ATTACHMENT 3

WORK BREAKDOWN STRUCTURE (WBS)

28 JAN 2005 DRAFT RFP RELEASE
(unchanged from 28 DEC
Partial Draft RFP Release)

GOVERNMENT REFERENCE WORK BREAKDOWN STRUCTURE. This is a notional WBS and is not imposed on offerors. An offeror may propose a differing WBS tailored to its own approach.

1	**GOES-R [TOTAL PROGRAM]**	This element is a roll-up of segment level elements of the GOES-R Program, which includes a space segment, ground segment, user segment, launch segment, and additional segments as follows; Software segment- to aggregate software development and production costs and elevate visibility into the contractor's integrated approach to software management; Operations and Support Segment- lends itself to ease in evaluation of O&S costs; System-Level Segment- to capture system and system-of-systems engineering and other costs managed by the contractor above the segment level.
1.1	**System Level Segment**	This segment is a roll-up of elements that include System Engineering, Integration and Test (to account for system and system-of-systems engineering activity), Program Management, Data, and any additional elements as applicable to a contractor's architecture for system level products.
1.1.1	Systems Engineering, Integration & Test (SEIT)	This element includes the effort to integrate and test the GOES-R system. It includes System-of-Systems Integration, system-level performance and integration and test of the Space Segment and Ground Segments This may include external interface analysis, system to segment requirements allocation, CONOPS and OPSCON analysis, supportability and logistics planning and configuration may also be included if applicable. The effort to test the cross-system and system-of-system requirements validation is included as necessary. Includes support from segment and lower level vendors for System-level integration and test activities
1.1.2	Program Management (PM) (may break out at segment level)	This element includes the business management and administrative planning, organizing, directing, coordinating, controlling, and approval actions designated to accomplish overall program objectives which are not associated with specific hardware or software segments. This element excludes program management functions that are more appropriately identified at the segment or lower level.
1.1.3	Data (or rolled up in PM)	This element includes the effort to provide data and data management functions: (1) archiving documents, (2) establishing and operating a program data center, which may include an electronic data depository, (3) maintain the documentation data base, (4) monitor and status CDRL deliveries to assure timely delivery to the Government (5) provide the Government and the Program the required documentation handling assistance necessary to effectively manage the program, and (6) track Government Furnished Equipment. If data cost elements are recorded at lower levels of the WBS, they must be identified as a separate WBS element.
1.2	**Space Segment**	This element consists of space segment level system engineering, assembly, integration and test, instrument payloads, a communications payload, a spacecraft element/bus, a space vehicle-to-launch vehicle adapter, mission unique integration, and launch and on-orbit operations support through initialization and checkout in preparations for storage or operations. On-orbit storage and checkout prior to operations is also included. (O&S following readiness for operations will be accounted for in 1.7)

1.2.1	Space Segment Systems Engineering/Program Management (SE/PM)	This element also includes the systems engineering and program management functions directly associated with the Space Segment. It includes all technical, management and functional activities associated with the design, development, and production of mating surfaces, structures, equipment, parts, materials, and software (only that associated with software/hardware design interface) required to assemble level 3 the space segment (hardware/software) elements into a level 2 mission equipment.
1.2.2	Space Segment AI&T	This element includes the assembly, integration and test of the GOES-R payloads and spacecraft bus into a space vehicle. It includes all activities associated with the assembly, integration, and test of the level 3 space segment hardware and software elements into a space vehicle, including space vehicle systems ambient and environmental tests and intersegment tests to verify space vehicle performance prior to transporting the space vehicle to the launch site. It excludes integrated Space-Ground testing captured in WBS 1.1.1. Includes support from sub system and lower level vendors for Space Segment-level integration and test activities
1.2.3	ABI Payload	This element includes all activities necessary to design, develop, and produce a completed instrument ready for integration with the spacecraft and other elements of the satellite. The ABI payload includes all optics, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.3.1	ABI Payload SE/PM	This element includes the systems engineering and technical control as well as the business management of the ABI payload. It includes the overall planning, directing, and controlling of the definition, development, and production of an ABI payload, including supportability and logistics planning directly associated with the ABI payload.
1.2.3.2	ABI Payload AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the ABI payload as well as the STE, test software and simulators. This element excludes ABI payload software. This element includes particular payload support for integrated payload integration and test activities
1.2.3.3	ABI Payload subsystem (as many as applicable)	The ABI payload subsystems element includes all costs to design and develop hardware that is integrated into an ABI payload. The ABI payload subsystems include the major elements of the ABI payload. These major elements should include any ABI optics, electronics, on-board processor, controllers, thermal control, structures, etc. directly associated with the ABI payload.
1.2.4	HES Payload	This element includes all activities necessary to design, develop, and produce a completed HES instrument ready for integration with the spacecraft and other elements of the satellite. The HES payload includes all optics, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.4.1	HES Payload SE/PM	This element includes the systems engineering and technical control as well as the business management of the HES Payload. It includes the overall planning, directing, and controlling of the definition, development, and production of a HES payload, including supportability and logistics planning directly associated with the HES payload.

