

Appendix A: SMA Activity Listing by Functional Area

1. Configuration Management (CM) Program

- Configuration Management Plan
- Baseline GDS Requirements
- CM Control of Commercial off the Shelf (COTS)
- CM Control of Software

2. Contamination Control

- Contamination Control Program
- Contamination Control Plan
- Material Screening
- Establish & Verify Material Outgassing Data
- Thermal Vacuum Bakeout of Hardware
- Independent Evaluation of Contamination Control
- Contamination Control Verification Process

3. Design Verification

- System Performance Verification Plan
- Environmental Verification Plan
- System Performance Verification Matrix
- Environmental Test Matrix
- Complementary Environmental Test Matrix
- Environmental Verification Specification
- Environmental Test Plan
- Final System Performance Verification Report
- Verification Activity Reports
- Verification Test Activities Procedures
- Flight System Verification Program
- COTS Management Plan
- Sub-Tier Supplier COTS
- Suitability of COTS Software
- Compliance of Heritage Hardware

4. Electrical, Electronic and Electromechanical (EEE) Parts & ESD

- EEE Parts Stress Analysis
- Parts Materials and Processes (PMP) EEE Part Identification
- Review of EEE Analysis
- Electrostatic Discharge (ESD) Control Program
- Parts Materials and Processes ESD Control Plan
- ESD Packaging of Electronic Hardware
- ESD Control
- Verification of Work Areas

5. Ground Data System Assurance Program

- GDS Quality Plan
- GDS Management Program
- Engineering Peer Reviews
- Requirements Verification Matrix
- Defect Prevention Program/Plan
- Configuration Reviews Functional / Physical Configuration Audits
- Interface Tests - GDS Software & Database Management Systems
- Process for Verification and Validation of Database Systems
- Qualification of Test Tools
- Waivers for Identifying / documenting all Non-conformances
- Data Delivery Packages
- Integrated System Engineering Process
- Identify and Mitigate Security Risks in GDS
- GDS Reliability & Maintainability Predictions
- GDS Reliability Models
- Maintainability Validation Demonstration Tests
- Certification of GDS System Installation
- GSFC Review of Ground Operations Procedures
- Launch Site Ground Operations Procedures

- GDS Electromagnetic Compatibility (EMC) Control Test Plan
- EMC Interface Control Documents

6. Nonconformance Reporting (NCR)

- Nonconformance Review Process
- Material Review Board (MRB)
- Investigate Nonconformance
- Non Minor Nonconformance

7. Orbital Debris Assessment

- Orbital Debris Assessment Report
- Limit Orbital Debris Generation
- Perform Orbital Debris Assessment

8. Parts, Materials and Processes Program

- Parts Materials Processes Control Program (PMPCP)
- Parts Materials Processes Control Board (PMPCB)
- PMP Incoming Test and Inspection
- PMP Inspection and Test Plan
- Analysis of Failures
- Failure Analysis Report
- Corrosion Prevention and Control Plan
- Defective Parts and Materials Control Program
- PMP Qualification
- PMP Vendor Surveillance and Audit Plan
- Shelf Life Control Program
- Shelf Life Control Plan
- Traceability Control Plan
- Certification of Personnel
- As Designed Parts Materials and Processes List
- Project Approved Parts Materials and Process List
- Non Destructive Tests
- Fastener Material Test Reports
- Inorganic Materials and Composites Usage List
- Polymeric Materials Limited Shelf Life Control Process
- Polymeric Materials and Composites Usage List
- Qualification Plan and Procedure
- Established PMP Manufacturing Baseline
- Limited Life Plan
- Alternate Quality Conformance Inspection (QCI) & Small Lot Sample Plans
- Destructive Physical Analysis (DPA) Plan
- Alternate DPA Standards
- Parts Derating
- Radiation Hardness Assurance Program Plan
- Radiation Hardness Review
- Parts Screening Data Package
- Lubricated Mechanisms Life Test Plan
- Lubrication Usage List
- Procedure Qualification Record (PQR)
- Operator Qualification Test Record
- Material Process Utilization List
- Material Usage Agreement
- Fastener Control Plan
- Flammable Materials Usage List
- PMPCB approval of Policies & Procedures for Surveillance and Audit
- Radiation Hardness Assurance (RHA) Program
- Review of Laboratories & Analysis Facilities by PMPCB
- Testing at NASA White Sands Test Facility (WSTF)
- Determination of Material Flammability and Toxic Outgassing
- Qualification Proof Testing
- Raw Material Certificate of Compliance

