Geostationary Operational Environmental Satellites - R Series (GOES-R)

MANAGEMENT CONTROL PLAN (MCP)

January 31, 2013

U.S. Department of Commerce (DOC)
National Oceanic and Atmospheric Administration (NOAA)
National Environmental Satellite, Data, and Information Services (NESDIS)
National Aeronautics and Space Administration (NASA)

Geostationary Operational Environmental Satellite – R Series (GOES-R)
Management Control Plan

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GOES-R Management Control Plan

Document Change Record

VERSION	CCR #	DATE	PAGES AFFECTED	DESCRIPTION
1.0	01224	12/04/2007	ALL	BASELINE
2.0	02262A	02/11/2013	ALL	Updates to reflect program changes

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1. Program Overview

1.1 Introduction

The National Oceanic and Atmospheric Administration (NOAA) operates a system of environmental satellites in geostationary orbits to provide continuous weather imagery and monitoring of meteorological data for the United States, Latin America, much of Canada, and most of the Atlantic and Pacific ocean basins. The Geostationary Operational Environmental Satellite (GOES) system provides atmospheric, oceanic, climatic, and solar products supporting weather forecasting and warnings, climatologic analysis and prediction, ecosystems management, and safe and efficient public and private transportation. The GOES Series system also provides a platform for space environmental observations, and auxiliary communications services that provide for GOES data rebroadcast, data collection platform relay, low resolution imagery, emergency weather communications, and satellite-aided search and rescue.

The GOES-R Series program is a collaborative effort between NOAA and the National Aeronautics and Space Administration (NASA) to develop and acquire the GOES-R Series system. NOAA defines requirements, is responsible for overall program integration and management, provides funding, procures ground segment elements, and operates the deployed GOES satellites. NASA procures and launches the satellite, provides program mission assurance and system engineering resources and expertise, provides satellite system acquisition and development expertise and functional support, and assists NOAA with program integration and management. Program activities occur at the co-located Program and Project Offices at Goddard Space Flight Center (GSFC), Greenbelt, MD.

1.2 Purpose

This Management Control Plan (MCP) is authorized by the Memorandum of Understanding (MoU) between NOAA and NASA dated June 15, 2007 and documents the business processes, management controls, and organizational structure of the GOES-R Series program (Appendix B). The MCP outlines the specific implementation of NASA Procedural Requirement (NPR) 7120.5, NASA Program and Project Management Processes, as it applies to the GOES R Series program and projects. The MCP meets the intent of NPR 7120.5 requirements for a Program Plan and is supported by the Project Plans of the GOES-R Series Flight and Ground Segment Projects.

The contents of the GOES-R Series MCP satisfy the requirements of Departmental Administrative Orders (DAO) 208-3, Major System Acquisitions for the Department of Commerce, which requires major systems to document a program management and control structure that describes the Program's business processes.

1.3 Relationship to Other Documents

The GOES-R Series Document Tree (410-R-DOCTREE-0123) provides the relationships among all GOES-R Program level documents. Figure 1 summarizes the relationship of the GOES-R Series MCP to other GOES-R Series program documents.

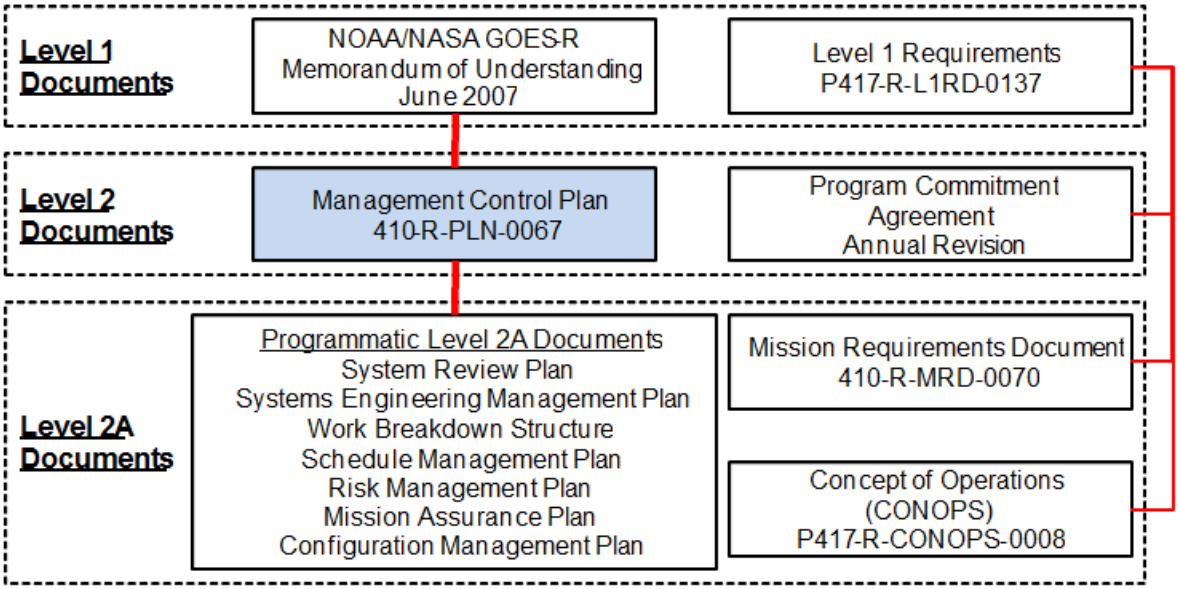

Figure 1: Management Control Plan relationship to Other Program Documents

The hierarchical description of documents in Figure 1 is effective for purposes of resolving any conflicts between any of the documents listed in Figure 1. Level 2A documents are process documents or technical requirements while level 2 are programmatic requirement documents. Thus, the MoU between NOAA and NASA dated June 15, 2007 supersedes any conflicting provisions of this MCP. Any conflict between the provisions of the MoU and this MCP will be resolved by the National Environmental Satellite, Data, and Information Services (NESDIS) Assistant Administrator (AA) and GSFC Center Director. The GOES-R Series System Program Director (SPD) resolves conflicts between GOES-R Series Level 2 and 2A documents. Disagreements that cannot be resolved by the GOES-R SPD shall be documented in writing and elevated to the NESDIS AA and the GSFC Center Director for resolution. Failing resolution at that level, the issue shall be elevated to the signatory positions of the MoU and successively higher positions as necessary for final resolution. The GOES-R Series Program Commitment Agreement augments the Level 1 technical requirements and annually identifies budgetary and schedule limitations established by the Deputy Under Secretary for Operations (DUS/O) and accepted by the GOES-R Series SPD.

1.3.1 Applicable Documents

- Memorandum of Understanding between the National Oceanic and Atmospheric Administration and The National Aeronautics and Space Administration Regarding the Geostationary Operational Environmental Satellite Series R, June 2007
- Consolidated Observational Requirements List (CORL)
- GOES-R Series Program Commitment Agreement (PCA)
- Departmental Administrative Orders (DAO) 203-1, Appropriation Requests and Related Budgeted Matters
- Departmental Administrative Orders (DAO) 208-3, Major System Acquisitions for Department of Commerce

- Federal Information Processing Standards (FIPS) 199, Standards for Security Categorization of Federal Information and Information Systems
- American National Standards Institute/Electronic Industries Alliance (ANSI/EIA) Standard 748-2002, Earned Value Management Systems, revised January 2002
- NASA Policy Directive (NPD) 1000.3D, The NASA Organization
- NASA Procedural Requirement (NPR) 7120.5, NASA Program and Project Management Processes
- NASA Procedural Requirement (NPR) 8705.4, Risk Classification for NASA Payloads
- Goddard Space Flight (GSFC) Standard, GSFC-STD-1000, Rules for the Design, Development, Verification and Operation of Flight Systems.
- Goddard Procedural Requirements (GPR) 5100.1F, Procurement
- Goddard Procedural Requirements (GPR) 7120.7, Schedule Margins and Budget Reserves to be Used in Planning Flight Projects and In Tracking Their Performance
- NASA Form 1018, NASA Property in the Custody of Contractors
- Code of Federal Regulations (CFR) 41 Chapter 101, Public Contracts and Property Management
- GOES-R Series Program Level 1 Requirements Document (L1RD), P417-R-L1RD-0137
- GOES-R Series Program Mission Requirements Document (MRD), 410-R-MRD-0070
- GOES-R Series Program Work Breakdown Structure (WBS) Definitions Document, P417-R-WBS-0078
- GOES-R Series Program Schedule Management Plan, 410-R-PLN-0193
- GOES-R Series Program System Review Plan (SRP), 410-R-PLN-0052
- GOES-R Series Program Risk Management Plan, 410-R-PLN-0081
- GOES-R Series Program Concept of Operations (CONOPS), P417-R-CONOPS-0008
- GOES-R Series Program Systems Engineering Management Plan (SEMP) 410-R-PLN-0069
- GOES-R Series Program Configuration Management (CM) Plan, 410-R-PLN-0084
- GOES-R Series Program Records Management Document, 410-R-DOC-0231
- GOES-R Series Program Mission Assurance Plan (MAP), 410-R-MAP-0080
- GOES-R Series Program Environmental Management Plan, 410-R-PLN-0128
- GOES-R Series Program Export Control Plan, 410-R-PLN-0239
- GOES-R Series Program Integrated Program Master Schedule (IPMS), 410-R-SCH-0082

1.3.2 Reference Documents

- GOES-R Series Document Tree, 410-R-DOCTREE-0123

1.4 Goals and Objectives

The GOES-R Series Program implements a key NOAA objective to gather and provide accurate and reliable data from sustained and integrated Earth-observing systems in support of NOAA's mission to understand and predict changes in weather, climate, oceans and coasts, as well as the space environment that support the Nation's economy, and protect lives and property. To achieve this objective, NOAA gathers environmental data by researching, developing, deploying, and operating systems to collect remote and in situ observations, as well as manages and shares data through partnerships and standards. To this end, NOAA is developing the GOES-R series as the next-generation of GOES to serve future space-based observations and provide data continuity.

In accordance with the Geostationary Satellite Program Charter, GOES satellites meet current and near-term national operational environmental sensing requirements for continuous observation of weather,

Earth's environment, and the solar and space environment. To meet requirements and accomplish its mission, the geostationary satellites program performs three major functions:

- Provide continuous Geostationary Environmental Sensing to support NOAA Goal Teams.
- Provide Data Collection Service capability to support NOAA Goal Teams.
- Provide continuous relay of environmental data to distributed users and relay of distress signals from aircraft or marine vessels to search and rescue ground stations.

1.5 Program Architecture

The GOES-R Series system includes spacecraft, instruments, launch services, and all associated ground system elements and operations for four satellites (GOES-R/S/T/U). Figure 2 below illustrates the functional GOES-R Series system. The GOES-R Series program, in accordance with NASA NPR 7120.5, is defined as a single-project program due to the interrelated nature of the Ground Segment and Flight Projects. Additionally, due to its national importance and program life cycle costs, the GOES-R Series program is assigned as a Category 1 program and has a risk classification of B per NPR 8705.4, Risk Classification for NASA Payloads. The GOES-R Series is also defined as a High Impact system in accordance with the Federal Information Processing Standards (FIPS) 199, Standards for Security Categorization of Federal Information and Information Systems.

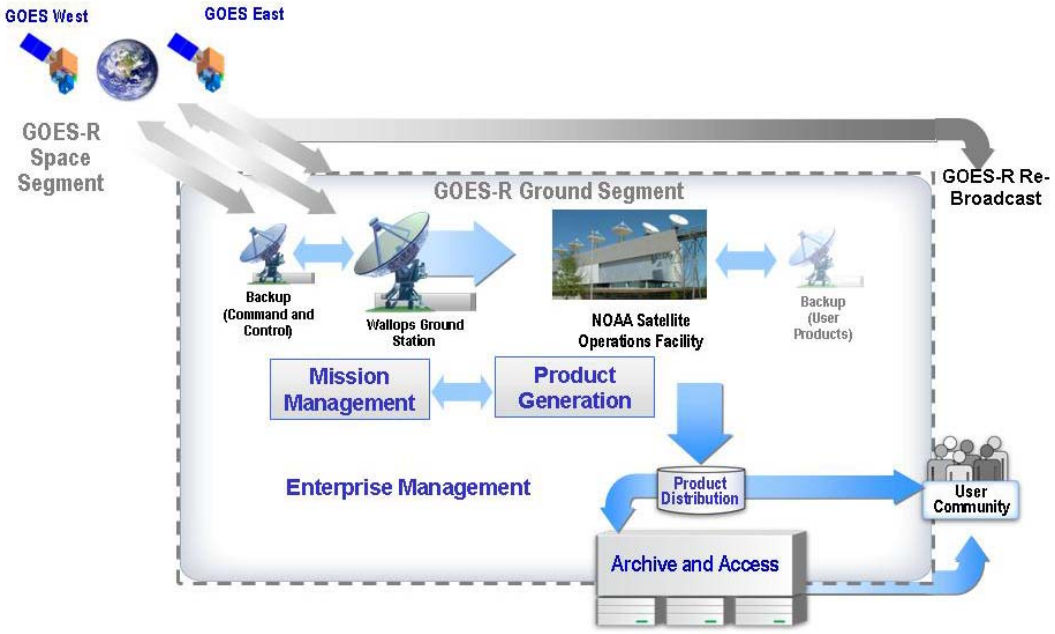

Figure 2: Baseline GOES-R Series System Configuration

Figure 3 provides the on-orbit operational locations for the GOES-R Series system: 137 degrees West longitude for the Western Operational station, and 75 degrees West longitude for the Eastern Operational station. During the on-orbit storage period, the satellites will be positioned at 105 degrees West longitude; a Launch/Check-out position is reserved at 90 degrees West longitude.

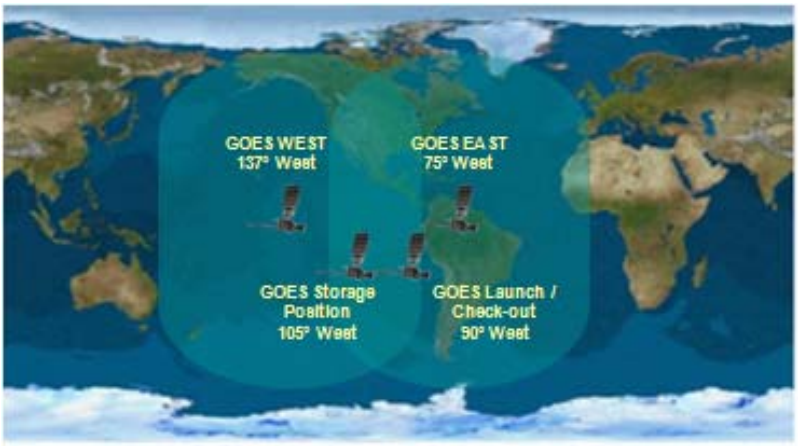

Figure 3: Operational Locations

1.5.1 Space Architecture

The GOES-R Series system space architecture will accomplish the following:

- Maintain continuous service from a GOES system that meets the remote sensing requirements as specified by NOAA, that is, to provide for continuous observations of the Earth, its atmosphere, and the solar and space environment from geosynchronous orbit.
- Provide for reception and relay of data from ground based Data Collection Platforms (DCP) to the NOAA prime and backup Command and Data Acquisition (CDA) ground stations.
- Provide for continuous relay of weather facsimile (WEFAX) and other data to small users, independent of all other functions.
- Permit relay of distress signals from aircraft or marine vessels to the Search and Rescue ground stations of the Search and Rescue Satellite Aided Tracking (SARSAT).
- Provide a spacecraft capability for permitting data transmission via the Emergency Manager's Weather Information Network (EMWIN).
- Provide spacecraft platforms suitable for supporting the instrument payloads.

The Flight Project will implement the space architecture by issuing separate contracts for the development of the instruments and the spacecraft. The Flight Project includes the instruments, spacecraft, launch services, satellite integration, and on-orbit satellite initialization and checkout. The Flight Project will provide launch services and instruments as government-furnished products (GFP) to the spacecraft contractor. After launch, the spacecraft contractor will support the NOAA Satellite Operations Control Center (SOCC) until satellite checkout is completed and the satellite is turned over to NOAA for operations.

The Advanced Baseline Imager (ABI) will provide key performance parameters hemispheric, synoptic, and mesoscale imagery for global and Continental United States (CONUS) forecasting and severe weather warning. Additional instruments include Space Environment In-Situ Suite (SEISS), Extreme Ultraviolet Sensor/X-Ray Sensor Irradiance Sensors (EXIS), Solar Ultraviolet Imager (SUVI), Geostationary Lightning Mapper (GLM), and Magnetometer (MAG). The instruments will be provided to the spacecraft contractor as GFP for integration into the spacecraft.

1.5.2 Ground Architecture

The Ground Segment encompasses the following four major functions: 1) Mission Management (MM), 2) Enterprise Management (EM), 3) Product Generation (PG), and 4) Product Distribution (PD).

Mission Management (MM) includes mission scheduling, satellite (including instrument) operations, satellite state-of-health trending, orbital analysis, and ground operations.

Enterprise Management (EM) supports all operational functions by monitoring, assessing, and controlling the configuration of the operational systems, networks, and communications for the GOES-R ground segment.

Product Generation (PG) includes algorithm support, raw instrument processing to Level 1b (including calibration, navigation and registration), and generation of the data for rebroadcast and for higher level product data creation including operational derived products (Level 2+). The government will provide the necessary science algorithms for the generation of Level 2+ user products.

Product Distribution (PD) includes distribution of Level 1b, Level 2+, and derived products to user portals while addressing interfaces with the user for accessing GOES data. The primary user portals are the Advanced Weather Interactive Processing System – Version 2 (AWIPS) operated by NOAA's National Weather Service (NWS), the Comprehensive Large Array-data Stewardship System (CLASS) operated by the NOAA National Data Centers, and the ESPC Processing and Data Access (PDA) system operated by the Office of Satellite Processing and Operations (OSPO), and the GOES-R Series satellites (for retransmittal to GOES Rebroadcast (GRB) ground terminals).

