Marshall Space Flight Center
Engineering, Science & Technical Services

JACOBS
ESTS Group

Task Order Plan (TOP)

Contract Number: *NNM05AB50C*
TO Title: *RF & Data Systems Branch - ISS*
TO Number: *37-030303* **Revision:** *12*

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

MSFC Initiator: *Walter Robinson*

(b)(4)

Emergency: *No*

Revision 12: The purpose of this revision is (a) to discontinue support for subelement 07 since this support is no longer required for FY2011, effective October 8, 2010, and (b) to add support for Shuttle Solid Rocket Booster (SRB) NASA Standard Initiator (NSI) susceptibility to external incident Electro-Magnetic Emissions (EME) through subelement S1, start effective December 4, 2010.

Subelement	Previous Subelement	WBS	Subelement Title	Subelement Status
JA	03 & 04	401769.06.01.02.03	ISS C&DH & C&T	Active
	06	401769.06.08.02.04.05	ISS ECLSS STEFI Rack # 3	Transferred to 37-030201-JA by Rev 11
07	07	278083.02.50.01	ILN Mission 1 Engineering	Deleted by Rev 12
JB	08	401769.06.08.02.04.05	ISS ECLSS STEFI Rack # 3 Technician	Active
S1	N/A	522632.08.01.01	SRB NSI Susceptibility to EME	Added by Rev 12
	CC	136905.08.05.08.04.08	Upper Stage RF	Administratively closed effective July 2, 2010
	CD	136905.08.01.03	Flight Safety System RF	Administratively closed effective July 2, 2010
	CE	136905.02.06.08.06	SIL DBOB Assembly & Test	Administratively closed effective July 2, 2010
	CF	136905.08.05.09.01.08	SDF DBOB Assembly & Test	Administratively closed effective July 2, 2010

Revision 11: 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 consolidates the support provided to the International Space Station (ISS) Command and Data Handling (C&DH) System Problem Resolution Team (SPRT) and the Communications and Tracking (C&T) SPRT into one subelement (JA), from the previous two (03 & 04). The scope of this subelement was also revised to reflect the consolidation as well as additional projects within the ISS to receive more focused support by C&DH.

There were no changes made to Subelement 07 except to renumber it to JB.

The ISS subelements have been renumbered to conform to the project/program naming convention that has been established for FY11.

Subelement 07 task objectives and technical approach remained unchanged. Skill requirement (para 3.0) were updated to reflect the current task skill needs.

This revision transfers support from Subelement -06 to TO # 37-030201-JA.

Sub-CC: This subelement was administratively closed effective July 2, 2010.

Sub-CD: This subelement was administratively closed effective July 2, 2010.

Sub-CE: This subelement was administratively closed effective July 2, 2010.

Sub-CF: This subelement was administratively closed effective July 2, 2010.

This revision affects the following APO elements: None.

Revision 10: The purpose of this revision is to add Subelements CE and CF to support assembly of hardware for the System Integration Laboratory (SIL) and Software Development Facility (SDF). This revision (b)(4) from May 1 through the end of this contract year (CY). This change also reduces the amount of support planned for subelement 08 over the same period as STEFI Rack objectives have been met. A low level of support has been estimated for the remainder of the year for periodic STEFI maintenance. No other change is included in this revision.

This revision affects the following APO elements: System Integration Laboratory (SIL), Software Development Facility (SDF).

Revision 09: The purpose of this revision is to change the projected (b)(4) from (b)(4) in the time period from December 2009 through October 2010 for Subelement 08 since the (b)(4) category was incorrectly estimated in Revision 08 due to an error in the PeopleSoft Database. The correct category, (b)(4) was estimated in Revisions 06 and 07. No other change is included in this revision.

This revision does not affect any APO elements.