1.2.4.2	HES Payload AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the HES payload as well as the STE, test software and simulators. This element excludes HES payload software. This element includes particular payload support for integrated payload integration and test activities
1.2.4.3	HES Payload subsystem (as many as applicable)	The HES payload subsystems element includes all costs to design and develop hardware that is integrated into a HES payload. The HES payload subsystems include the major elements of the HES payload. These major elements should include any HES optics, electronics, on-board processor, controllers, thermal control, structures, etc. directly associated with the HES payload.
1.2.5	GLM Payload	This element includes all activities necessary to design, develop, and produce a completed instrument ready for integration with the spacecraft and other elements of the satellite. The GLM payload includes all optics, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.5.1	GLM Payload SE/PM	This element includes the systems engineering and technical control as well as the business management of the GLM Payload. It includes the overall planning, directing, and controlling of the definition, development, and production of a GLM payload, including supportability and logistics planning directly associated with the GLM payload.
1.2.5.2	GLM Payload AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the GLM payload as well as the STE, test software and simulators. This element excludes GLM payload software. This element includes particular payload support for integrated payload integration and test activities
1.2.5.3	GLM Payload subsystem (as many as applicable)	The GLM payload subsystems element includes all costs to design and develop hardware that is integrated into a GLM payload. The GLM payload subsystems include the major elements of the GLM payload. These major elements should include any GLM optics, electronics, on-board processor, controllers, thermal control, structures, etc. directly associated with the GLM payload.
1.2.6	SIS Payload	This element includes all activities necessary to design, develop, and produce a completed SIS instrument ready for integration with the spacecraft and other elements of the satellite. The SIS payload includes all optics, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.6.1	SIS Payload SE/PM	This element includes the systems engineering and technical control as well as the business management of the SIS Payload. It includes the overall planning, directing, and controlling of the definition, development, and production of a SIS payload, including supportability and logistics planning directly associated with the SIS payload.
1.2.6.2	SIS Payload AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the SIS payload as well as the STE, test software and simulators. This element excludes SIS payload software. This element includes particular payload support for integrated payload integration and test activities
1.2.6.3	SIS Payload subsystem (as many as applicable)	The SIS payload subsystems element includes all costs to design and develop hardware that is integrated into a SIS payload. The SIS payload subsystems include the major elements of the SIS payload. These major elements should include any SIS optics, electronics, on-board processor, controllers, thermal control, structures, etc. directly associated with the SIS payload

1.2.7	SEISS Payload	This element includes all activities necessary to design, develop, and produce a completed SEISS instrument ready for integration with the spacecraft and other elements of the satellite. The SEISS payload includes all optics, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.7.1	SEISS Payload SE/PM	This element includes the systems engineering and technical control as well as the business management of the SIESS Payload. It includes the overall planning, directing, and controlling of the definition, development, and production of a SEISS payload, including supportability and logistics planning directly associated with the SEISS payload.
1.2.7.2	SEISS Payload AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the SEISS payload as well as the STE, test software and simulators. This element excludes SEISS payload software. This element includes particular payload support for integrated payload integration and test activities
1.2.7.3	SEISS Payload subsystem (as many as applicable)	The SEISS payload subsystems element includes all costs to design and develop hardware that is integrated into a SEISS payload. The SEISS payload subsystems include the major elements of the SEISS payload. These major elements should include any SEISS optics, electronics, on-board processor, controllers, thermal control, structures, etc. directly associated with the SEISS payload..
1.2.8	P3I Payloads (as req)	This element includes all activities necessary to design, develop, and produce a completed PrePlanned Product P3I instrument ready for integration with the spacecraft and other elements of the satellite. The P3I payload includes all antenna, RF, digital, mechanical, thermal, and electrical components of the instrument.
1.2.9	Communication Payload	This element includes all activities necessary to produce a completed communication payload ready for integration with the spacecraft and other elements of the satellite.
1.2.9.1	Comm SE/PM	This element includes the systems engineering and technical control as well as the business management of the communication payload. It includes the overall planning, directing, and controlling of the definition, development, and production of a communications payload including supportability and logistics planning directly associated with the communications payload.
1.2.9.2	Comm AI&T	This element includes all activities to assemble, integrate, and test the hardware and software elements of the communications payload. This element excludes communications payload software.
1.2.9.3	Uplink/Downlink subsystem	The uplink/downlink subsystems element includes all costs to design and develop hardware that is integrated into a complete subsystem. The uplink/downlink subsystem includes any antennae, electronics, controllers, structures, etc. directly associated with the uplink/downlink functions.
1.2.9.4	Rebroadcast subsystem	The rebroadcast subsystems element includes all costs to design and develop hardware that is integrated into a complete subsystem. The rebroadcast subsystem includes any unique antennae, electronics, controllers, structures, etc. directly associated with the rebroadcast functions.
1.2.9.5	Payload Services subsystem	The payload services subsystems element includes all costs to design and develop hardware that is integrated into a complete subsystem. The payload services subsystem includes any unique antennae, electronics, controllers, structures, etc. directly associated with the rebroadcast functions of SARSAT, DCS, LRIT, and EMWIN.

