



*Creating Consensus on Vision and Strategy*

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**MARSHALL SPACE FLIGHT CENTER  
SAFETY AND MISSION ASSURANCE DIRECTORATE  
STRATEGIC PLAN UPDATE**

**OCTOBER 1, 2004**

**PREPARED BY:  
SAFETY AND MISSION ASSURANCE  
SENIOR MANAGEMENT TEAM**

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## **I. OVERVIEW AND BACKGROUND:**

The MSFC Safety and Mission Assurance Directorate (hereinafter known as S&MA) provides and supports mission critical safety and mission assurance functions for all MSFC projects and leads the industrial safety program for the Center. S&MA has updated its long-range strategic plan to serve as a focal point for continuous improvement and customer service excellence in its safety and mission assurance roles for MSFC and the Agency.

Between August and October 2000, S&MA conducted a comprehensive key stakeholder customer satisfaction process assisted by Strategic Leadership Associates. This resulted in a comprehensive external evaluation of S&MA functions serving the safety and mission assurance needs of S&MA's internal and external customers.

In 2001, S&MA completed a comprehensive reorganization that resulted in the development of five major mission critical departments. These departments included:

- **Advanced Projects Assurance**
- **Shuttle Assurance**
- **Cargo Assurance**
- **SR&QA Policy, Assessment, and Integration**
- **Industrial Safety**

Between October 2001 and March 2002, S&MA developed its first strategic plan to implement the new organizational structure. Since the inception of the strategic plan and the restructuring of S&MA, several key changes in their organizational environment have occurred. These include, but are not limited to:

- **The major re-direction of safety and mission assurance priorities at the Agency level for NASA**
- **The Columbia Shuttle investigation findings**
- **The designation of S&MA as a Directorate at MSFC**
- **The appointment of a new MSFC Center Director**
- **The appointment of Dr. Jan Davis as Director of the Safety and Mission Assurance Directorate**
- **The incorporation of the MSFC Systems Management Office in the S&MA portfolio**
- **The creation of a separate Business Management Office within the Directorate**

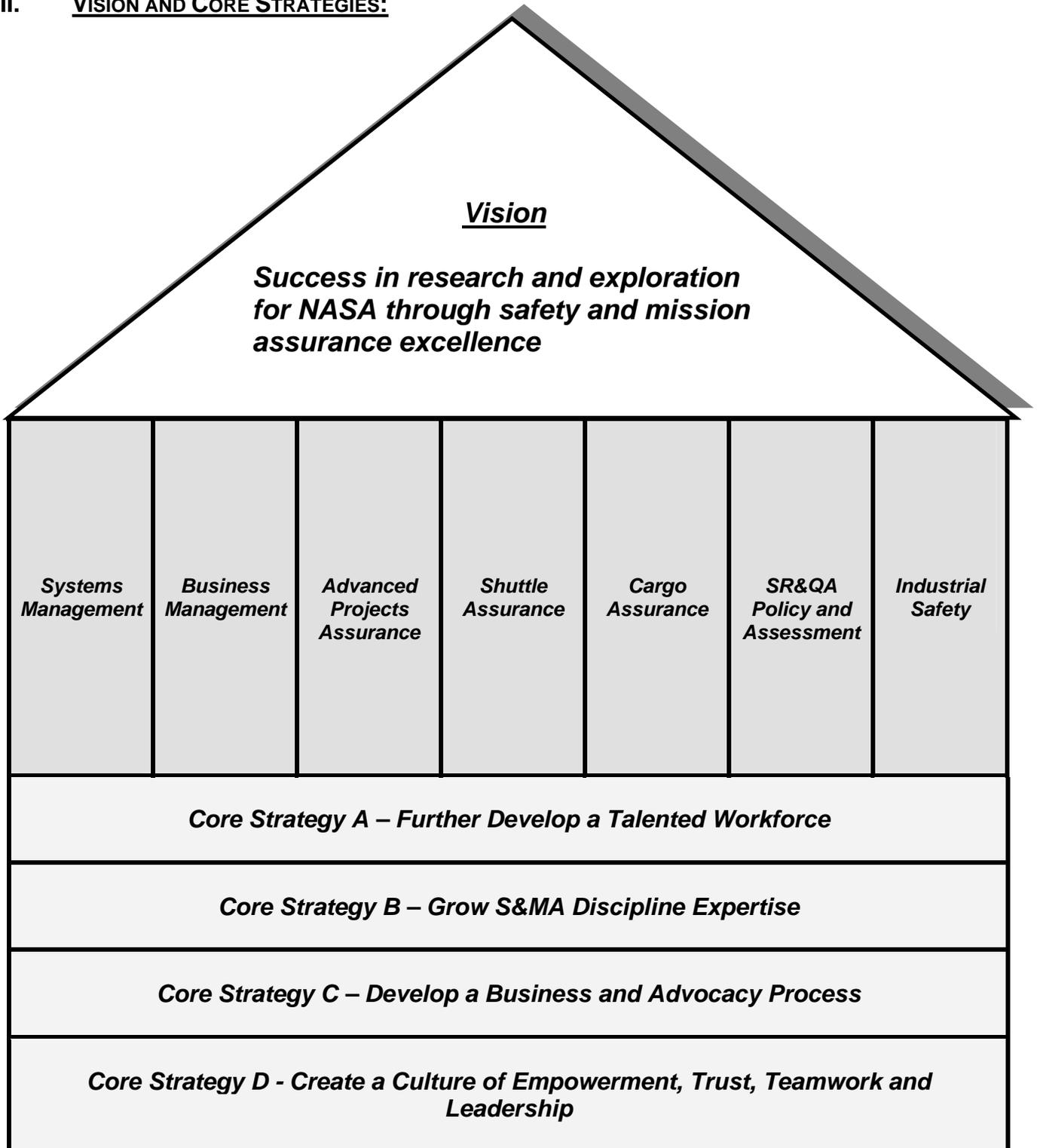
On April 5-7, 2004, the current S&MA Management Team participated in an off-site retreat at Doublehead Resort to review and update the initial strategic plan from 2002. Participants in the retreat included:

