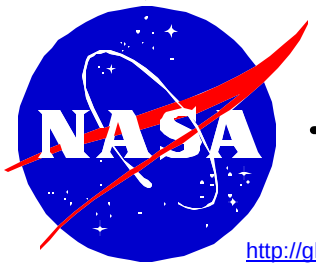
433-PLAN-0003

GAMMA-RAY LARGE AREA SPACE TELESCOPE (GLAST) PROJECT

GLAST PROJECT SURVEILLANCE PLAN

July 1, 2003



GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

GAMMA-RAY LARGE AREA SPACE TELESCOPE
(GLAST)
PROJECT

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July 1, 2003

NASA Goddard Space Flight Center

Greenbelt, Maryland

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1 INTRODUCTION

1.1 Purpose

The purpose of this plan is to define the overall approach for surveillance of the contractor and partners activities on the GLAST program. The objective of the contractor and partners surveillance is to measure the health of the project through participation in their activities and collection and analysis of metrics of their performance. Traditional oversight methods including GSFC mandatory inspection of contractor and partners work and approval of their review board actions are a part of the GLAST program surveillance activities.

1.2 Scope

This plan identifies program requirements, the strategies and tactics to be used for oversight. Surveillance activities are described, and metrics and processes for a continuous measure of contract performance are defined. Identified are responsible individuals, specific areas to be placed under surveillance, planned frequency of surveillance, and associated metrics. This document is intended to be a "living" document from which resources and activities will evolve from one phase to another during the life of the contract. The plan will be updated as required.

The surveillance program will address the flight segment for GLAST, which includes the spacecraft, instruments, ground support equipment, flight software and ground software. This plan also applies to the implementation and operations phases of the GLAST program, including integration, test, shipment, launch, deployment, checkout, and operation.

1.3 Applicable Documents

Large Area Telescope (LAT) MAR	(433-MAR-0001)
GLAST Burst Monitor (GBM) MAR	(433-MAR-0002)
Spacecraft MAR	(433-MAR-0003)
Ground Data Systems MAR	(433-MAR-0004)

2 GLAST PROGRAM DESCRIPTION

2.1 GLAST Program

The GLAST (Gamma-ray Large Area Space Telescope) Mission consists of two instruments: the Large Area Telescope (LAT) will be build at the Stanford Linear Accelerator Center (SLAC) and the Gamma-ray Burst Monitor (GBM) will be built at the Marshall Space Flight Center (MSFC). The Spacecraft for this mission will be built by Spectrum Astro in Gilbert, Arizona**.** NASA plans to launch GLAST in September 2006.

The LAT is a next generation high-energy gamma-ray instrument designed to image celestial gamma-ray sources in the energy band extending from 20 MeV to more than 300 GeV. The LAT follows in the footsteps of the CGRO- EGRET experiment, while the GBM traces its origins to the CGRO- BATSE.

The GLAST LAT has a very wide field of view and greatly improved sensitivity compared to EGRET, especially at higher gamma-ray energies. It will also provide very accurate positions for the gamma-ray sources that it detects.

During the one year all-sky survey, GLAST is expected to detect and provide accurate positions for thousands of new gamma-ray sources, ranging from active galaxies to supernova remnants and pulsars. It will also have the sensitivity to determine whether or not the extragalactic gamma-ray background is truly diffuse. Follow-up observations through the Guest Investigator Program will facilitate studies of many individual gamma-ray emitters, and will include many multi-wavelength campaigns.

The GBM comprises two sets of detectors that will cover an energy range from 5 keV to about 30 MeV, and provide burst triggers and locations over a field of view that is greater than two thirds of the sky. Together the LAT and GBM provide coverage of the broadest energy range ever achieved on a single spacecraft. Observations of gamma-ray bursts over such a large energy range should help to resolve some of the remaining questions regarding the origin and energy production mechanisms in these mysterious and powerful events.

