AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		4

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicble)
0001	04/29/11		

6. ISSUED BY CODE N00173

CONTRACTING OFFICER
NAVAL RESEARCH LABORATORY
ATTN: CODE 3230.TA
WASHINGTON, DC 20375-5326

7. ADMINISTERED BY (If other than Item 6) CODE

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

CODE FACILITY CODE

(X) 9A. AMENDMENT OF SOLICIATION NO.
N00173-11-R-TA07

9B. DATED (SEE ITEM 11)
04/21/11

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED (SEE ITEM 11)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[x] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [x] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPIRATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

The purpose of this amendment is to answer questions from prospective offerors.

Question 1: What is the pinout of the connectors to "match the existing connection to the AUV receiver channels?

Answer 1: The pinout is specified in the attachment of this modification.

Question 2: How much power is available at the connector for the sensors?

Answer 2: There is no power available on any of the pins, however, there are unused pins to which power could be applied from within the DAS. It is not known what the supply voltages, which are available within the DAS, nor is it known if there is any excess capacity in suitable quantities. There is obviously the raw unregulated battery voltage which varies from about 33VDC-27VDC. The MHDO connector has 22AWG pins and current through them should be managed appropriately (<750mA?).

Question 3: Do the deliverables include the 7-meter cable, the array, the trailing cable and drogue?

Answer 3: The deliverable is a complete unit ready to be installed and used on the AUV. The only modification to the AUV permitted is for physical attachment for deployment and transport.

Question 4: What are the accuracy requirements of the attitude sensors?

Answer 4: Sufficient to meet stated requirement "to permit knowledge of the location in space (optimally within +/-1.5 cm) of each hydrophone element relative to the reference point on the AUV tow vehicle at all sampled times."

Question 5: Please provide more detail on the "configuration to permit readout using one or two of the existing receiver sensor channels" i.e What is the interface to the existing equipment?

Answer 5: 32 existing hydrophone channels are available for the towed array signals. The offerer can utilize these channels to pass data, provided no hardware changes are required at the AUV and all other specs are met. If the offerer dedicates 30 of these for the 30 acoustic sensors, the remaining two would be available for use by the attitude sensors. Some software modification for signal processing at the AUV can be accommodated, for example to demodulate or deconstruct attitude information contained in an FM carrier.

Question 6: Please define "minimal" change in array sensitivity or characteristics over the operating depth?

Answer 6: Small changes in buoyancy and acoustic sensitivity are expected. However overall system performance should not be degraded, and the noise floor and attitude sensor specs should be meet over the listed operational environment range.

Question 7: In second paragraph it says "This section must be relatively rigid and straight". Please clarify whether this means the acoustic section, attitude sensor section or both?

Answer 7: The section referred to includes both the acoustic sensors and the two attitude sensors. The reason for this requirement is that the positions in space of each element must be known accurately at all times (relative to the center of the AUV towing it). If the array is reasonably inflexible, the location of all elements can be determined using just one sensor located at either end of the active portion. If the array is permitted to be more flexible, additional attitude sensors are needed to measure the degree of bending.

Question 8: The second paragraph states the array must have a "trailing cable terminated in a drogue". Arrays such as this are typically terminated by a drogue but what is the intent of the "trailing cable"?

Answer 8: The trailing cable simply connects the end of the acoustic section to the drogue. Here "drogue" refers just to the termination object used to improve stability and linearity. The separation is typically needed to reduce noise.

Question 9: Paragraph 4 states that each 16 channel group of hydrophones must terminate with an MHDO 61 connector. This implies two 61-pin connectors which appears excessive for the number of channels. Please clarify?

Answer 9: MHDO 61-FCR connectors are in place on the AUV for the primary acoustic system. The towed array must be connected by swapping the towed array connectors for two of the primary array connectors. For the primary acoustic array used on this AUV, each signal input (ADC) channel is differential and uses three connectors: a high, a low and a shield. Hence each bank of 16 channels requires 48 pins. The mating sockets cannot be rewired to accommodate the towed array. All information must be communicated using the available 32 ADC channels.