Jan Davis/QD01  
Alex Adams/QD20  
Al Clark/QD10  
Dennis Davis/QD50  
Chris Cowart/QD30  
Terry Hamm/QD01  
Scott Jackson/QD03  
Roy Malone/QD01  
Linder Metts/QD30

Ron Mize/QD50  
Dan Mullane/QD20  
Coy Newton/HEI  
Randy Reed/HEI  
Steve Robbins/QD02  
Dave Spacek/QD01  
Angelia Walker/QD40  
Herb Zollar/QD20

The following Directorate Strategic Plan incorporates the Mission, Strategies, Outcomes, Action Plans, and Strategic Assessment of the current leadership team. The plan will be monitored and directed by QD01 in conjunction with the Department Managers.

II. VISION AND CORE STRATEGIES:



The S&MA Senior Leadership Team identified the following cross-cutting core strategies (QD01 goals) as a basis for the future S&MA Strategic Plan. The Director will appoint representatives of all departments of the Directorate to implement and monitor action plans for each core strategy to assure agency and MSFC satisfaction and a commitment to excellence for the Directorate.

**Core Strategy A – Further Develop a Talented Workforce**

**Successfully recruit and develop a talented workforce within expanded allocations, working effectively with our support contractor.**

**Core Strategy B – Grow S&MA Discipline Expertise**

**Grow discipline expertise maintaining authority, processes, and skills to scale up or down for project requirements, and to promote early involvement in projects.**

**Core Strategy C – Develop a Business and Advocacy Process**

**Adopt and develop a 5-year business/advocacy plan to:**

- **Recruit new work and financial resources,**
- **Sustain existing work, and**
- **Educate new project managers on our value-added capabilities.**

**Core Strategy D – Create a Culture of Empowerment, Trust, Teamwork, and Leadership**

**Build a workforce culture of empowerment, trust, teamwork, and leadership.**

### **III. CORE STRATEGIES AND PERFORMANCE MEASURES:**

The following four core strategies and associated performance measures will serve as the measurement of S&MA's success in achieving the proposed strategic plan. Each of the following performance measures will be monitored by QD01 and senior managers to determine the level of progress S&MA will make between April 2004 and the conclusion of FY05.

#### **A. Further Develop a Talented Workforce**

1. **Completion of our hiring goals by:**
  - a) **50% of existing vacancies filled within our allocation by July 2004**
  - b) **75% of existing vacancies filled within our allocation by the end of FY04**
  - c) **100% of existing vacancies filled within our allocation by end of FY05**
2. **Baseline assessment of all related S&MA personnel against first three completed roadmaps by July 2004**
3. **Completion of remaining discipline roadmaps (quality assurance inspection, industrial safety engineering, software assurance, project assurance) by the end of FY04**
4. **100% of eligible S&MA workforce participating within roadmap process with 50% qualified by January 2006**

#### **B. Grow S&MA Discipline Expertise**

1. **An established authority and policy function established between discipline experts and project-related S&MA personnel**
2. **Training roadmaps fully coordinated by discipline experts**
3. **Completed assessment of optimum discipline expertise levels devoted to major projects and programs, working with the mission support contractor**
4. **Participation of project S&MA personnel in discipline team coordination meetings**

#### **C. Develop a Business and Advocacy Process**

1. **5-year Business Advocacy Plan completed by the end of FY04**
2. **Established strategy with a path for new funding through Office of Exploration Systems (OES) by FY05**
3. **Annual established forecast of the lifecycle of existing work in place by the end of FY04 and thereafter**
4. **Education process in place on business and resource planning functions for S&MA managers by March 2005**
5. **Established customer education process on S&MA value-added capabilities in place by the end of December 2005**

- D. Create a Culture of Empowerment, Trust, Teamwork, and Leadership**
- 1. Established employee annual satisfaction survey process with published results and follow-up actions by the end of FY04**
  - 2. Enhanced employee awards and recognition program by the end of FY04**
  - 3. Departmental off-sites and directorate leadership training for team development completed annually**
  - 4. Assess and implement MSFC and agency-wide culture survey recommendations based on S&MA data**

## **IV. STRATEGIC ACTION PLANS**

**Core Strategy A – Further Develop a Talented Workforce**

**Successfully recruit and develop a talented workforce within expanded allocations, working effectively with our support contractor.**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
1.1 Create a master schedule of all existing MSFC S&MA vacancies and provide list to all Department Managers. Department Managers will address milestone; weekly review.	04/30/04	09/30/05	QD03 and Department Managers	<ul style="list-style-type: none"> <li>• 50% of existing vacancies filled within our allocation by July 2004</li> <li>• 75% filled by the end of FY04</li> <li>• 100% filled by end of FY05</li> </ul>
1.2 Reclama OSP list with Human Resources and seek Center Director assistance in encouraging “trainable” engineers to transfer to S&MA.	04/30/04	07/01/04	QD01	<ul style="list-style-type: none"> <li>• 50% of existing vacancies filled within our allocation by July 2004</li> <li>• 75% filled by the end of FY04</li> <li>• 100% filled by end of FY05</li> </ul>
1.3 Create an S&MA recruitment committee to continuously seek new employees.	04/30/04	01/10/06	QD03 and Department Managers	<ul style="list-style-type: none"> <li>• 50% of existing vacancies filled within our allocation by July 2004</li> <li>• 75% filled by the end of FY04;</li> <li>• 100% filled by end of FY05</li> </ul>
2.1 All S&MA employees will declare one of the following as their “discipline expertise”: <ul style="list-style-type: none"> <li>• Systems Safety Engineer</li> <li>• Reliability/Maintainability Engineer</li> <li>• Quality Engineer</li> <li>• Industrial Safety Specialist</li> <li>• QA Specialist</li> </ul> (excludes MSA’s, QD02, QD03)	03/31/04	06/01/04	QD01 and Department Managers	<ul style="list-style-type: none"> <li>• Baseline assessment of all related S&amp;MA personnel against first three completed roadmaps by July 2004</li> </ul>