2.2 GLAST Program Major Milestones

Mission PDR	Second quarter of 2003
Mission NAR	Second quarter of 2003
Mission CDR	First quarter of 2004
Mission MOR	Second quarter of 2005
Mission PER	Fourth quarter of 2005
Mission ORR	Second quarter of 2006
Mission PSR	Third quarter of 2006
Mission FRR	Fourth quarter of 2006
Mission LRR	Fourth quarter of 2006
Launch	September 30,2006

3 GLAST SURVEILLANCE TEAM

The management system between the GPO, Marshall Space Flight Center (MSFC), SLAC and Spectrum Astro will operate as a four-way partnership with the common goal of achieving successful program implementation. The GLAST surveillance program will use this integrated team concept. The Surveillance Team will consist of the following organizations and specific members:

3.1 GLAST Project Office (GPO)

GLAST Project Office (GPO) is responsible for executive management of project objectives within guidelines and controls prescribed by NASA Headquarters, GSFC management, and the contract. GSFC Code 492 specifically has been assigned this responsibility. Technical assistance and support will be available as needed through the PO for development and production of GLAST.

3.2 GLAST Project Manager (PM)

The PM is responsible to the GSFC Director of Flight Programs and Projects for managing the GLAST project. He is the senior official responsible for providing overall direction for surveillance activities as they pertain to this plan.

3.3 GLAST Deputy Project Manager (DPM)

The DPM leads a team of technical specialists who support the GLAST development and production effort. He assumes full responsibility for directing the surveillance program in the absence of the PM.

3.4 GSFC Systems Assurance Manager (SAM)

The SAM, assigned by the Chief of Systems Safety and Mission Assurance, is responsible to the PM for implementing the activities of the Project Surveillance Plan. She/he will manage and coordinate support, as required, from the GLAST Project, the various GSFC Code 300 divisions, SLAC, MSFC, and subcontractors as appropriate.

3.5 GLAST Quality Assurance Representative (QAR)

The GLAST QE is responsible for providing technical QA support to the SAM in support of the instruments and spacecraft development, integration, test, and launch site activities as required.

3.6 GLAST Software Quality Assurance Representative (SQE)

The GLAST SQE is responsible for providing technical Software support to the SAM in support of the instruments and spacecraft development, integration, test, and launch site activities as required.

3.7 GLAST Quality Engineer resident at SLAC (RQE)

The resident Quality Engineer (QE) located at Stanford Linear Accelerator (SLAC), Palo Alto, California, shall serve as an extension of and represent the GLAST SAM. The QE will interface with the GPO to provide technical support as required, and will provide periodic written reports to the SAM on current status and issues.

3.8 GLAST Quality Engineer resident at Spectrum Astro (RQE)

The resident Quality Engineer (QE) located at Spectrum Astro, Phoenix, Arizona shall serve as an extension of and represent the GLAST SAM. The QE will interface with the GPO to provide technical support as required, and will provide periodic written reports to the SAM on current status and issues.

3.9 GLAST Systems Engineer resident at SLAC (RSE)

The GPO is providing a systems engineer to be resident at Stanford Linear Accelerator (SLAC), to work issues related to the LAT and the GLAST Mission.
The Systems Engineer will provided technical support, recommendations and also will participate on project related reviews and meetings. He/She will coordinate a closed-loop process for any requests for actions (RFA) generated during these reviews or meetings and will provide periodic written reports to the Project on current status and issues. If a task priority issues arise, primary importance should be placed on flight systems engineering issues. Other tasks should be prioritized according to mission risk.

3.10 Marshall Space Flight Center

No onsite project surveillance is planned for the GBM instrument. GSFC has provided guidelines for meeting specific project SMA requirements, but direct oversight is not planned. Careful review of QA documentation, reliability assessments, safety plans and verification procedures plus participation in reviews are the planned extent of the GLAST Project SAM plans at Marshall.

4 SURVEILLANCE STRATEGY AND TACTICS

4.1 Program Surveillance Strategy

In general, the GLAST surveillance plan will take four primary forms:

a- Formal participation in various working groups, reviews, surveys, audits, technical interchange meetings and inspections.
b- Informal discussions, telecons, reviews, and meetings between GSFC, contractor and partners personnel
c- Review of metrics
d- Mandatory inspection of contractor work

The GLAST project will employ both the "insight" and "oversight" concepts of management and surveillance. The GLAST project will have visibility into the contractor and partners technical progress and issues and will have full insight into program schedules at all levels.