1.2.10	Spacecraft Element/Spacecraft Bus (SCE)	This element includes the cost of the structure; and any thermal, attitude determination and control (ADCS), electrical power supply (EPS), telemetry, tracking, and command (TT&C); and propulsion systems, where applicable.
1.2.10.1	Spacecraft SE/PM	This element includes the systems engineering and technical control as well as the business management for the spacecraft bus. It includes the overall planning, directing, and controlling of the definition, development, and production of a spacecraft, including supportability and logistics planning directly associated with the spacecraft bus.
1.2.10.2	Spacecraft AI&T	This element includes all activities to assemble, integrate and test the hardware and software elements of the spacecraft.
1.2.10.3	Attitude Control Subsystem	This element includes the costs to design, develop, produce, test, and integrate the hardware necessary to perform the spacecraft attitude control functions. This element excludes any payload costs for AD&C purposes that are not intrinsic to the spacecraft/bus design.
1.2.10.4	Structure & Mechanisms Subsystem	This element includes the effort to design, develop, fabricate, test and integrate (as necessary at the subsystem level) the structures and electro-mechanical subelements that supports spacecraft subsystems, payloads, and provides for deployment of appendages. This element excludes the LV adapter/dispenser, which is recorded in WBS TBR
1.2.10.5	Propulsion Subsystem	This element includes the equipment used for orbit insertion, station keeping, and maneuvering of the satellite. This element includes the effort to allocate requirements, design, develop, fabricate, test and integrate (as necessary at the subsystem level) the propulsion subsystem.
1.2.10.6	Electrical Power Subsystem	This element includes the equipment used to generate, convert, regulate, distribute and/or store electrical power for use by the space vehicle (spacecraft bus and payloads). This element also includes the effort to allocate requirements, design, develop, fabricate, test and integrate (as necessary at the subsystem level) the electrical power subsystem.
1.2.10.7	Thermal Control Subsystem	This element includes the costs to design, develop, produce, test and integrate (as necessary at the subsystem level) the hardware necessary to control the spacecraft temperatures.. This element excludes thermal control systems or equipment for the payloads.
1.2.10.8	Command and Data Handling and TT&C	This element includes the cost to develop, design, produce, test and integrate (as necessary at the subsystem level) the hardware necessary to control the spacecraft bus. This element includes the function for Telemetry, Tracking and Control, which should be segregated within this element.
1.2.10.9	Aerospace Ground Equipment	This element includes the design, development, production, integration and testing of those deliverable items required to support and maintain the system or portions of the system while the system is not directly engaged in the performance of its mission, and which are not common support equipment. This includes all costs associated with electrical ground support equipment (EGSE) and mechanical ground support equipment (MGSE) at the Space Segment level.
1.2.11	SV/LV adapter	This element includes the cost to design, develop and test the hardware necessary to attach the satellite to the launch vehicle.