**Core Strategy A – Develop a Talented Workforce (continued)**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
2.2 As applicable, each S&MA employee will declare a Systems Safety, Reliability, and Maintainability, Quality Engineering, or Industrial Safety Specialist specialty, and must complete baseline self-assessment by July 1, 2004.	05/31/04	07/01/04	All effected employees	<ul style="list-style-type: none"> <li>Baseline assessment of all related S&amp;MA personnel against completed roadmaps by July 2004</li> </ul>
2.3 S&MA personnel selecting other specialized discipline expertise (Quality Assurance, Industrial Safety Engineer, Software Assurance, Project Assurance) shall complete baseline self-assessment within 30 calendar days of Professional Development Roadmap (PDRM) release.	PDRM Baseline	PDRM Baseline +30 days	All effected employees	<ul style="list-style-type: none"> <li>Baseline assessment of all related S&amp;MA personnel against completed roadmaps within 30 days of PDRM release.</li> </ul>
3.1 Complete development of remaining PDRM's.	04/29/04	09/30/04	PDRM Champions	<ul style="list-style-type: none"> <li>Completion of discipline roadmaps by the end of FY04</li> </ul>
4.1 Create a career development policy and incentive program to encourage PDRM qualification.	04/29/04	07/15/04	Senior Managers	<ul style="list-style-type: none"> <li>100% of eligible S&amp;MA workforce participating within roadmap process with 50% qualified by January 2006</li> </ul>

**Core Strategy B – Grow S&MA Discipline Expertise**

**Grow discipline expertise maintaining authority, processes, and skills to scale up or down for project requirements, and to promote early involvement in projects.**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
<p>1.1 Define clear lines of authority and responsibility for Discipline Managers and for S&amp;MA personnel, including concurrence with IDP, input to performance appraisals, ITA for applicable discipline, independent assessments, etc., and decide on tool. To include process for Peer Reviews.</p>	05/17/04	10/08/04	Discipline Management Team and QD40 Manager	<ul style="list-style-type: none"> <li>• An established authority and policy function between discipline experts and project-related S&amp;MA personnel.</li> <li>• An approved OI by October 2004</li> </ul>
<p>2.1 Update, document, and own discipline processes, procedures, and tools considering project life cycle.</p>	04/26/04	09/30/05	Discipline Managers and Working Groups	<ul style="list-style-type: none"> <li>• Training roadmaps fully coordinated by discipline experts</li> <li>• Discipline documentation in place by end of FY05</li> </ul>
<p>3.1 Discipline Managers in conjunction with Team Leads, Group Managers, or Department Managers will perform a gap analysis for projects and institutional support areas. Involve Discipline Managers in resource management process.</p>	08/04/04	01/02/06	Discipline Managers, Dept. Managers, and QD03	<ul style="list-style-type: none"> <li>• Completed assessment of optimum discipline expertise levels devoted to major projects and programs, working with the mission support contractor</li> <li>• A detailed analysis of CY05</li> </ul>

**Core Strategy B – Grow S&MA Discipline Expertise (continued)**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
4.1 S&MA will create cross-departmental discipline working groups to mentor, develop best practices, improve processes, and benchmark external discipline-specific activities and processes.	04/26/04	12/30/04	Discipline Managers	<ul style="list-style-type: none"> <li>• Participation of project S&amp;MA personnel in discipline team coordination meetings</li> <li>• Individual discipline teams established and functioning</li> </ul>

**Core Strategy C – Develop a Business and Advocacy Process**

**Adopt and develop a 5-year business/advocacy plan to:**

- **Recruit new work and financial resources,**
- **Sustain existing work, and**
- **Educate new project managers on our value-added capabilities.**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
1.1 Develop and baseline a 5-year S&MA business plan.	04/26/04	09/30/05	QD03*	• Business Advocacy Plan completed
2.1 Become familiar with tools and processes for OES: • Spiral development • RM by Active Risk Management (ARM)	04/26/04	10/03/05	QD10/QD40/HEI	• S&MA requirements for new funding through OES
2.2 Develop new reliability tool to support OES concept and trade studies	04/26/04	10/03/05	QD10/QD40/HEI	• New reliability tool developed and implemented by QD10
2.3 Implement communication with Code Q, Hartline, and Fisher for OES requirements and opportunities.	04/26/04	12/30/05	QD10* HEI	• S&MA requirements clearly defined and accepted by OES
3.1 Establish training for S&MA managers with CFO on: • Government budgeting process • Full cost accounting	12/06/04	03/25/05	QD03*	• Education process for S&MA departments
4.1 Establish customer education process on S&MA value-added capabilities by determining what has been done, the most effective way to do this, and whether a consultant is needed.	01/10/05	12/09/05	QD01/QD03*	• Customer education process
*Input from other organizations (QD01, QD02, QD10, QD20, QD30, QD40, QD50)				

