

Task Order Plan (TOP)

Contract Number: NNM05AB50C
TO Title: Systems Engineering Support
TO Number: 37-010301 **Revision:** 14

Period of Performance: 10/02/2010 to 09/30/2011

MSFC Initiator: Donna Prsha

(b)(4)

Emergency: No

Revision 14: The purpose of this revision is to extend this task into Contract Year 6 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period October 2, 2010 through September 30, 2011. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance. Sub-element -09 was transitioned to TO 37-010306-JA. Sub-element -11 and -14 have been closed due to no further support required. Sub-element -13 was renumbered to -JA to conform to the project/program naming convention that has been established for FY11.

This revision affects the following Science program(s) or Project(s): ISS ECLSS and MSRR.

Sub-element	Previous Sub-element	Sub-element Title	WBS	Status
N/A	37-010301-03	OMEGA	430728.02.04.05.01, 698671.01.08.06.44	Closed with Rev 04
N/A	37-010301-04	NGAVGS	699152.04.06.01.08	Closed with Rev 04
N/A	37-010301-05	GBM	378710.05.02	Closed with Rev 11
N/A	37-010301-06	HD Camcorder	099844.04.03.02	Closed with Rev 04
N/A	37-010301-08	US A&S3	Institutional funds	Closed with Rev 04
N/A	37-010301-09	ECLSS Spares	401769.06.08.02.04.05	Transitioned to 37-010306-JA with Rev 14
N/A	37-010301-10	LPRP	132438	Closed with Rev 11
N/A	37-010301-11	FASTSAT ES13 Institutional Funded	Institutional funds	Closed with Rev 14
N/A	37-010301-12	ILN	401769.06.08.02.04.02	Closed with Rev 12
37-010301-JA	37-010301-13	ECLSS Sustaining	401769.06.03.03.02.07	Added with Rev 07
N/A	37-010301-14	FASTSAT Project Funded	595551.01.08.01.VP08.09	Closed with Rev 14
37-010301-15	37-010301-15	MSRR SE&I	825080.04.06.01.07, 825080.04.06.01.11	Added with Rev 11

Revision 13: The purpose of this Task Order (TO) revision is to adjust the resource estimate due to changes in scope. Sub-element -14 subcontract labor was decreased by (b)(4) and labor was de-

created by (b)(4) hours due to a decrease in FASTSAT project funding. Minimal effort is expected to continue for sub-element -14 in January 2010. Sub-element -15 was increased by (b)(4) hours due to an increase in scope that required additional support personnel to complete the requirements and verification for MSRR-1.

Revision 12: The purpose of this revision is to reduce scope for sub-element -09 by (b)(4) hours and change the labor category from (b)(4) due to the resource filling the open position. Sub-element -12 is closed out in this revision and is decreased by (b)(4) hours due to a decrease in scope. Sub-element -14 subcontract labor was increased by (b)(4) due to an increase in scope and labor was increased by (b)(4) hours.

Revision 11: The purpose of this revision is extend this task into Contract Year 5 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period October 3, 2009 through October 14, 2010. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance. This revision also closes out sub-element -05 GBM and -10 LPRP and adds MSRR SE&I sub-element -15.

Revision 10: The purpose of this Task Order (TO) revision, -10, is to adjust the resource estimate. Sub-element -05 was decreased by (b)(4) hours due to a decrease in scope. Sub-element -09 was increased by (b)(4) hours due to an increase in scope and additional support staff for the task. Sub-element -10 was increased by (b)(4) hours due to an increase in scope and estimate for subcontract on sub-element -10 was increased by (b)(4) due to an increase in scope. Sub-element -11 was increased by (b)(4) hours due to an increase in scope and estimate for subcontract on sub-element -11 was increased by (b)(4) due to an increase in scope. Sub-element -12 was decreased by (b)(4) hours due to due to customer priorities on another task and travel was decreased by (b)(4) since planned travel was not required. Sub-element -13 was decreased by (b)(4) hours due to a decrease in scope. Sub-element -14 was increased by (b)(4) hours due to an increase in scope and estimate for subcontract on sub-element -11 was decreased by (b)(4) due to a decrease in scope.

Revision 09: The purpose of this revision is to decrease travel for ILN sub-element -12 by (b)(4) due to changes in planned travel.

Revision 08: The purpose of this revision is to add sub-element -14 (FASTSAT Project Funded) to allow charges to be separated out from the sub-element -11 (ES-13 Institutional Funded). Sub-element -11 scope was reduced with labor decreased by (b)(4) hours and subcontract estimate reduced by (b)(4). Sub-element -12 labor category was changed from (b)(4). Sub-element -10 scope was reduced with labor decreased by (b)(4) hours and subcontract estimate reduced by (b)(4).