Monthly Program Status and Quarterly Status Reviews, technical progress interchanges, and meetings of working groups are planned. These activities will be conducted as face-to-face meetings, videoconferences or teleconferences, as appropriate. Visibility gained through this formal and informal participation in the contractor and partners GLAST activities will be used as a primary means of collecting information to measure contract performance.

The GLAST Quality and Systems Engineers resident at SLAC and Spectrum Astro will provide oversight of partner activities through participation in various board meetings, conducting product inspections, monitor or witness tests, and assess processes. Through these activities they will seek objective evidence and data that the partner's programs and processes are commensurate with the importance of the GLAST program and are compliant with contractual requirements. Activities at Marshall will be reviewed by project management at the various reviews and formal meetings.

4.2 Contractor Management Systems and Processes

The GLAST contracts are based on a combination of systems required by the GPO office and existing contractor and partners management systems and processes. The GPO has encouraged the use of contractor and partners practices and procedures that have been proven on previous satellite programs.

4.3 Contractor and Partners Performance Assurance Systems

For the GLAST program, MSFC, SLAC and Spectrum Astro have developed comprehensive Quality Assurance Plans, which were reviewed by the GLAST Systems Assurance Team, and approved by the GPO. SLAC Product Assurance Management (PA), MSFC and Spectrum

Quality Assurance Management (QAM) are responsible for implementing and maintaining these programs and for flowing Program Performance Assurance requirements to their subcontractors and verifying compliance. The standards imposed on subcontractors include quality assurance, source inspections, and objective evidence of quality. Also included are general requirements for progress reporting, Performance Assurance management responsibility, the generation of and updating of Performance Assurance plans, and specification of buyer/seller responsibilities. Performance assurance, as directed by the GLAST SAM, will be performed in conjunction with the contractor, partners and subcontractors' internal performance assurance activities.

4.4 Interfaces/Information Flow

It is essential that close communications be maintained between all members of the Project Surveillance team to ensure that the surveillance role is performed effectively. Various means will be used to maintain information flow as summarized below.

The resident Quality Engineers at SLAC and Spectrum Astro will provide a list of activities preformed at their respective sites in a weekly form or as required by the SAM.

The GLAST activities will be summarized and reported in the Code 303 Weekly Report.

Weekly telecons will be held between the contractor and partners Product Assurance Managers and the SAM and/or his designated QAR as required. The resident QE will participate on these telecons.

5 GLAST PROJECT SURVEILLANCE ACTIVITIES

5.1 Product Verification (Inspection)

The GLAST Surveillance Team will use two methods of product verification, direct examination and indirect examination. The selection of the method of choice for any given situation will be determined through mutual consent between GSFC and the appropriate contractor, partners (and any subcontractors, if necessary). The criteria for analyzing the results of these examinations may range from simple drawing compliance to complex issues relying upon the judgment of scientific and engineering specialists.

a. Direct examination can take a variety of forms, first and foremost being inspection of hardware against the relevant drawings, specifications, etc. Examinations may take the form of non-destructive evaluations such x-ray fluorescence for plating thickness verification, or sample destructive examinations such as total ionizing dose tests for microcircuits or printed wiring board cross section examinations. If agreed to by the contractor or partner, GSFC may use its facilities to perform direct examinations of selected critical hardware.

b. Indirect examination will be used when direct examination is not possible. Methods of indirect examinations may include inspection of GLAST similar hardware produced on the same production line by the same personnel as the flight hardware. It may consist of non-destructive and/or destructive examinations of coupons, lot acceptance test samples, and material examinations, which may be performed at GSFC.

c. Nonconformance Control System, the contractor and partners have implemented Nonconformance Control Systems (NCS) that are based on previously used systems. The NCS will identify and report nonconformances and provide assurance that positive corrective action is implemented to preclude recurrence.

5.2 Assurance Reviews

Participation in the various formal and informal reviews will be an integral part of the surveillance process. These reviews provide an opportunity to assess complete segments of the entire program and determine the quality of work completed at that point.