**Core Strategy D – Create a Culture of Empowerment, Trust, Teamwork, and Leadership**  
**Build a workforce culture of empowerment, trust, teamwork, and leadership.**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
1.1 Summarize results of survey(s) and present to QD01 direct reports in stand-alone meeting.	04/26/04	07/01/04	QD30 C. Cowart	<ul style="list-style-type: none"> <li>Summarize results and discuss with QD01 direct reports at stand-alone meeting.</li> </ul>
1.2 Share results of survey(s) with all MSFC S&MA employees.	04/26/04	07/20/04	QD01	<ul style="list-style-type: none"> <li>Results shared at QD All-Hands and e-mail.</li> </ul>
1.3 Execute new annual employee survey.	10/04/04	01/30/05	QD03	<ul style="list-style-type: none"> <li>100% QD01/HEI participation</li> <li>Increased scores over previous year</li> </ul>
2.1 Discuss continuous monetary and non-monetary awards process with QD01 direct reports	04/26/04	08/16/04	QD01	<ul style="list-style-type: none"> <li>Discussion at QD01 staff meeting</li> <li>Awards reports to MSR</li> </ul>
2.2 Convene directorate-wide team to evaluate Peer Awards ceremony and directorate-level awards.	04/26/04	07/15/04	QD01	<ul style="list-style-type: none"> <li>Team provide feedback to QD01</li> </ul>

**Core Strategy D – Create a Culture of Empowerment, Trust, Teamwork, and Leadership (continued)**

Key Decisions and Actions	Start Date	Scheduled Completion Date	Responsibility	Performance Measures/Metrics
3.1 QD01 and each Department and Office (including HEI) will conduct at least one off-site on an annual basis.	04/26/04	12/17/04	All Office/Dept.	<ul style="list-style-type: none"> <li>Off-sites conducted</li> </ul>
3.2 Each manager/supervisor will complete at least one week of formal and one week of equivalent non-formal management/leadership training on an annual basis.	04/26/04	12/17/04	All Managers/Supervisors	<ul style="list-style-type: none"> <li>Training complete</li> </ul>
3.3 Implement QD skip level lunch and other venues to foster communication.	04/26/04	07/02/04	QD01	<ul style="list-style-type: none"> <li>Discuss at Friday QD01 staff meeting</li> <li>First Skip Level Lunch conducted 06/03/04, and scheduled monthly</li> </ul>
4.1 When feedback is received from agency and MSFC culture surveys, convene directorate-wide team to evaluate results and generate corrective action plans.	Within 15 days of receiving results	TBD – dependent on actual findings	QD01	<ul style="list-style-type: none"> <li>Results assessed and corrective action developed</li> </ul>
4.2 Develop consolidated QD corrective action tracking database for items, such as Safety & Mission Success (SMS) feedback, culture surveys, etc.	04/26/04	08/30/04	QD40 (IT)	<ul style="list-style-type: none"> <li>Database on-line</li> </ul>

## **V. DEPARTMENTAL CORE COMPETENCIES, PRODUCTS, AND GOALS:**

The following S&MA core competencies will be required throughout the organization. In addition, products and goals have been identified for each of its departments. These core competencies, products, and goals are intended to define the basic core disciplines and necessary scope of skills for S&MA to serve MSFC and agency programs and projects in the future, as well as its national goals.

### **A. S&MA Cross-Cutting Core Competencies**

1. System Safety Engineering
2. Reliability/Maintainability Engineering
3. Quality Assurance
  - Engineering
  - Specialist
4. Software Assurance
  - Engineering
  - Specialist
5. Project/Program Assurance
6. Industrial Safety
  - Engineering
  - Specialist
7. Administrative Support
  - IM
  - MSA
  - SFA
  - Personnel
8. Business Management
9. Risk Management

## **B. Systems Management Office (QD02)**

### **Goals**

1. To foster quality systems engineering and project management for MSFC projects and programs.
2. To provide expert consultation in the form of indirect support in the formulation, planning, and trade studies of projects.
3. To provide independent evaluation by assessing the technical and programmatic status of MSFC projects.
4. To be a steward of the MSFC systems engineering and project management processes and develop tools and training to aid in their implementation.

### **Products and Services**

- Reviews and evaluates Center programs/projects and provides project management and systems engineering guidance in the formulation stage.
- Develops MSFC policy for and conducts Independent Assessments, Non-Advocate Reviews, Independent Implementation Reviews, and participates in program/project reviews. Develops MSFC policy for Red Team reviews.
- Provides to the Center Director an independent evaluation of programs/projects progress toward meeting technical requirements within cost and schedule commitments.
- Serves as a member to the MSFC Program/Project Management Council (PMC) and provides the Secretariat for the MSFC PMC.
- Supports the Agency Chief Engineer and Agency Independent Program Assessment Office by participating in reviews of other NASA Center's projects and serving as the point of contact for providing experts to support external review requests.
- Directs the development of standard processes, tools, and guidelines for the program/project management and systems engineering.
- Defines and coordinates Center-wide training/mentoring for program/project management and systems engineering practices and processes.
- Supports the Program Management development activity at MSFC by co-chairing the Program Management Board and Program Management Board Working Group.
- Represents the Center on Agency-level Program Management and Systems Engineering Working Groups.

**C. Business Management Office (QD03)**

**Goals**

1. To enable the departments to efficiently perform assignments/missions by consolidating the business aspects of the departments and standardizing those processes
2. To integrate business management processes and support Center and Agency-wide initiatives in improving NASA business practices
3. To provide timely, quality resource and administrative support
4. To maintain and continue registration to ISO 9000 and AS9100 standards
5. To ensure IT security by maintaining and securing all S&MA applications and databases

**Products and Services**

- Serve as the integrated administrative and business management organization
- Center Actions Information Technology (CAITs) coordination
- Responsible for planning and managing S&MA business functions
- Integrate budget requirements, including annual program operating plan (POP) planning and submittals.
- Budget Reviews
- Center ISO coordination
- Property Assessment
- MSFC DCB Member
- IFMP coordination
- S&MA Website Coordination
- Provides strategic planning and support to all S&MA offices
- Fellowships, Agency training, IDP coordination
- Perform the overall integration and coordination with the S&MA elements to compile annual reports, Annual Operating Agreement (AOA), implementation plan, and metrics
- Management Status Review coordination
- Formulation and implementation of workforce planning and full cost analysis
- Provide administrative support to managers and employees
- Oversee awards, personnel actions, training, staffing, skills, position description, records management, and telecommunications coordination

- Oversee all travel \$'s, information technology policies and support services, and facilities utilization
- Development of the overall planning requirements that meet the need of the programs/projects objectives
- Track and assess programmatic status of cost schedule and technical performance on monthly basis (funds control: authority, commitments, obligations, cost)
- Interface with other MSFC institutional organizations in planning, execution, and evaluation of programmatic issues related to S&MA
- Ensure definition, development, and maintenance of office computer configurations and applications are accomplished according to requirements and priorities.

