

C.1 STATEMENT OF WORK

Ocean System Mission Planning Program Support

1.0 SCOPE

1.1 This Statement of Work describes the requirements for marine engineering support services for project planning and execution to be provided to the Ocean Facilities Department, Naval Facilities Engineering Service Center. This support may be required for the following:

- feasibility and concept development studies
- project development and planning
- engineering analysis and design
- preparation of project plans and specifications
- geological, geophysical or bathymetric surveys, seafloor mapping and seafloor imaging
- precise integrated navigation of surface vessels, ROVs, AUVs and towed sensor packages
- preparation of environmental and other permit documentation
- ocean engineering system installation planning, oversight and execution
- assess and improve undersea cable system survivability against anthropogenic threats and marine environmental and biologic hazards
- cable system planning and installation, including desktop studies
- interface between Navy requirements and commercial undersea cable industry capabilities, experience and assets
- project management, including preparation of detailed and summary project cost, schedule, and technical progress reports

1.2 This contract is an indefinite quantity contract. The specific services that the contractor shall be required to provide will be established by individual Delivery Orders issued by the Ordering Officer.

2.0 BACKGROUND.

2.1 The Naval Facilities Engineering Service Center supports the Navy in the planning, design, installation, maintenance, and removal of military subsea cable systems. The design of the cables themselves, the techniques used to install them, and the resulting life cycle cost are strongly dependent on the specific environment into which the cables must be installed. Therefore, it is essential that the routing of the cable be thoroughly investigated, through desktop studies, and when necessary, through reconnaissance and detailed surveys. The objective of these investigations is to characterize not only environmental conditions but also man-made threats such as fishing and pre-existing cables; and natural hazards such as seafloor debris, geological faults, and outcropping rock. The cable system engineer integrates these data with specific cable and connector designs, evaluates system life expectancy, and when necessary devises methods to protect the cable to improve its life. In some cases effective routing of the cable may be sufficient, in others the full range of cable protection techniques may be required.

3.0 REQUIREMENTS.

3.1 The Contractor shall provide the labor, material, equipment and facilities required to perform the work as described below.

3.2 General Requirements.

3.2.1 The Contractor shall travel to Government facilities and other locations to perform the services as described in Section 3 of this Statement of Work. Locations may include project locations worldwide and work aboard Government, Government-contracted or contractor-chartered vessels or platforms.

3.2.2 The Contractor shall participate in in-process project reviews at the Contractor's facility, project sites, NFESC (West Coast Headquarters and East Coast Detachment), and other locations as specified by individual delivery orders. For in-process project reviews at the Contractor's facility, the Contractor shall provide facilities (meeting or working spaces) and equipment (presentation, Information Technology, etc.) required for such reviews.

3.2.3 The Contractor shall assume custody of Government-Furnished Property (GFP) and provide for proper use, storage and maintenance as required by FAR 52.245-5. The Contractor shall return GFP as scheduled and identify and report any damaged or missing items. The Contractor shall provide property reporting for any GFP stored at the Contractor's facility.

3.2.4 The Contractor shall provide progress reports, financial reports, technical reports, drawings, manuals, or any other documentation as specified by the Contract and individual Delivery Orders.

3.2.5 The Government will provide required Government furnished property (GFP)/Government furnished information (GFI). The Government will provide access to Government facilities, personnel, documents and publications considered essential to contractor performance. The Government will facilitate in-process reviews.

3.3 Specific Services Required

3.3.1 Project planning, including scheduling, workload and resource allocation, survey planning, and installation planning.

3.3.1.1 The contractor shall translate mission requirements into cable system design, installation, and maintenance requirements. The contractor shall collect existing environmental, threat and hazard data through desktop surveys, site visits and personal communications. The contractor shall conduct interviews of boat captains to develop data on people-related activities that would impact a cable system such as fishing, trawling or cable installations. The contractor shall compare and contrast, based on specific project requirements, cable protection methods such as armoring, burial, directionally drilled bores, anchoring to the seafloor, or other techniques. The contractor shall plan cable routes, including development of specifications and plans for site surveys, and geologic or geophysical studies. The contractor shall include schedules and costs for ships, equipment, labor, and logistics support as part of these plans.

3.3.1.2 Examples of such tasks include development of plans for installation of instruments in an ocean basin for measuring seismic activity. The contractor would use existing data to develop potential cable system designs and routing of the cable from shore to the specified instrument location. The contractor would determine locations of known cables and the nature of fishing or other potential man-made threats along potential routes to the instrument site. The contractor would determine the adequacy of existing data and develop plans and identify resources for performing side scan, swath bathymetry or other surveys to obtain the additional data needed for final route planning. Based on survey results and mission requirements the contractor would recommend measures ranging from simple cable armoring to horizontal drilling to provide the cable with the required level of protection. When ordered, the contractor would develop detailed plans for procuring materials, ships, labor, logistics and engineering support for the cable system design, installation and documentation.

