

Task Order Plan (TOP)

Contract Number: NNM05AB50C
TO Title: Flight Hardware and Sustaining Engineering Support
TO Number: 37-060204 **Revision:** 03

Period of Performance: 10/02/2010 to 9/30/2011

MSFC Initiator: Keith Parrish

(b)(4)

Emergency: No

Revision -03: 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.

This revision affects the programs listed in the table below:

Subelement	Previous Subelement	WBS	Program
JA	01	401769.06.08.02.04.05	ISS
JB	02	401769.06.03.07.02.03	ISS
JC	03	401769.06.03.03.02.07	ISS
JD	04	401769.06.01.01.08	ISS

The subelements have been redesignated to conform to the project/program numbering convention that has been established for FY11. Subelements 01, 02, 03 and 04 are closed.

Revision -02: Due to a reduction in scope, in that portions of previously estimated contractor support have been reassigned to civil service personnel, the (b)(4) on Subelement -01, Subelement -03, and Subelement -04 are respectively reduced by (b)(4) for a total reduction of (b)(4) resulting in a corresponding (b)(4) reduction in cost. Some of those activities include brine analysis, updating of the International Space Station (ISS) product water database, monitoring of the ISS Urine Processor Assembly (UPA) telemetry data, and documentation of ISS UPA anomaly reports. (b)(4) No subelements are being closed due to this reduction. No additional budget is required.

Revision -01: The purpose of this revision is to decrease the scope of technician support needed for Subelement -01: Shuttle Transition and Retirement System (STaRS) Environmental Control and Life Support System (ECLSS) Spares due to a lack of funding. The (b)(4) on Subelement -01 was reduced by (b)(4) with a corresponding reduction in cost of (b)(4). (b)(4) The Schedule, Performance Plan and Risk Assessment have not been revised since there are no expected changes in task activities for this period of performance. No additional budget is required.

Revision -00: This Task Order (TO) is a continuation of work being performed on TO's 37-060102 and 37-020201 of the NNM05AB50C ESTS contract. This TO combines work performed previously in ES61 and ES22, and now supports ES62 within the ED organizational structure. The purpose of this revision is to 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. For Subcontracted efforts, this TO authorizes work for the same period. Additionally, the Schedule, Performance Plan and Risk Assessment reflect task activities for the new period of performance. This revision affects the following Science programs: (subelement -01) Shuttle Transition and Retirement System (STaRS) Environmental Control and Life Support System (ECLSS) Spares, (subelement -02) ECLSS Sustaining Engineering, (subelement -03) Regenerative ECLSS hardware/systems and ECLSS flight hardware fabrication, and (subelement -04) ECLSS System Manager Support. The active subelements are now:

Sub-element Mapping and WBS funding:

New Subelement	Previous Subelement(s)	WBS
37-060204-01	N/A	401769.06.08.02.04.05
37-060204-02	37-060102-02	401769.06.03.07.02.03
37-060204-03	37-060102-03 37-020201-03	401769.06.03.03.02.07
37-060204-04	37-060102-04 37-020201-01 37-020201-02	401769.06.01.01.08

1.0 Task Order Description & Objectives

The objective of this TO is to provide systems and test engineering support for the International Space Station (ISS) Environmental Control and Life Support Systems (ECLSS) flight hardware, sustaining engineering efforts, and spare Orbital Replacement Unit (ORU) development and test activities. ECLSS includes, but is not limited to:

Subelement JA (previously 01): Shuttle Transition and Retirement System (STaRS) ECLSS Spares.

Subelement JB (previously 02): Sustaining Engineering (SE) simulator build-up, maintenance, and testing.

Subelement JC (previously 03): Regenerative ECLSS hardware/systems, ECLSS flight hardware fabrication, and Calcium Remediation Evaluation support.

Subelement JD (previously 04): ECLSS System Manager support.

Support includes system engineering; testing of development, flight, and sustaining engineering hardware; reducing, analyzing, correlating data and documenting findings; instrumentation and control system development; materials/procurement tracking; system verification; build-up of ECLSS simulators; procedure writing; participation in ECLSS meetings and design reviews; operation of the chemistry laboratory; operation of the machine shop and other manufacturing equipment within buildings 4754 and 4755; fabrication of ECLSS flight hardware; and other engineering and technical functions as needed to accomplish the successful testing and operation of the ECLSS test facility.