**D. Advanced Projects Assurance Department (QD10)**

**Goals**

1. Ensure that we are providing timely, value-added expertise and products to each Program/Project customer as demonstrated by customer satisfaction results.
2. Ensure each member of APAD has adequate training by utilizing a well developed and executed Individual Development Plan (IDP). Encourage APAD personnel to become qualified via the Professional Development Road Map (PDRM) process.
3. Develop proactive S&MA processes and innovative S&MA tools in support of Exploration Systems Programs/Projects.
4. Strive to incorporate CAIB findings and MSFC and Agency cultural survey results into our job performance. Continue to improve teamwork and camaraderie among APAD personnel, both civil service and mission services contractor.
5. Maintain our high level of expertise in Quality Assurance processes associated with test hardware, operations, and facilities.

**Products and Services**

- Assessments of contractor-developed quality, reliability, maintainability, supportability, system safety, and risk evaluations
- Development of reliability, maintainability, and supportability assessments and FMEA/CILs for in-house projects
- Development of Safety Data Packages/Hazard Analyses for in-house projects
- S&MA risk lists
- Development of S&MA analysis tools for concept and trade studies

- Development of S&MA and/or Quality Plans
- Development of S&MA Analyses Guidelines documentation for the Office of Exploration Systems (OES) programs
- Oversight and management of Probabilistic Risk Assessments for the OES programs
- Oversight and insight of program/project processes, hardware, and software
- Oversight and insight into operations at MSFC test facilities
- S&MA requirements development and implementation
- S&MA budget and schedule
- Contractor performance monitoring/evaluation
- Contractor surveillance through in-plant Defense Contract Management Agency (DCMA) and Resident Management Office (RMO)
- Establishment and implementation of the OES safety panel and OES reliability and maintainability review panel process
- High Performance Experimental Aerospace Vehicles (EAV) flight certification process support
- Certification of flight readiness (CoFR) process support
- Provide guidance/direction to contractors and other NASA Center S&MA Offices as Program S&MA for the OES programs

**E. Shuttle Assurance Department (QD20)**

**Goals**

1. Significantly improve the Shuttle Assurance Team (MSFC, HEI and DCMA) staffing levels from those in place at the time of the Columbia accident.
2. Work closely with QD01 to improve the structure, quality and availability of training for Shuttle Assurance personnel.
3. Promote consistency across QD20 Teams by “benchmarking” Best Practices and implementing these practices across teams.
  - a. Government Mandatory Inspection Point's (GMIP's)
  - b. Material Review Board (MRB)
  - c. Corrective Action Process
4. Improve the quality of S&MA assessments of technical issues, engineering change requests and program briefings (i.e., ICB, Daily, PRCB).
5. Achieve a high level of customer satisfaction as measured by surveys and received feedback.

## **Products and Services**

- Change evaluations of Change Requests (CRs), Engineering Change Packages (ECPs), Requirement Change Notices (RCNs), Launch Change Notices (LCNs), manufacturing process changes, Hazard Report (HR) and Critical Items List (CIL) updates
- Launch countdown support – Go/No Go recommendations
- Post-flight assessment participation and SPAT Board membership. Evaluation of observations/findings and recommended dispositions.
- Contractor performance monitoring and evaluations (HEI and Shuttle Prime Contractors)
- Action item responses to QD01, SSP Program and Project Offices
- Delegated agency management [e.g. Letters of Declaration (LoDs), POCs]
- Flight readiness assessments and recommendations
- Technical Issues Briefing (TIB) coordination for Center Director
- Evaluation of hardware non-conformances and manufacturing process departures. Material Review Board membership.
- Problem Reporting and Corrective Action (PRACA) evaluations, database management and trending
- Systems Safety Review Panel presentations and AI responses
- Quantitative risk assessments [Probabilistic Risk Assessment (PRA), Quantitative Risk Assessment Software (QRAS), Sapphire]
- Hardware acceptance (DD-250 review and approval)
- Government Mandatory Inspection Point (GMIP) definition and implementation
- Surveillance findings
- Design review [Preliminary Design Review (PDR), Critical Design Review (CDR), Design Certification Review (DCR)] participations and identification of Review Item Discrepancies (RIDs)
- Audit findings [Process Product Integrity Audit (PPIA), NASA Engineering and Quality Audit (NEQA)]
- NASA Discrepancy Reports
- Review and recommend disposition of NASA Safety Reporting System (NSRS) items
- Corrective action report dispositions

## **F. Cargo Assurance Department (QD30)**

### **Goals**

1. Foster a spirit of unification and interdependence among the Cargo Assurance team, characterized by open communication and cooperation

and the continual pursuit of excellence in the products and services provided to our customers.

2. All Cargo Assurance team members, including Mission Services Contractor personnel, will continually enhance professional and technical skills, knowledge, and expertise through training and mentoring. Individual Development Plans (IDPs) will be prepared and maintained by each team member to identify training requirements and enable career advancement to positions of increased responsibility.
3. Support development and implementation of state-of-the-art/cutting edge information management technology and tools to standardize, simplify, and enhance the quality of S&MA products and processes.
4. Serve as a contributor/consultant and source of expertise for S&MA core disciplines in the application of emerging discipline tools and techniques to space cargo projects.
5. Develop/improve partnerships with customers and S&MA organizations at MSFC and other Centers/industry to foster the OneNASA vision and customer satisfaction; share expertise; and improve standardization in the development of value-added S&MA products and services.

