

GODDARD SPACE FLIGHT CENTER

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300 SAFETY AND MISSION ASSURANCE DIRECTORATE

The Safety and Mission Assurance Directorate (SAMd) is responsible for the overall management and implementation of Center policy in the areas of systems safety, mission assurance and management systems. It provides leadership, guidance and technical authority to review Goddard Space Flight Center (GSFC) programs and projects in order to assure and independently verify that these systems meet the Agency's goals for mission success. The SAMd provides support to GSFC projects in their implementation of systems safety, mission assurance and management systems. It assures that GSFC is a learning organization with the tools to facilitate effective communication and support sound, knowledge-based decision making.

300.1 DIRECTORATE RESOURCES OFFICE

The Directorate Resources Office develops and executes the Directorate resources policies, plans and procedures as directed by the Center Chief Financial Officer and internal Directorate leaders. It develops and coordinates resources budgeting requirements as identified by the Systems Assurance Managers (SAMs), other senior line managers within the Directorate, and the project staff in the Flight Programs and Projects Directorate. The Office monitors, tracks and reports the resources health of the directorate as a key component of the office functions and provides feedback and analysis to SAMs and other contract task monitors to assist in the management of their budgets. It manages the allocation and review of resources, including budget, workforce, and space. It directs the business management activities carried out in the areas of financial analysis, pricing, scheduling, procurement, and general business. The Office is responsible for coordinating with the appropriate functional managers to ensure compliance with policies and application of new techniques for effective utilization of resources.

301 SYSTEMS REVIEW OFFICE

The Systems Review Office (SRO) supports Directorate, Center and Agency leadership for the independent review and assessment of projects per NASA/GSFC directives and standards. These technical and programmatic reviews are performed at critical milestones in the lifecycle of these efforts and provide project teams with expert advice and confirmation of approach. Independent assessments may be chartered at the discretion of Directorate management. Review and assessment reports advise decision makers at key decision points in the mission life cycle.

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The SRO supports the planning and implementation of independent reviews of mission systems, spacecraft, instruments, ground systems and launch vehicles. The SRO manages the selection and acquisition of expert, independent review and assessment team members, and may be called upon to provide executive secretaries and chairpersons of independent review and assessment teams.

302**INSTITUTIONAL SUPPORT OFFICE**

The Institutional Support Office (ISO) is the Center focal point for Goddard Management System planning and implementation. The ISO continually improves the Management System and maintains compliance with the AS 9100 and ISO 9100 international quality management system standards. The ISO manages an extensive, Center-wide, closed-loop preventative and corrective action program including control of policy directives and technical standards; requirements traceability and compliance verification; problem reporting, tracking and trending; sharing of lessons learned; etc. Management system experts in this Office provide technical oversight and assistance to project teams to efficiently and accurately address requirements, process waivers and develop corrective action plans. The ISO leads the internal audit program, the external supply chain assessment program, and is the focal point for third-party audits, NASA Headquarters directed compliance audits, and other external survey and assessment activities. The ISO owns the GSFC risk management process, and with the support of the Reliability and Risk Analysis Branch (322), controls the policies, processes and tools for the identification, analysis, communication, trending, mitigation and acceptance of risks throughout the project life cycle. It manages the internal control program for the GSFC institution and projects, and prepares the Annual Statement of Assurance for approval by the Center Director.

320**MISSION SUPPORT DIVISION**

The Mission Support Division (MSD) is the Center focus for all safety, reliability, and mission assurance activities for space flight projects. The Chief of the MSD directs all matrix support to projects and selects Safety and Mission Assurance (SMA) Managers, in consultation with project managers and Directorate leadership. The MSD maintains the GSFC Mission Assurance Guidelines and the MSD Chief approves all project Mission Assurance Requirements (MAR) and implementation plans. The Chief of the MSD is responsible for maintenance of safety, reliability, and quality engineering competency and the comprehensive professional development required for SMA Managers and their teams. The Chief of the MSD is a key role in the SMA technical authority, and certifies from

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an SMA perspective to the Director, the readiness of space flight project to proceed to the next phase of the life cycle with a particular emphasis on the final Certification of Flight Readiness (CoFR).