1.6 Stakeholder Definition

GOES-R Series stakeholders fall into one or more of the following categories based on their interface to the system and the type of data that they use:

- NOAA meteorologists in Weather Forecast Offices (WFOs) and Centers who provide regional weather and river forecasts and warnings to the public using the AWIPS. Non-NOAA users such as NASA, United States Geological Survey (USGS), Department of Defense (DoD), and the international weather community are also included.
- Users of the CLASS. The CLASS data users pull data from the CLASS as it becomes available in that archive. The CLASS is the long-term archive where the GOES-R data from the PDA is stored indefinitely for users who do not require a data latency of less than 5 minutes. Examples of these users are researchers at educational institutions involved in the atmospheric, oceanic, climate, and astrophysical sciences. The CLASS receives GRB, Key Performance Parameter (KPP), Level 0 and Level 2+ data. The KPP is cloud and moisture imagery, Level 0 data is reconstructed unprocessed instrument data, and Level 2+ data are derived products for users.
- Direct Readout (DRO) users with transmitting sensors (such as buoys and river flood gauges) and those that receive the data relayed through GOES-R radio communications. The following are four DRO relay services:
  - GOES Rebroadcast (GRB)
  - High Rate Information Transmission (HRIT)/ Emergency Managers Weather Information Network (EMWIN)
  - Data Collection System (DCS)
  - Search And Rescue Satellite Aided Tracking (SARSAT)
- The Product Distribution Access (PDA) Users represented by the NOAA National Weather Service (NWS) National Centers for Environmental Prediction (NCEP), other US government agencies and international hardline users who receive data from PDA in a push/pull mode and can tolerate moderate data latency.

For more details on the stakeholders and program efforts to ensure their readiness for GOES-R, see the GOES-R Program User Readiness Plan.

1.7 Program Authority and Governance Structure

This section describes the program authority and governance structure of the GOES-R Series Program.

1.7.1 Program Authority

Figure 4 depicts the flow of program authority.

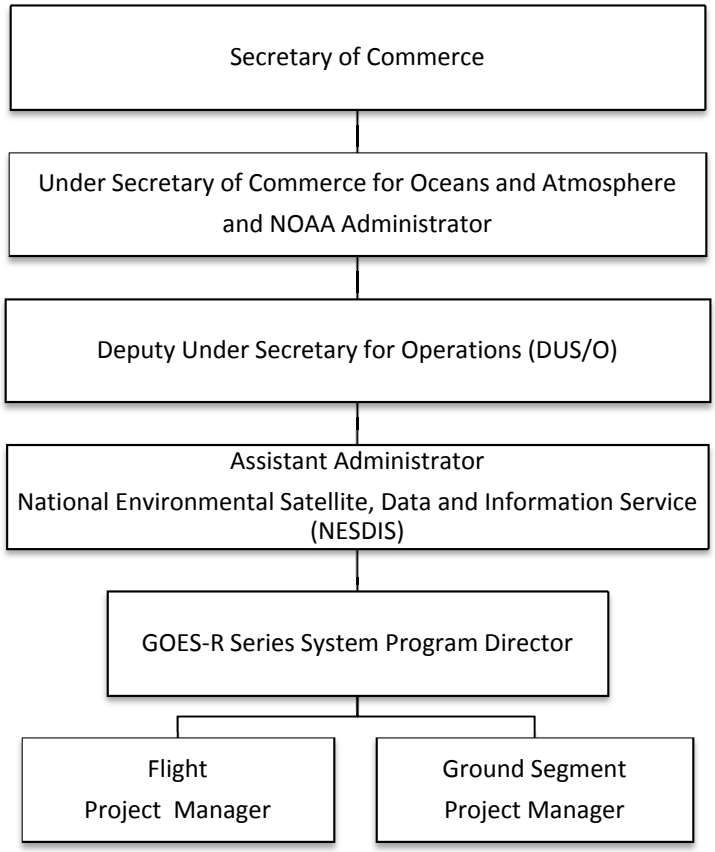

Figure 4: GOES-R Series Program Authority

1.7.2 Governance Structure

The governance structure of the GOES-R Series program is depicted in Figure 5. NASA and NOAA jointly chair each of the management councils, and NOAA serves as the decision authority.

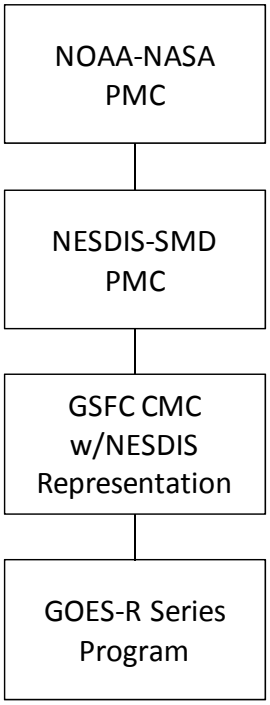

Figure 5: Governance Structure

1.7.2.1 NOAA-NASA Program Management Council

The NOAA-NASA Program Management Council (PMC) provides executive and strategic oversight of selected NOAA Programs being implemented in partnership with NASA and in accordance with NOAA PMC Terms of Reference and section 6.5 of NASA Policy Directive (NPD) 1000.3D, The NASA Organization. The NOAA DUS/O and NASA AA are co-chairs with the NOAA DUS/O having final decision authority for the NOAA-NASA PMC.

1.7.2.2 NESDIS/NASA Science Mission Directorate (SMD) Program Management Council

The NESDIS/SMD PMC provides oversight of NOAA Satellite and Information Systems, including GOES-R implementation responsibilities, to include major milestones, reviews, Key Decision Points (KDP), and below Level 1 decisions affecting the Satellite Enterprise. The NESDIS AA holds Monthly Status Reviews (MSRs) to which NASA is invited, to provide oversight of financial performance, and oversight of integration of NOAA Satellite and Information Systems into the NESDIS enterprise. The NESDIS AA and SMD AA are co-chairs but the NESDIS AA holds final decision authority for the NESDIS/SMD PMC.

1.7.2.3 GSFC Center Management Council

The GSFC Center Management Council (CMC) provides oversight and advice regarding GOES-R Series Program conduct, and oversight of Center institutional functions that support the program. For NOAA Programs the CMC is co-chaired by the GSFC Deputy Director and NESDIS Deputy Assistant Administrator for Systems (DAAS). The GSFC Deputy Director has final decision authority for the GSFC CMC.

1.8 Organizational Structure and Responsibilities

This section describes the organizational structure and responsibilities of the key entities that are required for the success of the GOES-R program. Figure 6 summarizes the organizational structure, functions, and interdependencies between NOAA, NESDIS, NASA, the GOES-R Series Program, and the Flight and Ground Segment Projects. All Legislative affairs will be conducted in accordance with established NESDIS policy as described in the MoU section 6.A.10. NOAA and NASA will coordinate public affairs and will conduct efforts in accordance with existing NESDIS and NASA policies and the MoU.

Function	Organization					
	NOAA US/ DUS/O	**NESDIS AA/DAA**	**NESDIS Operational & Data Ctr**	**NASA**	**System Program Director**	**Project Managers**
Concept studies	- Serve as selection official for PDRR selections	- Develop direction & guidance for concept studies		- Provide technical management of concept studies (GSFC)	- Perform architecture studies - Develop and execute study contracts - Provide contract management for concept studies	- Support and conduct concept studies consistent with direction and guidance from program / NESDIS
Development of Program and Project Level Requirements	- Approve GOES-R Series system Level I requirements	- Execute Level I requirements - Approve Level II requirements			- Execute level II and IIa requirements - Allocate requirements to projects - Approve level IIa and III Requirements	- Execute Level III requirements - Approve level IIIa requirements
Resource management (Program Budget)	- Develop & execute NOAA budget - Conduct annual budget submission reviews - Approve individual program budgets	- Establish GOES-R Series budget - Execute budgets for GOES-R Series supporting infrastructure	-Establish budget for necessary support functions - Implement support functions consistent with budget	GSFC: - Approve annual submission of NASA project budgets - Provide resources for management of NOAA resources applied to NASA - Approve cost estimates for NASA functions Headquarters (HQ): Provide NASA senior management insight into NASA project budgets	- Develop GOES-R Series program budget for fiscal year and life cycle - Implement program consistent with budget - Provide annual budget submission input manage program resources - Coordinate development of cost estimates for support functions	- Provide project budget requirements to GOES-R Series Program Office (GPO) - Execute project budget
Inter-government Agreements	- Sign agreement for NOAA	- Support execution of agreement		Sign for NASA (NASA HQ)	- Manage program IAW agreement	- Support SPD
Staffing Mgt		-Establish NESDIS civil servant staffing	-Develop staffing plan necessary for support functions	- Provide staff in accordance with annual staffing plan (GSFC)	- Develop program staffing plans - Implement staffing plans	- Develop project staffing plans - Implement staffing plans
Project Plans					- Approve as needed	- Develop and execute

Function	Organization					
	NOAA US/ DUS/O	**NESDIS AA/DAA**	**NESDIS Operational & Data Ctr**	**NASA**	**System Program Director**	**Project Managers**
Program / Project Performance Assessment	Chair NOAA PMC	- Award fee determination for ground contracts - Review program/project performance via - Management interaction - Special issue topic resolution - Monthly reporting requirements - Receives briefing from NASA Award Fee Determination Official on decision and rationale for Flight Project Award fees		- Award fee determination for flight contracts (GSFC Code 400) - Review Program and Projects (GSFC CMC)	- Chair Performance Evaluation Board (PEB) for all spacecraft and major ground contracts (unless delegated to Project Manager) - Concur with Award Fee Plan	- Chair PEBs as delegated by SPD
Launch Commit	- Approve mission readiness	- Approve flight and launch readiness		GSFC & HQ: - Concur with launch readiness - Launch commit	- Provide launch readiness statement	- Develop launch readiness criteria
Independent Reviews	- Receive reports from IIRT & SRB - Determines SRB scope & chair	- Approve SRB membership & SRP - Approve System Review Plan - Receive reports from IIRT and SRB		- NASA AA: Determines SRB scope & chairmanship - GSFC CMC: Manage SRB infrastructure - GSFC Deputy Ctr Dir: Approve SRB membership & SRP	- Support IIRTs - Review and respond to SRB results	- Support SRBs
Acquisition	Serve as selecting Official for NOAA Contracts	Review IT acquisition requests		- Serve as Selecting Official for NASA Contracts (GSFC) - Act as selecting office for instrument procurements (GSFC Code 400)	Provide support and oversight of source selection process	- Manage and execute contracts - Execute Source Selection process
Schedule Baseline Control (Section 5.2.2.2.2)	Key Milestone concurrence	Critical Milestone Approval		- Key Milestone Readiness - Critical milestone concurrence for flight (GSFC) - Provide Agency recommendation for program to proceed to Decision Authority (HQ)	- Critical milestone readiness - Program milestone approval	- Project milestone approval - Program milestone readiness

Function	Organization					
	NOAA US/ DUS/O	**NESDIS AA/DAA**	**NESDIS Operational & Data Ctr**	**NASA**	**System Program Director**	**Project Managers**
Decision Authority for Reviews	- Program Readiness Review Approval - KDP approval	Approves readiness for launch Approves readiness for handover to flight operations team				
Security Assessment & Authorization (A&A) Organization		- Perform A&A related authorizing official activities for the system being developed - Designate a Security Control Assessor (SCA) for the system being developed		- Perform A&A related authorizing official activities for the Program administrative support local area network (LAN) - Designate an SCA for the Program administrative support LAN	- Perform A&A-related system owner activities. - Appoint a NOAA GOES-R Series Information System Security Officer (ISSO) for the system being developed - Appoint a NASA GOES-R Series Computer Security Officer (CSO) for the Program administrative support LAN	

Figure 6: Organizational Interdependencies Summary

1.8.1 Department of Commerce (DOC)

Department of Commerce (DOC) provides policy oversight and guidance to NOAA for successful acquisition and operation of the GOES-R Series. Nothing in this MCP should be construed to limit the inherent responsibility of the Department to conduct effective oversight of the GOES-R Series Program.

The DOC, through the Chief Financial Officer/Assistant Secretary for Administration (CFO/ASA), is the DOC acquisition executive, and is responsible for overall DOC budget formulation and execution including the GOES-R Series program. The DOC provides consolidated oversight, review and input on program plans to include but not limited to the MCP, Cost Estimates, and Acquisition Strategy. DOC also provides review and approval of budget submissions to Office of Management and Budget (OMB) and Congress.

1.8.1.1 National Oceanic and Atmospheric Administration (NOAA) Organizations

NOAA is accountable to DOC for successful GOES-R Series development and operational mission success. NOAA provides direct oversight for the GOES-R Series Program through the NOAA-NASA Program Management Council (PMC).

1.8.1.1.1 National Environmental Satellite, Data, and Information Services (NESDIS)

The NESDIS AA retains authority to conduct program reviews and coordinate with NOAA.

NESDIS will provide technical authority resources for the ground segment.

Office of the Chief Information Division (CID) performs Security Assessment & Authorization (A&A) related Authorizing Official Designated Representative (AODR) responsibilities, appoints a Security Control Assessor (SCA), and oversees SPD compliance with Information Technology (IT) security requirements.

1.8.2 NASA Headquarters

As agreed in the MoU, the Administrator of NASA, or designated representative, will meet at least annually and on an as-needed basis with the NOAA Administrator, or designated representative, to discuss program progress and status. Additionally, the NASA SMD's Joint Agency Satellite Division (JASD) will also regularly brief NASA senior management on the progress and status of the GOES-R Series program.

NASA SMD will have representation on the GSFC CMC for monthly status. NOAA and NASA will conduct KDP readiness reviews at the NESDIS/SMD Program Management Council with NOAA acting as the final decision authority.

NASA SMD will represent the GOES-R Series program on NASA's Human Exploration and Operations Mission Directorate (HEOMD) Flight Planning Board (FPB). Reimbursable authority provided to NASA from NOAA will be accepted by NASA SMD.

1.8.3 NASA Goddard Space Flight Center (GSFC) Organizations

NASA GSFC is responsible for procurement, management, and execution of the Flight Project in accordance with overall NOAA guidance, standard technical oversight resources for program and projects, and staffing of senior leadership positions outlined in the MoU.

Standard NASA technical oversight resources are defined as Mission Assurance, Technical Authority as defined in paragraph 4.3, Standing Review Board (SRB) management, and other exercise of NASA

technical expertise through the NOAA-NASA PMC. NASA GSFC will co-manage the SRB together with NOAA.

The GOES-R Series SPD and senior GSFC managers will coordinate the assignments of individuals to key program and project office contract management positions.

The GSFC CMC oversees, in accordance with overall NOAA guidance, the activities, products, and performance of the GOES-R Series program.

In the event of any defense, litigation or settlement of any claim or protest brought pursuant to any GOES-R Series procurement, the GSFC legal counsel will fully inform and seek concurrence from DOC legal counsel of any actions that it proposes to take.

1.8.4 GOES-R Series Program Office (GPO)

Figure 7 provides an illustration of the GOES-R Series Program's organizational structure. The program is NOAA led, with an integrated NOAA-NASA program office organization, staffed with personnel from NOAA and NASA, and co-located at NASA/GSFC to maximize program/project office efficiency. The following sections describe the organizational responsibilities for the program's senior leadership team.

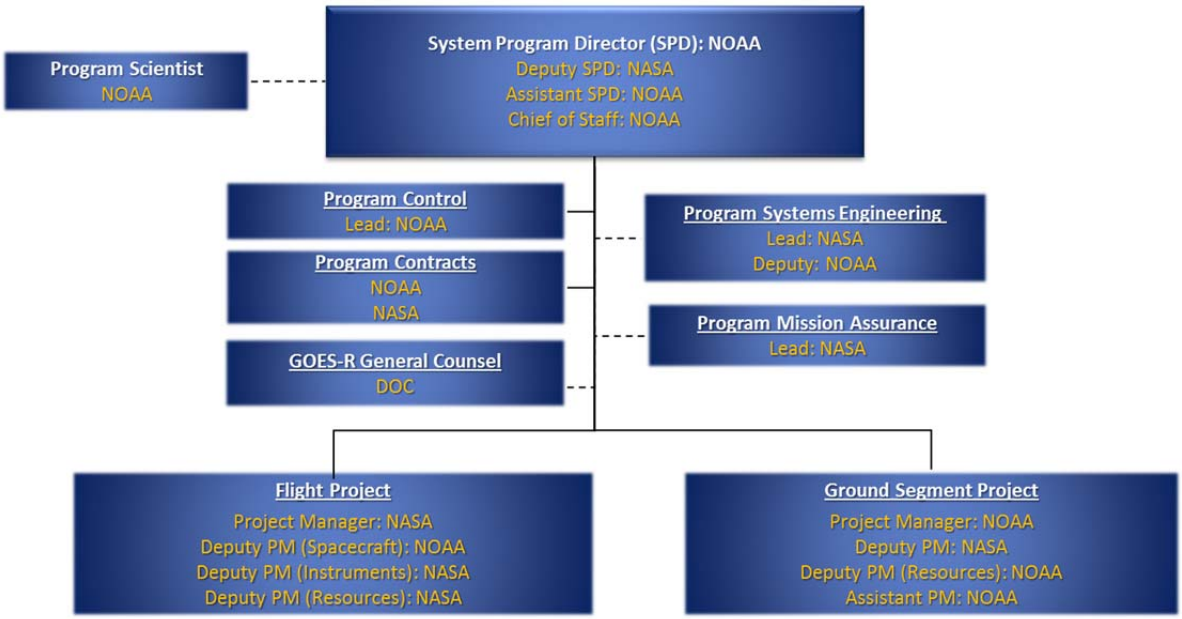

Figure 7: GOES-R Organizational Structure

1.8.4.1 GOES-R Series System Program Director (SPD)

Notwithstanding other duties set forth in the MCP, the SPD (a NOAA employee) has ultimate authority and responsibility for managing the overall performance and operation of the GOES-R Series program. The SPD reports to the NESDIS DAAS. The SPD is accountable to NOAA / NESDIS management for all aspects of the program, including financial, technical, information security, programmatic, and operational performance. The SPD sets the direction of the organization, articulates the vision, develops the goals, sets the programmatic and budget priorities, and guides internal policies and processes. The

SPD is responsible for all program status reporting to oversight activities and has sole authority within the program office to propose changes to policies and procedures as they apply to the GOES-R Series. The SPD prepares, defends, and executes the program budget, represents the program to external organizations and is the focal point and principal interface with internal NOAA/NESDIS components, Congress, oversight agencies, and Mission Partners. A summary of the SPD roles and responsibilities is provided below.