MSFC, SLAC and Spectrum Astro will present:

a- Formal Reviews to a GSFC review team consisting of the GSFC Systems Assurance Review Team and GLAST Project Office representatives. The formal reviews required to be held for the Spacecraft, Instruments, and Ground System are shown in Table 1 below.

b- Informal Reviews Informal reviews consist of component and subsystem PDRs, CDRs, and packaging Technical Interchange Meetings (TIMs). They will be presented by the contractor and partners to internal review teams.

5.3 Review Boards

GSFC GLAST Systems Assurance personnel, and project engineers will be involved on six principal categories of review boards, as described below.
These boards, in some form, exist at the contractor, partner and subcontractor levels.

- Configuration Control Boards (CCB)
- Parts, Materials, and Processes Control Boards (PMPCB)
- Corrective Action Board (CAB)
- Material Review Boards (MRB).
- Alert Review Board (ARB)
- Failure Review Boards (FRB)

Participation in Review Boards is a very important function of the surveillance process. GSFC participation in the PMPCB, MRBs and FRBs is mandatory. Participation shall include, but not be limited to the following activities:

- Preparation to become familiar with the technical and programmatic issues involved.
- Independent analysis and development of potential options, recommendations and tradeoffs.
- Review of contractor, partner or subcontractor analyses and recommendations.
- Clear understanding of the risks and benefits to the GLAST program for each board action and clear articulation of this information to GPO, contractor and partner participants.

In the interest of facilitating open communications, GLAST surveillance team members will communicate all findings and opinions to their contractor or partner counterparts in a timely manner.

5.4 Audits

In accordance with the GLAST Quality Requirements the contractor and partners will have internal audit programs in place to determine the adequacy and conformance of processes to the requirements. As an element of the surveillance process, GSFC representatives will participate in joint contractor and partner audits to the extent possible.

Audits will be conducted in accordance with the contractor and partner standard practices and policies. GSFC audit participants may generate an independent opinion, which will be provided in writing to the contractor or partner representative, and the project SAM. The contractor or partner will submit audit reports to the resident Quality Engineer, who will summarize relevant information concerning audits to the project SAM on a monthly basis.

5.5 Reliability Assurance

GSFC reliability engineering personnel will be available to participate in all reviews, audits, teleconferences, and other meetings as requested by the project to provide insight/oversight support of all reliability and risk management related activities as allowed by the Statement of Work and Mission Assurance Requirements. GSFC reliability engineering personnel will review all applicable data item deliverables and provide guidance when requested by GSFC project management or Spectrum Astro.
GSFC reliability engineering involvement shall include, but not be limited to, the following activities:

- Use of Probabilistic Risk Assessment (PRA) to assess, manage, and if necessary, quantitatively assess the need to reduce program risk.
- Demonstration that redundant functions, including alternative paths and work-around, are independent to the extent practicable.
- Demonstration that the stress applied to parts is not excessive.
- Identification of single failure items/points, their effect on the attainment of mission objectives and possible safety degradation.
- Evaluations showing that the reliability design aligns with mission design life and are consistent among the systems, subsystems, and components.
- Identification of limited-life items and assurance that special precautions are taken to conserve their useful life for on-orbit operations.
- Selection of significant engineering parameters for the performance of trend analysis to identify performance trends during pre-launch activities.
- Assurance that the design permits easy replacement of parts and components and those redundant paths are easily monitored.

5.6 Safety

The implementation of safety engineering guidelines is the responsibility of the contractor or partner system safety program as documented in their Systems Assurance Plan, 1196 EP-Q45016-000 and revisions, the System Safety Program Plan (SSPP), 1196 EP-SA44995-000 and revisions as well as Launch Site Support Plans, Ground Operations Plan (GOP) and the Missile System Pre launch Safety Package (MSPSP). The MSPSP must demonstrate that the spacecraft, its interfaces, ground support equipment (GSE) and procedures comply with the safety requirements in EWR 127-1, Eastern and Western Range Safety Requirements. The Launch Site Support Plan must support the requirements in KHB 1710.2D, Kennedy Space Center Safety Practices Handbook.