Question 10: Does the 7-meter tow cable have to contain 122 conductors? If so, what are the functions of these conductors and where do they get wired to in the array? Can a pinout table be provided?

Answer 10: The number of cable connectors is not specified. The primary array presently uses 32 channels, each using a shielded twisted pair. However the offerer can propose any approach that is consistent with all other specs (noise level, terminating connectors, etc).

Question 11: How are the hydrophone signal lines terminated in the AUV? Specifically, are they differential? If differential, are they balanced? What is the impedance from each leg to signal common and between the signal pairs? Are the signal lines AC coupled inside the AUV? Does the wiring intenal to the AUV contain shields that must be carried thru to the array?

Answer 11: We need some additional information from another source until we can answer this question. It will be forthcoming as soon as it is available. A second amendment will be issued to address this when available.

TOWED ARRAY REQUIREMENTS AND SPECIFICATIONS

Appendix A: Receive Array Pinout

NG SAS Receive Array Element Location/Pinout Updated 2/7/2005

- Array connectors: Impulse MHDO-61-CCP RA
- Bulkhead connectors: Impulse MHDO-61-FCR
- Pins 49, 50, 52 through 61 not used

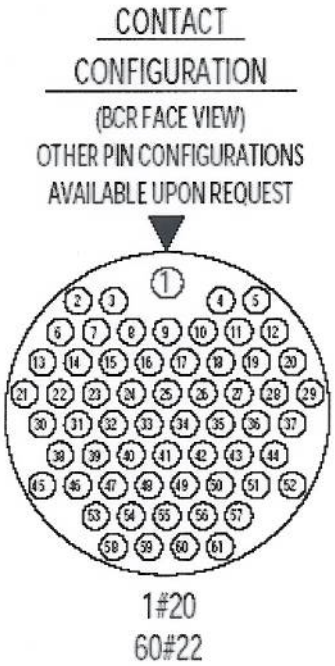

Figure 1 – MHDO-61-FCR Pinout (Array CCP connector is the mirror image)

A/D Channel #	TSP #	Cable #	Type	Pin #
1	5b	1	L	1
			H	2
			SH	3
2	6b	1	L	4
			H	5
			SH	6
3	7b	1	L	7
			H	8
			SH	9
4	8b	1	L	10
			H	11
			SH	12
5	1b	1	L	13
			H	14
			SH	15
6	2b	1	L	16
			H	17
			SH	18
7	3b	1	L	19
			H	20
			SH	21
8	4b	1	L	22
			H	23
			SH	24
9	5t	1	L	25
			H	26
			SH	27
10	6t	1	L	28
			H	29
			SH	30
11	7t	1	L	31
			H	32
			SH	33
12	8t	1	L	34
			H	35
			SH	36
13	1t	1	L	37
			H	38
			SH	39
14	2t	1	L	40
			H	41

			SH	42
15	3t	1	L	43
			H	44
			SH	45
16	4t	1	L	46
			H	47
			SH	48
17	3b	2	L	1
			H	2
			SH	3
18	4b	2	L	4
			H	5
			SH	6
19	5b	2	L	7
			H	8
			SH	9
20	6b	2	L	10
			H	11
			SH	12
21	1b	2	L	13
			H	14
			SH	15
22	2b	2	L	16
			H	17
			SH	18
23	7b	2	L	19
			H	20
			SH	21
24	8b	2	L	22
			H	23
			SH	24
25	3t	2	L	25
			H	26
			SH	27
26	4t	2	L	28
			H	29
			SH	30
27	5t	2	L	31
			H	32
			SH	33
28	6t	2	L	34
			H	35
			SH	36

29	1t	2	L	37
			H	38
			SH	39
30	2t	2	L	40
			H	41
			SH	42
31	7t	2	L	43
			H	44
			SH	45
32	8t	2	L	46
			H	47
			SH	48
Array shield #1		1	SH	51
Array shield #2		2	SH	51