- Oversees the success of the GOES-R Series mission and implementation of the program and has ultimate functional authority over the program and projects;
- Leads the development of and approves acquisition strategies, approaches, and RFP documentation for the system PDRR and A&O Phase contracts per the FAR, and NOAA acquisition rules and regulations;
- Selects and evaluates the Assistant System Program Director, Ground Segment Project Manager, and Budget Officer (Program Control Lead);
- Approves selection and provides performance inputs for Flight Project Manager, Deputy System Program Director, Program Systems Engineer and Program Mission Assurance Manager in accordance with NASA policy;
- Provides selection and performance inputs for program and project personnel;
- Prepares, defends and executes the program budget in accordance with NOAA Planning, Programming, Budgeting, Execution System (PPBES) process;
- Utilizes Program Operating Plans (POP) developed for funding NASA personnel and facilities and NASA contracted efforts as part of the overall NOAA budgeting process;
- Designates teams and approves process for evaluations for the program contracts;
- Chairs the Performance Evaluation Boards (PEBs) for the spacecraft and major ground contracts, and will make recommendations to both the NASA and NOAA Fee Determination Officials (FDOs);
- Attends all pre-briefs and source selection evaluation meetings for the program NASA contracts and will give comments, questions and concerns to the NASA Source Selection Authority (SSA);
- Maintains integrated program schedule to include determination and monitoring of critical path functions in coordination with Program Systems Engineering, Project Managers and team leads;
- Performs all certification and accreditation related System Owner activities as identified in DOC, NOAA, NESDIS, and National Institute of Standards and Technology (NIST) IT Security policies and guidance, respectively;
- Chairs all program-level boards;
- Provides functional oversight and direction to Senior Management Team members; and
- Assures compliance with DOC, NOAA, and NIST Special Publication 800 Series of guidance.

1.8.4.2 Deputy System Program Director (DSPD)

The Deputy System Program Director (DSPD), a NASA employee, is responsible for the day-to-day operations of the Program, assuming any responsibilities delegated by the SPD. The DSPD has responsibility for managing the integration and execution of program activities and resources at the discretion of the SPD. As a NASA employee, the DSPD serves as the SPD bridge to NASA organizations, provides a NASA voice for GOES-R Series issues which have impacts to NASA, and provides insight on NASA decisions which impact the program. In the absence of the SPD, the DSPD assumes full decision-making authority for all program functions and activities.

A summary of the DSPD roles and responsibilities is provided below.

- Provides technical oversight and input to Program Control for responses to external and internal NOAA information requests, technical issues (i.e., system anomalies) and Congressional inquiries.

This includes coordination of technical responses with cognizant GOES-R Series division/project personnel;
- Provides technical oversight and input to Program Control for the development of all program-level briefings prepared for NOAA/NESDIS senior management and customers;
- Assures NASA Readiness Review process is consistent with KDP requirements;
- Promotes continuous improvement by identifying deficiencies and redundancies in program internal and external processes, facilitating agreement and acceptance of approved corrective action, communicating procedural changes, and monitoring the effectiveness of the implementation;
- Serves as a Member and Alternate Chair of all Program Boards (Management, Configuration Control, Risk);
- Attends and provides feedback from NASA GSFC oversight councils to include: Preliminary Monthly Status Reviews (Pre-MSRs) and MSRs, and ensure compliance with applicable NASA documentation and processes in coordination with the Project Managers;
- Supports the preparation of decision packages and progress reports for KDP briefings;
- Attends and provides feedback from NASA instrument and peer reviews, assuring requirements are met in coordination with the Program Scientist and the Project leads; and
- Provides oversight of the Program's Mission Assurance process through the Mission Assurance lead.

1.8.4.3 Assistant System Program Director (ASPD)

The Assistant System Program Director (ASPD) is a senior NOAA employee who reports to the SPD. The SPD and DSPD may utilize the ASPD's expertise to assist in any of their specific responsibilities and delegate responsibility as required. ASPD specific responsibilities include, but are not limited to:

- Directs the day-to-day implementation and execution of the organizational, administrative and financial operations of the Program Office;
- Performs studies and makes revisions to existing Program Office processes and procedures;
- Mentors and develops Program Office staff through expanded training and work opportunities;
- Develops and implements of strategies for hiring and retaining qualified employees;
- Enhances relations with NOAA/NESDIS and NASA associated offices;
- Serves as a member of the program interview panel for both NOAA and NASA employees as required; and
- Provides technical oversight and input to Program Control for program responses to external and internal technical inquiries with cognizant GOES-R Series division/project personnel support.

1.8.4.4 Program Scientist

The Program Scientist will be a NOAA employee at the program office level charged with providing the link between the operational user community of the GOES-R Series and the program office. The Program Scientist reports administratively to the NESDIS AA and functionally to the GOES-R Series SPD. The Program Scientist will perform liaison functions with NASA as assigned by the SPD, but primary responsibility will be as science authority representing the user community to the program office. The Program Scientist will work in coordination with a Flight Project and Ground Segment Project Scientist to accomplish the specific duties listed below:

- Collaborates with the NOAA, NESDIS, and GOES user community to define the users' needs, operational requirements, and science data (Level 2+) product requirements for the GOES-R Series mission;
- Chairs the GOES-R Operational Requirements Working Group (GORWG);
- Chairs the Science Demonstration Executive Board (replaced the Proving Ground Executive Board);
- Provides the principal scientific guidance to the System Program Director throughout the lifecycle of the program;

- Serves as a member of the NOAA senior science staff;
- Serves as a member of the Algorithm Development Executive Board (ADEB);
- Supports the formulation and reviews of the spacecraft, instruments, and ground segment to ensure and optimize scientific return;
- Convenes science and application working groups to suggest revisions of the system requirements for senior management review and to review program accomplishments in coordination with Flight and Ground Segment Projects;
- Supports algorithm development and enhancement, calibration and validation activities, outreach and training, and GOES-R Series Proving Ground product demonstrations to ensure algorithm and user readiness;
- Communicates with program and users on matters of inter-agency and international scientific coordination;
- Ensures GOES-R Series user requirements and the program constraints, appropriate to the mission, are captured in the GOES-R Series Level I Requirements Document (LIRD); and
- Provides support as key scientific advisor to the SPD in decisions that trade among performance, cost and schedule as well as decisions that trade among competing instrument suites and operational constraints on the spacecraft.

1.8.4.4.1 GOES-R Operational Requirements Working Group (GORWG)

The GOES-R Operational Requirements Working Group (GORWG), working under the leadership of the GOES-R Series Program Scientist, is a system specific working group of the NOAA Observing System Council (NOSC) established to identify and represent NOAA user observational requirements.

The primary role of the GORWG will be to represent NOAA users whose observation requirements have been allocated to the GOES-R Series System through the LIRD. Specific responsibilities of the GORWG are:

- Serves as the Focal point for all GOES-R Series operational requirements issues;
- Supports the development of the GOES-R Series System LIRD;
- Provides a science assessment to the NOSC of optimal instrument configuration and system implementation for the GOES-R Series system;
- Assesses user requirements impacts of the configuration change requests to the Level I Requirements; and
- Assesses anomaly impacts, mitigation strategies, including next launch needs.

1.8.4.4.2 GOES-R Series Technical Advisory Panels (TAPs)

Technical Advisory Panels (TAPs) serve as Advisory Panels to the GOES-R Series Program Office. TAPs were largely used during the instrument formulation phase. TAPs are available in an advisory capacity for the Flight and Ground segment contracts. TAPs are co-chaired by both a GORWG and Program Office representative. Specific responsibilities for the TAPs include:

- Works with the users and the GPO on any user-requested modifications to Level I requirements and resulting modifications to the MRD;
- Assesses impacts to Level I requirements due to system constraints provided from the GPO; and
- Serves as an advisory board to the GORWG in its role of assessing operational requirements for decision by the NOSC.

1.8.4.5 Program Control

Program Control provides the expertise required to manage the business and financial aspects of all GOES-R Series activities. The Budget Officer, who serves as the chief of the Program Control, reports to

the SPD and is responsible for the day-to-day monitoring, management and control of all budget and financial management activities, control and monitoring of the program schedule, and external reporting on the Programmatics. GOES-R Series Program Control will provide integrated support to all organizational elements within the GOES-R Series Program. Primary responsibilities include program-level strategic planning, policy development and coordination, Federal Managers' Financial Integrity Act (FMFIA) execution, communications, cost estimates, budget formulation, budget execution, financial analysis, programmatic planning to include Earned Value Management (EVM), Capital Planning, program schedule creation, maintenance and control, and external program reporting A summary of Program Control responsibilities are provided below.

- Executes the program-level strategic management activities;
- Creates and maintains all Program Cost Estimates;
- Facilitates integrated budget development and program control oversight functions with NESDIS AA and NOAA Chief Financial Officer;
- Develops all related and back-up material for the NOAA Budget Process;
- Oversees all capital planning (OMB 300) and other budgetary documents;
- Integrates Project-supplied budget inputs into the program budget preparation and conduct programmatic defense;
- Manages the financial control and funds execution in accordance with SPD direction;
- Matrixes personnel to the Projects and provide oversight of the EVM process;
- Manages the Workforce planning and support agreements as directed by SPD;
- Tracks and reports contract performance in association with the Contracts Division;
- Leads Program schedule generation, maintenance, and management efforts; and
- Prepares all reports on programmatics to outside entities (e.g., the annual congressional report and the monthly OMB dashboard report).

1.8.4.6 Contracts Division

NOAA and NASA agree to form a collaborative GOES-R Series Program contracting partnership to ensure effective and efficient support for all GOES-R Series Program and Project contract actions. NOAA and NASA Contracting Officers will retain full agency authorities, respectively, and continue agency reporting responsibilities while operating in partnership with each other. Contracting Officers must have appropriate warrant authority as required by NOAA and NASA regulations, policies, and procedures. The partnership intends to collaborate by:

- Sharing of contracting staff resources for NASA and NOAA contracts;
- Establishing action approval levels for Program review; and
- Operating within current NASA/NOAA processes, policies, and procedures.

The GOES-R Series Contracts Division provides procurement authority and expertise required for planning and contracting GOES-R business-related matters while ensuring program compliance with the Federal Acquisition Regulation (FAR), local (DOC, NASA) acquisition regulations, as well as applicable DOC, NOAA and NASA acquisition policies and procedures. The Contracts Division will be staffed as a matrix support activity with personnel from the NOAA Acquisition and Grants Office (AGO) organization and the NASA GSFC contracts office and will be located with the GOES-R Series Program. The GOES-R Series Contracts Division will provide integrated support to all organizational elements within the Program. A summary of the Contracts Staff includes the following responsibilities for Program Office Contracts, Flight Project Contracts and Ground Segment Project Contracts.

1.8.4.6.1 Program Office Contract Chief

- Acts as contract advisor to SPD

- Interacts with Flight and Ground Segment Project Contracting Officers for the purpose of maintaining communication relative to contractual matters.
- Provides Program review of program-related acquisition planning and implementation documents (e.g. acquisition and source selection plans, solicitations, awards, and modifications)
- Works with other government contracting support organizations to meet Program contract administration requirements
- Provides contractual advice to the SPD on all the GOES-R Series Award Fee efforts
- Coordinates interaction between Program Office, NOAA AGO contracting staff and NASA GSFC contracts office

1.8.4.6.2 Flight Project Contracting Officers and Specialists

- Utilizes NASA procedures as defined in the Goddard Procedural Requirements (GPR) on Procurement (GPR-5100.1G)
- Reports to the GSFC Assistant Chief for GOES-R Series Procurement and are matrixed to the Flight Project Manager in performance of their duties
- Provides bi-monthly summaries to the Program Office Contracting Officer
- Communicates contractual issues and actions that may have a significant effect on cost/schedule as they occur.
- Tracks and reports Flight Project contract performance and contract modifications in association with Program Control
- Authorizes, with SPD concurrence, changes to the GOES-R Series Flight Project contracts

1.8.4.6.3 Ground Segment Project Contracting Officers and Specialists

- Ensures all Ground Segment Project Contracts will be in accordance with NOAA AGO procedures and as specified in this section of the MCP
- Reports to NOAA AGO and are matrixed to the Ground Segment Project Manager in performance of their duties
- Provides bi-monthly contractual summaries to the Program Office Contracting Officer
- Communicates contractual issues and actions that may have a significant effect on cost/schedule as they occur
- Tracks and reports NOAA Ground Segment Project contract performance and contract modifications in association with Program Control
- Authorizes, with SPD concurrence, changes to the GOES-R Series ground segment A&O contract, and other NOAA-managed contracts as they relate to the Ground Segment

1.8.4.7 Program Systems Engineering (PSE)

The Program Systems Engineering lead reports to the SPD and is responsible for Mission systems integration, planning, coordination, and adjudication of the space and ground segments for the GOES-R Series Program Systems Engineering functions. The Program Systems Engineer position will be staffed by a NASA person, with a NOAA Deputy. The Program Systems Engineering Lead's duties and responsibilities are:

- Serves as program technical authority;
- Oversees verification and validation of GOES R Series system to ensure that Level 1 requirements are met;
- Defines, documents, and manages Level 2a requirements for the GOES-R Series architecture and end-to-end performance in coordination with mission internal and external stakeholders including continuity of operations;
- Defines, documents, and manages the GOES-R Series program systems engineering processes ensuring End-to-End systems integration and performance in accordance with the MCP and the Systems Engineering Management Plan (SEMP);

- Provides recommendations to SPD for standards, references, and technical tools to be applied on the GOES-R Series program;
- Provides periodic reports to the SPD on status issues, problems, deviations/waivers and corrective actions associated with program systems engineering efforts;
- Conducts, in support of the GOES-R Series SPD, program level technical reviews and convening working groups on program level issues;
- Oversees the program level risk management process;
- Chairs the Program Engineering Change Review Board (ECRB) for changes to the Level 2 requirements and other program documents;
- Performs configuration management of necessary interface requirements and interface control documents in coordination with Flight and Ground Segment Projects;
- Develops and oversees program level configuration management process;
- Manages cross project and program level technical margins in coordination with Flight and Ground Segment Projects;
- Performs program-level baseline and trade studies, technical analyses, and engineering peer reviews;
- Co-chairs any joint systems engineering working groups within NOAA/NESDIS or NASA as required;
- Serves as the focal point for any continuity of operations (COOP) issues in coordination with the Ground Segment Project; and
- Participates in the GORWG in an advisory capacity.

1.8.4.8 Mission Assurance

The Program Mission Assurance Manager (PMAM) serves as the mission assurance focal point for the Program Office and leads the team of assurance engineers along with their Mission Assurance Managers (MAM) that support the program and its projects. The Program Mission Assurance Manager is matrixed to the program office, and maintains an independent reporting path to the NASA GSFC Safety and Mission Assurance Directorate.

Specific disciplines within the SMA functions include:

- Systems safety, industrial safety, quality assurance, reliability, parts control, materials and process control, environmental verification, contamination control, workmanship standards and processes, software assurance, and design/technical reviews of all systems and instruments.

Specific responsibilities include:

- Manages and directs the overall mission assurance activities via Mission Assurance Requirements (MAR) for all Flight and Ground contracts;
- Formulates approaches and concepts and provides the recognized technical leadership and engineering responsibility in execution of the assurance management functions of the program;
- Ensures the generation and implementation of the Systems Safety Plan;
- Ensures the proper level of effort is being expended to meet all Mission Assurance Requirements;
- Ensures assessments of the SMA functions to ensure that proper levels of effort are being expended;
- Ensures program deficiencies are being identified and corrected;
- Ensures all contracts follow the MRB and FRB requirements set forth in the MARs;
- Ensure close call and mishap reporting requirements are followed;
- Ensures that assigned mission assurance personnel are properly directed and motivated to produce the best feasible product; and
- Works with Program Systems Engineering to ensure spacecraft, instruments and ground systems meet SMA objectives.

1.8.4.9 Flight Project Manager (FPM)

The Flight Project Manager (FPM) reports functionally to the SPD and receives line supervision from the Deputy System Program Director. The GOES-R Series FPM is responsible for all aspects of the Flight Project development and implementation lifecycle including conformance to technical performance, cost, and schedule requirements. The FPM is responsible for overseeing the contractor development and implementation of satellite, launch vehicle and related efforts. This includes acquiring, developing and deploying a satellite system that generates earth observation imagery in response to user needs. The FPM works with other Program staff members to oversee the development of the GOES-R Series architecture. The Flight Project Manager's specific responsibilities include:

- Manages and implements the GOES-R Series Space segment;
- Manages and oversees the acquisition of individual instruments and spacecraft;
- Reports functionally to the SPD;
- Manages the Flight Project budget, including allocated reserve;
- Controls and assesses all project activities consistent with the program/project plans;
- Works with the Program Systems Engineer and the Ground Segment Project Manager to confirm contractor deliverables meet the Ground Segment Project needs and requirements;
- Works with System Program Director, Program Systems Engineer and the Ground Segment Project Manager to effect the resolution of all critical and potential program problems;
- Leads the development and control of flow down requirements as they pertain to the Flight Project from Level 2 to lower levels in accordance with Configuration Management Plan; and
- Provides continuous risk management assessments, mitigations, and work-around identifications and implementations to the SPD.