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

Systems and test engineering support for the ISS ECLSS will be provided and tracked as delineated in the following four subelements:

Subelement -JA: Systems test and test engineering support for the STaRS ECLSS Spares effort will be performed under subelement -JA and will include system engineering; design of test support hardware and software; testing of development and flight hardware; materials/procurement tracking; system verification; procedure writing; participation in ECLSS meetings and design reviews; and other engineering and technical functions as needed to accomplish successful testing. Required inputs for this subelement-

ment include system and test requirement information as well as timely delivery of test and support hardware and software.

Subelement -JB: Systems test and test engineering support for the Sustaining Engineering Simulators will be performed under subelement -JB and will include system engineering; design of test support hardware and software; testing of development, flight, and sustaining engineering hardware; materials/procurement tracking; system verification; build-up and maintenance of ECLSS simulators; procedure writing; participation in ECLSS meetings and design reviews; and other engineering and technical functions as needed to accomplish the successful testing and operation of the ECLSS test facility. Required inputs for this subelement include system and test requirement information as well as timely delivery of test and support hardware and software.

Subelement -JC: Systems test and test engineering support for Regenerative ECLSS hardware/systems will be performed under subelement -JC and will include system engineering; design of test support hardware and software; testing of development and flight hardware; materials/procurement tracking; identifying technology needs; defining technology development plans; supporting hardware design/assembly as required; and providing oversight for development testing, system verification, procedure writing, participation in ECLSS meetings and design reviews; and other engineering and technical functions as needed to accomplish successful testing. Required inputs for this subelement include system and test requirement information as well as timely delivery of test and support hardware and software. Fabrication of ECLSS flight hardware may also be performed under subelement -JC. Engineering support for the failed on orbit Distillation Assembly (DA) SN002 will be performed under subelement -JC. The primary objective is to evaluate the effectiveness of chemical treatments in preventing calcium sulfate precipitation from forming in the DA. Anticipated task order support consists of: operation of the chemistry laboratory to mix feed solutions and analyses of effluent from the DA; operation of the machine shop and other manufacturing equipment within buildings 4754 and 4755 in support of mechanical fabrication requests; electrical technician support with the installation of a camera and build-up of needed cable assemblies; and provide other engineering and technical functions as needed to accomplish the successful chemical treatment evaluation.

Subelement -JD: Systems Manager Support will be performed under subelement -JD and will include tasks associated with monitoring and evaluating performance of in flight hardware; defining hardware evaluation test requirements; supporting test operations; reducing, analyzing, correlating data; and documenting findings. Additional support will include off gassing loads, analysis of supply cargo, anomaly investigations of hardware systems, root cause evaluations, and re-design efforts. Engineering support will also be provided to the Nodes/MPLM Projects Office and ISS ECLS Subsystem Manager.

3.0 Discussion of Skills Required

To accomplish the objectives of this TO a diverse and comprehensive skill mix is required. The team will consist of chemists, electrical, mechanical, and chemical engineers, and electrical and mechanical technicians.

4.0 Special Tools Required

None.

5.0 Participating Subcontractors

The following companies will contribute toward accomplishing the objectives of this TO:

(b)(4)

6.0 Milestones & Deliverables

Subelement -JA: Milestones and deliverables in support of STaRS ECLSS Spares to include test support hardware and software, test plans, test procedures, test reports, inputs to the Monthly Activity Report (MAR), and trip reports.

Subelement -JB: Milestones and deliverables in support of the SE Simulator to include test support hardware and software, test plans, test procedures, test reports, inputs to the MAR, and trip reports.

ESTS Contract Task Order Request Performance Plan

Task Order Title: [Flight Hardware and Sustaining Engineering Support](#)

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Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X 65% = Justification
Provide Engineering, Chemical Laboratory, and Technician support in the following areas: International Space Station (ISS) Sustaining Engineering ECLSS Spare ORU support WRS Flight hardware fabrication System Manager Support		
Schedule Objectives (Milestones)	Weighting Schedule % 10% (min 10%)	Schedule Score X 10% = Justification
Provide products and support for SE build-up and test to meet coordinated project and customer need dates in the following areas: International Space Station (ISS) Sustaining Engineering ECLSS Spare ORU support WRS Flight hardware fabrication System Manager Support		
Cost (actual vs. negotiated)	Weighting Cost% 25% (min.25%)	Cost Score X 25% = Justification
	Weighting Total % 100.00%	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

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Comments:

Risk Assessment

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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	Probability (1-4)	Impact (1-4)	Risk Description
Risk C1	Cost			No cost risks have been identified for this Task Order.
Risk C2	Cost			
Risk T1	Technical			No technical risks have been identified for this Task Order.
Risk T2	Technical			
Risk S1	Schedule			No schedule risks have been identified for this Task Order.
Risk S2	Schedule			

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