Revision 07: The purpose of this revision is to add support for ECLSS Sustaining and to make adjustments to support on sub-elements -09, -10 -11 and -12. Sub-element -13 was created to manage support to ECLSS Sustaining. On sub-element -09, the direct labor estimate was increased by (b)(4) hours to support an increase in scope. On sub-element -10, (b)(4) was added to cover travel for subcontract support. On sub-element -11 the direct labor estimate was decreased by (b)(4) hours and a subcontract estimate of (b)(4) was added. On sub-element -12, the direct labor estimate was increased by (b)(4) hours and the subcontract estimate reduced by (b)(4).

Revision 06: The purpose of this revision is to add support for the Fast, Affordable, Science and Technology SATellite (FASTSAT) and International Lunar Network (ILN) projects. Sub-element -11 was created to manage support to FASTSAT. Sub-element -12 was created to manage support to ILN.

Revision 05: The purpose of this revision is to add support for the Lunar Precursor and Robotics Program (LPRP). Sub-element -10 was created to manage support to LPRP. In addition (b)(4) was estimated for sub-element -05 (GLAST) travel related charges from travel taken in April 2008 and billed to the Task Order in FY09.

Revision 04: The purpose of this Task Order (TO) revision, -04, is to extend this task into Contract Year 4 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period September 27, 2008 through October 2, 2009. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance.

This revision affects the following Science Project: Sub-element -05: Gamma-ray Large Area Space Telescope (GLAST) Burst Monitor (GBM) and also affects the following International Space Station Project: Sub-element -09 ECLSS Spares.

Sub-elements 37-010301-03, 37-010301-04, 37-010301-06, 37-010301-08 are not funded and will not continue in this revision for Contract Year 4.

Revision -03: The purpose of this Task Order (TO) revision is to more accurately reflect the effort required during this period of performance. The hourly estimate for sub-element -04 was increased by (b)(4) hours. On sub-element -06, the subcontracted effort was reduced by (b)(4) due to a reduction in task scope. On sub-element -09, the hourly estimate was increased by (b)(4) hours due to a shift in available support. No other changes were made in this revision, and no additional budget is required.

Revision -02: The purpose of this revision is to reduce scope for sub-element -03 OMEGA and Sub-element -09 ECLSS Spares. On sub-element -03, the subcontracted effort was reduced by (b)(4) and labor hours increased by (b)(4) hours due to a reduction in task scope. On sub-element -09 labor hours were reduced by (b)(4) hours due to a reduction in scope.

Revision -01: The purpose of this revision is to add support for ECLSS Spares, decrease support to GLAST and delete support for the Upper Stage Avionics and Software Subsystem Specification. (b)(4) hours were moved from sub-element -05 (GLAST) to sub-element -09 (ECLSS Spares WBS 401769.06.08.02.04.02). Sub-element -08 was reduced by (b)(4) hours due to a decrease in scope.

Revision -00: This Task Order (TO) is a continuation of work being performed on TO 31-060202 of the NNM05AB50C ESTS contract. This TO realigns work performed previously in EI62, and now supports ES13 within the new ED organizational structure. This TO defines and estimates work for the period 1 March 2008 through 26 September 2008. For Subcontracted efforts, this TO authorizes work for the same period. TO 31-060202 will be revised for closure in March with an effective date of 29 February 2008.

Other adjustments:

31-060202-CD was changed to 37-010301-08 because the task is being funded by institutional funds. Due to change in scope (b)(4) hours were added to -08 to the current plan for Contract Year 3.

1.0 Task Order Description & Objectives

This Task Order provides support to MSFC Space Systems Department Systems Engineering & Integration Branch for International Space Station (ISS) Environmental Control and Life Support System (ECLSS) Sustaining Engineering and the Materials Science Research Rack (MSRR).

Jacobs ESTS Group will support and maintain the following: System Requirements documents/databases, System Requirement Allocation Matrix and Requirements Traceability, System Requirement/Spec Trees, System/Subsystem Architecture and functional decomposition documents, Interface Requirements documentation, Stakeholder high level definition and operational concept development, Verification/Validation Requirements, Planning, and Compliance Tracking documents/databases, Systems Trade Study Reports/Presentations, Technical Risk Assessment and Tracking databases, System Analysis & Modeling analyses and reports. Support will be provided on all project defined reviews.

Jacobs ESTS Group will provide overall project planning, including resource planning and management, master and detailed scheduling, cost estimating and planning, risk management, WBS development, day-to-day task planning, and reporting.

