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ROBOTEK ENGINEERING, INC.

SECTION C Descriptions and Specifications

SECTION C Descriptions and Specification

C.1 STATEMENT OF WORK.

1.0 The contractor shall provide engineering and technical services and supplies to support the Navy's SDST system and related systems and equipment. The contractor shall provide facilities, equipment, and personnel to perform the work under this contract. This statement of work (SOW) defines the effort required for the production of the SDST system, production and integration of SDST payloads, and the adaptation of the SDST control system to different platforms and supporting equipment. This includes any changes required to the SDST system deemed necessary by the Government. These changes may be determined necessary to correct a deficiency; to accommodate a design change in the base person watercraft; to provide improved performance; to adapt to a different use of the SDST system.

1.1 The SDST System consists of the following:

Nomenclature	Description	Quantity
SDST Vehicle	Remotely Controlled Personal Water Craft	2
Remote Operator Station (ROS)	A Laptop Based Control System that allows control of the SDST when you can not see SDST	1
Mobile Remote Operator Station (MROS)	A mobile control system for control when you can see the SDST, such as during launch and recover of the SDST	1
Handling Equipment	Skid Dolly Assembly and support items.	2

1.2 The SDST payloads are camera systems, targeting systems, environmental sensors, and mine hunting equipment. The payload being integrated to the SDST is the camera. The following is a list of camera options:

- Standard quad black & white video transmit and receive video system.
- Standard quad color video transmit and receive video system.
- Color camera with zoom, pan and tilt video transmit and receive video system (is still being developed under the SBIR phase II contract).
- Infrared camera with zoom, pan, and tilt video transmit and receive video system (is still being developed under the SBIR phase II contract).
- Multiple cameras of different types video transmit and receive video system (is still being developed under the SBIR phase II contract).

The camera system may be integrated with the SDST control system to provide a scoring system. This system will be capable of near real time estimates of miss distance of rounds shot at the SDST and highly accurate post processing miss distance analysis to provide lethality information (is still being developed under the SBIR phase II contract).

1.3 Other payloads that may be integrated and adapted to the SDST are for special warfare; ship decoy missions; mine counter measures; fleet security; reconnaissance; and environmental sensing. In the future as payloads for the

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SDST are developed they shall be transitioned to this contract. As payloads are determined necessary for the SDST system by the Government they maybe integrated to the SDST system.

2.0 REQUIREMENTS:

2.1 General: The contractor shall fabricate the SDST system and payload systems to the drawings and specification determined by the RoboTek drawing: ROBOSYST. The drawing of the standard quad black & white video transmit and receive system is RobTek drawing: RSV-BWCAMKIT and the color video transmit and receive system is RobTek drawing: RSV-CLCAMKIT. The SDST system consists of two SDST vehicles, a ROS, a MROS, and handling equipment. The SDST RoboSki system architecture figure describes in general how all the pieces work together. The contractor shall be available for consultation during Government testing of this ocean platform. The contractor shall provide monthly status reports and include the Government Representative in all technical decisions.

2.1.1 The standard SDST video system has four wide angle (~ 78° Field of View (FOV)) black & White cameras, one pointing in each cardinal direction (forward, right, aft, and left). The cameras are small, weatherproof, low cost cameras with 1/3" CCD's giving moderate resolution (380 lines) and a low light capability of 0.3 Lux. The cameras can be selected individually, can be automatically sequenced (in forward, right, aft, left order) with a variable dwell time (0.1 to 9.9 seconds in 0.1 second increments) or all cameras can be viewed simultaneously in a split screen "quad" mode. The basic system includes the quad camera head, quad video processor, control computer, payload cable, 5 Watt 2.2 GHz (S-Band) video transmitter, transmit cable, 3 dB transmit antenna, 12 dB omni receive antenna, 18 dB directional grid antenna, receive cable, 2.2 GHz receiver, and pelican case.