1.8.4.10 Ground Segment Project Manager (GSPM)

The Ground Segment Project Manager (GSPM) reports directly to the SPD. The GOES-R Series GSPM is responsible for all aspects of the ground segment project development and implementation lifecycle including conformance to GOES-R technical performance, cost, and schedule requirements. The GSPM is responsible for all aspects involved in the design, development, implementation, integration, test, and transition of the GOES-R Series ground segment to safely operate the space segment and to produce earth observation products in response to program approved requirements. The GSPM works with other Program staff members to oversee the development of the GOES-R Series architecture and associated technology roadmap. The GSPM's specific responsibilities include:

- Manages and implements the GOES-R Series ground segment consistent with program/project plans;
- Reports directly to the SPD;
- Manages the Ground Segment Project budget, including allocated reserve;
- Controls and assesses all project activities consistent with the program/project plans;
- Works with the Program Systems Engineer and the FPM to confirm contractor deliverables meet the Ground Segment Project needs and requirements;
- Works with System Program Director, Program Systems Engineer and FPM to resolve all critical and potential program problems;
- Leads the development and control of flow down requirements as they pertain to the Ground segment from Level 2 to lower levels in accordance with Configuration Management Plan;
- Provides continuous risk management assessments, mitigations, and work-around identifications and implementations to the SPD;
- Manages the Ground Segment Project workforce planning and support agreements as directed by SPD;
- Tracks and reports Ground Segment contractor performance and Performance evaluation in association with the Ground Segment Contracting Chief;

- Leads Ground Segment schedule generation, maintenance, and management efforts; and
- Responsible for Property Management of all NOAA Property comprised in the Ground Segment hardware, software, and equipment.

1.8.4.11 GOES-R Series Program Legal Counsel

The DOC GOES-R Series Program legal counsel team consists of one DOC OGC Contract Law Division (CLD) staff attorney who serves as the primary point of contact for all legal matters arising from the GOES-R acquisitions and contracts administration, and also of two other CLD attorneys that support or supervise the line attorney. Members of the legal counsel team are full members of the GOES-R program.

The legal counsel team provides legal, contractual, and law-related technical advice and support to the GOES-R Series system program director. Such support necessarily extends to matters pertaining to all aspects of the program and its projects. Because complete information is a prerequisite to rendering sound and effective legal advice, the DOC GOES-R Series line attorney must enjoy access to program and project-related information that is pertinent to all counsel activities. The legal team will coordinate with appropriate NASA officials to access program information that is the exclusive property of NASA.

1.8.4.12 GOES-R Series Program Chief of Staff

The GOES-R Series Program Chief of Staff reports to the Assistant System Program Director and is responsible for the day-to-day operations of the GPO. Specific responsibilities of the Chief of Staff are listed below. Many of these functions require close coordination with the Program Control lead:

- Prepares coordinated program responses to external and internal NOAA, NASA, DOC, etc. information requests and Congressional inquiries;
- Serves as the primary contact for Office of the Inspector General and Government Accountability Office audits/reviews;
- Coordinates and responds to all program NOAA/NESDIS/Program-level actions;
- Coordinates development and review of program/NESDIS/NOAA executive correspondence and policy documents;
- Oversees external and internal communications activities for the Program. This includes all public affairs, educational, and outreach initiatives and coordination with NOAA/NESDIS and NASA/GSFC;
- Facilitates the weekly management action tagup meetings and the monthly Program Status Reviews (PSRs). This administration includes developing agendas and coordinating briefings.
- Coordinates the development of all program-level briefings prepared for NOAA/NESDIS senior management and customers;
- Implements and manages program-level logistics, communications, IT, facilities support, and administrative support functions;
- Oversees all program property management functions performed by the GOES-R Series Property Custodian; and
- Oversees all human resource management functions performed by the Administrative Officer.

1.8.5 Key NOAA Interfaces

The following section describes NOAA organizations and systems, which contribute to the GOES-R Series program's mission success.

1.8.5.1 National Weather Service (NWS)

The National Weather Service (NWS) uses GOES data for critical functions including forecasting and providing intensity estimates of hurricanes, identifying and tracking severe weather, issuing watches and warnings for severe weather and winter weather, analyzing forest fires (and resultant smoke), assimilating GOES data into numerical weather prediction models, and monitoring space weather. GOES uses data from NWS DCPs and numerical weather prediction models for the creation of higher order GOES-R Series products.

1.8.5.1.1 NWS Network Control Facility (NCF)

The GOES-R Series system will provide satellite imagery and products to the NWS Network Control Facility (NCF) in Silver Spring, MD, for use in NWS facilities. The NCF combines GOES-R Series data with radar, numerical weather prediction, in situ, text products and forecasts, and delivers them to the NWS Weather Forecast Offices and River Forecast Centers for use in the forecast and warning process.

1.8.5.1.2 National Centers for Environmental Prediction (NCEP)

GOES-R Series system data and products will be delivered to National Centers for Environmental Prediction (NCEP) and used for aviation weather, climatological analysis, environmental modeling, hydrometeorological forecasting, ocean prediction, space environment monitoring, storm prediction, and tropical weather forecasting.

1.8.5.1.3 National Weather Service Telecommunications Gateway (NWSTG)

The National Weather Service Telecommunications Gateway (NWSTG) acts as a switching station, receiving GOES products and delivering the data to the international community. Surface and other in situ data are routed from field sites back to NWSTG for use in GOES product processing.

1.8.5.1.4 Emergency Managers Weather Information Network (EMWIN)

NWS will send Emergency Managers Weather Information Network (EMWIN) data to the GOES-R Series system for relay and dissemination.

1.8.5.2 National Environmental Satellite, Data, and Information Service (NESDIS)

National Environmental Satellite, Data, and Information Service (NESDIS) components that contribute to the mission of the GOES-R Series include; the Office of Satellite and Product Operations (OSPO), Office of Systems Development (OSD), Center for Satellite Applications and Research (STAR) and Data Centers.

1.8.5.2.1 Office of Satellite and Product Operations (OSPO)

The Office of Satellite and Product Operations (OSPO) will provide the following functions for the program:

- Manages and operates the GOES-R Series system for product generation and distribution once operational;
- Coordinates with the GOES-R Series system direct broadcast community to communicate changes in broadcast services;
- Sends high-rate information transmission (HRIT) data to the GOES-R Series system for rebroadcast to HRIT user community;
- Brokers requests for instrument scanning mode changes between the requestor and GOES-R Series satellite operations;
- Provides 24/7 user help desk for ground segment product generation and distribution services to operational users;

- Participates in the source selection activity for the ground segment;
- Participates in ground segment reviews for design, development, implementation, integration, testing and transition to operations;
- Manages and operates the mission management and enterprise management system.
- Manages and operates the functions at the ground acquisition site, Wallops Command and Data Acquisition Station (WCDAS);
- Performs engineering management, trending, and analysis for the GOES-R Series spacecraft;
- Manages the GOES-R Series backup facility and its operation;
- Participates in procedures and plan reviews;
- Participates in space and ground design reviews;
- Participates in training and mission simulations, Ground System integration and testing;
- Serves on Post-Launch Test (PLT) teams as sub-system engineers; and
- Participates in development operations transition plans and training operational crews.

1.8.5.2.2 Office of Systems Development (OSD)

Office of Systems Development (OSD) will support the GPO in sustaining engineering, maintenance, and technology refresh of GOES-R Series Ground Segment assets. OSD will also support the definition, design, and implementation of new systems into the GOES-R Series environment. The OSD will be responsible for acquisition and development of several system components of the Ground Segment including the GOES-R Access Subsystem (GAS) portion of the Environmental Satellite Processing and Distribution Services (ESPDS) procurement, the Ancillary Data Relay System, and the communications infrastructure to interface the Ground Segment with the DCS and EMWIN/HRIT ground systems. The OSD Ground Systems Division will be responsible for long-term refresh and sustainment activities required for the ground system. OSD will provide technical support to the Program Systems Engineering Team.

1.8.5.2.3 Center for Satellite Applications and Research (STAR)

The Center for Satellite Applications and Research (STAR), formerly Office of Research and Applications (ORA) is the home of the Algorithm Working Group (AWG). STAR acts in an advisory capacity to the program, leading the Calibration Working Group, and providing members for the Integrated Modeling Working Group. The AWG will develop scientific algorithms for each GOES-R Series product and supply proxy data for simulating system inputs and outputs. STAR will also assist the contractor during calibration activities. All AWG products will be delivered first to the GSPM for evaluation. The GSPM will then provide the materials to the GS prime contractor as Government Furnished Information (GFI). The algorithm development process is outlined in the Algorithm Development Management Plan for Ground Segment Product Generation.

1.8.5.2.4 Data Centers

There are two NESDIS data centers that archive GOES-R Series data:

- National Climatic Data Center (NCDC), one node of CLASS: GOES-R will provide data to NCDC for long term archive
- National Geophysical Data Center (NGDC), one node of CLASS: the GOES-R Series will provide data to NGDC for long term archive

1.9 Implementation Approach

1.9.1 Acquisition Management

1.9.1.1 Source Selection Evaluation Board Process

NOAA and NASA roles and responsibilities for source selection are documented in the MoU. Ground segment source selections will follow the FAR, and NOAA acquisition policies. Space segment source selections will follow the FAR and the NASA FAR supplement.

For space segment procurements, NOAA will participate in NASA acquisition and contract execution activities as identified in the approved acquisition strategy, including, at a minimum: The NESDIS AA will attend any Source Evaluation Board (SEB) briefings to the NASA Source Selection Official (SSO) concerning this acquisition or the source selection thereof.

The NASA space procurement strategy and source selection approach will be reviewed and approved at the NASA Headquarters-Level Procurement Strategy Meeting. NASA procurement authority has been delegated to the GSFC. GSFC and GPO will review and approve the Request for Proposal (RFP) package. The NOAA ground procurement strategy and source selection approach will be reviewed and approved by NOAA and NOAA IT Review Board (NITRB), GPO, AGO and DOC.

NASA will provide the Source Selection Official (SSO) for the space procurements and NOAA will provide the SSO for the ground procurements. Both the Space and Ground segment Source Evaluation Boards (SEB) will have NOAA and NASA personnel. Throughout the NASA source selection process, the NESDIS AA will participate in SSO briefings.

The NESDIS AA will be afforded a reasonable opportunity to provide comments, ask questions and express concerns orally and/or in writing to the SSO to consider prior to the SSO's selection. In all cases, a written NESDIS assessment will be provided.

1.9.1.2 Contracts Management

When acquiring goods and services in support of the GOES-R Series program, all program office and project office personnel will utilize the FAR, respective agency supplemental (DOC, NASA) acquisition regulations, as well as respective NOAA and NASA acquisition policies and procedures. Contracting Officer's Technical Representatives (COTRs) will be specifically designated by a NOAA or NASA Contracting Officer in accordance with agency training requirements. COTRs will coordinate appropriate contracting activities with the NOAA or NASA contracting officer in accordance with applicable regulations. Figure 8 shows contracts management controls.

Control Objective/Risk	Management Control	Documentation Source
Ensure acquisition plans represent sound business approach to acquiring goods and services	Acquisition plans above values designated in the respective DOC, NOAA and NASA policies and procedures are reviewed by senior acquisition officials. NOAA Acquisitions leading to KDP-I were reviewed by the DOC Acquisition Review Board and Commerce IT Review Board (CITRB). Future Acquisitions will be reviewed by the DOC Investment Review Board.	FAR, CAR, NASA FAR Supplement, Commerce Acquisition Manual, NOAA Acquisition Handbook, local NOAA/NASA policies
Ensure prospective solicitations and contracts comply with FAR, and applicable NOAA and NASA regulations	Prospective NOAA contracts are reviewed by NOAA AGO review panel and DOC Office of General Counsel. For Flight Project contracts managed by Goddard, the current version of the Goddard Procedural Requirements (GPR) 5100.1 will be followed.	Commerce Acquisition Manual, NOAA Acquisition Handbook Goddard Directive Management System
Ensure communication between the Program Office and Project Office	Assignment of GOES-R Program Office Contracting Officer – Project Contracting Officers are required to provide a brief summary of status to Program Office Contracting Officer bi-monthly and communicate contractual issues and actions that may have a significant effect on cost/schedule as they occur.	MCP

Figure 8: Contracts Management Controls

1.9.1.3 Performance Management

NOAA and NASA roles and responsibilities for Award Fee determination are documented in the MoU. The projects will develop an award fee plan for each acquisition, and coordinate such with NOAA and NASA as applicable. The GPO will develop a process to jointly evaluate applicable aspects of the flight and ground segment contracts.

Contractor performance will be assessed on a periodic basis and will consider management, cost, schedule and technical performance.

The award fee process will be implemented according to the respective Performance Evaluation Plans (PEPs) for each implementation contract. The SPD will concur with the Award Fee Plan for Flight and Ground Segment Projects, NESDIS may concur as well to both projects' Award Fee plans. For major elements, spacecraft contract and ground contract, the GOES-R SPD will chair the Award Fee PEBs. The PEBs are responsible for evaluating contractor performance, based upon the approved PEP. Depending on the contract, the PEB Chairman will make fee recommendations to the appropriate Fee Determination Officials (FDOs). For NOAA, the FDO will be the NESDIS AA. For NASA, the FDO will be the GSFC Director of Flight Projects. For the spacecraft contract, prior to a final fee decision, the NASA FDO will provide rationale for the fee determination to the NESDIS AA. The NESDIS AA will be given reasonable opportunity to provide a written or verbal assessment on the intended award fee decision to the FDO prior to the award fee decision. For instruments, the SPD will be given reasonable opportunity to provide a written or verbal assessment on the intended award fee decision to the FDO prior to the award fee decision. In all cases, a written NESDIS assessment will be provided.

On an annual basis, the NESDIS AA and NASA counterpart will conduct a joint review of the effectiveness of the award fee determination process for the GOES-R Series program. Findings and recommendations will be reported to the DUS/O and to DOC.

1.9.2 Property Management

The Property Management process complies with federal regulations and appropriate agency property and logistics management directives and instructions. NOAA Property Management is conducted in accordance with the NESDIS Interagency and Other Special Agreements Manual, Appendix on Control of Government Owned Property. The NASA Property Management process complies with federal regulations and NASA property and logistics management directives and instructions. This section provides details called out in the MoU section 9, Control of Government Owned Property.

1.9.2.1 Control of Government-Owned Property Process Description

This section documents the areas of property administration that will be accomplished by GSFC property managers and program/NESDIS property managers.

This direction addresses all equipment that was purchased and/or provided by program/NESDIS for a contractor (Government-Furnished Products (GFP)). It also addresses all property purchased by a contractor at the direction of GSFC (Contractor-Acquired Property (CAP)) that is retained as government-owned equipment by the program/NESDIS.

1.9.2.1.1 GSFC Responsibilities

The GSFC responsibilities for the GOES-R Series Program include the following:

- Manage property at GSFC that is purchased with program funding for use by NASA or its support contractors in accordance with all applicable FAR and the NASA FAR Supplement (NFS)
- Provide an annual inventory of all property at GSFC that is purchased with program funding for use by NASA or its support contractors. The inventory should include all mandatory element fields required to maintain the NOAA Property system. These fields are:
    - The Federal Supply Class
    - Property Identification Number
    - Manufacturer and model number
    - How it's acquired (e.g., constructed, purchased, transferred)
    - From whom acquired
    - Acquisition cost
    - Acquisition date
    - Physical location.
    - Identify whether it is GFE or CAP
    - Optional fields include:
        - Model name
        - Source document number (purchase order, contract)
        - Serial number
- Ensure that all applicable proper property clauses from the FAR and NFS are incorporated into any NASA GOES-R Series contract
- Ensure that each NASA GOES-R Series contractor provides the annual NASA Form 1018, NASA Property in the Custody of Contractors. and that a copy is provided to the NESDIS Program Office
- Provide a list of any such property to the Program Property Manager prior to any disposition of such property

1.9.2.1.2 GOES-R/NESDIS Responsibilities

The NESDIS responsibilities for the GOES-R Series Program include the following:

Notify GSFC property management organization of any property on the Inventory Schedule list of which they may want to take possession and provide shipping instructions. The program/NESDIS may take possession of their property at any time under any circumstance, except that NASA shall have the opportunity to transfer data from computers prior to such action.

- Inform GSFC property management organization of any NOAA regulatory changes that may have an impact on property controls
- Include the following mandatory internal data before inventory reports are sent to the NOAA Regional Property Manager for review: Commerce Business System (CBS) Accounting Classification Code Structure (ACCS), Property Accountability Officer, Property Custodial area, and Property Custodian
- Record all property related to this project in the NOAA Personal Property System
- Retain copies of all NOAA contract close out documents
- Retain copies of the Inventory Report to the program/NESDIS for all NOAA Government-Furnished Equipment and all NOAA Contractor-Acquired Property purchased with program/NESDIS funds
- Ensure that proper disposal procedures are followed in accordance with the FAR

1.9.3 Facilities Management

Office space is allocated to each project/division based on current staffing requirements. Each project/division is responsible for assigning and managing office space within its allocated area, with approval from the ASPD. Each year, as a minimum, Program Control will assess space requirements and allocations with projects. Any significant changes in overall program space requirements will be managed via the GSFC space management board process.