1.2.12	Mission Unique Launch Integration	This element includes first time mission unique SV to LV integration activities required to mate the satellite vehicle to the launch vehicle and to incorporate mission (launch/flight) parameters. It includes costs for which both the SV contractor and LV contractor will incur to make modifications to the EELV standard interface specification (SIS) and to tailor LV flight software. These cost occur only once for the first mission and will not occur again for subsequent missions unless the SV-LV interface and/or mission parameters change.
1.2.13	Launch and Orbital Operations Support (LOOS)	LOOS includes effort associated with prelaunch planning, launch and ascent, and initial on-orbit operations. The prelaunch activities include bus and payload preparation, as well as interface activities with the launch vehicle contractor, the launch base. The launch and ascent period includes final assembly, checkout, and fueling; liftoff; telemetry, pre-launch TT&C, and recovery operations; and post-processing of liftoff data. Final on-orbit support includes maintenance of the ADCS operation; attitude and orbit control; support of on-orbit testing; routine monitoring and fault detection of space vehicle subsystem functions; and support of anomaly investigation and correction. This includes on-orbit storage period activities if these activities are prior to turn over of the satellite to the user. This period ends when the satellite is turned over to the operational user. Operations costs are recorded within the O&S Segment after turn over to operational user.
1.3	**Ground Segment**	This roll-up of elements includes the costs of requirements allocation, design, development, production, integration, test and verification of the GOES-R ground segment. The ground segment is defined as those elements necessary for command and control of the space segment necessary: to monitor and maintain its state of health; to plan and schedule the constellation collection activities; and, to process and deliver collection data. It also includes all elements necessary for simulation, evaluation and anomaly resolution. All necessary hardware and materials necessary for operations crew training are included. This element also includes central security management (such as COMSEC, TRANSEC, Authentication) as appropriate.
1.3.1	Ground Segment SE/PM	This element includes the systems engineering and technical control as well as the business management for the ground segment. SE/PM is the overall planning, directing, and controlling of the definition, development, production, and operation of the ground segment including supportability and logistics planning.
1.3.2	Ground Segment AI&T	This element includes the overall assembly, integration and testing for all ground segment elements, hardware and software, into a complete ground system. It excludes integrated Space-Ground testing captured in WBS 1.1.1. Includes support from sub system and lower level vendors for Ground Segment-level integration and test activities
1.3.3	Mission Ground Station (replicate as necessary for MGS, Backup MGS, factory nodes, etc. if applicable.	This element includes all activities necessary to produce a mission ground station or stations This WBS element should expanded with specific subelements or replicated as necessary to identify any additional ground elements (e.g., , back-up mission ground station, development facility, training facilities, or others_. This element excludes software that is recorded in the Software Segment WBS.

1.3.3.1	Ground Station SE/PM	This element includes the systems engineering, technical control and business management efforts to directly associate with the Mission Ground Station element. This includes the SE/PM costs associated with the initial purchase of certain dedicated communications links necessary for system connectivity, Ground Communications and any other equipment (hardware and/or software), if applicable
1.3.3.2	Ground Station AI&T	This element includes the overall assembly, integration and test for Ground Station subelements. This includes the MGS, Ground Communications and any other equipment (hardware and/or software), as applicable. This effort also includes any efforts necessary for identification, integration, and test of GFE directly associated with the Ground Station.
1.3.3.3	Facilities	This includes the costs to design, develop and operate facilities necessary to support the ground station. Any costs for new or modified Government provided facilities will be incurred by government using construction and RDT&E funding, as appropriate, and should be identified as GFE.
1.3.3.4	Ground Terminals	This element includes the costs for the ground command and receive terminals. These cost include construction (new and modifications) as well as any antenna, feed, and electronics costs including development installation and test.
1.3.3.5	Mission Management equipment	This includes the costs to design, develop, build test and integrate equipment necessary to support ground segment mission management. This includes mission management equipment located at MGS or other nodes.
1.3.3.6	Product generation equipment	This includes the costs to design, develop, build test and integrate equipment necessary to support ground segment product generation. This includes product generation equipment located at MGS or other nodes.
1.3.3.7	Product Distribution equipment	This includes the costs to design, develop, build test and integrate equipment necessary to support ground segment product distribution. This includes product distribution equipment located at MGS or other nodes.
1.3.3.8	Command and Control	This includes the costs to design, develop, build, test, and integrate the ground equipment necessary to support commanding and controlling the spacecraft. This includes C2 equipment located at MGS or other locations.
1.3.4	Terrestrial Communication	This includes the costs to design, develop, and test terrestrial communications links between ground station and other ground elements. This element also includes costs as necessary for integration of identified GFE, if applicable, but should be identified as a specific subelement to this element.
1.3.5	Additional Elements (e.g. Replicate as necessary for Backup MGS, etc. if applicable & provide lower levels consistent with 1.3.3)	This includes the costs to design, develop, and test other elements to support additional elements in the ground segment.
1.4	**NESDIS Infrastructure Interface**	This is a roll-up of elements that include all activities necessary to design, develop, produce, and operate the interface to the NESDIS Infrastructure.