Revision 08: 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. 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 APO elements: First Stage (subelement CD) and Upper Stage (subelement CC)

This revision affects the following ISS Projects: Environmental Control Life Support System (ECLSS) (subelements 06 and 08), Node 2 and Node 3 (subelements 03 and 04), and ELC (subelement 04).

This revision affects the ILN Project (subelement 07).

The WBS' associated with these subelements are listed in the table below:

Revision 07: This revision makes adjustments to 5 subelements.

Subele ele-ment	Project	Description of Change
03	ISS – C&T	Reduce estimated hours by (b)(4) due to limited support being required for the remainder of the year.
04	ISS – C&DH	a) Increased other estimate by (b)(4) due to an increase in the monthly cellular fee. b) Increased travel by (b)(4) due to unexpected lengthy travel in June and July, and expected travel in August and September to support troubleshooting and additional validation.
06	ECLSS	Increased estimated hours by (b) due to increased support being required.

	STEFI # 3 Engineering	
07	ILN RF	Decreased estimate by (b)(hours due to a decrease in planned work for August and September.
08	ECLSS STEFI # 3 Technician	Decreased estimate by (b)(4) hours due to transition date of new employee support to the task.

This revision affects the following APO elements: None.

Revision 06: This revision adds a new subelement (-08) for technician support to the ECLSS STEFI Rack # 3 assembly and test. (b)(4) hours were estimated for this support. In addition, (b)(hours were added to subelement – CC, (b)(4) hours were added to subelement – CD, and (b)(hours were added to subelement – 07 to more accurately project part time support for these tasks. (b)(4) hours were added to subelement – 04 to fully support the requirements of the task.

A few minor format and typographical errors were also corrected.

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 APO elements: Upper Stage (subelement – CC) and First Stage (subelement – CD).

Revision 05: This revision accomplishes three objectives.

The first objective is to increase the projected support for Subelement - 04 (C&DH Support to ISS). Since the start of the fiscal year, the travel has been occurring at a greater than expected rate which has also caused the hours of support to be greater than expected. The projection for travel has been doubled to a new total of (b)(4) and the hours have been increased by (b)(4) for a new total of (b)(4)

The second objective is to decrease the planned ramp up of support to Subelement - 06 (Support for ECLSS STEFI Rack # 3). The expected project need for software development and test support has shifted to later in the year so the projection has been flattened for the rest of the fiscal year. There have also been (b) hours of technician support added for preliminary rack testing and troubleshooting. These changes resulted in a reduction of the planned hours by (b)(4) for a new total of (b)(4) hours

The third objective of this revision is to add subelement - 07 for International Lunar Network (ILN) support (support to be initiated on January 21, 2009 for remainder of the fiscal year), and reduce the projected support for subelement – CD. This reduced the planned hours by (b)(4) resulting in a new total of (b)(4) hours for subelement – CD.

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 APO elements: First Stage (subelement – CD).

Revision 04: The purpose of this revision 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 adds subelements – CC (for Upper Stage RF support) and – CD (Upper Stage Flight Safety System RF Support) to this Task Order. The support in these two areas is being transferred from Task Order # 37-030301.

This revision affects the following APO elements: Upper Stage (subelement – CC) and First Stage (subelement – CD).

This revision deletes subelements - 02 and - CT.

The task title was also changed in the Plan and the Risk Management Plan; deleted the " – ISS" extension.

Revision 03: This revision adds subelement -06 to this Task Order for engineering support to the International Space Station (ISS) Environmental Control Life Support Subsystem (ECLSS) Urine Processing Assembly (UPA) Special Test Equipment for Flight Controller Assembly (FCA) Interfaces (STEFI) Rack # 3 development.

- Subelement – 02 - No requests for support were received from the project so the total plan was reduced by (b)(4) hours.
- Subelement – 03 – Support required was less than expected so the total hours of support was reduced by (b)(4) hours.
- Subelement – 04 – Support required to accomplish the goals of this subelement required an additional (b)(4) hours. Reduced the planned ODC since the monthly cellular phone costs are less than expected.
- Subelement – 06 – Added with this revision.
- Subelement – CT – Support requested was greater than originally expected which resulted in a need for an additional (b)(4) hours of support.
- No change of scope is included in this task order revision for subelements - 02, - 03, - 04, or – CT.

