

## **Statement of Work**

### **SkySat Support for Extended Range Tactical Chat Cebrowski Institute**

#### **Naval Postgraduate School**

#### **1.0 Background/Introduction**

United States Marine Corps (USMC) doctrine, as embodied by Expeditionary Force 21, calls for a rapid response capability, requiring a highly mobile, medium-weight, assault capability. In order to support Extended Marine Air-Ground Task Force (MAGTF) Operations (EMO), there exists a critical need to provide on-the-move, beyond-line-of-sight communications to forward-deployed MAGTF maneuver elements without relying on existing satellite communications infrastructures. Two of the most critical communications requirements for maneuver forces are voice and text-chat. Providing these capabilities within a land- or sea-based deployment scenario, such as a forward operating bases or ships underway, is a well-established capability; however, maintaining connectivity to on-the-move forces is extremely difficult, often requiring dependence on satellite communications support. Such capabilities, however, are in limited availability, have a limited capability to support on-the-move elements, and are most often reserved for theater-level operations. This research seeks to explore the potential for providing on-the-move tactical chat over a long-endurance, wide-area, surrogate-satellite capability.

Space Data Corporation developed a long-endurance, high-altitude balloon system, referred to as SkySat, which hosts an Ultra-High Frequency (UHF) radio allowing for positive-control of the platform's positioning by a ground controller. The radio used to communicate with the control system onboard the SkySat platform is compatible with current tactical radios in the USMC inventory. Further, the SkySat system itself is also in the USMC inventory in limited quantities. This research intends to deliver a field-demonstrated, tactical chat capability utilizing the SkySat Ultra High Frequency (UHF) radio as a relay between several geographically dispersed users equipped with tactical radios and either a laptop or a smartphone/tablet, interfaced to the tactical radio.

#### **2.0 Scope**

Field demonstration of the tactical chat capability to be provided by NPS requires use of the SkySat platform. While the platforms to be used are government furnished (to be provided by I Marine Expeditionary Force [MEF]), each platform must be refurbished after their use in order to maintain readiness to support operational missions. As the field experimentation to be undertaken by this research is outside the mission tasking of the units supporting I MEF, expertise from the vendor is necessary to support flight of the SkySat platform during the field demonstrations. Further, as the SkySat UHF radio is to be used as the relay device for the chat

capability, guidance for the configuration of the tactical radios to be used by the ground elements to connect to the SkySat UHF radio must be provided by the SkySat vendor.

### **3.0 Tasks**

The contractor shall perform the following tasks:

- 3.1** Acquire the data controllers necessary to interface user access devices (laptops) to non Internet Protocol (IP) capable tactical radios that are common to USMC small units (AN/PRC-148C, AN/PRC152C), such that the radios can be used to exchange IP data over the SkySat surrogate satellite system.
- 3.2** Provide detailed configuration guidance, in the form of a user checklist or manual, for the data controllers and tactical radios, to include AN/PRC-148(V)(C), AN/PRC-152C, AN/PRC-117G, and AN/PRC-152A versions, to the Contracting Officer's Technical Representative (COTR) to be used to support the field demonstration. NPS, supported by I MEF as necessary, will provide the tactical radios from its inventory.
- 3.3** Provide flight support to the field demonstration site in Yuma, Arizona, Camp Pendleton, California, or Camp Roberts, California, as determined by the field experimentation plan generated by the government. Flight support is the preparation, launch, control, and recovery of the SkySat platforms as required by the experimentation plan.
- 3.4** Collect data relevant to the flight of the SkySat platform during the associated field experiment and provide that data to the NPS project for evaluation of the supported data links.
- 3.5** Refurbish one (1) SkySat platform upon completion of the field experiment, such that it can be returned to the I MEF operational inventory.

#### 4.0 Deliverables

The contractor shall be responsible for preparing deliverables in support of the tasks identified in this SOW.

<b>Task</b>	<b>What will be inspected</b>	<b>Acceptable Quality Level (AQL)</b>	<b>Method</b>	<b>Frequency</b>
3.1	Data exchange capability between user device (laptop/Android tablet) and the tactical radio systems across the SkySat radio.	Data packets exchange between laptops connected to each of the tactical radio types identified above (AN/PRC 148C, AN/PRC 152C, AN/PRC-152A, and AN/PRC-117G).	Data packet capture at each laptop/tablet using best commercial practice (tcpdump or Wireshark). Packet capture data will be forwarded to NPS project members for evaluation.	Once, prior to scheduling of the first field experiment or demonstration.
3.2	Tactical radio configuration guide.	NPS research project personnel will be able to configure the tactical radios according to the configuration guide developed by the vendor.	Configuration guide will be provided to the NPS project team at least three weeks prior to the first scheduled field demonstration. NPS project members will validate the guide by configuring a set of tactical radios and verifying the configured radios' ability to communicate through a SkySat radio; the latter provided by I MEF.	Once upon delivery of the configuration guidance. If issues are discovered with the guide, then reinspection will be accomplished upon correction of the issue by the vendor.

3.3	Operation of the SkySat platform and radio during field experiments and/or demonstrations. At most, two such demonstrations will be performed.	The SkySat system will be configured and deployed to support the relay of tactical chat messages between dispersed ground units. While the performance of the chat capability is not under review by this effort, the ability to pass suitable data (IP) traffic across the UHF radio is.	Dispersed users will exchange data packets across the SkySat-supported UHF links. Performance of the system will be measured as a percentage of successful data packets delivered.	For each field experiment or demonstration performed (at most, two).
3.4	Flight Data Collection	SkySat location and altitude data during flight	Capture of flight control reports during flight operations	30 second intervals during flight operations.
3.5	Refurbished SkySat platform.	Fully mission capable.	Visual inspection by I MEF Science and Technology personnel.	Once, upon completion of the required refurbishment.

