late 1990; followed in late 1991 by an order for a second spacecraft, Astra 1D; in 1992 for Astra 1E; in 1993 for Astra 1F; in 1994 for Astra 1G; in 1995 for 1H; and in 1996 for 2A. In August 1999, SES ordered two new satellites, Astra 2C, a 601HP, and Astra 2D, a 376 model; followed by ASTRA 3A, another 376, in August 2000. In 2012, SES ordered SES-9, which was launched in 2016. SES-15, ordered in 2015, was launched in 2017.

Miscellaneous: SES is the world-leading satellite operator and the first to deliver a differentiated and scalable GEO-MEO offering worldwide. SES focuses on value-added, end-to-end solutions in two key business units: SES Video and SES Networks. The company provides satellite communications services to broadcasters, content and internet service providers, mobile and fixed network operators, governments and institutions. The satellites are controlled from the SES ground stations in Betzdorf, Luxembourg; Woodbine, Maryland; and Gibraltar, United Kingdom. For more information on SES: www.ses.com.

The O3b mPOWER preliminary design review (PDR) was successfully completed in June 2018, and the critical design review (CDR) was successfully completed in July 2019. The first three satellites are targeted for launch in mid-2021.

Boeing Satellite Systems is located in El Segundo, Calif. The world's first geosynchronous communications satellite, Syncom, was built by Boeing and launched in 1963. Boeing has delivered satellites to more than 20 customers, and continues to design and build government and commercial satellites in its factory in El Segundo.

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