1.9.3.1 Co-located GOES-R Series Program and Project Offices

The GOES-R Series Program and Project staffs include government and contractor personnel collocated on multiple floors within Building 6 at GSFC, Greenbelt, MD which share common resources such as power, water, telecommunications, computer support and other resources. The facilities are owned and operated by NASA and provided based upon a MoU agreement between NOAA and NASA, a copy of which can be found in Appendix B of this document.

1.9.3.2 NOAA Satellite Operations Facility (NSOF) Spaces

Space for up to 25 GOES-R Series Program/Ops Project staff members (government and contractors) will be required at NSOF during the A&O Phase of the GS implementation. This is to ensure that proper oversight and management can be provided through this phase.

In addition, twenty spaces for the Mission Operations Support Team (MOST) (government and contractors) will be required at NSOF during all pre-launch and post-launch spacecraft and ground system testing. These spaces will be required from fiscal year (FY) 2012 until six months after the launch of the last GOES-R Series satellite.

1.9.3.3 Wallops Ground Facility

For Wallops, space for up to 10 GOES-R Series Program/Ops Project staff members (government/ contractors) will be required during the A&O Phase of the GS implementation.

1.9.3.4 Remote Back-Up (RBU) Facility

At the Remote Back-Up (RBU) Facility, up to 20 GOES-R Series Program/Ops Project staff members (government/contractors) will require office space during the A&O Phase of the GS implementation. The staff member requirement depends on the level of back up functionality approved for the facility. Operational spaces will be required to house back-up ground systems. Facilities for the RBU will be acquired in accordance with the Code of Federal Regulations (CFR) 41 Chapter 101, Public Contracts and Property Management, and relevant NOAA regulations.

2. Program Baseline

2.1 Requirements Baseline

Mission requirements are derived from the Consolidated Observational Requirements List (CORL), validated by NOAA Observing System Council (NOSC), and are documented in the GOES-R Series Level I Requirements Document.

2.2 Work Breakdown Structure (WBS) Baseline

The GOES-R Series Program Work Breakdown Structure (WBS) Definitions Document (P417-R-WBS-0078) provides the framework for specifying the work to be performed for the program.

2.3 Schedule Baseline

Schedule Management is conducted in accordance with the GOES-R Series Program Schedule Management Plan (410-R-PLN-0193).

2.4 Resource Baseline

The program receives its annual budget via DOC/NOAA Congressional appropriations processes. NOAA utilizes a Planning Programming Budgeting and Execution System to budget and allocate its funding. The GPO shall submit its budget yearly for incorporation into the overall NESDIS and NOAA budgets. The initial resource baseline was established at KDP-I and will be finalized at KDP C. The process used yearly to establish the GOES-R Series budget for subsequent years is outlined in the Program Control Functions Section 4.0.

2.5 Program Commitment Agreement

The GOES-R Series Program Commitment Agreement (PCA) augments the Level 1 technical requirements and annually identifies budgetary and schedule limitations established by the DUS/O and accepted by the GOES-R SPD. The Program Commitment Agreement will include:

1. Program Overview
2. Schedule Commitment
3. Cost Commitment
4. Additional information not already addressed in Level I or MCP necessary to be consistent with requirements for PCA outlined in NPR 7120.5.

The PCA will be signed by the GOES-R Series SPD, NESDIS AA, and NOAA DUS/O who is the final approval authority for the GOES-R PCA.

3. Program Control Plans

3.1 Technical Authority (TA)

The technical authority (TA) process outlined in NPR 7120.5 is explicitly adapted herein to suit the unique inter-agency structure of the GOES-R Series Program. The GOES-R Series TA Model applies with equal force to both the Flight Project and the Ground Segment Project, and establishes a system of checks and balances to ensure that technical decisions having significant impact on the Program are not arbitrarily made. The technical authority process allows the designated TA to elevate a technical disagreements having significant impact on the Program or Projects to the appropriate level of technical oversight. The TA Model should not be construed to deprive the SPD or the Project Managers of their ultimate responsibility for the respective Program or Project success in conformance with governing requirements.

Infrequent circumstances may arise when a TA or the Program/Project Manager may disagree on a proposed programmatic or technical action and judge that the issue rises to a level of significance that the next higher level of management should be involved. In such circumstances:

- The Program/Project Manager (or Chair of the controlling board) has the authority to make a decision while resolution is attempted at the next higher level of Programmatic and TA;
- Resolution should occur prior to implementation whenever possible. However, the Program/Project Manager may proceed at risk in parallel with pursuit of resolution if they deem it in the best interest of the program/project. In the event that the Project Manager determines that proceeding with a proposed course of action is in the best interest of the program although the TA dispute has not been resolved, the Project Manager shall inform the Program Manager of such rationale and seek the specific authorization of the SPD before proceeding; and
- Resolution should be attempted at successively higher levels of Programmatic Authority and TA until resolved.

There are three distinct types of TA: Engineering TA, Safety and Mission Assurance (SMA) TA and Science TA. These TAs are separate entities, focused on different aspects of requirements as described in this document.

3.1.1 Engineering Technical Authority (ETA)

For the GOES-R Series Program, engineering technical authority is exercised by the Program Systems Engineer. For the Flight Project, the TA is the Project Systems Engineer. For the Ground Segment Project, the TA is the Ground Segment Systems Engineer.

Oversight of the Technical Authority process for the flight project is by the Applied Engineering and Technology Directorate (AETD) Branch and Division management. Additional technical oversight for flight is provided via the NOAA program office system engineering team, and any other individual that may be designated by the DUS/O. For the Ground Segment Project, oversight will be a joint effort between NESDIS OSD and NASA AETD. The Project level ETAs are responsible for coordination with the Program TA.

The GSFC Director of Applied Engineering and Technology and NESDIS DAAS will provide a forum to hear appeals of the Program Level TA.

3.1.2 Safety and Mission Assurance Technical Authority (SMATA)

The GOES-R Series Program, mission assurance TA is exercised by the Program Chief Safety and Mission Assurance Officer (CSO). For the Projects, the SMATA is the CSO (Flight Project) and the Mission Assurance Manager (Ground Segment Project).

Oversight of the TA process for both projects will be provided by the NASA GSFC Safety and Mission Assurance Directorate. Additional mission assurance technical oversight for both projects is provided via the NOAA program office system engineering team, and any other individual that may be designated by the DUS/O. The Project level TAs are responsible for coordination with the Program TA.

The NASA GSFC Safety and Mission Assurance Director and NESDIS DAAS will provide a forum to hear appeals of the Program Level SMATA.

3.1.3 Science Technical Authority (TA)

For the GOES-R Series Program and projects, science TA is exercised by the Program Scientist.

Technical oversight will be NESDIS with support from the NOAA Observing Council (NOSC).

The NOSC will provide a forum to hear appeals of the Program Scientist.

3.1.4 Technical Authority Appeal Paths

See Figure 9. If the issue is not resolved in the above forums, respective program appeal authorities, will brief the NESDIS AA, NOAA, and the GSFC Deputy Director regarding the facts, details, and impacts of the technical disagreement between the PSE or Mission Assurance and the SPD. The NESDIS AA and the GSFC Deputy Director will meet to resolve the issue.

If no resolution is achieved at this level, the NESDIS AA and GSFC Deputy Director will brief the NOAA DUS/O, NASA Chief Engineer (for flight project), and NASA Chief Safety and Mission Assurance Officer (for mission assurance) regarding the facts, details and impacts of the technical disagreement.

The NOSC will provide a forum to hear appeals of the Program Scientist.

The NOAA DUS/O has ultimate authority to resolve disagreements.

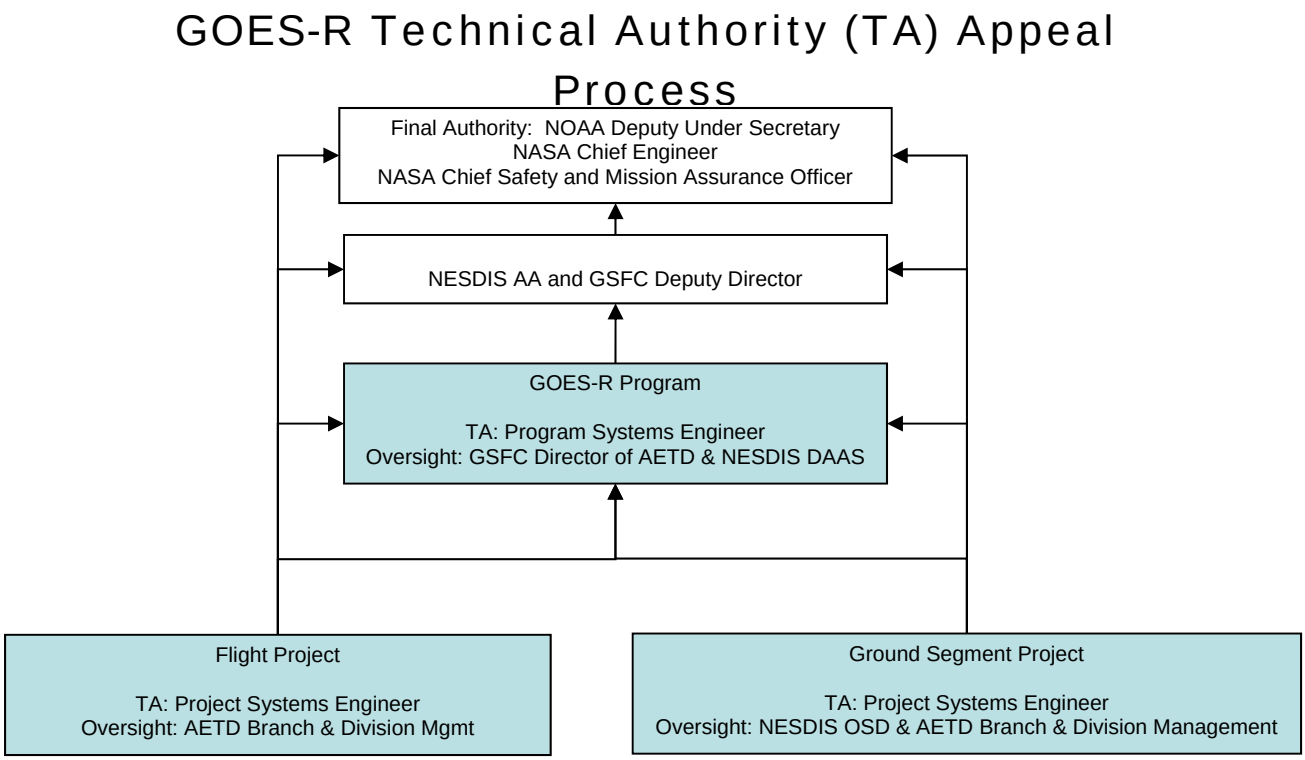

Figure 9: GOES-R Series Technical Authority Appeal Process

3.2 Review Plan

The GOES-R Series program will execute a series of reviews that assess health and status of the program/ projects throughout the life of the program and provide approval to proceed to the next phase. The process, objectives, and entrance and success criteria for these reviews are described in the System Review Plan (SRP) (410-R-PLN-0052). Figure 10 outlines those reviews along with accompanying milestones.

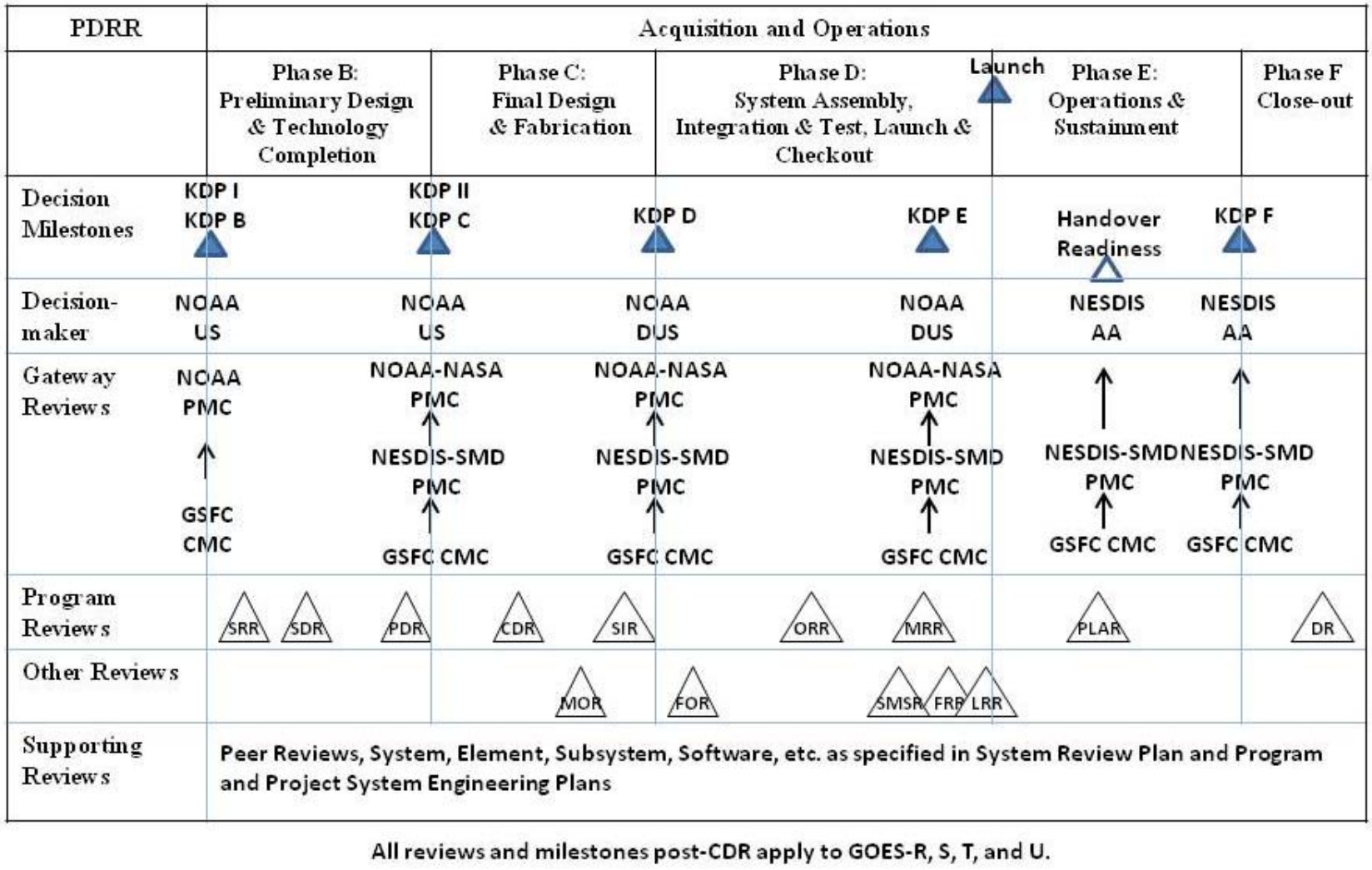

Figure 10: GOES-R Series Assessment Reviews and Milestones

3.2.1 Key Decision Points (KDP)

There are five Key Decision Points (KDP) and two readiness milestone reviews identified for the GOES R Series program. The Secretary of Commerce is the designated KDP Milestone Decision Authority for Department of Commerce KDP Milestone Decisions. The Secretary delegated the KDP decision authority to the NOAA Administrator (Under Secretary of Commerce for Oceans and Atmosphere) on December 21, 2007.

- KDP B: The NOAA Administrator authorized the GOES-R Series program to proceed to implementation (acquisition and operations) phase on January 4, 2008. This allowed the program to begin the source selection processes for the spacecraft and ground systems.
- KDP C - Program Baseline Review: Budget and Schedule baselines are established for DOC and congressional oversight purposes. This is the baseline to which NOAA will hold the GOES-R Series program accountable. The NOAA US is the approval authority for KDP C
- KDP D - Mission Integration Readiness: The Program will certify that the projects are prepared to be integrated into an end-to-end GOES-R Series system. This transition is uniquely a "soft gate," in which the program may initiate integration work immediately, absent a notice of discontinuance by the NOAA DUS/O who is the decision authority for this milestone.
- KDP E - Mission Readiness Review: The program is prepared to solicit Kennedy Space Center led Flight Readiness and Launch Readiness Reviews in preparation for satellite launch and ground system operation. The decision authority for this milestone is the NOAA DUS/O.
- Launch Readiness Review: The program is ready to launch and perform early operations. The decision authority for this review is the NESDIS AA.
- Handover Readiness: Program certifies readiness to transition observatory to the flight operations team. The decision authority for this milestone is the NESDIS AA.
- KDP F - End of Mission: Signals the end of the operational use of the system and the beginning of the disposal phase. The decision authority is the NESDIS AA.

3.2.2 Program Readiness Reviews

Program readiness reviews will be held to determine readiness for KDP reviews. The NOAA-NASA PMC is the decision forum for the readiness reviews with the exception of the Handover Readiness Review and KDP F. For these exceptions, the NESDIS/SMD PMC is the readiness decision forum. The NOAA-NASA PMC reviews will be preceded by a GSFC CMC readiness review and a NESDIS/SMD PMC readiness review, the results of which will be presented as a recommendation for readiness to the NOAA-NASA PMC to support the readiness review decision. The Joint NESDIS/SMD PMC readiness reviews will be preceded by a GSFC CMC readiness review, the results of which will be presented as an advisory assessment to the Joint NESDIS/SMD PMC to support the readiness review decision.

3.2.3 Product Maturity for Readiness Reviews

The product maturity matrix and plan maturity matrix for each Program/Project milestone review are the Project Milestone Product Maturity matrix (Table 4-3) and the Project Control Plan Maturity Matrix (Table 4-4) from the NPR 7120.5 as applicable.