320.1 SOFTWARE ASSURANCE OFFICE

The Software Assurance Office (SAO) supports projects by providing objective insight into the maturity of software engineering processes and the quality of the associated work products. The SAO encompasses the disciplines of Software Quality, Software Safety, Software Reliability, and Verification and Validation which may entail all or some of the following: Ensuring proper flow-down of software requirements, assessing compliance to NASA standards and procedures, conducting software safety analyses, identifying reliability risks with the software, and witnessing software builds and test activities to evaluate operational readiness. SAO personnel work collaboratively with the entire mission assurance team, as well as software engineering. The SAO is responsible for promoting consistency in software assurance activities and their implementation across all GSFC projects while ensuring compliance with Agency requirements. The SAO is a resource for technical experts for independent assessments and reviews.

321 SYSTEMS SAFETY BRANCH

The Systems Safety Branch (SSB) assists GSFC missions in implementing an effective mission systems safety program which may include all or some of the following: negotiating requirements with the applicable launch range, interpreting the range requirements, performing hazard analysis, performing fault tree analysis, documenting the design and analyses, developing or reviewing the operating procedures, monitoring all hazardous operations, providing support during the development and test of the mission hardware and software, and providing on-site safety coverage for operations at the launch range. The SSB Operates the NASA Safety Reporting System (NSRS) that provides all GSFC and contractor employees a means to report safety problems anonymously, as a means of last resort, when the employee believes that a problem has been overlooked or ignored by NASA management. All problems reported are investigated and appropriate corrective action taken to eliminate the problem. The SSB is a resource for technical experts for independent reviews and assessments.

322 RELIABILITY AND RISK ANALYSIS BRANCH

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The Reliability Analysis Branch (RAB) performs, or independently reviews, a wide range of reliability engineering analyses for the missions that may include some or all of the following: Probabilistic Risk Assessment, Fault Tree Assessments, Failure Mode and Effects Analyses, block diagrams, worst case assessments, parts stress derating, critical items list, and other statistical analyses that support the missions design engineering and decision making functions. The RAB is a resource for technical experts for independent reviews and assessments.

323 MISSION ASSURANCE BRANCH

The Mission Assurance Branch (MAB) provides quality assurance expertise to establish, manage and review mission assurance programs for GSFC projects. The MAB provides SMA Managers and Quality Assurance Engineers for these projects. The MAB acquires and manages additional mission assurance support from outside the Directorate as required. The MAB ensures that project teams and contractors comply with NASA and GSFC directives, standards and other requirements pertaining to systems safety and mission assurance. MAB employees continually assesses the hardware/software quality status of all mission elements, and reports to project managers and Directorate management on the project progress, problems, anomalies and risks from the SMA perspective. The MAB is a resource for technical experts for independent reviews and assessments.

350 OCCUPATIONAL SAFETY AND HEALTH (OSH) DIVISION

Plans, organizes and directs resource protection and risk management Programs for the Center and its worldwide facilities through the issuance of Occupational Safety & Health GSFC policy and performance of oversight and consultation. Serves as technical advisor to the GSFC Directorates and Center management on Occupational Safety & Health Programmatic issues. Manages assigned programs in an effort to Minimize factors known to result in personnel illness/injury, property Damage and/or adverse mission impact.

Provides Occupational Safety services, including but not limited to Industrial Safety, Construction Safety, Fire Protection, Cryogenic Safety, Contractor safety programs evaluations, Mishap investigations and safety awareness/training. Provides Occupational Health services, including but not limited to Industrial Hygiene services for the utilization of ionizing and non-ionizing radiation sources and management of the Nuclear Regulatory Commission (NRC) Licenses and Chemical Safety program services.

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Provides necessary interface and coordination with NASA Headquarters, Other Federal agencies/regulators, state/local governments and other Private organizations relative to GSFC safety and health issues and Regulations. Interfaces with appropriate regulatory agencies and local Communities in support of occupational safety and health issues. Conducts investigations, sampling, and analysis of suspected safety and Health issues/problems/concerns. Provides technical direction and support To all GSFC organizations on a variety of miscellaneous safety projects.