The primary responsibility for monitoring safety issues and documentation for GSFC is assigned to the GLAST Project Safety Manager (PSM) and his contract support. The surveillance team will interface with the cognizant GLAST project engineers and other GSFC organizations as required. The surveillance team will work with Spectrum Astro, MSFC and GSFC representatives to ensure all safety requirements are fulfilled and any non-compliances are successfully resolved prior to launch.

5.7 Parts, Materials and Process Control Board (PMPCB)

The GLAST parts program is supported by the Project Parts Engineer (PPE) in accordance with 433-PLAN-0004 (EEE Parts Management Plan) the LAT (instrument) EEE Parts Program Control Plan is LAT-MD-00099-03 and is administered by the LAT PPE.These documents prescribe the use of Level 2 parts capable of meeting a 5 year mission life in accordance with GSFC 311-INST-001. The LAT parts control program is governed by the Parts Control Board consisting of the GLAST PPE, the LAT PPE, and cognizant design engineers, system specialists, subsystem managers, etc., who are invited to participate.
Parts intended for use in LAT subsystems are maintained in Parts Identification Lists (PILs) and reviewed by the PCB for compliance to mission reliability goals.
Part procurement specifications are prepared as needed by either PPE for EEE parts requiring additional screening or qualification testing to meet GLAST part requirements.

The GLAST PPE will conduct a weekly radiation telecon between SLAC, NRL, and Code 561 (Radiation Effects & Analysis) to resolve lingering radiation test issues.

The GSFC GLAST surveillance team will participate as a member of the PMPCB. The GLAST surveillance team will act as interface between the contractor or partner, the GLAST Project Office and GSFC Assurance Technologies Division to provide information and support to contractor, partner and subcontractor PMP activities. The GLAST surveillance team personnel will participate, but not be limited to, the following:

- PMP Control Board activities
- Review of Parts Lists and Materials Lists
- Drawing and document review of manufacturing processes
- Design of experiments to evaluate new and existing processes
- Quantitative and qualitative analyses of parts, materials and processes
- Failure analyses
- Contractor, partner and subcontractor handling of PMP issues

A senior Materials Assurance Engineer (MAE), who is responsible for recommending, reviewing and approval of all materials used on the Project is also supporting the GLAST Project. The MAE, a member of the GSFC Materials Engineering Branch (MEB), will administer the materials program as specified in the GLAST MAR, the GSFC Mission Assurance Guidelines (MAG) and in compliance with 541-PG-7120.2.1, Materials Engineering Support Guidelines for GSFC.

Some of the principal duties of the MAE include, but are not limited to:

- Participate as a permanent member of the GLAST PMPCB.
- Attend and participate at Peer and Design Reviews.
- Attend and participate at GLAST Project meetings.
- Review Materials and Processes Control Plans (including subcontractors).
- Review and/or approve Materials and Processes Lists (including subcontractors).

- Reviews and/or approves Materials Usage Agreements (MUAs) or Waivers concerning materials issues.
- Provide expertise in the selection of flight materials and processes.
- Participates in parts and materials failure analyses and Failure Review Boards as requested.
- Cooperates with the GLAST Project Contamination Control Engineer to assure required cleanliness control of hardware.
- Perform any other duty associated with a successful materials flight program.

5.8 Performance Verification

Performance verification refers to the testing of components, subsystems and the fully integrated spacecraft and payload combination. The contractor and partners will submit Test Requirements Documents describing the planned performance verification tests. The surveillance team will review these documents while considering that many of the elements of the spacecraft and payload are new designs or substantial modifications of existing designs, while other elements have been used successfully on previous spacecraft.

Listed below are typical activities to be conducted by GLAST surveillance team engineers for contractor, partner and subcontractor surveillance.

- Participate in pre-test walkthroughs and reviews.
- Review and comment on test plans, methods, and procedures prior to their application to any flight hardware.
- Participate in post-test reviews.
- Participate in Failure Review Board activities.
- Perform independent analyses of anomalies and failures.

