

Defense, Space & Security  
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## Inmarsat-5

**Description and Purpose:** Four Boeing 702HP satellites will provide new Ka-band high-data-rate mobile communications services.



### **Customer:**

Continuing a relationship which began more than three decades ago, Inmarsat, the leading provider of global mobile satellite communications services, returned to Boeing in August 2010 to order three 702HP spacecraft to provide its new Ka-band global and high-capacity satellite services. In October 2013, Inmarsat exercised the option to order one more 702HP spacecraft to add to their fleet.

### **General Characteristics:**

The new satellites will join Inmarsat's fleet of geostationary satellites that provide a wide range of voice and data services through an established global network of distributors and service providers.

Inmarsat-5 F1, the first of four Boeing-built Inmarsat-5 satellites, was successfully launched on December 8, 2013 and handed over to the customer on March 3, 2014. Inmarsat-5 F2 successfully launched on February 1, 2015, and was handed over to the customer on April 24, 2015.

Each Inmarsat-5 satellite will carry 89 Ka-band beams that will operate in geosynchronous orbit with flexible global coverage. The satellites are designed to generate approximately 15 kilowatts of power at the start of service and approximately 13.8 kilowatts at the end of their 15-year design life. To generate such high power, each spacecraft's two solar wings employ five panels each of ultra triple-junction gallium arsenide solar cells. The Boeing 702HP carries the xenon ion propulsion system (XIPS) for all on-orbit maneuvering. When operational, the Inmarsat-5 satellites will provide Inmarsat with a comprehensive range of global mobile satellite services, including mobile broadband communications for sea vessels, in-flight connectivity for airline passengers and streaming high-resolution video, voice and data.

In a separate arrangement, Boeing also has entered into a distribution partnership with Inmarsat to provide L- and Ka-band capacity services to key users within the U.S. government. Leveraging Boeing's expertise in government environments and

applications, the Inmarsat-5 satellites will provide Inmarsat's customers with an array of secure voice and high-speed communications applications between land, sea and air services, and multinational coalitions.

The Inmarsat-5 spacecraft will be compatible with the Ariane, Sea Launch, Proton and Atlas launch vehicles.

**Miscellaneous:**

Beginning in 1976, Boeing has built three satellites and four payloads for Inmarsat. Marisat 1, 2 and 3 were three L- and C-band communications satellites built for the space segment of the world's first maritime system. Of the three Marisat satellites, all exceeded their contractual design life of five years and provided a combined 70 years of service. The HS-356 spacecraft were launched in 1976 – one each on Feb. 19, June 9, and Oct. 14. The satellites were placed in geosynchronous orbit at 15 degrees west longitude, 176.5 degrees east longitude, and 72.5 degrees east longitude, respectively. Boeing also built the L-band payloads that launched on the four Inmarsat-2 satellites during the early 1990s and continue to operate without a single unit failure to date.

Boeing Commercial Satellite Systems, headquartered in El Segundo, Calif., is the world's leading provider of commercial satellites. The world's first geosynchronous communications satellite, Syncom, was built by Boeing and launched in 1963. Boeing has delivered more than 170 commercial satellite systems, and with the 702HP, MP and SP product lines, Boeing can support payloads ranging from 3 to 18 kilowatts. Boeing builds satellites at its Satellite Development Center in El Segundo, Calif., the site of the world's largest satellite manufacturing factory.

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