The surveillance method for the deliverables listed above will be personal observation at NPS or the field experiment site, as most appropriate. If performance falls below the AQL defined above, the Contracting Officer's Representative (COR) shall document the instance(s), coordinate with the Contracting Officer and advise the Contractor. The Contractor will be requested to review the documentation and provide a written response on how performance will be corrected in the future. Re-performance of any work for failure to perform in accordance with the specified AQL or task requirement shall be completed at the Contractor's own expense and at no additional cost to the Government.

## 5.0 Minimum Technical Requirements

- The contractor must have at least two years field experience in the deployment, operation, and recovery of SkySat platforms.
- The contractor must have demonstrated experience integrating government off-the-shelf (GOTS) tactical radios, and any data controller items necessary to support IP data by those radios, with the SkySat UHF radio.

## 6.0 Period of Performance

Establishment of the date for the first field experiment will be accomplished by NPS COR/COTR, but will not occur sooner than 45 days after award of the contract, or 30 days after receipt of the GFE from I MEF, whichever is later. Unless otherwise directed by the Contracting Officer, this effort will terminate no later than 31 December 2015, unless extended by the Government.

## 7.0 Place of Performance

The acquisition and integration of the data controllers shall be accomplished at a location most convenient to the contractor, as shall the development of the tactical radio configuration guide. The site(s) for the field experimentation or demonstration will be determined by the COTR, in conjunction with I MEF technical leads, at least two weeks prior to that activity. The location will be determined by availability of access to the site, frequency use authorization at the site, and ease of operational support at the site, to include payload recovery, the latter constraint being more of convenience to all participants, for former two constraints being subject to FAA and FCC regulation. For planning purposes, the three locations, Yuma, Camp Pendleton, and Camp Roberts, should be used.

## 8.0 Work Week and Hours of Operation:

The Contractor shall provide services during normal working hours excluding federal holidays. Normal working hours are 0730-1630, Monday through Friday, unless requirements dictate otherwise. Exceptions can be permitted by the COR upon request and at the COR's discretion.

Work required on-site at NPS shall be performed by the Contractor, as required.

Following is a list of holidays observed by the Government.

<u>Name of Holiday</u>	<u>Time of Observance</u>
New Year's Day	1 January
Martin Luther King Jr. Day	Third Monday in January
President's Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	4 July
Labor Day	First Monday in September
Columbus Day	Second Monday in October
Veteran's Day	11 November
Thanksgiving Day	Fourth Thursday in November
Christmas Day	25 December

If any of the above holidays occur on a Saturday or a Sunday, then such holiday shall be observed by the Contractor in accordance with the practice as observed by the assigned Government employees at the using activity

### **9.0 Government Furnished Property**

Tactical radios for the field demonstration will be provided by NPS, in conjunction with I MEF. All cryptographic controls required for protection of sensitive equipment will be followed according to Department of Defense (DoD), USMC, and Navy practice, where necessary.

### **10.0 Travel**

Travel shall be in accordance with the Joint Travel Regulations (JTR) and will be reimbursed by the government on an as-incurred basis. For planning purposes, two trips, each of 3-days' duration including travel, are expected to support field demonstrations. At most, one would be at either Camp Pendleton or Camp Roberts. The others will be at Yuma unless circumstances otherwise prevent, in which case the activity will occur at either Camp Roberts or Camp Pendleton.

<b>Associated Task</b>	<b>From/To Travel Location</b>	<b>Duration of Trip</b>	<b>How Many Travelers</b>
3.3	Camp Pendleton	3 days	2
3.3	Yuma, AZ	3 days	2

### **11.0 Classification**

No access to classified data is authorized under this program. However, as Cryptographically Controlled Items (CCIs), such as the AN/PRC-117G or AN/PRC-152A radios, may be provided to the vendor for verification of configuration guidance, those radios will be handled accordingly. The contractor shall ensure only properly authorized personnel have access to the radios and that they are stored in accordance with DoD regulations with respect to Type-1 cryptographic equipment. The contractor must have a current SECRET clearance, at a minimum, in order to handle the CCI-Type 1 radios.

### **Privacy Act Statement**

“Pursuant to Title 5 United States Code 552a(m)(1), the contractor and all employees of the contractor working under this contract are required to comply with the requirements of 5 U.S.C. 552a (“The Privacy Act of 1974”).”

### **Contractor Identification**

In accordance with DFAR 211.106, there shall be a clear distinction between Government employees and service contractor employees. Service contractor employees shall identify themselves as contractor personnel by introducing themselves or being introduced as contractor personnel and displaying distinguishing badges or other visible identification for meetings with Government personnel. In addition, contractor personnel shall appropriately identify themselves as contractor employees in telephone conversations and in formal and informal written correspondence.

### **12.0 Non-Personal Services Statement**

Contractor employees performing services under this order will be controlled, directed, and supervised at all times by management personnel of the contractor. Contractor management will insure that employees properly comply with the performance work standards outlined in the SOW. Contractor employees will perform their duties independent of, and without the supervision of, any Government official or other Defense Contractor. The tasks, duties, and responsibilities set forth in the task order may not be interpreted or implemented in any manner that results in any contractor employee creating or modifying Federal policy, obligating the appropriated funds of the United States Government, overseeing the work of Federal employees, or otherwise violating the prohibitions set forth in Parts 7.5 and 37.1 of the Federal Acquisition Regulation (FAR). The Government will control access to the facility and will perform the inspection and acceptance of the completed work.