3.2.4 Independent Reviews

The purpose of Independent Reviews is to add value and reduce risk through the infusion of expert knowledge that is independent of the subject product development activity. The review teams' roles are advisory to the convening authorities and do not have authority over any Program content. These reviews provide expert assessment of the technical and programmatic approach, risk posture, and progress against the program baseline.

The GOES-R Series System Review Plan (SRP), 410-R-PLN-0052, establishes a plan for conducting a comprehensive set of Independent Reviews at all levels of the GOES-R Series Program at critical milestones. The SRP identifies two primary review bodies: the Standing Review Board (SRB) and the Integrated Independent Review Team (IIRT). The specific roles of each are covered in subsequent subsections. The Program and Projects have specified milestones in each phase, which require the convening of the SRB or IIRT as appropriate to assess completion.

3.2.4.1 Standing Review Board (SRB)

A GOES-R Series Standing Review Board is chartered on behalf of the NOAA-NASA PMC and the GSFC CMC. The DUS/O (NOAA Administrator's Designee) and the Associate Administrator, NASA have authority to determine the scope and the chairmanship of the SRB. The NESDIS AA and GSFC Deputy Center Director approve the membership of the SRB.

The SRB will comprise experts in both NASA and NOAA systems that are fully independent of the GPO. Through the planned series of reviews, the SRB will evaluate the adequacy of the planning, design, and implementation and associated processes to safely and successfully accomplish the mission requirements. The SRB will also assess GOES-R Series programmatic performance and ability to deliver on commitments.

The SRB chair is accountable to the NOAA-NASA PMC and GSFC CMC, conducts the reviews and reports completion of milestone review assessments to a NOAA-NASA PMC to which NESDIS, SMD and GSFC CMC members have been invited.

3.2.4.2 Project Integrated Independent Review Team (IIRT)

Project milestones are assessed by IIRTs established as described in the Program System Review Plan (410-R-PLN-0052). The chairs of the IIRTs will conduct the review and report findings to a NOAA-NASA PMC to which GSFC CMC, NESDIS and SMD members have been invited.

3.3 Risk Management (RM) Plan

Risk is characterized by the combination of the probability or likelihood that the program will experience an event and the consequences, impact, or severity of the event, were it to occur. Risk Management (RM) is a continuous, iterative, and proactive process to manage risk and achieve mission success. The process involves identifying, analyzing, planning, tracking, controlling, documenting, and communicating risks effectively. RM begins in the end-to-end Systems Architecture Definition phase and continues through the operations and disposal phase with the disposition and tracking of existing residual and new risks.

The SPD will take a proactive approach to managing risk as documented in the Risk Management Plan (410-R-PLN-0081). The GOES-R Series Program and Projects will adhere to the same Risk Management Plan. The RM process will be implemented by the SPD and will include the establishment of a Risk Management Board (RMB) chaired by the SPD. The Project Managers will establish and chair project-level risk boards that will be coordinated with the program level board.

The GOES-R Series program/projects will utilize RM as a decision-making tool to ensure safety and to enable programmatic success. Decisions will be made based on an orderly risk management effort that includes the identification, assessment, mitigation, and disposition of risks throughout the program's life cycle. Applying the RM process also ensures that risk is communicated clearly and consistently to NOAA and NASA management councils

3.4 Concept of Operations (CONOPS) (Flight and Ground Operations Plans)

The Concept of Operations (CONOPS) for the GOES-R Series program is described in detail in the GOES-R CONOPS document P417-R-CONOPS-0008.

3.5 Systems Engineering Management Plan (SEMP)

The GOES-R Series Program Systems Engineering Management Plan (SEMP) 410-R-PLN-0069 defines the technical approach to managing and executing mission systems engineering throughout the life cycle of the program. This represents the full end-to-end system – from capture of energy irradiating on the space-borne instruments to final product distribution. In addition to the Program SEMP, the Flight Project and Ground Segment Project have developed SEMPs to cover their respective Systems Engineering segment responsibilities.

The End-to-End System will become a seamless integration of the Space Segment and the Ground Segment, which will generate and distribute products to the end users and to the NOAA archive and retrieval system, CLASS. Most interfaces between the major subsystems as well as with the Users are bi-directional and interactive. The system must ensure that these sub-systems work together while meeting the stringent performance and reliability requirements. Program Systems Engineering (PSE) will ensure these interfaces are properly designed and implemented. Further, a series of “end-to-end” tests will be conducted as the system is integrated to ensure that all operational and contingency modes perform and meet the Mission Requirements. Actual flight and operational ground system hardware and software will be used for much of this testing. Independent analysis of the designs and relevant special tests will be performed when functional and performance testing is not feasible. System level testing activities will extend through the launch and checkout of the first satellite to ensure the system operates reliably and as efficiently as possible.

3.5.1 Requirements Management

The NOAA Executive Panel and NOAA Executive Council have delegated approval authority to the Deputy Under Secretary for the user requirements or Level I requirements, which are the basis for the GOES-R Series system acquisition.

The NOAA Observing System Council is the program requirements validation body. The NOSC, along with the NOAA PMC, are the advisory bodies to the Under Secretary for NOAA's Earth observation and environmental observation-related data management (end-to-end collection, processing, storage, archiving, accessing, and disseminating) activities.

The GOES-R Series Requirements Management Process is the process by which user requirements for environmental data from geostationary satellites and ground processing systems are generated. The requirements are translated into more detailed system specifications and are assessed for impacts.

3.5.2 Requirements Hierarchy

Figure 11 depicts the GOES-R Series system requirements hierarchy.

Requirement Level	Baseline Document	Document Custodian & Control Process	Reviewing Body	Approving Body
NOAA Observing Systems Architecture (NOSA)	Consolidated Observational Requirements List (CORL)	NOAA Observing Systems Council (NOSC)	NOSC	NOAA Executive Council (NEC)
Level I	GOES-R Series Level I Requirements Documents	GOES-R Series Program Office (GPO)	NOSC, NOAA PMC, NESDIS AA/DAA	NOAA DUS/O
Level II	GOES-R Series Management Control Plan	PSE	NESDIS AA/DAA NASA/GSFC PMC	NESDIS AA, NASA/GSFC Center Director
Level IIa	Mission Requirements Document	PSE	GOES-R Program GORWG	GOES-R SPD
Level III	GOES-R Project Plans	GOES-R Projects	GOES-R Program	GOES-R SPD
Level IIIa	Project Level Interface Documents and Functional Specifications	GOES-R Projects	GOES-R Program	GOES-R Project Managers

Figure 11: GOES-R Requirements Documents Hierarchy

All GOES-R Series requirements are derived from the NOAA Consolidated Observation Requirements List (CORL), which documents and prioritizes observational requirements across all NOAA Programs. The NOAA Observing Systems Council coordinates annual updates of the CORL and performs two functions:

- Allocation of user identified observing requirements to the appropriate NOAA observing system program office
- Verification that the observing systems are consistent with NOAA's existing and planned Observing Systems Architecture

GOES-R Series Level I Requirements, documented in the GOES-R LIRD (P417-R-LIRD-0137) are the user/science requirements that the CORL allocated to the GOES-R Series Program.

The Level I requirements serve as the supervisory requirements document for the Program. All other requirements documents flow down from the Level I documents.

At Level II, the MCP outlines management processes required to execute programmatic responsibilities. Requirements from the MCP are used to create and execute project plans at Level III. The Program-level technical Mission Requirements Document (MRD 410-R-MRD-0070) derives Level I requirements into Level IIa mission engineering requirements used to acquire the GOES-R Series System. The MRD is the primary requirements document for the system PDRR and A&O contracts.

At Level III, the MRD is used to create Level IIIa requirements, which are subsystem, element and interface-level requirements documents. They are maintained and controlled by the Flight and Ground Segment Projects. Level IIIa requirements documents become contractual documents provided to development contractors for the GOES-R Series system.

At Level IV, Level IIIa requirements are used to create Level IV requirements by the development contractors. Level IV requirements become the contractor's system and subsystem specifications for the design, development, and testing of the GOES-R Series systems and subsystems.

3.6 Documentation and Configuration Management Plans

3.6.1 Configuration Management (CM) Plan

The Configuration Management (CM) process is the disciplined approach used to control the baseline by imposing requirements for configuration identification, change control, status accounting, and audits. Level I, Level II and Level IIa documentation will be controlled via Program CM. Level III documentation will be controlled by the appropriate Project CM process. Representatives from both the Flight Project and Ground Segment Project are included in all reviews of program level documentation. In addition, the Program System Engineer and Deputy are part of the review process for all Project configuration controlled documentation. The requirements serve as the foundation upon which the contractors will design and build the GOES-R Series system. The CM Process for the Program is outlined in 410-R-PLN-0084.

The objective of this GOES-R Series Program CM process is to implement and maintain a CM system that will:

- Establish a process for configuring all level II Program baseline documentation through all phases of the GOES-R Series Program;
- Manage and control level II system configurations and program data;
- Establish a process for performing administrative and editorial changes to the Level I baselines
- Establish a GPO Change Control Board (CCB); and
- Coordinate GPO CM activities with the Flight Project and Ground Segment Projects' CM activities.

3.6.2 Program Documentation

The GOES-R Series Program Records Management processes for the library and all other documentation are contained in the GOES-R Records Management Document, 410-R-DOC-0231.

3.7 Mission Assurance Plan (MAP)

The GOES-R Mission Assurance Plan (MAP), 410-R-MAP-0080 is the GOES-R Mission Assurance governing document. This MAP describes the GPO responsibilities and the planned government role in

end-to-end Mission Assurance for the GOES-R Series system. The Projects will flow the MAP requirements for each contract.

3.8 Environmental Management Plan

Program Environmental Management practices will be in accordance with the GOES-R Series Program Environmental Management Plan, 410-R-PLN-0128.

3.9 Export Control Plan

Program Export Control practices will be in accordance with the GOES-R Series Program Export Control Plan, 410-R-PLN-0239.

3.10 Information Technology (IT) Management plan

The Program administrative support servers and workstations and associated network infrastructure shall be operated, maintained and accredited according to NASA/GSFC processes and procedures. However, the GOES-R Series is a NOAA-funded Program and is the designated Information Owner and requires Program and Project information be protected following whichever NOAA/NESDIS or NASA/GSFC IT Security control is more restrictive. To ensure compliance with both NOAA and NASA IT Security Policy, the Code 410 Information System Security Officer (ISSO) and the program ISSO collaborate on administrative IT support topics as members of the Program IT Management team.

The ground segment (GS) and associated developments will be procured via a NOAA contract and operated from NOAA facilities. The NESDIS Associate Administrator is the Authorizing Official for the GS; therefore the GS shall be operated, maintained, and accredited following Federal law, NIST standards and guidance, and applicable DOC, NOAA, and NESDIS supplements. IT Security Risk to the system will be continually analyzed throughout design, development, and implementation to identify and correct system vulnerabilities. The program ISSO will work with the ISSOs from the OSO and the OSPO to ensure the GS meets security requirements for fielding in their operational environments. Prior to transitioning to operations, the program ISSO is responsible for performing security functions to include providing security sign-off of changes after the system is placed under configuration control, managing accounts, monitoring system usage, and ensuring software patch levels are maintained.

4. Program Control Functions

This section addresses Program Control functions called out in the MoU section 6.B.6. The program and projects are committed to establishing and implementing standard processes and procedures to create uniformity across the program and projects.

4.1 Financial Systems

Financial Management will be conducted as part of the larger NOAA Planning, Programming, Budgeting and Execution System (PPBES). See Figure 12. The PPBES links NOAA's strategic vision with programmatic detail, budget development, and annual operating plans. A major decision-making process, the PPBES permits the Line Offices, Goal Team Leads, and programs to do joint planning and link directly to NOAA's Programming, Budgeting and Execution phases. Thus, PPBES permits harmonization of strategy, planning, programming, and budgeting functions. The program will follow all NOAA guidance including the procedures outlined in the NOAA PPBES, NOAA Administrative Order (NAO), the Business Operations Manual (BOM), and budget guidance memorandums from the NOAA Chief Financial Officer (CFO). In addition to the PPBES activities described in the paragraphs below, the GOES-R series program office will support any additional adhoc PPBES information/meeting requests to ensure complete and timely understanding of GOES-R series budget requirements and execution status as well as to provide opportunities for timely management decisions regarding budget requirements and execution.

4.1.1 Planning

The Planning Phase of PPBES is a 6-month process that begins each March and culminates in an update to the NOAA Strategic Plan, development of an Annual Guidance Memorandum (AGM) to guide the subsequent Programming, Budgeting and Execution phases, and Goal Assessments. Specific details of the planning process are provided each year from the NOAA Program Planning and Integration Office in its Planning Guidance Memorandum to the programs.

4.1.2 Programming

The Programming phase of the PPBES process provides the fiscal and programmatic linkage between NOAA's strategic plan and its budget. The Office of Strategic Planning (OSP) is responsible for the programming phase of the PPBES process. It aids the GOES-R program office in translating the high level outcomes contained in the NOAA Strategic Plan into clear and understandable program objectives. OSP provides guidance for each year's programming phase in its yearly Programming Phase Overview. The Program Office uses this guidance as it builds its budget for the upcoming cycle.

4.1.3 Budgeting

Budget submissions will occur at least annually to support the GOES-R Program budget formulation and spend plans process. The Program Office/Program Control and the projects will engage in annual budget discussions in order to support NOAA budget preparation prior to the annual Commerce budgeting process. In January (after all previous fiscal year data is in) the program will provide the necessary guidance and information to the Projects for the development of their funding profiles. The Projects will submit these funding profiles, as well as staffing profiles (both Civil Service and Service Contractors), by the end of February. If the Budget is not enacted by this time, this will be considered a DRAFT only. The updated final submission will be due within 30 Days of an enacted budget. This guidance will consist of:

- Funding constraints;
- Schedule constraints and launch readiness dates (LRDs);
- General instructions for providing a response; and
- Template for providing data back to Program.

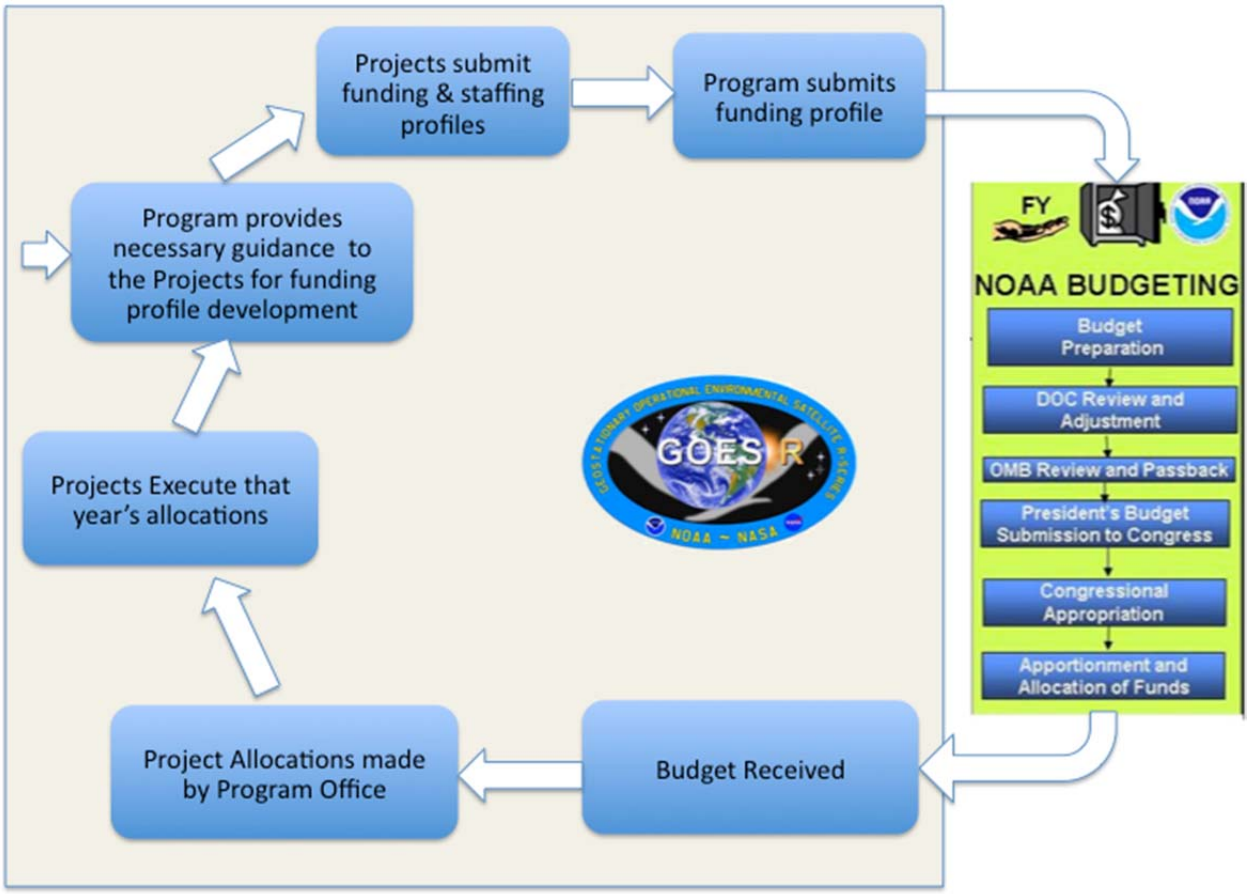

Figure 12: Program Budget Formulation and Review Process Flow and NOAA Budgeting Process

4.1.4 Budget Execution and Review

Program Control manages the budget execution and review process by initiating, reviewing, or approving a variety of financial documents such as procurement requests and funds transfer requests.

Program Control manages the program office budget execution and review processes using financial management policies and procedures per DAO 203-1, Appropriation Requests and Related Budgeted Matters. In addition, Program Control supports program office planning meetings, contract formulation activities, and contract administration in concert with the Contracting officers. This shall include submission of monthly budget obligation and execution plans and status to the NOAA Budget Office and an annual advanced acquisition plan to the NOAA Acquisition and Grants Office.