### **Products and Services**

- Hazard Analysis
- Failure Modes and Effects Analysis/Critical Items List (FMEA/CIL)
- Fault Tree Analysis (FTA)
- Engineering Change Request/Engineering Change Package (ECR/ECP) and Waiver/Deviation Reviews
- Independent Assessments
- S&MA Plans
- Support to flight/ground safety reviews
- Statement of Work/Data Requirements Document (SOW/DRD) and Letter of Delegation (LOD) development
- Contractor evaluations
- Project documentation evaluations/inputs
- Procurement Quality Requirements
- Material Review Boards
- As-Built Configuration Summaries
- Parts Tags and Discrepancy Records
- Manage S&MA Quality Records Center
- Application assessments for new tools, technologies, and processes
- Quality inspections, test monitoring, and audits

- Certification of flight readiness
- Risk Management consulting and support

**G. SR&QA Policy and Assessment Department (QD40)**

**Departmental Goals**

1. Become the agency leader in establishing and developing easily accessible S&MA tailored best-in-class processes, tools, and technologies that can be applied to various programs.
2. Develop a paperless system for documenting, tracking, and reporting applicable S&MA processes.
3. Establish and develop a professional development roadmap for core S&MA disciplines, whereby personnel can obtain qualification in their chosen discipline.
4. Establish and develop discipline expertise, including opportunities for career advancement (i.e., IA, audits, system safety, reliability, quality, etc.).
5. Maintain a high level of customer satisfaction and exceed our customer's expectation for audits by establishing an integrated optimized auditing process and cohesive team.
6. Establish a high level of customer satisfaction by exceeding customer's expectation for assessments through the conduct of value-added Independent Assessments.
7. Establish strategic alliances with discipline experts across various NASA Centers, HQ, and DoD.
8. Develop and implement a process for periodically assessing the maturity of CRM implementation on Center programs and projects.
9. Develop, maintain, and provide CRM tools/databases to assist Center programs and projects in implementing CRM.

**Product and Services**

- Easily accessible guideline documentation (DRDs, OIs, MPD, MPG, etc.) for each S&MA process (i.e., quality plan, reliability plan, Statistical Process Control (SPC), hazard analysis, FMEA, etc.)
- Facilitate the selection of enhanced tools for the implementation of key S&MA processes
- Expert technical support to program(s) on select key issues
- A paperless S&MA documentation system where applicable
- Training and awareness

- Continuous Risk Management (CRM) training, tools, facilitation, and maturity assessments
- Support MSFC Fracture Control Board
- Center POC for Process-based Mission Assurance (PBMA) System
- Personnel certification maintenance (CERTRAK)
- Management, conduction and facilitation of audits both internal and external (ISO, NEQA, Supplier, etc.)
- Lessons learned database
- SR&QA Policy Development
- Focal point for NASA HQ initiatives
- PRACA
- NSRS
- ALERT administration
- Corrective Action System
- Recurrence control
- Export control
- IA Report, Engineering Information Reports (EIRs)

**H. Industrial Safety Department (QD50)**

**Goals**

1. Assure Center management provides a safe workplace that prevents injury to employees and prevents damage to property and equipment.
2. Develop and maintain an Industrial Safety Department with personnel who are highly motivated, fully trained, and effectively organized.
3. Lead and promote safety awareness through effective communication and training methods.
4. Evaluate the development and implementation of a behavioral-based, personal safety program so that safety becomes second nature to employees in all aspects of their lives.
5. Develop and utilize technologies, processes, and techniques to improve safety performance, accomplished through training, literature, partnering, and benchmarking activities. Expertise is provided to other centers, agencies, industry, and academia.
6. Support and assist the Center in implementing a third party assessment of the MSFC SHE Program.

## **Products and Services**

- Facility hazard analyses
- Facility inspections
- Hazardous ops surveillance
- Mishap data analyses (including IRIS)
- Center-wide policy/procedures
- Audits
- Workers' compensation
- Training and awareness
- Drawing and procedure review
- Technical consultation
- Construction inspections and monitoring
- Reviews of contractor safety and health plans
- Safety reviews (ORI's, SRT's, TRR's, etc.)
- Explosive siting problems
- Support critical lifting operations
- Safety certifications
- Database development/management, such as:
  - Inventory of Hazardous Operations (IHOPS)
  - SHE Findings Tracking System (SHEtrak)
  - Safety Concerns Reporting System (SCRS)
  - Supervisor Safety Web Page (SSWP)

## **APPENDIX A**

### **SWOT ANALYSIS**

On April 5, 2004, the S&MA Senior Management Team developed the following SWOT Analysis to understand and review their position in the new S&MA environment of the agency.