Revision 02: This revision increases the planned support by (b)(4) hours provided in Subelement – 04 to the ISS. Support to the Node 2 and Node 3 is continuing with additional support being provided to the ExPRESS Logistics Carrier (ELC) project. In general, this ELC support falls within the definition of ISS C&DH support but additional definition is added to the Task Order Description and Technical Objectives.

Revision 01: This revision defers the technician support provided in Subelement CT to later in the fiscal year. Section 7 is updated to document the Spectrum Analyzer and to show the Cellular Telephone monthly fee.

Revision 00: This Task Order (TO) is a continuation of work being performed on TO # 32-020301 and 31-030101 of the NNM05AB50C ESTS contract. This TO realigns work performed previously in EV23 and EI31, and now supports ES33 within the new ED organizational structure. This TO defines and estimates work for the period 1 March 2008 through 26 September 2008. TO # 32-020301 and # 31-030101 will be revised for closure in March with an effective date of 29 February 2008.

1.0 Task Order Description & Objectives

(JA) ISS C&DH & C&T Support

The ESTS Group will provide technical sustaining engineering of the Communication & Tracking (C&T) – Video subsystem for both the International Space Station (ISS) Node 2 and the Node 3. Specific activities to be performed will be limited in scope to providing technical input on Video system questions on a case by case basis. Support will be provided on an as needed basis and limited to technical comments to change documentation and responding to specific technical questions. Support to the C&T System Problem Resolution Team (SPRT) will be provided as requested by the SPRT Chair within the scope of this sustaining engineering support effort.

The ESTS Group will provide sustaining engineering of the Command & Data Handling (C&DH) system for the Nodes 2, Node 3, and the Permanent Multipurpose Module (PMM). Specific activities to be performed will include but not be limited to: supporting the maintenance and coordination of changes to the 1) Prime Item Development Specification (PIDS), 2) Interface Control Documents (ICDs), and 3) other documentation as applicable to the Node 2, Node 3, or PMM C&DH system; participating in investigations and resolution of on-orbit anomalies.

In addition, this effort will include participation in PMM mission preparation activities and support for the launch, mission, and activation of the PMM to the ISS.

Expertise in avionics and ISS C&DH will be provided as requested by the C&DH SPRT Chair for other ISS projects. One of these projects is the ExPRESS Logistics Carrier (ELC). This support will include sustaining engineering support for the ELC # 1 & # 2. Support will be provided to participate in ELC # 3 and ELC # 4 mission preparation activities and support for the launch, mission, and activation of the ELC # 3 and ELC # 4 to the ISS. Support will be provided for ELC Sustaining Engineering which will include but not be limited to: ELC Simulator test planning, configuration, certification, and handover support, ELC Simulator testing with payloads destined for the ISS, and payload review/testing support as necessary to ensure proper interface with the ISS ELC systems. Support will also be provided as the point-of-contact for all in-orbit anomalies of the ELC systems on-board the ISS and participation in all anomaly resolution activities relative to the ELC systems on-board the ISS.

Projects whose systems interface to the ISS Node 2, Node 3, PMM, and ELC will be supported as necessary to ensure proper interface with those ISS elements C&DH system. Projects identified so far that will be supported are the following: the External Wireless Communications (EWC) System definition, design, and development; the Common Docking Adapter (CDA) definition, design, and development.

This support is being provided to the ISS C&DH SPRT through an ITA between the JSC Engineering organization and the MSFC Engineering organization.

(07) International Lunar Network (ILN) Mission 1 Support

This subelement is closed by Revision – 12.

