

Geostationary Operational Environmental Satellite Ground System (GOES GS) FY08OA Analysis

The operational analysis (OA) is an annual, in-depth review of the GOES GS program's performance based on the following:

- Customer Results
- Performance Measures
- Strategic and Business Results
- Financial Performance
- Innovation

The focus on this analysis will include a review FY08 performance, measures and results highlighting significant achievements/ performances. An historical review/ comparison of FY07OA will also be conducted to highlight significant information and contributions.

1.0 Customer Results

The OSD GOES GS program is fully meeting the customer's needs and the program is delivering the services that it is intended to deliver as outlined in the NOAA and NESDIS operational plans.

The OSD GOES GS program primarily serves;

- Internal NESDIS customers
- Satellite Operations Control Center (SOCC)
- Wallops and Fairbanks Control and Data Acquisition Stations (CDAs)
- NESDIS Office of Satellite Operations (OSO)
- NASA Goddard Space Flight Center (GSFC) and its contractors.

GOES GS systems;

- Provided to OSO for command and control the GOES constellation of satellites.
- Delivered systems also navigate and calibrate spacecraft instrument data.
- Collect data that is delivered to the Environmental Satellite Processing Center (ESPC) for further processing.
- ESPC is used to generate products which impact all economic sectors of the nation.

OSD focuses on providing an orderly transition from the system development stage, to operational stages. GOES GS provides;

- A year of maintenance
- Extensive system training
- Additional subject matter training
- Complete set of hardware spares

GOES GS program supports the customer's requirements. Two performance measures track the quality, timeliness and accuracy of GOES GS program's performance:

1) GOES GS control of the on orbit assets

2) GOES GS support of the launch, orbit rising, and the check out of new GOES spacecraft.

Note: Due to GOES GS constant system monitoring, the customers have successfully used the GOES ground system with only minor incident reports.

1.1 Performance Measures

Customer Results Performance Measure- Image Navigation and Registration (INR) 3 sigma accuracy at nadir (smaller radius is better) Plus or minus a radius of 8km. Threshold is 95%. 98.67% achieved.

Performance measures of the GOES GS can also be evaluated using the information in the Incident Reports (IRs). These are tracked using a severity classification to show the importance to operations ranging from a 1 (Spacecraft (SC) in danger) to a 4 (very minor issue). Enhancement requests are tracked as a 5. Using the number of open IR's as a tracking measure shows that the GOES GS is meeting user expectations.

2.0 Strategic and Business Results

The GOES GS program is meeting its own goals and objectives as well as those of the agency. Program management and controls are in place to ensure that the program continues to meet its goals and objectives and monitor how well the GOES GS program performs.

- GOES program directly supports the NOAA mission goal (#3) to serve society's needs for weather and water information.
- Significant demands met on virtually all of NOAA's programs in providing information to the Nation and the World community on the health of the environment in real-time.
- SOCC/CDA provides 24x7 support for each NOAA geostationary (GOES) and polar orbiting (POES) environmental spacecraft and actively prepares for and participates in new spacecraft launch operations.
- GOES GS supports the reception and processing of the data which is required to meet the NOAA mission strategy of Monitor and Observe.
- GOES supports the Department of Commerce (DOC) theme to Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship
- GOES GS supports NOAA's "Ingest/Process Satellite Observations" component: "allows data & observations to be acquired from both NOAA and non-NOAA satellite sources and processed to a level necessary to prepare the data to be further refined into the required product sets" within NOAA's Enterprise Architecture.

2.1 Program Management and Controls

GOES GS program is guided by the Office of Management and Budget (OMB), DOC, and NOAA guidelines and policies. Oversight is provided by NESDIS, including the NESDIS Information Resources Management Team (IRMT, formerly ITAT) and the NESDIS Chief Information Officer (CIO). A baseline of annual activity is contained in the matrix annual operating plan which is approved by the line office.