Obligation of funds is subject to approved allocations being provided by NESDIS headquarters. Once funds have been provided by NESDIS, the authority for the approval and use of funds resides with the SPD.

Responsibility for the execution of the approved budget resides with the Project leads after coordination from financial execution manager. These responsibilities include the timely identification of funding requirements and coordination with Program Control. The GPO will provide NESDIS headquarters and NOAA Acquisition and Grants Office (AGO) a plan listing NOAA acquisitions each fiscal year. NESDIS will determine if any individual obligations of NOAA funds require headquarters approval in the acquisition system, the Commerce Standard Acquisition and Reporting System (CSTARS) or equivalent.

Program Control reports budget execution status in accordance with monthly obligation plans and monthly earned value reports at the NOAA-NASA PMC. In preparation for the PMC, Program Control analyzes contract cost reports and validates budget requirements. To the maximum extent possible, Program Control must ensure that the funding available for each contract is sufficient to meet all program requirements for all fiscal years.

Monthly Reporting: The Projects will report their funding execution status monthly to the SPD both at the macro allocation level as well as the Funding Profile that has been agreed to by the Program. This will include:

- detailed explanations of liens/encumbrances;
- proposed funding allocation changes;
- changes to Management Reserve (MR);
    - If MR goes below the stated objectives (as defined in 4.2.2), the project will provide explanation of this and the program will determine if more allocations should be made.
- Monthly obligation report; and
- Monthly cost report.

4.1.4.1 NASA Full Cost Reimbursables

The GOES-R NOAA-NASA MoU outlines the NASA full cost reimbursables in section 7.

4.1.4.2 Procedures for Funding NASA Total Value of MoU

The GOES-R Series NOAA-NASA MoU outlines the procedures for funding NASA total value in section 7.

4.1.5 Congressional Notification Requirements

Annual Congressional Appropriations Act for the Commerce Department and NOAA may provide conditions for additional congressional notifications and the thresholds for any notification requirements.

4.2 Performance Measurement Systems

The Program Control division, led by the Budget Officer, has responsibility for monitoring the performance measurement systems described in the following subsections

4.2.1 Earned Value Management System (EVMS)

Program and Project activities will apply Earned Value Management (EVM) meeting the criteria defined in the American National Standards Institute/Electronic Industries Alliance (ANSI/EIA) Standard 748-2002, Earned Value Management Systems, which was revised January 2002.

The Program will use the current month and cumulative Budget Cost for Work Schedule (BCWS), Budget Cost for Work Performed (BCWP) and Actual Cost for Work Performed (ACWP) to calculate the current month and cumulative Cost and Schedule Variances (CV and SV). In addition, the program will use the Cost and Schedule Performance Indexes (CPI and SPI) as primary measures of major system component cost and schedule efficiency. See Figure 13 for indices color rating ranges.

Index	Green	Yellow	Red
CPI	CPI>=0.95	0.95> CPI >= 0.90	CPI< 0.90
SPI	SPI>=0.95	0.95> SPI >= 0.90	SPI< 0.90

Figure 13: EVM Indices COLOR Rating Ranges

Any index change resulting in a "red" assessment must be reported to the Program Office immediately, whereas an index change resulting in a "yellow" assessment will be reported at the next month's review. This applies to both the current month and the cumulative indices.

4.2.2 Contingency, Schedule Margin and Baseline Controls

4.2.2.1 Contingency

Project managers and Program Systems Engineering will request a budget that includes contingency funding using the budget execution process outlined in section 4.1.3. The SPD will approve the project budget allocation, including contingency level. Once allocated, the project manager and PSE have the authority to reallocate and apply contingency as appropriate across project elements, but they must inform the SPD of this reallocation.

The Program will maintain a budget reserve level (i.e., contingency) of 10% on unliened cost-to-go through A&O phase. Flight Project will maintain a budget reserve level of 20% on unliened cost-to-go or higher through the last spacecraft delivery. At the time of delivery of the final spacecraft to the delivery to the launch site, the Flight Project will have a budget reserves level of 10% or higher on unliened cost-to-go. The Ground Segment Project will maintain a budget reserve level of 20% or higher on unliened cost-to-go through FOC for operations. Deviations from this level of budget reserves shall require concurrence of the SPD, CMC and NOAA.

The Project Manager has the authority to approve an over-target baseline within the budget, milestone and Level II performance parameters called out in this plan. Project Managers will inform the SPD prior to any such rebaselining activities.

At monthly status reviews, project managers shall present their budget reserves status relative to allocated levels. If the budget reserves fall below the agreed-to levels, the presentations shall include justification for the shortfall and a mitigation strategy.

4.2.2.2 Schedule Margin

Schedule margin guidelines are specified for the Flight Project in GPR 7120.7, Schedule Margins and Budget Reserves to be Used in Planning Flight Projects and In Tracking Their Performance.

Schedule margin guidelines for the Ground Segment Project are one month per year from Authority to Proceed (ATP) through launch.

Schedule margins less than those specified may be appropriate in some cases. There may be circumstances where schedule margins greater than those specified will be required. Any deviations between the actual and recommended schedule margins shall be agreed upon between the SPD and the respective project managers and require concurrence of the CMC and NESDIS.

At monthly status reviews, project managers shall present their schedule margin status relative to the approved margins. If the schedule margin falls below the agreed-to levels, the presentations shall include explanations as to the reasons for the shortfall as well as a description of any activities initiated to mitigate the trend.

4.2.2.3 Schedule Baseline Control

In accordance with the GOES-R Series Schedule Management Plan, Program Control, in conjunction with the Projects, will develop, maintain, and execute integrated master schedules and institute schedule management processes that:

- Provide a controlled schedule baseline, encompassing all elements of the program/project WBS;
- Provide regular schedule performance measurement against the baseline, and current forecast-to-complete;
- Provide hierarchical traceability from the detailed schedules to the highest level Critical Milestones which are controlled by the GPO and NOAA – See Figure 14 for list of Critical Milestones;
- Identify critical path for management and control;
- Contain all critical milestones for internal and external activities;
- Provide schedule integration and traceability based on an end-to-end logic network format that relates all tasks and milestone dependencies from the project start to completion; and
- Identify and control schedule reserve based on project risk and report monthly.

Critical GOES-R Series (GOES-R/S/T/U) Schedule Milestones	
Controlled by NOAA DUS/O	Controlled by GOES-R SPD*
• Launch Readiness • Operational • End of Design Life	• Mission Operations Review • Ground Releases • System Integration Review • End-to-End Tests • Flight Operations Review • Operational Readiness Review • Mission Readiness Review • Ground Segment Readiness • Flight Readiness Review • Launch Readiness Review • Post-Launch Acceptance Review • Spacecraft Handover Review
* changes to be briefed as part of Integrated Master Schedule (IMS)	

Figure 14: Controlled GOES-R Schedule Milestones

Project Managers may augment the Critical Milestones that encompass the schedule baseline with additional milestones in the Integrated Program Master Schedule (IPMS), 410-R-SCH-0082, or Project Integrated Master Schedule (IMS) which highlight key events within project elements. These supporting

milestones could include such events as: payload or spacecraft design reviews and deliveries, achievement of Technology Readiness Levels (TRL), or finalization of memorandums of understanding.

The schedule baseline will be documented and controlled in the Master Schedule. The initial Program and Project milestone schedules have been established.

4.2.3 Programmatic Thresholds

The GOES-R Series Risk Management Plan outlines specific thresholds for cost, schedule, and technical risk reporting.

Thresholds for the cost impact for a particular segment are based upon projected percentage overrun for that segment (including its project reserves). Total cost risk is determined by a combination of impact and probability of occurrence. Each October, the Program will provide a budget allocation for the remaining approved program

The Flight project follows the Goddard Space Flight Center guidelines of 20% contingency on unliened cost-to-go. The Ground Project will also use 20% contingency on unliened cost-to-go. This metric will be reported monthly to the SPD from the allocation done each October (or later if budget is enacted at a later date). Similarly, schedule risk is based on the critical path and schedule contingency health.

Risk thresholds are designed to communicate cost and schedule risk and mitigations far in advance of impacting budget and schedule.

4.2.4 Technical Thresholds

The Program Systems Engineering Lead will identify system level metrics to monitor and track. Each Project Systems Engineering Lead is responsible for identifying and managing the mission resources allocated for their respective system and subsystem segment. Each Project Systems Engineering Lead and Program Systems Engineering Lead will identify resources that need to be monitored.

The Program Systems Engineering Lead defines acceptable resource margins and establishes a margin management philosophy based on various stages of the mission lifecycle. As the system architecture matures, the precision of the resource estimates will improve, as will the method of estimating the resources requirement. Resource margins shall be met in accordance with GSFC-STD-1000, Rules for the Design, Development, Verification and Operation of Flight Systems. Both the Flight Project and Ground Segment Project will track technical resource margins at their level and report margin status to the program.

5. Waiver Approval Authority

Waivers to the GOES-R Series MCP may be granted with the approval of both the NESDIS AA and the GSFC Center Director. In case the NESDIS AA and GSFC Director disagree on waiver approval, the request may be elevated to the Deputy Under Secretary for Oceans and Atmosphere.

APPENDIX A: ACRONYMS

A&O	Acquisition and Operations
AA	Archive and Access
AA	Assistant Administrator (NOAA Organization)
AA	Associate Administrator (NASA Organization)
ABI	Advanced Baseline Imager
ACS	Attitude Control System
AGO	Acquisition & Grants Office
ARB	Acquisition Review Board
ASA	Assistant Secretary for Administration
ATC	Assurance Technology Corporation
AWC	Aviation Weather Center
AWG	Algorithm Working Group
BSS	Boeing Satellite Systems
BW	Bandwidth
CARD	Cost Analysis Requirements Document
CBE	Contractor Best Estimate
CCB	Configuration Control Board
CDRL	Contract Deliverables Requirements List
CITRB	Commerce Information Technology Review Board
CLASS	Consolidated Large Array Stewardship System
CMC	Center Management Council
CONOPS	Concept of Operations
DOC	Department of Commerce
DOD	Department of Defense
DR	Decommissioning Review
DRS	DRS Technologies
ECRB	Engineering Change Review Board
EM	Enterprise Management
EUVS	Extreme Ultra Violet Sensor
EVM	Earned Value Management
EXIS	EUVS/XRS Irradiance Sensor
FOR	Flight Operations Review
FPA	Focal Plane Assembly
F&PS	Functional and Performance Specification
FPM	Flight Project Manager
FRR	Flight Readiness Review
GAO	Government Accountability Office
GEO	Geostationary Earth Orbit
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GLM	Geostationary Lightning Mapper
GIRD	General Interface Requirements Document
GOES	Geostationary Operational Environmental Satellite
GORD	Geostationary Operations Requirements Document
GORWG	GOES Operational Requirements Working Group
GRB	Global Re-Broadcast
GPO	GOES-R Series Program Office
GPR	Goddard Procedural Requirements
GS	Ground Segment
GSPM	Ground Segment Project Manager
GSFC	Goddard Space Flight Center
HES	Hyperspectral Environmental Suite
IBR	Integrated Baseline Review
IIR	Integrated Independent Review
I/F	Interface
IMC	Image Motion Compensation
IRAD	Independent Research and Development
IRD	Interface Requirements Document
IRT	Independent Review Team
IT	Information Technology
ITU	International Telecommunication Union
ITT	ITT Industries
JOFOC	Justification for Other than Full and Open Competition
JCL	Joint Cost Schedule Confidence Level
JCSDA	Joint Center for Satellite Data Assimilation
KDP	Key Decision Point
LCC	Life Cycle Cost
L1RD	Level I Requirements Document
LM	Lockheed Martin
LMATC	Lockheed Martin Advanced Technologies Center
LRR	Launch Readiness Review
LW	Longwave
LWIR	Longwave Infrared
LRD	Launch Readiness Date
MAP	Mission Assurance Plan
MAR	Mission Assurance Requirements
MEO	Medium Earth Orbit
MM	Mission Management
MOR	Mission Operations Review

MoU	Memorandum of Understanding
MRD	Mission Requirements Document
MRR	Mission Readiness Review
NASA	National Aeronautics and Space Administration
NEC	NOAA Executive Council
NEP	NOAA Executive Panel
NESDIS	National Environmental Satellite and Data Information Service
NCDC	National Climate Data Center
NDE	NPOESS Data Exploitation
NGDC	National Geophysical Data Center
NGC	Northrop Grumman Corp.
NITRB	NESDIS Information Technology Review Board
NOAA	National Oceanic and Atmospheric Administration
NPOESS	National Polar-Orbiting Environmental Satellite System
NPG	NASA Procedures & Guidelines
NPP	NPOESS Preparatory Project
NSOF	NOAA Satellite Operations Facility
NTIA	National Telecommunications and Information Administration
NWS	National Weather Service
OCIO	Office of the Chief Information Officer
O&S	Operations and Support
OPS	Operations
ORR	Operational Readiness Review
OSD	Office of Satellite Development
OSO	Office of Satellite Operations
PD	Product Distribution
PDR	Preliminary Design Review
PEB	Performance Evaluation Board
PEB	Power Electronics Box
PDRR	Program Definition and Risk Reduction
PG	Product Generation
PLAR	Post-Launch Acceptance Review
PMC	Program Management Council
PMR	Program Management Review
POP	Program Operating Plan
PORD	Performance Operations Requirements Document
PTM	Prototype Model
RF	Radio Frequency
RFA	Request for Action
RFP	Request for Proposal
RVS	Raytheon Vision Systems
S/C	Spacecraft
SEB	Source Evaluation Board
SCR	System Critical Review
SEC	Space Environment Center
SEISS	Space Environment In-Situ Suite
SEMP	Systems Engineering Management Plan
SETA	System Engineering and Technical Assistance
SDR	System Definition Review
SIR	System Integration Review
SIS	Solar Imaging Suite
SMD	Science Mission Directorate
SPD	System Program Director
SRB	Standing Review Board
SRP	System Review Plan
SSO	Source Selection Official
STAR	SaTellite Applications Research
SUVI	Solar Ultra Violet Imager
SVU	SAP Version Update
S/W	Software
TA	Technical Authority
TIM	Technical Interface Meeting
TRD	Technical Requirements Document
UET	User Education and Training
UIID	Unique Instrument Interface Document
UNH	University New Hampshire
VNIR	Visible Near Infra-Red
VIS	Visible
XRS	X-Ray Sensor
WCDAS	Wallops Command and Data Acquisition Station
WWB	World Weather Building

APPENDIX B: GOES-R MEMORANDUM OF UNDERSTANDING

Agreement
NOAA/NASA Support of the GOES-R Program
Page 1 of 2

DEPARTMENT OF COMMERCE INTERAGENCY AND OTHER SPECIAL AGREEMENTS

1.a. AGREEMENT NUMBER

b. AMENDMENT NUMBER (if applicable)

2. PARTIES TO THE AGREEMENT

a. NAME OF OPERATING UNIT AND OFFICE (Name of administrative contact, including address, telephone and FAX numbers and e-mail.)

ALC: 13140001
DUNS: 784769085
U.S. Department of Commerce,
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
1335 East-West Highway
Silver Spring, MD 20910-3283
Admin POC: Lisa Hurt email: Lisa.hurt@noaa.gov
Phone: 301-713-0088 x165 Fax: 301-713-3599

_X_ Requesting OU ___ Servicing OU

b. NAME OF OPERATING UNIT AND OFFICE (Name of administrative contact, including address, telephone and FAX Numbers, and e-mail.)

ALC: 80000002
DUNS: 042273664
National Aeronautics and Space Administration
Goddard Space Flight Center
8800 Greenbelt Road
Greenbelt, MD 20771
Admin POC: Steven J. Dobrosielski email: Steven.J.Dobrosielski@nasa.gov
Phone: 301-286-7931 Fax: 301-286-9777

___Requesting OU _X_ Servicing OU

3. PROJECT TITLE OR PURPOSE

GOES-R Program Support

4. GOODS AND SERVICES BEING EXCHANGED (The description of goods and services being exchanged and delivery requirements are included in the attached terms and conditions.)

5. LEGAL AUTHORITY

National Aeronautics and Space Act of 1958, codified at 42 USC section 2473(c)(5) and (6). See Section 2 of the attached terms and conditions.

6. ANTICIPATED PERIOD OF AGREEMENT

START DATE: See last date of signature in Block 8

COMPLETION DATE: See Section 15

7. FUNDING

a. Estimated Total Cost

See Section 7

b. Funds Citation/Cost Center

See Section 7

Frequency of Distribution: See Section 7 (quarterly, monthly, etc.)

c. Cost Allocation

___100% reimbursed by requesting Operating Unit

_X_ Other. Explain: See Section 7

d. Funds Availability/Budget Approval : See Section 7

8. EXECUTION OF THE AGREEMENT

a. OU Approval Official

John J. Kelly
Brig. Gen., USAF (Ret.)
Deputy Under Secretary
for Oceans and Atmosphere

6/15/07
Date

b. OU Approval Official

Rex D. Geveden
Associate Administrator
National Aeronautics and Space Administration

06.12.07
Date

MEMORANDUM OF UNDERSTANDING BETWEEN THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION REGARDING THE GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE, SERIES R

1. PURPOSE

The U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS), and the National Aeronautics and Space Administration (NASA) are committed to successful planning, acquisition, and operation of the Geostationary Operational Environmental Satellite Series R (GOES-R) program. The purpose of this agreement is to define a relationship between the parties that results in the successful planning, implementation, and management of the GOES-R program. This agreement, in and of itself, does not obligate or transfer funds.