The ESTS Group will provide technical support in RF avionics systems to MSFC for the development of requirements and architecture of the communications systems for the ILN Mission 1 Concept Study. Personnel supporting this sub-element will provide input, review, and comments to ILN requirements documentation, participate in communication subsystem trades and analysis, participate in test activities to develop requirements, attend and participate in requirements and data reviews; and provide supporting documentation for presentations. Typical work will include, but not be limited to, inputs on, and review of, subsystem concepts, trade studies, team reports, and presentations in the area of the RF systems. Support provided will also include attendance at review sessions, avionics team and project team meetings, teleconferences, and TIMs.

(JB) ISS ECLSS STEFI Rack # 3 Technician Support

The objective of this subelement is to provide electronics fabrication and repair activities in support of special test equipment and developmental hardware for the Flight and Ground Computers Branch, including such activities as wiring of equipment racks, fabrication of cables, assembly (principally soldering) of printed circuit boards, wiring of breakout boxes, fabrication and assembly of mechanical enclosures for electronics. This subelement is specific to support provided for development and test of the STEFI # 3 Rack. In addition this could include examination, test, or rework on STEFI # 2 as required to assist with the STEFI # 3 Rack development effort. Also included would be identification of any safety hazards associated with any laboratory equipment, such as soldering irons, hole punches, air-hoses, in the work-area provided. Potential included efforts would be repair or rework of flight circuit boards (soldering and/or component changes) while monitored by MSFC quality assurance personnel.

(S1) Solid Rocket Booster (SRB) NASA Standard Initiator (NSI) Electromagnetic Emissions (EME) Susceptibility Analysis Support

The objective of this subelement is to provide support investigating the Radio Frequency (RF) characteristics of the NASA Standard Initiator, a pyrotechnic component of the Space Shuttle's Solid Rocket Booster (SRB) Range Safety System (RSS). Personnel supporting this subelement will become familiar with the overall system function, purpose, requirements, and operation of the NSI component, and will use electromagnetic simulation and analysis software to model the necessary subsystem components to predict electromagnetic susceptibilities which could result in inadvertent NSI activation. Laboratory experiments and measurements of the NSI may be made as necessary to support simulations and verify analyses. Preliminary and final reports will be generated and submitted. The support provided does not include ESTS Group personnel handling of any pyrotechnic components.

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

(JA) The ESTS Group will perform the work described above using standard office automation software including Microsoft Project, Excel, and Word.

To perform this subelement, the ESTS Group will evaluate proposed changes to the ISS C&DH and C&T systems for impacts to the Node 2 or 3 C&DH and C&T systems and make recommendations to ensure compatibility between the Node 2 & 3 and all external and internal interfaces. Changes to be evaluated could be against Government Furnished equipment (GFE), ISS common hardware, or Node unique hardware, software, or systems. Cognizance of all interface and integration issues associated with the ISS C&DH hardware, software, and system will be maintained through attendance at change control board. Lessons learned from processing, testing, and operation of the Node 2 will be applied to similar activities on the Node 3, ELC, PMM, EWC, and CDA.

When changes are proposed that affect the Node 2, Node 3, ELC, PMM, EWC, and CDA hardware or software, then technical solutions will be proposed to minimize the impacts to the ISS C&DH system. All applicable waivers will be reviewed for impact to the Node 2, Node 3, ELC, PMM, EWC, and CDA C&DH systems. Personnel will interface with the Node hardware provider to support determination that the as built subsystem meets all the subsystem requirements. Comments to documents will be processed through the applicable Review Item Discrepancy (RID) database and system. Nonconformance Reports (NCRs) and Problem Reports (PRs) [KSC] will be reviewed for acceptability with the C&DH requirements.

Support to the ELC project includes participation as Design Review Board member; approval of DVOs; identification of test cases; participation in test planning and coordination between Kennedy Space Center, Johnson Space Center, and the Goddard Space Flight Center; review of test plans and procedures; participation in definition of redesign activities for network interface board; observation of ORU and system testing; review of test results; and approval of requirements closure packages.