- Stress Corrosion Cracking Criteria
- Pedigree Review for Parts Older Than x Years
- 8. Quality Management System (QMS)**
 - Quality Manual
 - ISO 70 Compliance of Testing and Calibration Laboratories
 - Applicable to Software and Firmware
 - Failure Reporting
 - Quality Assurance (QA) and Safety Requirements Flow down
- 9. Reliability and Maintainability**
 - Reliability & Maintainability Program Plan (RMPP)
 - Failure Modes Effects Analysis (FMEA) Document
 - Fault Tree Analysis
 - Probabilistic Risk Assessment (PRA)
 - Critical Items List (CIL) reference to FMEA
 - Reliability Analysis
 - Parts Stress and De-rating Analysis
 - Limited Life Analysis
 - Trend Analysis
 - Reliability Testing
 - Trade-Off Analysis
 - Maintenance Logic Diagrams
 - Fault Tolerance and Management
 - Worst Case Analysis
 - Black/White Box Testing
 - Reliability Assessment Reports
 - Maintainability Modeling Report
 - Maintainability Analysis
 - Maintainability Demonstration Plan
 - Maintainability Predictions
 - Maintainability Data Collection System
 - Maintainability Demonstration Test Reports
 - Maintainability Demonstration Tests
- 10. Risk Management**
 - Risk Informed Decision Making (RIDM)
 - Risk Management Plan
 - Continuous Risk Management System
 - Risk Surveillance Plan
- 11. System Safety**
 - System Safety Implementation Plan
 - Safety Data Packages
 - Safety Program
 - System Safety Analysis
 - Tracking of GDS Residual Hazards
 - Safety Compliance
 - Hazard Reports
 - Verification Tracking Log
 - Launch Site / Ground Operations Procedures
 - Launch Site Safety Plan
 - Identification of Hazardous Operations
 - Safety Non Compliance Waiver Request
 - Letter of Safety Compliance
 - Compliance of Heritage Hardware to requirements
- 12. Software Assurance**
 - Software Quality Assurance (SQA) Plan
 - Software Safety Program
 - Verification & Validation Plan
 - Software Engineering Reviews
 - Software Quality Assurance
 - Software Quality Engineering Program
 - Software Nonconformance Reporting & Corrective Action (NRCA) Process
 - Software Reliability Program
- Software Continuous Risk Management System (CRMS)
- NASA Independent Verification & Validation (IV&V) Review
- Safety Related Deficiencies
- Software Safety Program for Safety Critical Software
- Software Security Program
- GSFC Software Waiver
- Software Functional Requirements for Government Furnished Equipment (GFE)
- Verification of Software Design and Engineering Techniques
- 13. Workmanship Standards**
 - Workmanship Program
 - Certification of Personnel
 - Use of NASA Workmanship Standards
 - Printed Wiring Boards
 - Printed Wiring Board (PWB) Test Coupons
 - Document Procedures to Implement Standards
- 14. Lessons Learned & GIDEP**
 - Lessons Learned at PDR
 - Post Mortem Lessons Learned
 - Government Industry Data Exchange Program (GIDEP)
 - Failure Experience Data Reports
- Supply Change Management**
 - Gold Rules
 - Lessons Learned
 - Outreach
 - Center databases (SOARIS, SAS, PFR, NCR)
 - AS9100 and ISO 9001
 - Internal Audits
 - Supplier Assessments
 - Configuration Management
 - Mission Operation Assurance
 - Training