5.9 Software Assurance

5.9.1 Formal Reviews

Formal system reviews, which have portions of the content, related to software will be supported by the appropriate NASA GSFC personnel. Participation will be conducted through the SAM and the contractor or partner product assurance program. The following system reviews will have software content:

- Flight Software Requirements Review
- Flight Software Preliminary Design Review
- Flight Software Critical Design Review
- Flight Software Test Readiness Review
- Flight Software Acceptance Review

Prior to the review, the review package will be reviewed to ensure completeness and accuracy. Review package limitations or discrepancies will be reported to the SAM. Following the review, action items will be tracked to closure.

5.9.2 Informal Reviews

Throughout the life cycle, NASA GSFC personnel will support informal engineering reviews. Requirements reviews will be supported to verify the completeness, consistency, testability, and traceability of the requirements. Design walkthroughs will be supported to ensure requirements

traceability and to verify correctness and consistency of the design. Code walkthroughs will be supported to verify the functionality of the code, to ensure coding standards are being followed, and that the software is traceable to the design and requirements. Test procedure walkthroughs will be supported to ensure that the software tests verify the necessary requirements, that the tests are repeatable, and that sufficient data will be collected and analyzed. Action items initiated during these reviews will be tracked to closure.

5.9.3 Documentation Review

Software documents will be reviewed for compliance to data item description requirements and a report will be given to the SAM.

5.9.4 Audits

NASA GSFC personnel to verify compliance to documented standards and procedures will periodically audit the contractor or partner software quality management system. The SAM will be responsible for determining the schedule and content of the audits. Action items initiated during these audits will be tracked to closure.

5.9.5 Change Activity

NASA GSFC personnel through the attendance of the contractor or partner Engineering Review Board meetings will monitor Change activity. Action items initiated during these reviews will be tracked to closure.

5.9.6 Metrics

Software metrics will be periodically collected by the contractor or partner and sent to required NASA GSFC personnel to be analyzed and interpreted. Metrics that will be evaluated include:

- Open defects
- Closed defects
- Defects remaining open for more than 60 days
- Number of open high severity defects
- Number of requirements vs. the number of original requirements
- % of requirements yet to be satisfied through testing

6 LIST OF ACRONYMS

ARB	Alert Review Board
CAB	Corrective Action Board
CCB	Configuration Control Board
CDR	Critical Design Review
DCMC	Defense Contract Management Command
DPM	Deputy Project Manager
EEE	Electrical, Electronic, and Electromechanical
FOR	Flight Operations Review
FRB	Failure Review Board
FRR	Flight Readiness Review
GBM	GLAST Burst Monitor
GLAST	Gamma-Ray Large Area Space Telescope
GOP	Ground Operations Plan
GPO	GLAST Project Office
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
LRR	Launch Readiness Review
MAE	Materials Assurance Engineer
MEB	Materials Engineering Branch
MOR	Mission Operations Review
MRB	Material Review Board
MSFC	Marshall Space Flight Center
MSPSP	Missile System Pre launch Safety Package
MUA	Material Usage Agreement
NAR	Non-Advocate Review
NCS	Nonconformance Control System
NRL	Naval Research Laboratories
ORR	Operational Readiness Review
PA	Product Assurance
PDR	Preliminary Design Review
PER	Pre-environmental Review
PIL	Parts Identification List
PMP	Parts, Materials and Processes
PMPCB	Parts, Materials and Processes Control Board
PRA	Probabilistic Risk Assessment
PPE	Project Parts Engineer
PSM	Project Safety Manager
PSR	Pre-shipment Review
QA	Quality Assurance
QAM	Quality Assurance Management
QAR	Quality Assurance Representative
QE	Quality Engineer
RFA	Request for Action
RQE	Resident Quality Engineer
RSE	Resident Systems Engineer
SAM	Systems Assurance Manager
SLAC	Stanford Linear Accelerator Center
SQA	Software Quality Assurance
SSPP	System Safety Program Plan
TIM	Technical Interchange Meeting

7 LIST OF DEFINITIONS

The following definitions apply within the context of this document:

Audit: A review of the developers, contractor's or subcontractor's documentation or hardware to verify that it complies with project requirements.