2.1.1 Other payload integration to the SDST will be similar to the camera system.

2.2 Delivery orders shall be placed against this contract. Delivery orders may be placed against the following equipment list which is not all inclusive and is subject to economic price re-determination:

Item #1 – SDST/TCS System

	QTY	PRICE	FEE	TOTAL
SDST with Alternate Upgrade	1	\$22,891	\$2,060	\$24,951
MROS (with case and charge)	1	7,997	720	8,717
TCS Ground Station	1	4,335	390	4,725
Total		35,223	3,170	38,393

Item #2 – Standard Video System

	QTY	PRICE	FEE	TOTAL
Standard Quad Video Xmit Syst	1	\$11,009	\$ 991	\$12,000
Standard Video Receive Syst	1	2,936	264	3,200
Total		13,945	1,255	15,200

Item #3- Video Upgrade A

	QTY	PRICE	FEE	TOTAL
Additional Parts/Labor	1	\$ 3,670	\$ 330	\$ 4,000
Non-Recurring Engineering	1	7,339	661	8,000
Total		11,009	991	12,000

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Item #4- Video Upgrade B

	QTY	PRICE	FEE	TOTAL
Additional Parts/Labor	1	\$ 5,505	\$ 495	\$ 6,000
Non-Recurring Engineering	1	14,679	1,321	16,000
Total	20,184		1,816	22,000

Item #5 - SDST KIT

	QTY	PRICE	FEE	TOTAL
Standard SDST	2	\$21,973	\$1,978	\$47,902 \$23,951 ea
MROS (with case and charge)	1	7,997	720	8,717
ROS System	1	8,286	746	9,032
Handling Equipment	2	1,897	171	4,136 \$ 2,068 ea
Total		64,023	5,764	69,787

Item #6 - SDST Suitcase Spares

	QTY	PRICE	FEE	TOTAL
Suitcase Spares	1	\$ 9,550	\$ 860	\$10,410

Item #7- Support

	QTY	PRICE	FEE	TOTAL
One Week Trip	1	\$ 5,499	\$ 495	\$ 5,994

Item #8 - Video Upgrade C

	QTY	PRICE	FEE	TOTAL
Color Quad System Upgrade	1	\$ 1,376	\$ 124	\$ 1,500

Item #89- SDST System Parts

	QTY	PRICE	TOTAL
Skid/Dolly Frame	4	\$450	\$1,800
Machined Components	6	\$458	\$2,750
Masts	4	\$195	\$780
Raw Metal Materials	-	\$500	\$500
GPS Receivers	5	\$169	\$845
Compass	5	\$820	\$4,100
Steering Servo	5	\$495	\$2,475
Throttle Servo	5	\$180	\$900
Lead	400 lbs	\$0.75	\$300
Total			\$15,000

2.2.1 The contractor may be required to revise and update equipment and data. Under this contract, contractor performance required under delivery orders include the following: (1) testing and evaluation, (2) design, development, and fabrication of equipment and support equipment, (3) provide the applicable data as specified within the delivery orders, (4) provide engineering and technical support services to support the Navy's Program.

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SUMMARY OF CHANGES

SECTION C Descriptions and Specification

2.0 REQUIREMENTS:

2.2 Delivery orders shall be placed against this contract. Delivery orders may be placed against the following equipment list which is not all inclusive and is subject to economic price re-determination:

Item #13 – System Design Update.

A. Redesign the SDST mounts and brackets to accommodate the new version of the PWC. Redesign the electrical component cable lengths if required to accommodate the update. Update the Phase II Engineering package to reflect the changes. Deliver to NFESC three copies of the change pages. SDST's beginning with 1014 (D. O. 0002) will use this design.

B. Redesign the SDST system to use FreeWave 900 MHz spread spectrum RF modems instead of the existing Pacific Crest UHF modems. This redesign includes the vehicle RF Modem, the MROS RF Modem and the ROS RF modem, as well as all data/power cables, RF coax cables, feedthrus, and antennas. Update the Phase II Engineering package to reflect the changes. Deliver to NFESC three copies of the change pages. Ordered but undelivered end items (vehicle under D.O. 0002 and D.O. 0006 and the MROS from D.O. 0006) will be delivered with the new design at no change in price).

C. Deliver a ROS upgrade kit for converting a ROS from a Pacific Crest to a FreeWave modem.

D. Provide four days (1 day travel; 3 days testing) of engineering support and associated travel expenses for Open Ocean testing of the updated system design at Port Hueneme.

E. Provide additional SDST system parts.

<u>Item No.</u>	<u>Price</u>	<u>Fee</u>	<u>Total</u>
0013A	\$8,346.00	\$751.00	\$9,097.00
0013B	\$5,546.00	\$501.00	\$6,065.00
0013C	\$2,265.00	\$204.00	\$2,469.00
0013D	\$5,009.00	\$451.00	\$5,460.00
0013E	\$789.00	\$71.00	\$860.00
GRAND TOTAL:			
ITEM # 0013	\$21,973.00	\$1,987.00	\$23,951.00

Changes in Section G

Summary for the Payment Office

The total funded amount of the contract remains unchanged.

b. ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.