Sub-element -03 (Closed per Revision -04)

This sub-element provided support to the OMEGA project in the areas of system engineering.

Sub-element -04 (Closed per Revision -04)

This sub-element provided support to the Next Generation Advanced Video Guidance System (NGAVGS) project in the areas of requirements and verification.

Sub-element -05 (Closed per Revision -11)

This sub-element provided support to the Gamma-ray Large Area Space Telescope (GLAST) Burst Monitor (GBM) project in the area of supporting systems engineering.

Sub-element -06 (Closed per Revision -04)

This sub-element provided support to the HD Camcorder Systems project in the areas of requirements and verification development and general systems engineering.

Sub-element -08 (Closed per Revision -01)

This sub-element provided support to the Upper Stage Avionics development and the Upper Stage Avionics and Software Subsystem Specification (US A&S3) in the area of requirements development.

Sub-element -09 (Closed per Revision -14)

This sub-element provided support to the ECLSS Spares project in the area of general systems engineering and provide support to the LSE.

Sub-element -10 (Closed per Revision -11)

This sub-element provided support to the Lunar Precursor and Robotics Program (LPRP) in the area of verification support.

Sub-element -11 (Closed per Revision -14)

This sub-element provided support to the Fast, Affordable, Science and Technology SATellite (FAST-SAT) Project in the areas of requirements, verification, and interface control.

Sub-element -12 (Closed per Revision -12)

This sub-element provided support to the International Lunar Network (ILN) Project in the areas of requirements, verification, and interface control.

Sub-element -JA (previously -13)

This sub-element provides support to the ECLSS Sustaining Project in the areas of requirements, verification, and interface control. This task includes general systems engineering support to include but not be limited to items such as input/update of PRACA database information, action item tracking, support of TIMs and Program/Project weekly meetings, etc. This task may require the use of data base templates defined by the ECLSS project and ES13.

Sub-element -14 (Closed per Revision -14)

This sub-element provided support to the Fast, Affordable, Science and Technology SATellite (FAST-SAT) Project in the areas of requirements, verification, and interface control.

Sub-element -15

This sub-element provides support to the MSRR SE&I project in the areas of system engineering. Experiment Module (EM) Integration support will be provided to the Materials Science Laboratory (MSL) EM. This support includes interface definition and Interface Control Document (ICD) development / management, technical coordination, export control compliance, verification review, and problem resolution. Support will be provided for the MSL Engineering Model, Flight Model, and Training Model deli-

very and integration. Support extends to all furnace inserts and science cartridges used in the MSL. Maintenance of MSRR/MSL system requirements and verification, support verification review and processing, database management, and tracking of verification status. Verification status will be provided to both I&PS and project management on an as-needed basis and at periodically scheduled reviews.' Support will be provided in the areas of software, software test, thermal, electrical, structures, dynamics, vacuum access, and design to support program/project changes, issues, and on-orbit anomalies as needed.

2.0 Technical Approach (Including required input, guidelines & assumptions)

The Jacobs ESTS Group will perform the work described above using standard office automation software including Microsoft Project, Excel, Word and PowerPoint. The Internet will be used to obtain NASA standards, military standards, and contractor documents as appropriate. Use of systems engineering tools such as CRADLE and ARM may be required depending on specific Project/Program needs.

The Jacobs ESTS Group will support meetings, teleconferences, Technical Interchange Meetings, (TIMs), etc., as required by the MSFC Space Systems Department Systems Engineering & Integration Branch. The Jacobs ESTS Group will travel as necessary to support electrical integration and EGSE tasks, TIMS, program reviews and other related activities.

3.0 Discussion of Skills Required

This Task Order requires (b)(4)

(b)(4) Experience in technology development, operations, and systems engineering is required. Systems engineering or integration experience with payloads or flight systems is also required. Working knowledge of NASA or DoD Systems Engineering processes is required. Independent initiative with good "follow-up" and organizational skills is required. Experience with systems engineering tools for requirements management is desired.

4.0 Special Tools Required

None.

5.0 Participating Subcontractors

None

6.0 Milestones & Deliverables

Monthly Activity Reports, updates to MSFC Space Systems Department Systems Engineering & Integration Branch monthly review charts, and project documentation as determined by project or MSFC Space Systems Department Systems Engineering & Integration Branch.

Sub-element -15:

- October 27, 2010: MSRR/MSL water and turbopump spinup on orbit
- January 2011: SQS on-orbit commissioning, MICAST7 processing, T61p laptop transition on-orbit
- June 2011: Germany Ops MSRR/MSL Operations TIM
- June 2011: SCAs 6 to be flown on Launch-on-Need

7.0 Special Considerations (Recruiting, Special Equipment / Material, Safety, etc.)

None.

