

Task Order Statement of Work (SOW)

Date: August 31, 2020

Task Name: OCI Instrument Systems Engineering

Task No. / Mod: 108/3

Task Monitor (TM): Robert Estep

Contract number: NNG15CR66C

Contract SOW Reference:

FUNCTION 2- IMPLEMENTATION PHASE SERVICES

Task Mod Summary: This is a Task extension for services to support the PACE Ocean Color Instrument (OCI) Engineering Test Unit and Flight build campaigns from 10/15/2020-4/14/2021.

I. Scope

- a. The Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission is classified as a Category 2 mission, per the criteria in NASA Procedural Requirement (NPR) 7120.5E, NASA Space Flight Program and Project Management Requirements. The mission classification is C according to NPR 8705.4B, Risk Classification for NASA Payloads. The PACE observatory is comprised of three instruments, an Ocean Color Instrument (OCI) and two Polarimeters (HARP2 and SPEXOne). The OCI is the primary instrument on the observatory and is being developed at GSFC. The PACE satellite is planned for a launch in 2022-2023. The PACE project office at the NASA Goddard Space Flight Center (GSFC) is responsible for the satellite development, launch and operations. The mission is planned for launch into a Sun synchronous polar orbit at 676.5 km with an inclination of 98° and a 1 pm local ascending node crossing time. The spacecraft bus will host the OCI, HARP2, and SPEXOne instruments. The GSFC PACE Project office will oversee the mission and the development of the satellite, launch vehicle, mission operations control center, and operations. The PACE mission consists of four major segments: space segment (SS), ground segment (GS), science data segment (SDS), and the launch segment (LS). The space segment consists of the spacecraft bus, the OCI, and the two Polarimeters. The spacecraft and OCI are being developed and integrated at GSFC. The

Polarimeters are planned to be procured outside of GSFC. The spacecraft and instruments will be integrated as the PACE observatory at GSFC.

- b. Summary of work – The contractor shall provide an Instrument Systems Engineer to perform the following:

Shall provide historical knowledge and continuity to the OCI project, by performing the following duties:

1. Verification and Validation Support for the following:
 - a. Prepare and/or review hardware and software integration plans and procedures.
 - b. Prepare and/or review detailed functional, comprehensive, and environmental test plans and procedures.
 - c. Ensure execution of integration and test plans.

2. Environmental Requirements: Define, review, and analyze OCI's specifications for:
 - a. Thermal Vacuum
 - b. Grounding
 - c. EMI/EMC testing
 - d. Contamination Control
 - e. Safety
3. Risk Analysis, Reduction, and Management:
 - a. Develop and implement contingency plans for controlling high risk elements in the test program
 - b. Provide comment to and alternate approaches for current risk management plans.
4. Configuration Management and Documentation:
 - a. Lead anomaly resolutions
 - b. Develop procedural changes to provide optimal test results and instrument operation.
5. Integration, Test, and Verification
 - a. Provide instrument engineering support for integrating and verifying the flight OCI instrument, ground, and data systems.
 - b. Develop, modify, and execute test plans and procedures.
 - c. Assist with document all non-conformances and provide disposition
 - d. Assist with the development of operating manuals and reference documents

- e. Provide training for junior engineers as needed for testing, documenting, and handling flight hardware.
- c. Required skills/knowledge – The contractor shall have the following knowledge skills mix to evaluate the below areas:
1. Developing, testing, and delivering of a space flight science instrument
 2. Contamination control for UV optics and spaceflight hardware
 3. Developing, maintaining, operating high vacuum systems
 4. Electrostatic control and mitigation
 5. Electro magnetic testing of flight hardware
 6. Vibration and acoustic testing of flight hardware
 7. Analyzing Laboratory and facility safety procedures
 8. Leading mutli-disciplinary teams
 9. Coordinating between test facilities and instrument teams
 10. Scheduling and budgeting for flight instruments
 11. Purchasing of flight hardware and test equipment
 12. Mishap response
 13. Mishap investigation
 14. Documentation review for adherence to ITAR/EAR
 15. ITAR/EAR instrument assessment
 16. Instrument Management

II. Period of Performance

The Period of Performance is from January 1st 2020 through October 14th 2020

III. Subtask Description

No Subtasks.

IV. Deliverables/Schedules/Milestones

<u>Ref#</u>	<u>Deliverables</u>	<u>Due Date</u>
1	Weekly Status Reports	Weekly
2	Monthly Progress Report	Monthly
3	End-of-task Report	End of task

V. Management Approach

a. Staff Allocation, Expertise, and Skill Mix

The contractor shall staff this work item with the appropriate skill mix and staffing level for the work.

b. Configuration Management

Systems and documents will be covered under the Project Configuration Management Plan.

c. Facilities

N/A

d. Risk Management and Best Practices

N/A

e. Performance Metrics

N/A

f. Government Furnished Facilities, Equipment, Software and Other Resources

The Government will provide account and passwords to government-furnished workstations where existing versions of various relevant software packages shall be maintained. It shall be the contractor's responsibility to complete any GSFC required security-related training courses.

g. Quality Assurance Requirements

The contractor shall comply with the PACE Project's Mission Assurance Requirements Plan (PACE-SMA-REQ-0002), attached to this task order.

VI. ODC (Travel and Procurement)

Travel may be proposed for special training needs and other engineering support task activities as directed by the Project. This could include, but is not limited to, the following:

- 2 domestic trips per annum to vendor facilities to support the instrument/mission in conducting crucial subsystem procurement reviews, Technical Interface Meetings (TIMs), and inspections.
- Travel is expected to consist of a Monday Departure and Friday return

<u>Location</u>	<u>Duration</u>	<u>Dates</u>
<i>Logan Utah</i>	<i>1 week</i>	<i>TBD</i>
<i>Logan Utah</i>	<i>1 week</i>	<i>TBD</i>

VII. Work Location

This work shall be performed primarily at the Goddard Space Flight Center (On-site), but the contractor may be required to perform some work at the contractor’s facility (Off-site).

VIII. Reporting Requirements

a. Weekly status report

The contractor shall generate Performance Reports every week. The report shall include, as a minimum, a summary of the weeks highlights/accomplishments, milestones/schedule/deliverables, risks and customer meetings.

b. Monthly performance report

The contractor shall provide monthly technical and schedule progress reporting to adequately describe the activities of the contractor team to the TM. The contractor shall provide monthly cost reporting in accordance with the WBS. The contractor, including subcontractors, shall be available to attend monthly status meetings.

All deliverables and requirements must follow the guidelines in 80GSFC18C0120 with no exceptions

IX. Security Requirements

The contractor shall comply with Information Technology Security procedures and requirements as defined by NPR 2810.1A in the performance of this task. In addition, the contractor shall comply with all applicable federal rules and regulations and agency directives. The Contractor shall adhere to project requirements regarding ITAR related information, as controlled by the ITAR, 22 CFR 120-130, by the U.S. Department of State. Any transfer of controlled information to a foreign person or entity requires an export license issued by the U.S. Department of State or an ITAR exemption to the license requirement prior to the export or transfer.

X. Data Rights

This SOW shall adhere to all Data Rights Clauses as stated in the SES II contract.

XI. Applicable Documents

1. PACE-SMA-REQ-0002 PACE Mission Assurance Requirements (MAR)

XII. References

N/A