OSD performs extensive, continuous OA on the performance of its systems. OSD conducts an objective measurement of resource and performance metrics of the OSD GOES GS elements. For all IT components, performance thresholds have been established and performance is

measured. Key performance issues and risks are identified through these reviews and tracked by OSD management.

2.2 Monitoring Cost, Schedule and Performance

Cost – Key budget issues and risks are identified through analysis, variance analysis and needs analysis and these reviews and tracked by GSD and OSD management.

Schedule – The matrix annual operating plan is used to track key milestones. These milestones and schedules are developed by GSD in coordination with OSD.

Performance – Contract performance is monitored to support both budget and performance measurements.

2.3 Security

- GOES Ground System investment contains two steady state systems, one for the GOES I-M satellites and the other for GOES NOP satellites.
- GOES GS systems are certified and accredited to the relevant OMB and NOAA requirements, which are based upon FIPS 200 and NIST 800-53 standards.
- Management, operational, and technical security controls are adequate to ensure the confidentiality, integrity and availability of information.
- GOES GS contingency plan was tested in September 2007.
- GOES GS Security Control Testing was completed on April 27, 2008.
- GOES Ground System (GS) completed its certification and accreditation (C&A) [including a Facilitated Risk Assessment (FRA), System Security Plan (SSP), and Security Test and Evaluation (ST&E)] on May 30, 2008. OSD and OSO worked together on the GOES GS C&A. Note: FY07 OA highlighted this testing procedure.
- Note: The contractors help maintain system operations. The required security clauses are inserted in the two IT services contracts by the Contracting Officer and independently verified by the Information Technology Security Officer.

2.5 Performance Measures

Mission and Business Results- Number of landmarks in spec as a percent of total landmarks 2008 Baseline is greater than 95% of total landmarks. The 2008 Actual Results are 99.00%. Surpassing the threshold of 95%

Processes and Activities- Percent of GOES data delivered meeting quality / timeliness requirements (includes dropouts) is 98.5% of GOES data. The 2008 Actual Results are 99.50%. Surpassing the threshold of 95%.

Technology- System availability 24/7 2008 Baseline is 95%. The 2008 Actual Results are 99.00%. Surpassing the threshold of 95%

Note: GOES GS also added the capability to support the new higher resolution spacecraft detectors that will be first flown in the GOES O mission satellite which is presently scheduled for launch no earlier than April 2009.

3.0 Financial Performance

GOES GS program plans and executes budget based upon a fiscal year calendar.

3.1 Current Performance vs. Baseline

The GOES GS planned costs and actual costs are shown in Figure 1 on the GOES GS FY08OA. The dollars on the Y-axis are in thousands. The financial operational analysis includes only Steady State IT dollars for fiscal year 2008. The total GOES GS planned and actual Steady State IT expenditures for Fiscal Year 2008 were \$19,452K. This is consistent with the FY08 summary of spending in the GOES GS OMB Exhibit 300 Capital Asset Plan.

4.0 Innovation to Meet Future Customer Needs

The following projects have been implemented in FY2008, or are being implemented in FY2009;

- Address future challenges
- Better meet customer needs
- Make better use of technology
- Lower operating costs.

GOES GS Infrastructure Improvements to Increase Performance- Database migration from Oracle to MySQL, an operating system software upgrade to Solaris 10 running on AMD Opteron hosts, land marking upgrades for GOES-13, and Spacecraft Support Ground System (SSGS) security enhancements for GOES NOP.

Support for Low Fuel GOES Satellites- OSD developed modifications to the ground processing software to remap the sensor data so that it appears to be coming from a stationary GOES satellite. This system was made operational in early FY08. The system is serving to extend the life of the GOES IM satellites. As a result, the GOES-10 satellite is currently being operated under an international agreement (GEOSS) to provide weather data to South America through December 2009.

Final Delivery of the GOES NOP Ground System- The GOES NOP ground system was delivered on schedule, 18 months after the launch of GOES-N (GOES 13). The system is COTS based and has been used first by Boeing and NASA and finally by OSO to fly the GOES-13 satellite. Note: FY07 OA highlighted this delivery procedure.