ESTS Contract Task Order Request Performance Plan

Task Order Title: [Systems Engineering Support](#)

Task Order Number: [37-010301](#) Revision: 14

Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X <u>65%</u> = Justification
<p>1) System engineering product development and support functions, assessments, and reviews are accurate and comprehensive.</p> <p>2) Perform system engineering based on established engineering best practices as defined in agency, center, and branch requirements and processes.</p>		
Schedule Objectives (Milestones)	Weighting Schedule % <u>10%</u> (min 10%)	Schedule Score X <u>10%</u> = Justification
Deliver any products identified per the agreed-to schedule		
Cost (actual vs. negotiated)	Weighting Cost% <u>25%</u> (min.25%)	Cost Score X <u>25%</u> = Justification
	Weighting Total % <u>100.00%</u>	Total Score

Technical, Schedule, and Cost Grading Scale

Score	Description
9.0-10.0	Exceeded TO Performance Plan objectives resulting in major benefit(s)
8.0-8.9	Exceeded TO Performance Plan objectives resulting in modest benefit(s)
7.0-7.9	Met TO Performance Plan objectives
3.0-6.9	Did not meet all TO Performance Plan objectives resulting in minimal impact or requiring additional agency funds
0.0-2.9	Did not meet TO Performance Plan objectives resulting in substantial impact and/or requiring additional agency funds

ESTS Contract Task Order Request Performance Plan

Task Order Number: [Systems Engineering Support](#)

Task Order Number: [37-010301](#) Revision: [14](#)

Comments:

Risk Assessment

Contract Number: NNM05AB50C
TO Title: Systems Engineering Support
TO Number: 37-010301 **Revision:** 14

Period of Performance: 10/02/2010 to 09/30/2011

MSFC Initiator: Donna Prsha

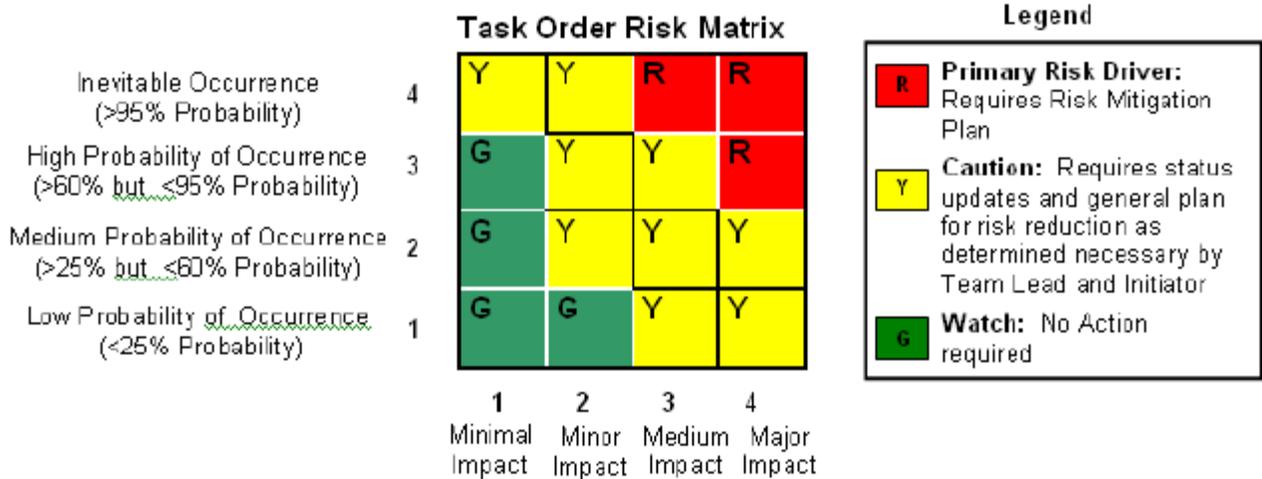
(b)(4)

Task Order Risk Assessment to Cost, Technical, and Schedule

List identified risk associated with Task Order performance as related to task cost, technical, and schedule. Classify the risk(s) according to probability of occurrence and impact as defined below and enter the risk into risk matrix.

Risk	Risk Type	Probabili-ty (1-4)	Im-pact (1-4)	Risk Description
Risk C1	Cost			No cost risk identified.
Risk C2	Cost			
Risk T1	Technical			No technical risk identified.
Risk T2	Technical			
Risk S1	Schedule			No schedule risk identified.
Risk S2	Schedule			

*Note: See page 2 for risk mitigation plan for those risks which are Primary Risk Drivers.



1

2

3

4

Minimal Impact

Minor Impact

Medium Impact

Major Impact

