

**Task Order Plan (TOP)**

**Contract Number:** NNM05AB50C  
**TO Title:** *Robotic Lunar Lander Development*  
**TO Number:** 43-000102 **Revision:** 02

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**Period of Performance:** 10/02/2010 to 06/30/2011

**MSFC Initiator:** *Lawrence Hill*

(b)(4)

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**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 June 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 support to VP24 Robotic Lunar Lander Development (RLLD) Project Office.

Program	Subelement	WBS	Status
VP24, RLLD	00	667047.02.99.08	Mapped to 43-000102-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 updated to specify 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 Lunar Lander Development (RLLD) projects. 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. This total cost for this task is estimated at (b)(4).

**1.0 Task Order Description & Objectives**

This task supports integrated test planning and implementation support of cold gas, warm gas, and hot gas testing for future lunar and celestial bodies mission capabilities. The focus is on providing integrated test planning efforts, with associated documentation and plans, and coordinating test facility support to assure testbed activities successfully demonstrate integration of guidance algorithms with the test hardware and software. This effort will support the NASA test planning and execution team for on-going cold gas, emerging warm gas and future hot-gas lander testing as required by NASA and accommodation of possible future external entities.

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

### ***Subelement -GA: Integrated Test Planning for Algorithm Integration Demonstration Activities***

#### Subcontractor:

Define and document requirements for RLLD integrated test plans - The scope of this effort is to enhance ongoing efforts for facility test management, test planning and document creation to assure the successful demonstration of advanced guidance algorithms coupled with test hardware. This effort shall accommodate changes in test hardware from cold-to-warm-to-hot gas configurations as required by NASA and provide assurance that all test planning can accommodate the unique requirements, including safety, for each configuration and meet all current test objectives and develop the capability to support future efforts to demonstrate and mature technologies required for mission success on NASA robotic space exploration projects.

Conduct broad capability test facility studies and assist in cross-agency test assessments and planning - The subcontractor shall conduct assessments, trade studies, and implementation plans for test facilities under NASA control and those of other agencies or at other locations. The subcontractor shall link the facility trade studies to specific test objectives for the comprehensive set of test hardware and test hardware configurations.

Test facility coordination - The subcontractor shall provide logistical coordination to define, supply and maintain (as appropriate) unique ground support equipment prior to and during RLLD test activities.

Program integration for test plans, test execution and algorithm integration assurance - The subcontractor shall provide detailed schedules and resource plans for support discussed above in this section. The subcontractor will also perform document control and delivery for all deliverables, including test plans, facility assessments and monthly reports.

Test Plans and Assurance/Certification - Test plans shall be prepared, outlining all assigned testing studies, and provided to the NASA team as inputs for their comprehensive test plan activities to include:

- Confirming system requirements
- Defining entry and exit criteria of all tests
- Functional requirements
- Non-functional requirements
- Updating test documentation as necessary
- Confirming that new and enhanced functionality has been implemented
- Producing reports on testing activities

The subcontractor shall assure that the test plans directly support the NASA RLLD test objectives and risk reduction goals. It is of particular interest to assure compliance with algorithm integration objectives for the multiple hardware configurations.

## **3.0 Discussion of Skills Required**

### ***Subelement -GA: Integrated Test Planning for Algorithm Integration Demonstration Activities***

The subcontractor shall provide the staffing required with the skills needed to complete the work described in this Task Order Plan. Knowledge of test planning, algorithm integration, safety, and facility planning and implementation will be required. Additional personnel with knowledge and expertise for program integration, program planning and implementation will be provided by the subcontractor as required.

## **4.0 Special Tools Required**



# ESTS Contract Task Order Request Performance Plan

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Category	Weighting Technical %	End of Period Technical Score
<b>Technical Objectives</b>	65%	$X \underline{65\%} = \underline{0.00}$ <b>Justification</b>
Define and Document Requirements or RLLD Integrated Test Plans  Conduct broad capability test facility studies and assist in cross-agency test assessments and planning.  Test facility coordination.  Program Integration for Test Plans, Test Execution and Algorithm Integration Assurance.  Test Plans and Assurance/Certification.		
<b>Schedule Objectives (Milestones)</b>	<b>Weighting Schedule %</b> <u>10%</u> (min 10%)	<b>Schedule Score</b> $X \underline{10\%} = \underline{0.00}$ <b>Justification</b>
Meet customer defined schedule/milestones for delivery of technical objectives and deliverable.		
<b><u>Cost (actual vs. negotiated)</u></b>	<b>Weighting Cost%</b> <u>25%</u> (min.25%)	<b>Cost Score</b> $X \underline{25\%} = \underline{0.00}$ <b>Justification</b>
	<b>Weighting Total %</b> <u>100.00%</u>	<b>Total Score</b> <b>0.00</b>

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## 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

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**Comments:**

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**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	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.



