

International Space Station

High-power electronics and energy storage hardware for the International Space Station are being manufactured by Space Systems/Loral (SS/L). Under contract to the Rocketdyne Division of Boeing North America, Inc., prime contractor for the electrical power system, SS/L has designed and is building three major subsystems for storing and controlling power on the Space Station at its Palo Alto, Calif., facility.

All three subsystems are orbital replacement units (ORUs), which can be replaced by astronauts working in space in order to extend the life of the Space Station beyond the design life of individual units. These units are the Battery ORU, the Battery Charge/Discharge ORU, and the Sequential Shunt ORU.

The Battery ORU (BORU) uses nickel-hydrogen-cell technology pioneered by SS/L for commercial communications satellites in 1983 on INTELSAT V. Each BORU, with a capacity of 81 Ampere hours, consists of 38 cells. The Space Station will eventually use 48 BORUs, which each weigh 365 lb. The battery has completed qualification tests, and long-term life tests are underway to show compliance with the Space Station's five-year design-life requirement. Flight-model BORUs are now in production.

Each Battery Charge/Discharge Unit (BCDU) can regulate discharge current from two Battery ORUs, and can provide up to 6.6 kW to the Space Station. During isolation, the BCDU provides charge current to the BORUs and controls the amount of battery overcharge. Each day, the BCDU and batteries undergo sixteen charge/discharge cycles. Battery charge and discharge power is derived from a bilateral dc/dc converter capable of operating at an efficiency of 91 percent. The Space Station will eventually use 24 BCDUs, which each weigh 233 lb. Engineering development testing of the BCDU is nearly complete, and qualification hardware is now being manufactured.

The Sequential Shunt Unit (SSU) processes raw power from the solar array to match the regulated electrical demands of the Space Station. Each SSU can handle 38.5 kW of electrical power at an efficiency of 98.5 percent. The Space Station will eventually use eight SSUs, which weigh 186 lb. each. Engineering development testing of the SSU is complete, and the manufacturing of qualification hardware has begun.

Space Systems/Loral is a full-service provider of commercial communications satellite systems and services, including the procurement of insurance

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SS/L satellites have amassed 630 plus years of cumulative on-orbit service.

and launch services, and mission control operations from its Palo Alto, Calif., headquarters.

SS/L currently has a backlog of more than 80 spacecraft. The company is the prime contractor for the Globalstar™ constellation of 64 digital-telecommunications satellites; the ASkyB, CyberStar™, L-Star, PanAmSat, and TEMPO direct-broadcast satellites; communications spacecraft including APSTAR-IIR, CD

Radio DARS, Chinasat 8, four new INTELSAT IX satellites — in addition to the 24 earlier INTELSAT satellites already delivered, M²A, Mabuhay, N-STAR, SUPERBIRD, and several Telstars; as well as the latest series of U.S. weather-watch spacecraft, GOES (Geostationary Operational Environmental Satellite); and MTSAT, the next-generation Japanese air traffic control and weather satellite.

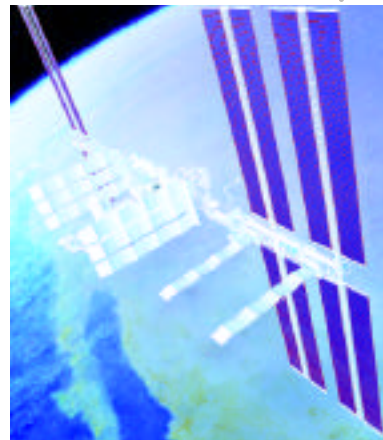
In alliance with Aerospatiale, SS/L is also building communications repeaters for the Eutelsat, Sirius, and Thaicom satellite programs; together with Russian partners, is a developing payloads for the Yamal program.

Loral Space & Communications (NYSE:LOR) is a high-technology company that concentrates on satellite manufacturing and satellite-based services.

Loral's subsidiary, Loral Skynet®, is a leading U.S. Satellite communications service provider, owns and operates the Telstar satellites. Loral manages and holds a 39 percent equity interest in the global, satellite-based mobile telephony system, Globalstar™, scheduled to begin service in 1999.

Loral also is the developer of CyberStar™, a satellite-based, open-protocol, digital-telecommunications system that will offer a variety of low-cost, high-speed, data and telecommunications services worldwide, initially from leased Ku-band transponders, and subsequently through a dedicated constellation of geosynchronous Ka-band satellites.

Most recently, Loral, along with its Mexican partner, Telefonica Autrey, was selected to operate Satelites Mexicanos, S.A. de C.V. (SatMex), the Mexican national satellite operation. Also, Loral has entered into a definitive agreement to acquire Orion Network Systems Inc., a corporate data networking and satellite services company, in a transaction expected to close in the first quarter of 1998.



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