

Task Order Plan (TOP)

Contract Number: NNM05AB50C

TO Title: *Robotic Lander Multi-Propellant Diagnostic Test Bed*

TO Number: 43-000103 **Revision:** 02

Period of Performance: 10/02/2010 to 08/31/2011

MSFC Initiator: *Lawrence Hill*

(b)(4)

Emergency: *No*

Revision 02: 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 August 31, 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 support to VP24 Robotic Lunar Lander Development (RLLD) Project Office.

Program	Subelement	WBS	Status
VP24, RLLD	00	667047.02.99.08	Mapped to 43-000103-GA
VP24, RLLD	GA	667047.02.99.08	Open

Revision: 01 This Task Order (TO) revision has been created to address a decrease in scope and associated Subcontract support in this Contract Year. Additional scope and Subcontract support will be planned for the next Contract Year in a subsequent revision. Sections 6 and 9 of this TO have been to correct the milestones/deliverables and the schedule associated only with this Contract Year. The Performance Plan and Risk Assessment have not changed. This change results in a net decrease of

(b)(4) The overall combined total for this task is (b)(4)

This Task Order (TO) has been created to provide technical support for the Robotic Lander Multi-Propellant Diagnostic Test Bed. This TO defines the task, including scope, schedule, and resource estimates throughout the period of performance. Costs have been estimated for Subcontract resources and the associated management hours. This TO includes a Risk Assessment, Performance Plan, and baseline schedule. Support for this TO is planned to begin on August 1, 2010. The total cost for this TO in Contract Year 5 is estimated at (b)(4)

1.0 Task Order Description & Objectives

Initiate efforts to develop a capability for the handling and testing of mono-propellant hydrazine and bi-propellant hydrazine and nitrogen tetroxide thruster systems. The effort will result in development plans, test procedures, analyses reports, and test reports that will constitute the deliverables on the contract. The effort will be focused on five major areas listed below.

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

Subelement -GA: Thruster System Testing

Subcontractor:

Propellant Development Plan - The contractor will prepare a development plan for the use of mono-propellant hydrazine and bi-propellant hydrazine and nitrogen tetroxide. The plan will specifically delineate the steps which should be taken and will lay out the specific hardware plan which will be followed.

Hazardous Propellant Training - The contractor shall ensure that engineers and technicians have received the appropriate training from a qualified source for the handling, usage and disposal of hazardous propellants specifically hydrazine and nitrogen tetroxide. This training will ensure that the contractor is prepared to safely handle propellants.

Facility Preparation - The contractor shall prepare the test facility for the handling and testing of hydrazine and nitrogen tetroxide. The contractor shall write a facility/test plan for handling test articles as well as for the specific hydrazine thruster mentioned herein.

Thruster Planning, Manufacturing, and Assembly - The contractor shall initiate planning efforts to manufacture and assemble a mono-propellant hydrazine thruster based on pre-existing designs/hardware and prepare this thruster for testing. (Note: manufacturing and assembly of the thruster may be completed, subject to the availability of funds.)

Test Planning and Execution - The contractor shall initiate plans to integrate the hydrazine thruster into the test cell and perform water flow testing followed by hot-fire testing to verify the facility and thruster performance. (Note: testing of the thruster may be completed, subject to the availability of funds.)

3.0 Discussion of Skills Required

The subcontractor shall provide the staffing required to successfully accomplish the objectives of this TO. Knowledge of propulsion components, systems, test facility design, and test planning and operations will be provided as required.

4.0 Special Tools Required

None

5.0 Participating Subcontractors

(b)(4)

6.0 Milestones & Deliverables

Monthly Activity Reports

<u>Monthly Milestones/Deliverables</u>	<u>Due Date</u>
Development Plan	Sep 2010
Training Report	Oct 2010
Material Purchases for Training	Oct 2010
Test Facility Design Package	Dec 2010
Facility Activation Test Report	Mar 2011
Mono-Propellant Thruster Development Package	May 2011

Bi-Propellant Thruster Development Package	Jun 2011
Mono-Propellant Thruster Detailed Development Package	Jul/Aug 2011
Bi-Propellant Thruster Detailed Development Package	Jul/Aug 2011
Mono-Propellant Thruster Checkout Test Report	Jul/Aug 2011
Bi-Propellant Thruster Checkout Test Report	Jul/Aug 2011
Final Report	Jul/Aug 2011

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

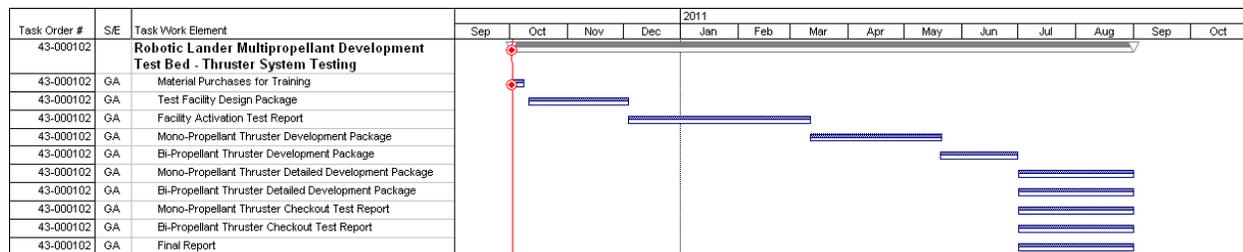
Support may require material purchases to accomplish the objectives of this TO.

8.0 Work Shelf

The following activities could be accomplished as part of the Task Order performance by personnel that are temporarily available due to program or funding delays on other Tasks. Specific assignments will be coordinated with the Task Initiator to ensure appropriate skills and experience.

TO/Subelement	Description	Due Date	Skill
---------------	-------------	----------	-------

9.0 Schedule - Schedule is baseline only. Reference Monthly Activity Report for detailed, updated schedule with milestones.



ESTS Contract Task Order Request Performance Plan

Task Order Title: [Science and Mission Systems Office](#)

Task Order Number: [43-000103](#) Revision: 02

Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X <u>65%</u> = Justification
Propellant development plan. Provide hazardous propellant training. Test facility preparation and facility/test plan. Thruster planning, manufacturing and assembly. Thruster test planning and execution.		
Schedule Objectives (Milestones)	Weighting Schedule % <u>10%</u> (min 10%)	X <u>10%</u> = Justification
Meet customer defined schedule/milestones for delivery of technical objectives and deliverables.		
Cost (actual vs. negotiated)	Weighting Cost% <u>25%</u> (min.25%)	X <u>25%</u> = 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

Task Order Number: [Science and Mission Systems Office](#)

Task Order Number: [43-000103](#) Revision: [02](#)

Comments:

Risk Assessment

Contract Number: NNM05AB50C
TO Title: *Robotic Lander Multi-Propellant Diagnostic Test Bed*
TO Number: 43-000103 **Revision:** 02

Period of Performance: 10/02/2010 to 08/31/2011

MSFC Initiator: *Lawrence Hill*

(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	Probability (1-4)	Impact (1-4)	Risk Description
Risk C1	Cost	1	1	Meet cost estimates to within 5%
Risk C2	Cost			
Risk T1	Technical	1	1	Meet all technical objectives
Risk T2	Technical			
Risk S1	Schedule	1	1	Meet schedule deadlines
Risk S2	Schedule			

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