#### **STRENGTHS**

- **S&MA has achieved Directorate status (true product line capabilities).**
- **True reliability expertise has returned to S&MA.**
- **People have energy to meet customer's expectations.**
- **We possess a very dedicated workforce.**
- **We maintain a good support contractor.**
- **The post-Columbia S&MA mission revitalization process is underway.**
- **We have a leader who is a national "hero" leveraging influence.**
- **Good relationships and mutual respect exist with other S&MA organizations at both other centers and HQ.**
- **The Center Director has strong support for S&MA.**
- **We maintain the best S&MA databases (Industrial Safety Department).**

## **WEAKNESSES**

- **Continued recruitment of quality and safety engineers is needed.**
- **Continued recruitment of discipline experts is needed.**
- **S&MA may be perceived as a non-value-added organization among MSFC workforce.**
- **Information flow and communication across departments could be improved.**
- **Training is needed in job functions, expertise, disciplines, and management.**
- **Poor utilization of resources still exists in some areas.**
- **We take on more responsibilities than we can handle.**
- **We function in a constant reactive mode.**
- **There is no centralized quality organization.**
- **Personal conflicts obstruct getting the job done.**
- **Morale is weak.**
- **There is no “One NASA” S&MA, especially for systems safety and quality.**

## **OPPORTUNITIES**

- **Investment in training and mentoring is critical.**
- **We are poised to receive additional resources.**
- **The new funding methodology will allow more autonomy and independence.**
- **Customers are more receptive than in past years to receive our services.**
- **We are welcomed by new projects as a value-added partner.**
- **There is strong alignment with new senior management of MSFC.**
- **We can be successful in this unique window of opportunity.**
- **Recruitment of new discipline experts continues.**
- **There is unique synergy with SMO integration into our Directorate to become risk management experts of the Center.**
- **We have in-roads and insights to support the exploration enterprise of HQ in developing their requirements.**
- **We can establish more preventative processes.**
- **We can create a cohesive quality process.**
- **We can audit the health of our programs and processes.**
- **We can benchmark other S&MA organizations.**
- **Opportunities exist to really make a difference, changing the past stereotype and stigma, and improve the S&MA product.**
- **Empowering our people to be passionate about making a difference is vital to our success.**

## **THREATS**

- **Not acting quickly in response to Columbia findings to implement a culture change would be an opportunity missed.**
- **Not turning the morale issue around to empowerment of our people would be short-sighted.**
- **Competition from other organizations exists.**
- **Not receiving additional dollars and discipline resources (FY04 and beyond) would slow progress.**
- **Low level of MSFC involvement in the new crew initiative would affect S&MA.**
- **Not implementing new funding model would weaken our base support.**
- **The looming Center reorganization may be neutral for us.**
- **Not receiving the right additional resources would stop momentum.**
- **Not responding correctly to new initiatives would be perceived poorly.**
- **Not having a committed or cohesive management team would be a missed opportunity.**
- **Not following through on new directions would be a reactive stance.**

**(N.B. Nearly all of these threats are addressable.)**

## APPENDIX B - STRATEGIC PRIORITY EVALUATION

To transition between the original S&MA Strategic Plan and the new update, S&MA senior managers identified and ranked the following strategic priorities as essential for success. These were used to formulate new core strategies.

<b>Scoring Criteria Guide</b>	<b>Priority A</b>	<b>Priority B</b>
<b>Factors and Key Items:</b> <b>(Score 1-10; 1 = Low, 10 = Very High)</b>	<b>Name:</b> Successful recruitment of talented workforce within our expanded allocations; and more effectively utilize current people with our support contractor.  <b>TOTAL SCORE: 65</b>	<b>Name:</b> Build a workforce culture of empowerment, trust, teamwork, and leadership.  <b>TOTAL SCORE: 64</b>
Factor 1 –Strategic Alignment <ul style="list-style-type: none"> <li>• Degree of Alignment with Core Mission/Business</li> <li>• Strategic Importance to Future State</li> <li>• Utilizes Strategic Partnerships – New/Existing</li> </ul>	<b>10</b>	<b>10</b>
Factor 2 – Competitive Advantage <ul style="list-style-type: none"> <li>• Offers Customer Unique Benefits</li> <li>• Meets Customer Needs Better</li> <li>• Improves Customer Value for Money</li> </ul>	<b>10</b>	<b>10</b>
Factor 3 – Market Attractiveness <ul style="list-style-type: none"> <li>• Market Size Adequate</li> <li>• Market Growth Apparent</li> <li>• Improves Competitive Situation</li> </ul>	<b>10</b>	<b>9</b>
Factor 4 – Leverages Core Competencies <ul style="list-style-type: none"> <li>• Competency Synergies</li> <li>• Technology Synergies</li> <li>• Facility Capacity</li> <li>• Workforce Skill Set</li> </ul>	<b>10</b>	<b>10</b>
Factor 5 – Technical Feasibility <ul style="list-style-type: none"> <li>• Size of Improvement Gap</li> <li>• Complexity of Project</li> <li>• Acceptable Degree of Uncertainty</li> <li>• Demonstrated Technical Feasibility</li> </ul>	<b>8</b>	<b>6</b>
Factor 6 – Financial Reward <ul style="list-style-type: none"> <li>• Certainty of Financial Return</li> <li>• Acceptable Payback Period</li> </ul>	<b>8</b>	<b>9</b>
Factor 7 – Just Do It <ul style="list-style-type: none"> <li>• Simple and Important</li> <li>• Existing Resources are Adequate</li> </ul>	<b>9</b>	<b>10</b>