Support to the PMM project includes participation in design reviews, requirements definition, and activities similar to Node 2, Node 3, and ELC support provided.

The ESTS Group will support Nodes Team meetings, Node Project reviews, ELC Project meetings, PMM project meetings, SPRT meetings, applicable Nodes/ELC/PMM tests, and TIMs as necessary to fulfill the responsibilities of this subelement.

(07) This subelement is closed by Revision – 12.

The ESTS Group will perform the work described above using standard office automation software including Microsoft Project, Excel, and Word.

To perform this subelement, the ESTS Group will provide technical evaluations of ILN documentation for adequate definition of the avionics system and RF relevant requirements, provide inputs to ILN Avionics documentation, provide inputs to trade studies for the avionics system hardware, provide input for definition of requirements additions and changes. Support will also be provided to the definition of the RF and communications system through expertise and applying lessons learned from previous RF systems development experience.

The ESTS Group will support ILN Team meetings, ILN Project reviews, Avionics team & staff meetings, attend tests, and Technical Interchange Meetings (TIMs) as necessary to fulfill the responsibilities of this subelement.

(JB) The approach that will be taken to support this subelement includes:

- Acquiring and reviewing electronic schematics and mechanical drawings for electronic systems and electro-mechanical hardware and layout;
- Identifying and acquiring the necessary electrical components, breadboard material, switches, connectors, cables, etc.;
- Fabricating, or having fabricated, chassis, panels, etc.;
- Assembling components onto the breadboards or printed wiring boards;
- Soldering components onto the boards;
- Wire wrapping and/or soldering connections to the board components according to the schematics and drawings provided with the work requests;
- Installing hardware into chassis;

- Assembling cabling and connectors;
- Assisting in the troubleshooting of breadboards and printed wiring circuits;
- Modifying circuits to incorporate changes developed to improve operation or correct malfunctions;
- Documenting all change on electronic schematics and mechanical drawings.

(S1) The ESTS Group will perform the work described above using standard office automation software including Microsoft Excel and Word, in addition to highly specialized electromagnetic structure modeling and analysis software provided by NASA.

To perform this subelement, the ESTS Group will perform the following tasks, including, but not limited to, (a) familiarization with the overall system function, purpose, requirements and operation; (b) development & refinement of the overall analysis scheme to be used to determine if the NSI is subject to external RF emissions/interference to the point where it could spontaneously activate; (c) analysis activities to include studies, tests, demonstrations, and experiments as necessary; (d) laboratory experiments, as necessary to supplement the analyses or verify analytical predictions; and (e) development and delivery of an analysis/test report detailing and documenting the conclusions reached.

The ESTS Group will not handle the pyrotechnic devices. All tests of NSI devices will be conducted per established project NSI testing standards. Trained pyrotechnic personnel will set up the devices to be tested. The ESTS Group will provide support for performing the RF measurements during any given test. All applicable safety standards will be followed to ensure the safety of the personnel in any test. Any training necessary for a test will be identified, and training completed, prior to the performance of the test.

The ESTS Group will support SRB Team meetings, SRB Project reviews, Avionics team & staff meetings, attend tests, and Technical Interchange Meetings (TIMs) as necessary to fulfill the responsibilities of this subelement.

3.0 Discussion of Skills Required

(JA) Personnel performing this subelement must be proficient with the software tools listed above. Personnel must have (b)(4) [redacted] Knowledge of the ISS C&DH and C&T Video system is a plus.

(07) This subelement is closed by Revision – 12.

Personnel performing this subelement of this Task must be proficient with the software tools listed above. Personnel must have a minimum of a (b)(4) [redacted] (b)(4) [redacted]

(JB) Personnel supporting this subelement must be at least a journeyman level paraprofessional with at (b)(4) [redacted] (b)(4) [redacted] associated with space flight and non-flight electronic hardware and electrical ground support equipment. Skill at soldering and de-soldering of small electrical components such as surface mount and multi-pin IC's is required.

