

# Government Integrator Case Study – Boeing Services Company

## Project/contract related information:

### Customer name

Boeing Services Company

### Period of performance

8 years

### Value of Contract/projects

\$20,000,000 and growing

## Description of project and Tools used for project

In support of the satellite operations of Boeing Services, we are providing various categories of satellite operations support personnel. These personnel provide services at various locations including support for the Motorola SATCOM project as a subcontractor to Boeing.

These labor categories of support include:

Ground Network Controllers – These support personnel

- Monitor Gateways and initiate corrective action to resolve Gateway faults
- Monitor the system Gateway Monitoring System to note operational trends and possible problems with the various network elements at the Gateway
- Monitor OSN and ODN for outages and perform first level troubleshooting to isolate the problem
- Work with Infrastructure GSNE and telecommunications provider to resolve WAN outages and
- Monitor and respond to anomalies of the Message Termination Controller

• Satellite Operations Shift Supervisors – These support personnel

- Coordinate all activities between Flight Operations Specialists, Space Vehicle Engineers, Control Facility Systems Operators, Ground Networks, Mission Planning, and Orbit Analysts to accomplish all mission objectives
- Serve as the final authority in command and control of the Space Vehicles
- Manage the daily operations of the Ground Network

• Space Vehicle Link Operators – These support personnel are responsible for

- Real-time execution of Spacecraft commanding pass plans
- Performing Real-time Spacecraft state of health evaluation
- Supporting in-orbit testing execution and test evaluation
- Performing spacecraft software uploads and switchovers to updated software, and
- Verifying the integrity of all products loaded to the spacecraft

• Orbital Analysts – These support personnel are responsible for

- Interfacing with the Engineering and Analysis Team to develop engineering tools and processes to characterize the Flight Dynamics characteristics. These tools and processes include the effects of station keeping and orbit raising maneuvers

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on the attitude control, EPS, propulsion, and thermal subsystems.

- Senior Orbital Analysts - These support personnel are responsible for
  - Performing orbit management tasks to maintain accurate tracking station pointing data
  - Maintaining accurate on board satellite ephemeris and
  - Maintain the satellite within its orbit tolerances
- Space Vehicle Engineers – These support personnel are responsible for
  - Execution and telemetry verification performed in support of controlling the satellite constellation
  - Duties include: Real-time execution of Spacecraft commanding pass plans, performing Real-time Spacecraft state of health evaluation, supporting on-orbit testing execution and test evaluation, performing spacecraft software uploads and switchovers to updated software, and verifying the integrity of all products loaded to the spacecraft
- Telemetry, Tracking and Control (TTAC) Link Operators – These support personnel
  - Monitor TTAC operations
  - Initiate corrective action to correct TTAC Faults
  - Monitor Plan deployments
  - Monitor the FTSP transfers to the Gateways and TTACs
  - Monitor Quality of Service tools and escalate problems as required
  - Monitor the Space Vehicle Acquisition and Space Vehicle Element Set tables, and
  - Monitor the Messaging ISRP Router and switches between the Primary and Backup Network Connection
- Network Operations Specialists - These support personnel
  - Are cross-trained and have experience with Telemetry, Tracking and Control (TTAC) Link Operator and Network Controller positions
  - Have the ability to perform all primary duties of TTAC Link Operator and Network Controller
  - Proficient in the UNIX operating system, as well as standard PC usage and applications
  - Have experience with Ground Station and Earth Terminal Operations and Maintenance, WAN Network Management and Fault Management, Ground System command and control software integration, and Ground system procedure development
- Mission Planners - These support personnel are responsible for
  - Developing and maintaining ground software for the satellite-based telephone and paging systems
  - Daily tasks including application development, development of productivity enhancement tools, coordination of interface and architecture issues
  - Developing tools to facilitate configuration, fault, and performance management.
  - Developing software processes to obtain ISO certification.

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- Ground Systems Domain SW Engineers - These support personnel are responsible for
  - Working within a diverse engineering and development team to develop and maintain ground software for the satellite-based telephone and paging system.
  - Daily tasks include:
    - Application development of Satellite Control (SC), Mission Planning System (MPS), and Orbit Services (OS) features/enhancements and defect fixes
    - Development of productivity enhancement tools and coordination of interface and architecture issues
    - Develop tools to facilitate configuration, fault, and performance management
    - Develop software processes to obtain ISO certification
    - Support anomaly meetings to identify corrective action and/or workarounds
- Real Time Operations Engineers - These support personnel are responsible for
  - Development, testing, and console support
  - Space Vehicle (SV) Maneuvers
  - Training/simulator development
  - CFSO operations, maintenance, and troubleshooting and general RTO support (process improvement, procedure and checklist development and maintenance)
  - Serving as rovers available to backfill real-time operations positions, which require execution and telemetry verification performed in support of controlling the Satellite constellation.

### CURRENT PROJECTS

As a preferred vendor at Boeing Homeland Security division we are providing support for the following projects:

- **SBSS** - The SBSS detects and tracks space objects, such as satellites and orbital debris. The Department of Defense will utilize data generated by the SBSS to support military operations. Additionally, NASA could use the information to calculate orbital debris collision avoidance measures for the International Space Station and Space Shuttle missions. IIC has produced large volumes of application code. Presently Boeing and IIC are gearing up to test and integrate the system for eventual movement to Schreiber Air Force Base for deployment as a TSS system
- **Iridium** – Iridium Satellite LLC ([www.iridium.com](http://www.iridium.com)) is the only provider of truly global satellite voice and data solutions with complete coverage of the earth (including oceans, airways and polar regions). Iridium delivers essential communications services to and from remote areas where no other form of communication is available. Iridium makes this possible through its constellation of 66 low-earth orbiting (LEO), cross-linked satellites and 12 in-orbit spares. The Iridium service is ideally suited for industries such as maritime, aviation, government/military, emergency/humanitarian services, mining, forestry, oil and gas, heavy equipment, transportation, and utilities. Iridium provides service to the U.S. Department of Defense.

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We are supporting the following categories of Iridium service offerings:

- **Iridium Data Services** - Using your computer and an Iridium satellite phone, you can connect to the Internet or a corporate network from virtually anywhere in the world, allowing you to browse the web, send and receive email, and transfer files.
  - **Iridium Fax and Enhanced Messaging service** - This is an extensive suite of options allowing subscribers to transmit and receive information in different format over the Iridium constellation of 66 satellites.
  - **International SOS** Provides support for qualified users of International SOS service.
  - **Ship Security and Alert Systems** - Iridium Satellite' new range of maritime satellite communication services providing cost-effective solutions for ship owners to meet the new International Maritime Organization (IMO) requirements for Ship Security and Alert Systems (SSAS).
  - **Short Burst Data Iridium Short Burst Data (SBD) service** – A new data service that enables value-added applications to send and receive short data transactions efficiently over the Iridium network.
  - **Short Message Service (SMS)** - A service that allows Iridium voice subscribers to use their phone as a voice communication and messaging device. The Iridium Satellite phone can send and receive up to 160 alphanumeric characters, in a single message. Once you turn your phone on and register with the Iridium satellite network, your new messages will be sent directly to your handset.
- **GMS** – We are supporting GMS, which is a new ground station specially developed for military and secure applications. The system will be run as a TSS system when it is complete.
  - **Direct TV/HDTV** - We have a team of space experts who are dedicated to deployment and launch of the HDTV Fleet. Additional work is being done to plan the mission, provide stability procedures, mid course maneuvers and maintain 99.9% uptime.