Configuration: The functional and physical characteristics of the payload and all its integral parts, assemblies and systems that are capable of fulfilling the fit, form and functional requirements defined by performance specifications and engineering drawings.

Configuration Control: The systematic evaluation, coordination, and formal approval/disapproval of proposed changes and implementation of all approved changes to the design and production of an item the configuration of which has been formally approved by the contractor or by the purchaser, or both.

Configuration Management: The systematic control and evaluation of all changes to baseline documentation and subsequent changes to that documentation which define the original scope of effort to be accomplished (contract and reference documentation) and the systematic control, identification, status accounting and verification of all configuration items.

Designated Representative: An individual (such as a NASA plant representative), firm (such as assessment contractor), Department of Defense (DOD) plant representative, or other government representative designated and authorized by NASA to perform a specific function for NASA. As related to the contractor's effort, this may include evaluation, assessment, design review, participation, and review/approval of certain documents or actions.

Discrepancy: See Nonconformance

Failure: A departure from specification that is discovered in the functioning or operation of the hardware or software. See nonconformance.

Failure Modes and Effects Analysis (FMEA): A procedure by which each credible failure mode of each item from a low indenture level to the highest is analyzed to determine the effects on the system and to classify each potential failure mode in accordance with the severity of its effect.

Insight: Insight is an assurance process that uses product performance requirements and performance metrics to ensure process capability, product quality, and end-item effectiveness. Insight relies on gathering a minimum set of product or process data that provides adequate visibility into the integrity of the product or process. The data may be acquired from contractor records or report deliverables, usually in a non-intrusive parallel method.
Insight as applied to contract will result in lower levels of GSFC surveillance and allow the contractor to assume increased responsibility and accountability for the integrity of processes. GSFC goal is to follow an insight-driven surveillance strategy. However, GSFC reserves the right to use an oversight approach to monitor questionable areas or areas of poor contractor / partner performance.

Inspection: The process of measuring, examining, gauging, or otherwise comparing an article or service with specified requirements.

Instrument: A spacecraft subsystem consisting of sensors and associated hardware for performing measurements or observations in space. For the purposes of this document, the referenced instrument is the LAT.

Observatory: See Spacecraft.

Oversight: Oversight is an assurance process that uses customer-imposed product specification and process controls, such as MIL-specifications, commercial specification, performance specifications and mandatory inspections, to direct the development and production of the product. Oversight is intrusive in that it requires gathering contractor/partner product or process data through on-site, in-series involvement in the process. Oversight entails very detailed monitoring of the process itself. Oversight is an in-line involvement in an activity, principally through inspection, with review and approval authority implicit to the degree necessary to assure that a process or product's key characteristics are stable and in control. GSFC inspection points will be determined primarily by SAM, Project Manager/COTR requirements for progress reviews or as otherwise specified.

Payload: See Spacecraft. "Payload," “Observatory,” and/or "spacecraft" are sometimes used interchangeably.

Spacecraft: An integrated assemblage of modules, subsystems, etc., designed to perform a specified mission in space. Other terms used to designate this level of assembly are Laboratory, Observatory, and Satellite.

Monitor: To keep track of the progress of a performance assurance activity; the monitor need not be present at the scene during the entire course of the activity, but he will review resulting data or other associated documentation (see Witness).

Nonconformance: A condition of any hardware, software, material, or service in which one or more characteristics do not conform to requirements. As applied in quality assurance, nonconformances fall into two categories--discrepancies and failures. A discrepancy is a departure from specification that is detected during inspection or process control testing, etc., while the hardware or software is not functioning or operating. A failure is a departure from specification that is discovered in the functioning or operation of the hardware or software.

Repair: A corrective maintenance action performed as a result of a failure so as to restore an item to operate within specified limits.

Rework: Return for completion of operations (complete to drawing). The article is to be reprocessed to conform to the original specifications or drawings.

Witness: A personal, on-the-scene observation of a performance assurance activity with the purpose of verifying compliance with project requirements (see Monitor).