(S1) Personnel performing this subelement must be proficient with electromagnetic structure simulation modeling and analysis software, as well as having knowledge of RF principles and operations, as they relate to electromagnetic susceptibility, and proficient with the software tools listed above. Personnel must (b)(4) [redacted] (b)(4) [redacted]

4.0 Special Tools Required

(S1) Personnel supporting this subelement will be provided a NASA-Issued (NASA-Provided) software license for High Frequency Structures Simulator (HFSS) Electromagnetic structure modeling and

analysis software for the PC, as well as an advanced PC engineering workstation to support modeling and simulation of the subject SRB subsystem.

5.0 Participating Subcontractors

None identified.

6.0 Milestones & Deliverables

Deliverables for these subelements are: Monthly Activity Reports (MAR), presentation charts given by personnel supporting this subelement, document evaluations with significant programmatic impact, special lab test equipment, comments to closure documentation and to program change requests.

Hardware schedules and deliveries as specified on Work Requests. Some additional sustaining support is provided as needed for Node 3 ECLSS spares.

Additional deliveries may be made as negotiated with the ESTS Task Lead.

A final report providing an evaluation of the Shuttle SRB NSI Susceptibility analysis results and comparisons with test results collected will be provided by March 15, 2011; or project revised date coordinated with the ESTS Task Lead.

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

(JA) Some domestic travel to provide mission support, attend tests, and attend program and design reviews will be required and is included in the estimates. A cellular telephone monthly rental fee is included as an “Other” estimated cost for this subelement.

(JB) Certification to the following workmanship standards (or equivalents):

MSFC-RQMT-2918	Requirements for Electrostatic Discharge Control
MSFC-STD-2903	MSFC Tailoring Guide for NASA-STD-8739.3, Soldering Electrical Connections
MSFC-STD-2905	MSFC Tailoring Guide for NASA-STD-8739.4, Crimping, Interconnecting Cables, Harness, and Wiring

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

Task Order #	belem	Task Work Element
37-03030:	**00**	**RF & Data Systems Branch Support**
37-03030:	**00**	**Monthly Activity Report**
37-03030:	**JA**	**Support the C&DH & C&T systems of ISS**
37-03030:	JA	Support PIRN, CR, IPR, Waiver generation, review, and closure
37-03030:	JA	Support the C&DH & C&T SPRT
37-03030:	JA	N2: Support on-orbit anomaly resolution
37-03030:	JA	N3: Support on-orbit anomaly resolution
37-03030:	JA	ELC: Support ELC requirement approval, testing (@ GSFC & KSC), ULF-3 launch & flight operations, and ULF-5 & 6 testing
37-03030:	JA	PMM: Support PMM activities for C&DH
37-03030:	JA	EWC: External Wireless Communications support for C&DH
37-03030:	07	Support for ILN Mission 1 Concept Study
37-03030:	JB	Support for STEFI Rack # 3 Technician Support
37-03030:	S1	Support for Shuttle SRB NSI RF Susceptibility anal

ESTS Contract Task Order Request Performance Plan

Task Order Title: RF & Data Systems Branch - ISS

Task Order Number: 37-030303 Revision: 12

Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X 65% =
		Justification
JA) Provide technical sustaining engineering of the C&T – Video subsystem for both the ISS Node 2 and the Node 3. Provide sustaining engineering of the C&DH system for the Nodes 2, Node 3, ELC, and the PMM. Participate in PMM mission preparation activities and support for the launch, mission, and activation of the PMM to the ISS.		
	Weighting Schedule %	**Schedule Score**
Schedule Objectives (Milestones)	10% *(min 10%)*	X 10% =
		Justification
JA) Provide all review, technical input, and support in a timely manner in support of Program/Project Milestones. 07) (Deleted in Revision 12.) Provide technical support in a timely manner to support Project/Program schedules. JB) Provide fabrication activities in a manner to support Project milestones and deliverables.		
	Weighting Cost%	**Cost Score**
Cost (actual vs. negotiated)	25% *(min.25%)*	X 25% =
		Justification
	Weighting Total %	**Total Score**
	100.00%	