1.4.1	NESDIS Infrastructure Element	This element includes the costs to design, develop, and produce all the hardware, if required, to operate a GOES-R system in conjunction with the NESDIS infrastructure. Cost in this WBS element will include the system engineering effort to define ICD's
1.4.2	Infrastructure SE/PM	This element includes the Systems Engineering (SE) and Program Management (PM) costs to oversee the design, development, and production of all the hardware, if required and software needed to provide GOES-R mission data in a format suitable for use by NESDIS infrastructure.
1.4.3	Infrastructure AI&T	This element includes the assembly, integration and test of the GOES-R ground system in conjunction with the existing NESDIS infrastructure.
1.4.4	Comprehensive Large Array-data Stewardship Program	This element includes costs associated with making additions or changes to CLASS to accommodate and support GOES-R.
1.4.5	Space Environment Center	This element includes costs associated with making additions or changes to SEC to accommodate and support GOES-R.
1.4.6	Merged Product Processing	This element includes costs associated with making additions or changes to Merged Processing to accommodate and support GOES-R.
1.5	Software Segment	This roll-up segment includes the cost to design, develop, build and operate GOES-R software; space, ground, and infrastructure interface. This includes costs of requirements analysis, design, development, integration, test, qualification and problem analysis/error correction. This element does not include software maintenance that is captured in the O&S software costs in WBS element TBR.
1.5.1	Software SE/PM	This element includes the systems engineering and technical control efforts, as well as the business management efforts, to oversee the design and development of the Space Segment, Ground Segment, and Infrastructure segment software.
1.5.2	Space Software	This element is a summation of the cost to design, develop, & implement GOES-R flight software. Systems engineering and program management for software should be embedded in their respective software cost elements. At the contractor's discretion, software systems engineering and program management could be accumulated and tracked separately at the software segment level.
1.5.2.1	Bus	This element includes the cost to design, develop, implement, verify, and test spacecraft software to perform standard spacecraft bus functions. This element excludes the cost of mission specific software directly associated with the communications or payloads.
1.5.2.2	Mission	This element includes the cost to design, develop, implement, verify, and test software to perform mission functions.
1.5.2.3	Communications	This element includes the cost to design, develop, implement, verify, and test communications software to perform mission specific communications functions.
1.5.3	Ground Software	This element includes the cost to design, develop, implement, verify, and test GOES-R ground software.
1.5.3.1	Capture	This element includes the cost to design, develop, implement and test ground software needed to perform capture functions in support of the GOES-R mission.
1.5.3.2	Command & Control	This element includes the cost to design, develop, and implement ground software to perform command, and control of the space vehicle.

1.5.3.3	Mission Management	This element includes the cost to develop, design, and implement ground mission management software for GOES-R system.
1.5.3.4	Product Generation	This element includes the cost to develop, design, and implement ground product generation software for GOES-R system.
1.5.3.5	Product Distribution	This element includes the cost to develop, design, and implement ground product distribution software for GOES-R system.
1.5.3.6	Simulation	This element includes the cost to develop, design, and implement ground software to simulate the GOES-R system test, evaluation, training, and command verification.
1.5.4	Infrastructure	This roll-up element includes the costs to design, develop, produce, implement and test all the software to support NESDIS Infrastructure interface.
1.6	**Launch Segment**	This roll-up of elements consists of booster hardware and common booster/satellite integration and services associated with launching a satellite into orbit.
1.6.1	Launch Vehicle Services	This element includes the launch vehicle (LV) and LV services, includes standard satellite vehicle-launch vehicle (SV-LV) integration activities accomplished by the LV contractor directly associated with the LV and SV-LV interface. This element may be CFE or GFE.
1.6.2	Standard SV-LV Integration & Launch Operations	This element includes standard SV-LV launch integration, preparation, post-launch closures, launch base procedures directly associated with the SV and SV-LV interface and excludes the standard LV contractor SV-LV integration in WBS TBR, above. This element includes the effort to transport the SV and equipment to the launch base, test and fuel the SV, mate the SV and perform health checks, support launch and ascent simulations and check-out activities and perform close out tasks consisting of returning SV support equipment and AGE as applicable. This element excludes the unique mission integration
1.7	**Operations & Support Segment**	The Operations & Support (O&S) element includes contractor support for on-orbit operations. This includes O&S planning, O&S readiness, payload on-orbit testing of modifications, new development driven by an engineering change order, hardware & software sustainment, and any contracted manpower staff support for MGS development & sustainment, as applicable.
1.7.1	Integrated Logistics Support	This element includes the costs to design, develop, and produce or provide all hardware & software maintenance provided as Integrated Logistical Support (ILS) for the GOES-R system.
1.7.1.1	Facilities	This includes the costs to design, develop and operate facilities necessary to support the ground segments. The costs for new or modified facilities costs will be incurred by government using construction and RDT&E funding, as appropriate, and should be identified as CFE or GFE.
1.7.1.2	Sustaining Engineering/PM	This element includes the sustaining engineering and program management functions necessary to maintain the GOES-R system; space, ground, and user interfaces, in an operational ready status.
1.7.1.3	Hardware Maintenance	This element includes the hardware maintenance effort to provide engineering, integrated logistics support (ILS) analysis, performance analysis and technical manual support to operational sites.
1.7.1.4	Hardware Refresh	This element includes for the procurement of replenishment spares and repairs to supplement maintenance efforts specified in TBR. This element excludes efforts and materials specified in initial spares element TBR.

