



SAFETY & MISSION ASSURANCE



(S&MA) NASA-JSC



SYSTEM SAFETY HARDWARE/SOFTWARE ENGINEERING

- Crew Survival Analysis
- Computer Based Control Systems Analysis
- Design and Acceptance Reviews
- Fault Tree Analysis
- Feasibility Assessments
- Human Factors Engineering/Analysis
- Intra-vehicular (IVA)/Extravehicular (EVA)
 - Safety/Risk Analysis
- Integration/System Hazard Analysis
- Payload Safety
- Risk Management Strategies
- Root Cause Analysis
- Requirements Definition and Tailoring
 - Government/Industry
- Safety Panels Charter/Operations
- Sneak Circuit Analysis
- Safety Equipment Definition
- System Safety

RELIABILITY & MAINTAINABILITY ENGINEERING

- Critical Items Identification and Control
- Failure Modes and Effects Analysis
- Human Rating/Crew Survival
- Limited Life Items Analysis
- Logistics and Support Analysis
- Part Application, Selection and Control
- Probabilistic Risk Assessments
- Problem Reporting & Corrective Action
- Reliability Block Diagrams
- Reliability Availability Maintainability and Supportability Analysis
- Trend & Precursor Analysis

OPERATIONS SAFETY

- Approach, Rendezvous, & Docking
- Hardware Jettison Assessments
- Emergency Response Strategy Assessments
- Flight Rules & Procedures Technical Evaluation
- Real-time Mission Support/Safety Assessments
- Risk/Strategic Assessments
- Robotics Operations Assessments
- Trajectory OPS&Debris Avoidance Assessments

QUALITY ASSURANCE/QUALITY ENGINEERING

- Alert Processing and Evaluations
- Audits (Software, Hardware, Manufacturing Process)
- Design and Acceptance Reviews
- Electrical Electronic Electro-mechanical (EEE) and Mechanical Parts Failure Analysis/ Destructive Physical/Screening Analysis Lab
- Electrical and Electronics Workmanship
- In-line Quality Verifications (NDE, GMIP)
- Inspections (Manufacturing, Parts)
- M&P Selection, Use, Fracture/Corrosion Control
- Parts Assurance Strategies
- Procurement Quality Assurance
- Pyrotechnics Quality
- Quality Surveillance Program
- Requirements Definition & Tailoring
- Software Quality Assurance
- Supplier Assessments/Parts Qualification
- Testing, Verification, Validation, Certification.

INSTITUTIONAL SAFETY

- Accident/Incident Prevention
- Availability Assessments
- Construction Safety Engineering
- Employee Safety/Health Participation and Awareness Consultation and Planning
- Facility Hazard Analysis/Test Readiness
- Fire Protection Engineering
- Hazardous Test Safety Analysis
- Human Test Subject Safety & Health Protocols
- Mishap Corrective Action, Investigation and Response Planning
- Occupational Safety Reporting, Measurement, and Analysis
- Pressure Systems Design and Assessment
- Process Safety Management of Highly Hazardous Chemicals
- Test Safety Officers
- Training (Inspection, Maintainability, Occupational Safety, Payload Safety, Reliability, Safety)

Contact the S&MA Director at 281-244-8715 for information.

BENEFITS OF SAFETY & MISSION ASSURANCE

Take Care of Our People—Accomplish the Mission. Safety & Mission Assurance (S&MA) assures successful spaceflight for your system, function, project, or program by assessing the probability to safely perform as intended, under predetermined conditions, and with an acceptable minimum of accidental loss. Our safety and mission assurance program reveals an overall picture of risks to reduce the cost of mission success and promote a healthy work environment. Specialty engineering principles are coherently integrated at the right times to address relevant issues. Our team approach, with its history of proven successes, uses expert skills, analytical methodologies, and a pool of trained professionals.

INDEPENDENT S&MA FUNCTION

S&MA offers world class services for Johnson Space Center (JSC) mission challenges. JSC, White Sands Test Facility (WSTF), Sonny Carter Training Facility (SCTF), and Ellington Field (EF) are among NASA's most diverse and hazardous technical environments, and they demand the most technically credible, robust, and responsive S&MA expertise.

SAFETY ENGINEERING

Safety engineering is used throughout the life cycle of a system to help identify and eliminate hazards that could injure people or damage hardware. With the complexity of systems continually growing, safety analyses and hazard control are vital to mission success.

RELIABILITY ENGINEERING

Reliability engineers ensure the consistent performance and successful operation of a product or system by participating in design, development, and product assurance activities.

PROBABILISTIC RISK ASSESSMENT

Probabilistic Risk Assessment is a comprehensive, structured, and disciplined approach for identifying, analyzing and quantifying risk in engineered systems. PRA is primarily used as a decision support tool that uncovers design and operational weakness in engineered systems and then helps to systematically identify and prioritize safety improvements.

QUALITY ASSURANCE

Quality Assurance specialists implement quality assurance functions by defining & imposing requirements for contracted government procurements. The specialists use quality assurance techniques to provide verification that contractor processes and products meet or exceed contracted requirements.



QUALITY ENGINEERING

Quality Engineers produce and/or verify products to assure that adequate design and manufacturing requirements are specified in processes and project design specifications.

JSC RECEIVING INSPECTION & TEST FACILITY

The W. David Beverly Receiving Inspection & Test Facility (RITF) performs the analyses to identify the root cause of mechanical, electrical/electronic parts, component and material failures.

SOFTWARE ASSURANCE

Software development, verification, and integration with hardware presents significant risk to the cost, schedule, and technical management of a project or a program. By implementing a software assurance program, at program startup, a program can better ensure and verify the quality and reliability of software while reducing program risks.

INSTITUTIONAL SAFETY

S&MA offers ground safety and health expertise to assess varied test safety systems and environments. The test safety officer function is made up of experienced, preeminently qualified professionals with a consistently valued ability to identify unique hazards and offer tailored solutions. JSC S&MA's pressure systems managers, engineers and inspectors are among the Agency's leaders in system design, operation, and assessment. They have specialized fluid system expertise working with the most volatile chemicals at WSTF and many human-rated systems at JSC. In addition, our institutional safety representatives are OSHA-recognized leaders and industry mentors offering progressive management strategies and practices to prevent a wide variety of workplace injuries and mishaps.

TAKE CARE *of* OUR PEOPLE



ACCOMPLISH *the* MISSION