NAVAL RESEARCH LABORATORY

NAVAL CENTER FOR SPACE TECHNOLOGY

Deployable Solar Array Product Statement of Work

for the

Standard Bus Program

NCST-D-SB013 **19 JUNE 2006**

RECORD OF CHANGES

REVISION LETTER	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY
—	5 June 2006	Draft	Paul Oppenheimer
REVA	8 June 2006	Rev A	Paul Oppenheimer
REVB	19 June 2006	Option for deployment fixture	Paul Oppenheimer

1.0 Scope

The Naval Center for Space Technology (NCST) requires turn key deployable solar array wings for the Standard Bus Program to be used on a Navy space program. Also included is delivery of related hardware and documentation. The contractor shall provide the labor, facilities, tooling, materials (except as noted herein), and services necessary to fabricate, test, and deliver a total of 2 flight qualified solar array wings. The contractor shall package the completed substrates for shipment via air/truck.

2.0 Applicable Documents

Document #	Document Title	Use
NCST-S-SB0003	Deployable Solar Array Product Specification for the Standard Bus Program	Required

Table 1 – Applicable Documents

- Exceptions, may be made with NRL approval
- In the situation that a specification called for in the table above is in conflict with the SOW, this SOW takes precedence

3.0 Description and Documentation

Description

The solar arrays shall be delivered as a turn key system that will integrate to the TACSAT IV Bus. Each deployable solar array wing includes the following but not limited to insulated panel substrates, interconnected cover solar cells, wiring, isolation diodes, connectors, temperatures sensors, coarse sun sensors, hinges, release mechanisms, yoke, and other items necessary to meet the specification requirements. The spacecraft requires two solar array wings. The following hardware shall be included in delivery to support the array through integration and testing.

Handling Fixtures – The contractor shall deliver handling fixture that allow the procuring activity to handle the arrays in a way that is structurally sound and minimizes the possibility of damage to the arrays. The handling fixtures shall support the following array functions but are not limited to: removal and insertion to shipping container, installation of to the spacecraft, removal from the spacecraft, deployment testing (if required)

Solar Array Protective Covers – The contractor shall deliver protective covers to encase the exposed solar cells during integration of the spacecraft.

Alignment and Installation Tools – The contractor shall deliver any required tooling to align and install the solar array assembly to the spacecraft.

Mechanism Reset Tools or Reseting (if applicable) – The contractor shall supply any tooling required to reset all release mechanisms after firing for testing. If the mechanisms require reseting at a vendor, the contractor shall be responsible for up to 10 resets per device.

Spare Solar Cells – The contractor shall provide 10 spare solar cells to replace any damaged cells that occur between delivery and launch.

Documentation

The contractor shall provide the following documentation:

- Drawings
  - Top Level Assembly
  - Wiring Diagrams
- Completed NRL traveler control sheet or contractor equivalent
- Deployment Manual
- Reports / data sheets for all required tests and inspections
- Test and manufacturing discrepancies shall be documented
- Monthly Reports
- Final Report

4.0 Meetings

The following meetings will be held at the contractor facility. There will be a Technical Interchange Meeting (TIM) held within two weeks of contract award. Additional meetings or facility visits other than the ones listed below shall occur on an as needed basis. The customer reserves the right to visually inspect the finished arrays prior to packaging for shipment to NRL.

Preliminary Design Review

The contractor shall arrange a preliminary design review (PDR) within 2 months of contract awarding. The procuring activity will have representatives present at the review.

Critical Design Review

The contractor shall arrange a critical design review (CDR) within 5 months of contract awarding. The procuring activity will have representatives present at the review.

Production Readiness Review

The contractor shall arrange a production readiness review prior to the application of flight solar cells to the substrates. A review package of the final assembly drawings, test results and schedule must be available at the review. Within two weeks of the final review, open action items must be closed for approval of major assembly of flight solar arrays.

5.0 Delivery / Schedule

Delivery Location

All hardware deliverables shall be sent to:

Naval Research Laboratory
Attn: Paul Oppenheimer, Code 8200, Building A59, Room 8J1 (Door i)
4555 Overlook Ave. SW
Washington, D.C. 20375

Deliverables

Line Item	Description	Due Date	Quantity
001	Solar Array Assemblies	12 months ARO	2
002	Handling Fixtures	Deliver with panels	All
003	Solar Array Protective Covers	Deliver with panels	All
004	Shipping/Storage Container	Deliver with panels	All
005	Alignment and Installation Tools Required	Deliver with panels	All
006	Mechanism Reset Tools and Hardware for 20 resets	Deliver with panels	All
007	Spare Solar Cells	Deliver with panels	10
008	Drawings – Top Assembly - Wiring	Deliver with panels	All
009	Deployment Manual/Procedure	Deliver with panels	1
010	Test Reports	As tests are completed	
011	Completed traveler	Deliver with panels	All
012	Test discrepancies	As they arise and summary documentation with the delivery of the panels	All
013	Monthly Report	1rst of every month starting at 45 days ARO	11
014	Final Report	Deliver with panels	All
015	Deployment Fixture	Deliver with panels	All