Scoring Criteria Guide	Priority C	Priority D
<b>Factors and Key Items:</b> <b>(Score 1-10; 1 = Low, 10 = Very High)</b>	<b>Name:</b> Target the OES program and utilize our management structures and tools to provide S&MA primary responsibilities through MSFC. <b>TOTAL SCORE: 59</b>	<b>Name:</b> Adopt and develop a 5-year business/advocacy plan to recruit new work and financial resources and educate new project managers on our value-added capabilities. <b>TOTAL SCORE: 58</b>
Factor 1 –Strategic Alignment <ul style="list-style-type: none"> <li>• Degree of Alignment with Core Mission/Business</li> <li>• Strategic Importance to Future State</li> <li>• Utilizes Strategic Partnerships – New/Existing</li> </ul>	<b>10</b>	<b>10</b>
Factor 2 – Competitive Advantage <ul style="list-style-type: none"> <li>• Offers Customer Unique Benefits</li> <li>• Meets Customer Needs Better</li> <li>• Improves Customer Value for Money</li> </ul>	<b>7</b>	<b>10</b>
Factor 3 – Market Attractiveness <ul style="list-style-type: none"> <li>• Market Size Adequate</li> <li>• Market Growth Apparent</li> <li>• Improves Competitive Situation</li> </ul>	<b>10</b>	<b>10</b>
Factor 4 – Leverages Core Competencies <ul style="list-style-type: none"> <li>• Competency Synergies</li> <li>• Technology Synergies</li> <li>• Facility Capacity</li> <li>• Workforce Skill Set</li> </ul>	<b>7</b>	<b>5</b>
Factor 5 – Technical Feasibility <ul style="list-style-type: none"> <li>• Size of Improvement Gap</li> <li>• Complexity of Project</li> <li>• Acceptable Degree of Uncertainty</li> <li>• Demonstrated Technical Feasibility</li> </ul>	<b>7</b>	<b>5</b>
Factor 6 – Financial Reward <ul style="list-style-type: none"> <li>• Certainty of Financial Return</li> <li>• Acceptable Payback Period</li> </ul>	<b>10</b>	<b>9</b>
Factor 7 – Just Do It <ul style="list-style-type: none"> <li>• Simple and Important</li> <li>• Existing Resources are Adequate</li> </ul>	<b>8</b>	<b>9</b>

Scoring Criteria Guide	Priority E	Priority F
<b>Factors and Key Items:</b> <b>(Score 1-10; 1 = Low, 10 = Very High)</b>	<b>Name:</b> Create early involvement with programs and projects to influence their process with the expertise needed building on SMO core capability as risk management experts. <b>TOTAL SCORE: 53</b>	<b>Name:</b> Leverage independent technical authority (ITA) status of S&MA to become an equal partner with the Engineering Directorate. <b>TOTAL SCORE: 52</b>
<b>Factor 1 –Strategic Alignment</b> <ul style="list-style-type: none"> <li>• Degree of Alignment with Core Mission/Business</li> <li>• Strategic Importance to Future State</li> <li>• Utilizes Strategic Partnerships – New/Existing</li> </ul>	<b>10</b>	<b>10</b>
<b>Factor 2 – Competitive Advantage</b> <ul style="list-style-type: none"> <li>• Offers Customer Unique Benefits</li> <li>• Meets Customer Needs Better</li> <li>• Improves Customer Value for Money</li> </ul>	<b>10</b>	<b>7</b>
<b>Factor 3 – Market Attractiveness</b> <ul style="list-style-type: none"> <li>• Market Size Adequate</li> <li>• Market Growth Apparent</li> <li>• Improves Competitive Situation</li> </ul>	<b>10</b>	<b>8</b>
<b>Factor 4 – Leverages Core Competencies</b> <ul style="list-style-type: none"> <li>• Competency Synergies</li> <li>• Technology Synergies</li> <li>• Facility Capacity</li> <li>• Workforce Skill Set</li> </ul>	<b>6</b>	<b>9</b>
<b>Factor 5 – Technical Feasibility</b> <ul style="list-style-type: none"> <li>• Size of Improvement Gap</li> <li>• Complexity of Project</li> <li>• Acceptable Degree of Uncertainty</li> <li>• Demonstrated Technical Feasibility</li> </ul>	<b>5</b>	<b>6</b>
<b>Factor 6 – Financial Reward</b> <ul style="list-style-type: none"> <li>• Certainty of Financial Return</li> <li>• Acceptable Payback Period</li> </ul>	<b>8</b>	<b>7</b>
<b>Factor 7 – Just Do It</b> <ul style="list-style-type: none"> <li>• Simple and Important</li> <li>• Existing Resources are Adequate</li> </ul>	<b>4</b>	<b>5</b>

Scoring Criteria Guide	Priority G	Priority H
<b>Factors and Key Items:</b> <b>(Score 1-10; 1 = Low, 10 = Very High)</b>	<b>Name:</b> Centralize focus, coordination, and leadership of discipline expertise. <b>TOTAL SCORE: 51</b>	<b>Name:</b> Successful implementation of training roadmap initiative for discipline expertise. <b>TOTAL SCORE: 49</b>
Factor 1 –Strategic Alignment <ul style="list-style-type: none"> <li>• Degree of Alignment with Core Mission/Business</li> <li>• Strategic Importance to Future State</li> <li>• Utilizes Strategic Partnerships – New/Existing</li> </ul>	<b>10</b>	<b>9</b>
Factor 2 – Competitive Advantage <ul style="list-style-type: none"> <li>• Offers Customer Unique Benefits</li> <li>• Meets Customer Needs Better</li> <li>• Improves Customer Value for Money</li> </ul>	<b>7</b>	<b>8</b>
Factor 3 – Market Attractiveness <ul style="list-style-type: none"> <li>• Market Size Adequate</li> <li>• Market Growth Apparent</li> <li>• Improves Competitive Situation</li> </ul>	<b>8</b>	<b>8</b>
Factor 4 – Leverages Core Competencies <ul style="list-style-type: none"> <li>• Competency Synergies</li> <li>• Technology Synergies</li> <li>• Facility Capacity</li> <li>• Workforce Skill Set</li> </ul>	<b>9</b>	<b>4</b>
Factor 5 – Technical Feasibility <ul style="list-style-type: none"> <li>• Size of Improvement Gap</li> <li>• Complexity of Project</li> <li>• Acceptable Degree of Uncertainty</li> <li>• Demonstrated Technical Feasibility</li> </ul>	<b>6</b>	<b>7</b>
Factor 6 – Financial Reward <ul style="list-style-type: none"> <li>• Certainty of Financial Return</li> <li>• Acceptable Payback Period</li> </ul>	<b>7</b>	<b>8</b>
Factor 7 – Just Do It <ul style="list-style-type: none"> <li>• Simple and Important</li> <li>• Existing Resources are Adequate</li> </ul>	<b>5</b>	<b>5</b>