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: RF & Data Systems Branch - ISS

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Comments: Technical Objectives (continued):
JA) (continued) Provide expertise in avionics and ISS C&DH as requested by the C&DH SPRT Chair for other ISS projects. Support projects whose systems interface to the ISS Node 2, Node 3, PMM, and ELC as necessary to ensure proper interface with those ISS elements C&DH system.

07) Provide technical support in RF avionics systems for the development of requirements and architecture of the communications systems for the ILN Mission 1 Concept Study. Provide RF system support to International Lunar Network (ILN) study. Submit RF system designs.

JB) Provide electronics fabrication and repair activities in support of special test equipment and developmental hardware, including such activities as wiring of equipment racks, fabrication of cables, assembly of printed circuit boards, wiring of breakout boxes, fabri-cation and assembly of mechanical en-closures for electronics.Provide technician support to ECLSS STEFI # 3. Assemble the STEFI Rack # 3.

S1) Provide RF evaluation support for Shuttle SRB NSI Susceptibility analysis. Develop simulations and simulation of RF characteristics of the NSI hardware. Perform tests to refine the models. Utilize models and test data to identify susceptibilities (in frequencies and power levels) of the SRB NSI hardware.

Schedule Objectives (continued):
S1) MAR and RF system technical inputs per the project milestone & review schedule. Final report of test and simulation findings due March 15, 2011.

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Risk Assessment

Contract Number: *NNM05AB50C*
TO Title: *RF & Data Systems Branch - ISS*
TO Number: *37-030303* **Revision:** *12*

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

MSFC Initiator: *Walter Robinson*

(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			No cost risks have been identified for any subelement.
Risk C2	Cost			
Risk T1	Technical			No technical risks have been identified for any subelement.
Risk T2	Technical			
Risk S1	Schedule			No schedule risks have been identified for any subelement.
Risk S2	Schedule			

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

Task Order Risk Matrix

		1 Minimal Impact	2 Minor Impact	3 Medium Impact	4 Major Impact
Inevitable Occurrence (>95% Probability)	4	Y	Y	R	R
High Probability of Occurrence (>60% but <95% Probability)	3	G	Y	Y	R
Medium Probability of Occurrence (>25% but <60% Probability)	2	G	Y	Y	Y
Low Probability of Occurrence (<25% Probability)	1	G	G	Y	Y

Legend

- R — **Primary Risk Driver:** Requires Risk Mitigation Plan
- Y — **Caution:** Requires status updates and general plan for risk reduction as determined necessary by Team Lead and Initiator
- G — **Watch:** No Action required

Impact Level	Cost Impact Definition	Technical Impact Definition	Schedule Impact Definition
(1) Minimal Impact	No significant cost impact	No significant technical impact	No significant schedule impact
(2) Minor Impact	Potential to recover cost	Potential to gain required technology without impact	Minor delay in deliverables but no impact to customer
(3) Medium Impact	>0 but <10% subtask cost overrun	Some technical impact but potential to recover	Delay in subtask deliverables but work arounds available and acceptable to customer
(4) Major Impact	>10% subtask cost overrun	Unable to meet technical requirements to perform subtask	Delay in subtask deliverables with impact to customer

Risk Mitigation Plan

Complete the following chart for those risks identified on page 1 as “Primary Risk Drivers”. The following chart will serve as the Risk Mitigation Plan.

Risk No.: Risk Description:		
Mitigation Step No.	Planned Completion Date	Mitigation Step Description