1.7.1.5	Software Maintenance support	This element captures the space, ground, and user segment diagnostic and maintenance software required for planned software maintenance functions including system engineering, software engineering, system verification, configuration management, quality assurance, documentation, and delta training. This element excludes hardware maintenance specified in element TBR.
1.7.1.5.1	Space Software Maintenance support	This element includes the space segment diagnostic and maintenance software required for planned software maintenance functions including system engineering, software engineering, system verification, configuration management, quality assurance, documentation, and delta training.
1.7.1.5.2	Ground Software Maintenance support	This element includes the ground segment diagnostic and maintenance software required for planned software maintenance functions including system engineering, software engineering, system verification, configuration management, quality assurance, documentation, and delta training.
1.7.1.5.3	Infrastructure Software Maintenance support	This element includes the infrastructure interface diagnostic and maintenance software required for planned software maintenance functions including system engineering, software engineering, system verification, configuration management, quality assurance, documentation, and delta training.
1.7.1.6	Initial Spares	This element includes the effort to: (1) support logistics engineering to generate spares listings; (2) provide maintainability and reliability data, and device test as required; (3) order initial hardware and software spares; (4) track order input from material requisition generation to initiation of the purchase order; (5) resolve vendor questions; (6) support pre-ship audit/pre-ship review activities as they pertain to spare parts; and (7) support safety engineering in the collection and validation of parts for use in the GOES-R program. This element does not include recurring spare hardware or software for sustainment.
1.7.1.7	Training	The training element includes the material deliverables, used to sustain training services, devices, accessories, aids, equipment, and parts, in order to facilitate instruction through which personnel will acquire the capability to operate and maintain the GOES-R system. This element excludes the cost of a facility to facilitate GOES-R system instruction and operating utilities for life support sustainment.
1.7.1.8	Technical Data	This element includes the equipment & materials necessary to provide technical order management functions, which include: (1) archiving documents; (2) establishing and operating a technical order depository; (3) maintain the documentation data base; and (4) track Government Furnished Equipment.
1.7.2	Operations	This element includes costs associated with operation of the GOES-R Ground segment.
1.7.2.1	Operations Personnel	This element includes costs for government and contractor personnel to operate the GOES-R Ground segment.
1.7.2.2	TComm	This element contains all the technical and functional labor efforts and activities associated with Operations & Maintenance (O&M) requirements allocation, design, development, procurement, assembly, integration, test and verification of all items that may be necessary for maintaining and upgrading the Terrestrial Communication element. This element includes all the cost to maintenance the Terrestrial communication links between the MGS, Back-up MGS and other identified nodes. This element may also include the cost to maintain "Non-GFE" communications links.

1.8	**Reserved**	TBD pending contractor inputs
1.9	**Reserved**	TBD pending contractor inputs
1.10	**Government Costs**	Provides a roll up of all Government program office costs excluding contract costs captured above
1.10.1	SETA/FFRDC Support	This element includes costs associated with SETA and FFRDC support
1.10.2	Government Staff	This element includes costs associated with government program office staff
1.10.3	Other Government Costs	This element includes costs such as travel, training, office supplies, comm., computer, and management information systems, etc.