3.3.2 Threat and hazard definition, feasibility studies, and technical concept development.

3.3.2.1 The contractor shall perform analyses, studies, and surveys to support assessment of survivability of submarine cables in response to anthropogenic threats and marine

environmental and biologic hazards. The contractor shall identify the threats and hazards and assess their extent, and identify the risk posed the threats and hazards. The contractor shall develop concepts for countering the threats identified, and shall assess the feasibility of the concepts identified from technical, environmental impact, and cost standpoints.

3.3.2.2 An example task would be the installation of a tactical surveillance system in support of a fleet exercise. The contractor would perform an analysis of the proposed installation area to determine the threats and hazards likely to be encountered. Based on the required cable system life and the threats and hazards identified the contractor would assess probable system availability over its life. The contractor would evaluate various system configurations, cable routing, and cable protection concepts for feasibility. The contractor would develop concepts for systems most likely to meet technical, cost, survivability and environmental requirements.

3.3.3 Underwater surveys and imaging.

3.3.3.1 The contractor shall perform underwater geodetic referenced surveys and imaging including but not limited to bathymetry, obstacle detection, sub-bottom stratification and geomorphology, sediment types and properties, flora/fauna identification and distribution, currents, water properties, and temperature. The contractor shall employ acoustic, optical, electrical, thermal, or mechanical methods as appropriate for these surveys. Typical methods include acoustic sounding, side-scan sonar, laser ranging, video, still photography and seafloor coring. Measurements may be required to made from a surface vessel, a towed body, a remotely operated vehicle, or a diver. The contractor shall record data through graphics, photographs, video, or other methods appropriate to the features, quantities, or qualities, or judgments being measured or assessed. The contractor shall integrate systems for survey projects, bringing together and integrating sensors and precise integrated navigation using COTS and NDI equipment. When COTS/NDI components are not available the contractor may develop special purpose test equipment to meet the needs of the survey.

3.3.3.2 An example task would be the performance of a swath bathymmetry, sub-bottom profile, and side scan sonar survey covering potential routes for an undersea acoustic range cable system that is to be installed on the continental shelf. The contractor would be responsible for providing all labor, equipment, vessels, and logistics support required, and for completing the survey by the timeframe specified.

3.3.4 Environmental assessment documentation and permit application/compliance.

3.3.4.1 The contractor shall assess the potential impacts on the environment of the proposed survey or cable installation and shall document potential impacts and means to mitigate the impacts. The contractor shall interact with regulatory agencies, completing documentation or permit applications required by the regulators, by applicable laws or by applicable government regulations.

3.3.4.2 An example task would be to assess the impact, complete National Environmental Policy Act documentation, and obtain the required permits for a cable installation. The contractor would be required to acquire data on trawl and cable burial machine operations and assess the persistence of machine disturbances to the seafloor.

3.3.5 Engineering analyses to support the above activities.

3.3.5.1 The contractor shall perform engineering analyses including but not limited to determining the effect of cable operational environment, installation, recovery, or repair operations on the seafloor, the environment, and the cable system components. The contractor shall perform analysis to determine the appropriate type, capability and employment method of survey equipment used to obtain specified data. The contractor shall perform analyses to determine the survivability of the cable system in response to the conditions, hazards and threats that it is likely to encounter during its life.

3.3.5.2 An example task would be to predict the improvement in cable system life resulting from various cable protection techniques, and to develop trade-offs between cable life and cost.

3.3.6 Prepare, provide and present technical briefings.

3.3.6.1 The contractor shall develop and present technical briefings to the government, to regulators, or to potential partners in inter-agency initiatives.

3.3.6.2 An example task would be to provide the government with a technical briefing that addresses the feasibility of several potential seafloor routes for an acoustic range trunk cable. The briefing would include swath bathymetry and side scan representations of the potential routes, with interpretations of the impact of the features mapped. The contractor would present the probable impact of the identified natural and man-made on the various potential routes and recommend the most favorable route, given the overall objective of the cable system.

3.3.7 Reports/Plans/ Schedules/Data/Cost Estimates/Specifications.

3.3.7.1 Unless otherwise directed in individual delivery orders the contractor shall utilize Microsoft Office software (Word, Excel, PowerPoint, Project) for preparation of documents and an ARCVIEW-compatible software for GIS formatted data. The contractor may be required to use other format and accuracy standards compatible with the Space and Naval Warfare Systems Command (SPAWAR) Advanced Deployable System (ADS) Mission Planning Work Station (MPWS) software presently under development.

4.0 FACILITIES

4.1 The services required under this contract shall normally be performed at the Contractor's facilities or a field location. The Contractor shall maintain a current SECRET facility clearance for the Contractor's facilities.