2. AUTHORITY

NOAA and NASA have authority to enter into this agreement pursuant to section 203(c)(5) and (6) of the National Aeronautics and Space Act of 1958, codified as 42 USC section 2473(c)(5) and (6). These sections authorize the provision of services, equipment, personnel, and facilities by either agency as necessary to meet the objectives of the agreement, on such terms as may be deemed appropriate. In addition, NOAA has programmatic authority for the activities described herein pursuant to 15 USC section 313 and 49 USC section 44720.

3. BACKGROUND

NOAA operates a system of environmental satellites in geostationary orbits known as GOES. These satellites provide continuous monitoring from the same longitude, allowing the tracking and detection of environmental phenomena that cannot be achieved using polar-orbiting satellites, which provide global coverage that geostationary satellites cannot. GOES spacecraft provide critical atmospheric, oceanic, climatic, solar, and space data images in near real-time and support weather forecasting, climatologic analysis and prediction, ecosystems management, and safe and efficient public and private transportation.

For GOES-R, NOAA will continue to have overall responsibility and accountability for the program. Both NOAA and NASA will acquire elements of the system under the auspices of an integrated NOAA/NASA program office, led by NOAA and located at the Goddard Space Flight Center (GSFC). The GOES-R program must have dedicated, collocated program management, systems engineering, and scientific support for which NOAA will provide reimbursement funding to NASA. This agreement is necessary to define the scope of support including the level of reimbursable, dedicated services that will be provided from NASA to NOAA.

4. SCOPE

The activities to be undertaken pursuant to this agreement include all support required to ensure the GOES-R system meets program requirements and schedule milestones. The GOES-R program includes the Program Office, the Flight Project, and the Operations Project. The Program Office includes all program management, acquisition strategy management, program level Systems Engineering and Integration, scientific, technical, and administrative support. The Flight Project includes the instruments, spacecraft, launch services, satellite integration, and on-orbit satellite initialization and checkout. The Operations Project includes the mission management, data calibration, product generation, product distribution, archive and access, user interface, and operations support.

Nothing contained in this agreement shall be interpreted in a manner that is inconsistent with or contrary to the purpose or intent of any Act of Congress establishing, affecting, or relating to the agreement or any applicable Federal or state law.

5. GOVERNING DOCUMENTS

Applicable Documents: The implementation and execution of this agreement shall be in accordance with the requirements of the GOES-R Management Control Plan (MCP). The MCP will be drafted by the GOES-R Program Office and approved by NESDIS and GSFC within 90 days of the signing of this agreement. Authority to extend the 90-day period is jointly delegated to the Assistant Administrator, NOAA Satellite and Information Service (NESDIS AA) and to the NASA Chief Engineer; such authority will be exercised jointly by the NESDIS AA and NASA Chief Engineer.

Guidance Documents: Guidance for processes for this program will be derived from the NASA Procedural Requirements (NPR) 7120.5D as provided in the MCP. Although NPR 7120.5D and other NASA technical oversight processes are referenced throughout this MOU, all references to any such technical oversight processes or other processes throughout this MOU are specifically defined by the MCP and the express understanding of the parties hereto that the NESDIS, NOAA or DOC (as appropriate) will play an oversight role, or other specific roles as outlined in the MCP, in the application of those NASA processes to the GOES-R program. The GOES-R Flight Project will be managed in accordance with NPR 7120.5D, as specifically implemented by the MCP as needed and agreed to by both parties.

6. SPECIFIC DUTIES AND RESPONSIBILITIES

NOAA (NOAA includes DOC, NOAA and NESDIS throughout this MOU, unless specified otherwise) and NASA shall each provide sufficient personnel to support their program/project functions as specified in the approved MCP.

Consistent with Section 5 and standard NOAA and NASA practices, the parties agree to the following:

A. NOAA and NASA shared responsibilities include:

1. NOAA and NASA Administrators will meet at least annually and on an as needed basis to assess the status and progress of the program.
2. NESDIS and GSFC shall ensure the GOES-R MCP is completed and signed within 90 days of the signing of this agreement, unless extended in accordance with Paragraph 5.
3. NOAA and NASA will support an integrated program/projects approach with co-located program and project offices.
4. Systems Engineering and Integration (SE&I) will be a government led activity residing within the Program Office. The Program Systems Engineer (PSE) position will initially be staffed by NASA but NOAA will maintain significant involvement in the SE&I function. The parties to this MOU understand that the goal is to eventually transition the PSE position for SE&I from a NASA employee to a NOAA staffed employee.
5. NOAA and NASA will jointly establish a Standing Review Board in accordance with NPR 7120.5D.
    a. Standing Review Board shall be co-chaired by NOAA and NASA
    b. Standing Review Board purpose and membership will be coordinated between NOAA and NASA.
6. The Joint Mission Readiness Review.
7. The Joint Flight and Launch Readiness Reviews.
8. The program and projects will be executed in accordance with applicable NASA/GSFC and NOAA/DOC technical standards and practices as outlined in the MCP.
9. Management, reporting, and oversight of activities will be accomplished through both DOC/NOAA and NASA processes.
    a. NOAA's Program Management Council (PMC) oversees the GOES-R Program, including the Flight and Operations Projects.
    b. NASA's GSFC Center Management Council (CMC) oversees the activities, products, and performance of the GOES-R Flight Project and provides advice to NOAA regarding the activities, products, and performance of the GOES-R Operations Project.
10. Coordination of all GOES-R legislative actions, including congressional testimony and questions for the record; public affairs releases and educational; training; or other releases to industry or the public. NOAA retains lead agency status for all legislative efforts. NASA agrees to provide assistance to NOAA as requested.
11. NOAA and NASA agree to form a collaborative GOES-R Program contracting partnership to ensure effective and efficient support for all GOES-R Program and Project contract actions. NOAA and NASA Contracting Officers will retain full agency authorities and continue agency reporting responsibilities while operating in partnership with each other. The partnership intends to collaborate through the sharing of contracting staff resources for NOAA and NASA contracts, establish action approval levels for Program review, and operate within appropriate current or future NOAA/NASA processes, policies, and procedures.
12. For Program and Project Office operations the NESDIS and GSFC Chief Information Officers (CIOs) shall agree on procedures for any information technology (IT) issues affecting NOAA hardware, software, connectivity, or the

security of NOAA information. Procedures shall be in accordance with DOC and NASA policies, federal law, and other federal guidance.

B. NOAA is ultimately responsible and accountable for overall success of the GOES-R program. Specific responsibilities include:
   1. Decision authority for Key Decision Points as described in MCP. (Currently DOC)
   2. Decision authority for mission readiness, flight readiness and launch readiness.
   3. Decision authority for overall acquisition strategy. (DOC)
   4. Procurement, management, and execution of the Operations Project.
   5. Staffing for the senior leadership of GOES-R. NOAA designated key positions include:
      a. System Program Director (SPD)
      b. Deputy SPD
      c. Program Control Lead
      d. Operations Project Contracting Officer
      e. Program Scientist
      f. Deputy Flight Project Manager
      g. Operations Project Manager.
   6. Perform program control functions as described in the MCP.
   7. Participate in the program systems engineering function and assume lead for this function in any transition from NASA to NOAA.
   8. Lead Program budget development for fiscal year and life cycle in accordance with DOC/NOAA processes based upon inputs from the projects and utilizing the processes described in the MCP.
   9. Participate in NASA acquisition and contract execution activities as identified in the approved acquisition strategy, including, at a minimum: The NESDIS AA will attend any Source Evaluation Board (SEB) briefings to the NASA Source Selection Official (SSO) concerning this acquisition or the source selection thereof.
   10. For award fee contracts, the GOES-R SPD will chair the Performance Evaluation Boards (PEB) for the spacecraft and major ground contracts and make recommendations to both the NOAA Fee Determination Official (FDO) and the NASA FDO in award fee determinations.
   11. Determine, in consultation with NASA, the composition and procedures for any Failure Review Board or Mishap Investigation Board for ground failures or mishaps at the major assembly level or any on-orbit failure that impacts Level I performance requirements. Flight Project Failure Review Boards or Mishap Investigation Boards shall be conducted in accordance with NASA procedures.
   12. Provide all briefs and interactions with the Executive and Legislative branches on GOES-R unless specifically delegated to NASA or specifically requested from NASA.
   13. Lead all international agreements and other partnership agreements external to NOAA/NASA relating to GOES-R.
   14. Develop and control the Level 1 requirements, Mission Requirements Document (MRD), and Concept of Operations (CONOPS).
   15. Develop and control the Program Plan and approval of the Project plans.

C. NASA responsibilities include:

1. Procurement, management, and execution of the Flight Project.
2. Staffing GOES-R senior leadership positions including:
   a. Assistant SPD
   b. Flight Project Manager
   c. Deputy Operations Project Manager
   d. Program Mission Assurance Lead
   e. Program Systems Engineering Lead
   f. Flight Project Contracting Officer
3. Provide project budget requirements to the program.
4. Provide standard NASA technical oversight resources pursuant to the MCP.
5. NASA GSFC is responsible for Program and Project mission assurance management and infrastructure.
6. As specifically described in the MCP and provided as in Section 5 to this MOU, NASA GSFC is responsible for the Technical Authority process including leading technical reviews associated with the Technical Authority process.
7. As part of the SSO source selection briefing(s), the NESDIS AA will be afforded the opportunity to provide comments, and raise questions or concerns for the SSO to consider prior to selection
8. For major elements of flight project award fee contracts, the NASA FDO shall brief NESDIS AA on decision and rationale.

7. COSTS

a. All activities under or pursuant to this agreement are subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 USC 1341.

b. Using the process and limitations set forth herein, NASA shall be reimbursed its actual, allowable and allocable direct and indirect costs for labor, contracted support services as well as facility and IT support for all Federal and support contractor personnel assigned to the GOES-R program and working at the GSFC facility. NASA has changed its approach to calculating full cost. It has eliminated separate rates for pools (IT, Facilities, Center G&A) and combined them into a larger Center Management and Operations overhead structure. For purposes of this agreement, reference to separate pools is maintained to provide traceability to the pre-negotiated agreement from March 2005. The parties agree to the following:

A. GSFC TECHNICAL MANAGEMENT:

1. FY07: Facilities and IT costs applicable to GSFC Tech Management are waived. Center G&A is applicable.
2. FY08: Facilities and IT costs applicable to GSFC Tech Management are applicable and shall be consistent with a separately negotiated NOAA/GSFC use permit.

B. NOAA GOES-R HOUSING:

1. FY07: Facilities and IT costs are applicable. Center G&A is waived.

2. FY08: Facilities and IT costs are applicable and shall be consistent with a separately negotiated NOAA/GSFC use permit. Center G&A is waived.

C. NASA CORPORATE G&A:

1. NASA corporate G&A payments do not apply to this agreement

D. FY09 AND BEYOND

1. Funding for indirect support will be calculated to reflect the market value of services provided. The pricing applied will not result in reimbursable revenue that is in excess of the full cost of providing the work. Calculation of the market value will be consistent with guidance included in NASA Financial Management Regulations (FMR) Volume 16.

Criteria specified in this agreement for calculation of indirect costs are applicable only to the GOES-R Program Support agreement. Any agreements for new work beyond the GOES-R series will be separately developed consistent with NASA policy for reimbursable activities.

Funding from NOAA for the total estimated value of this agreement is not presently available and is subject to receipt of sufficient annual appropriations and quarterly apportionments. Funding for this agreement will be documented in the Level I requirements document which will be finalized as a part of the Department of Commerce KDP-C/D process. When funding becomes available, NOAA will issue an order in accordance with the following paragraph. Accordingly, the parties agree that NOAA is not obligated to transfer funding to cover the full value of this agreement, nor is NASA obligated to perform services that exceed the cumulative amount of funds actually transferred through orders issued against this agreement. Details of these procedures and the associated documents will be explained in the MCP.

NOAA will issue orders for products and services according to standard NOAA procedures. The detailed procedures will be described in the MCP. NOAA and NASA will agree upon the type and extent of work required consistent with the acquisition strategy and other management control plans; the cumulative amount of funds obligated and made available; and the estimated period of performance covered by the funding. Detailed procedures and requirements concerning NASA billing and NOAA reimbursements shall be in accordance with standard NOAA and NASA operating procedures.

8. REPORTING REQUIREMENTS

Timely and comprehensive financial, programmatic, and technical reporting to NOAA and NASA management is essential to ensure mission success. Both parties commit to complete transparency on all aspects of the GOES-R program.

At a minimum, the projects shall provide the following regarding their GOES-R activities to the SPD:

A. Monthly status review reports.

B. Monthly Contract Cost Performance Reports, including Earned Value Management data, for all contracts executed in support of GOES-R except as agreed to by the SPD.
C. Quarterly Contract Cost Funds Status Reports for all contracts executed in support of GOES-R except as agreed to by the SPD.
D. Monthly Contract Action Reports for all contracts. Specific content shall be coordinated with the SPD.
E. Additional technical and programmatic data as requested by the SPD on an *ad hoc* basis.

At a minimum, the program and projects shall provide the following regarding their GOES-R activities:

A. Monthly Status Reviews to NOAA PMC. Specific content shall be coordinated with the SPD.
B. Quarterly Status Reviews to DOC.
C. Monthly Status Reviews to GSFC CMC and, if requested, to the appropriate NASA HQ PMC.
D. Reports as required to fulfill information resource investment management and information security requirements.

The format and content for these Status Reviews from the program and projects shall be coordinated by the SPD, with GSFC Monthly Status Review (MSR) reporting meeting at least the minimum reporting requirements of the GSFC CMC.

DOC, NOAA, and NASA management shall be invited to participate in each others' management reviews of GOES-R activities.

9. CONTROL OF GOVERNMENT OWNED PROPERTY

NOAA requires identification and tracking of all property acquired using its funds as described in the MCP.

10. RELEASE OF TECHNICAL AND PUBLIC INFORMATION INCLUDING DATA ACCESS AND UTILIZATION

All scientific and technical data developed or otherwise obtained or produced shall be shared between the parties to this agreement. All contracts and agreements entered into by each party shall ensure there is no restriction on the sharing of data between NOAA and NASA. It is the responsibility of the party producing the data to ensure that any restrictive markings associated with third party access to data or information is included with such data/information when provided to the other party. Support contractors having properly executed a non-disclosure agreement and having no conflict of interest shall also be entitled to view such data/information subject to the discretion of the party managing the contract.

Each party is responsible for complying with the terms of restrictive markings that may be placed on data or information. To the extent that data or information is properly released, appropriate

credit shall be given to NOAA and NASA as may be specifically directed in the approval for public release.

11. LIABILITY

Each party agrees to assume liability for its own risks associated with activities undertaken in this agreement.

12. BUILDING OPERATIONS, MAINTENANCE, AND PROTECTION

GSFC managers shall allocate sufficient work space, including class A office space, at NASA's GSFC facility, in accordance with the GSFC-NOAA use permit, for all GOES-R program office badged government and on-site support contractor personnel. NOAA will reimburse NASA for any product or service considered in excess of those normally provided for GSFC programs of similar scope and cost. As a minimum, support will include:

A. Facility management, security protection including badges for on-site personnel, and maintenance of the premises occupied by the GOES-R Program Office.
B. Access to all GSFC common-use areas including library, health unit, fitness unit, cafeteria, and parking and use of the GSFC motor pool and other transportation services in accordance with normal GSFC regulations. Certain areas, such as the health and fitness units and the motor pool, are restricted to civil servant use only.
C. IT systems support and maintenance for all personal computers and other equipment at a priority level commensurate to other GSFC programs of equivalent magnitude.
D. Facility maintenance and unscheduled repair services in accordance with GSFC regulations.

NOAA agrees that all GOES-R permanent program office personnel will comply with all GSFC facility regulations, security procedures, safety and environmental regulations, and training requirements.

13. RESOLUTION OF DISAGREEMENTS

Nothing in this agreement is intended to conflict with current DOC or NASA directives. If the terms of this agreement are inconsistent with existing directives of either of the offices entering into this agreement, those portions of this agreement which are determined to be inconsistent shall be invalid, but the remaining terms and conditions not affected by the inconsistency shall remain in full force and effect. At the first opportunity for review of this agreement, all necessary changes will be accomplished either by an amendment to this agreement or by entering into a new agreement, whichever is deemed expedient to the interests of both parties. Should disagreement arise about the interpretation of the provisions of this agreement or amendments and/or revisions thereto that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other party for consideration. If an agreement on interpretation is not reached within thirty (30) days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution. Disagreements concerning programmatic issues that cannot be resolved by the GOES-R SPD shall

be documented in writing and elevated to the NESDIS Assistant Administrator and the GSFC Director for resolution. Failing resolution at that level, the issue shall be elevated to the signatory positions to this agreement and successively higher positions as necessary for final resolution.

14. DURATION OF AGREEMENT

This agreement will become effective when signed by all parties and will remain in effect throughout the life of the GOES-R program.

The NESDIS Assistant Administrator and the GSFC Director will review the agreement annually to determine if it should be revised, renewed, or canceled. This review can be combined with the preparation of annual project spend plans. Proposed revisions to the succeeding year's agreement shall be provided to the other party one month prior to the end of the fiscal year.

15. AMENDMENT AND TERMINATION

Amendments to this agreement shall be in writing and are subject to the mutual agreement of the parties.

This agreement may be terminated at any time by either party; the terminating party must provide advanced written notice to the other party three hundred and sixty-five (365) calendar days prior to termination. In the event of termination of this agreement by NOAA, NOAA shall reimburse NASA for costs associated with this termination, including the termination costs for terminating contracts entered into by NASA pursuant to this agreement and costs necessary for the orderly closeout of activities under this agreement. In the event of termination of this agreement by NASA, NASA shall bear the costs associated with this termination, including the termination costs for terminating contracts entered into by NASA and NOAA pursuant to this agreement and any costs necessary for the orderly closeout of activities under this agreement.