

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF PAGES 8

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER 01 Jul 2009	2. CONTRACT NO. (if any) OA133005CO1035	6. SHIP TO: WG950123	
3. ORDER NO. 0039	4. REQUISITION/REFERENCE NO. NWWG9503-09-23054	a. NAME OF CONSIGNEE NATIONAL DATA BUOY CENTER	
5. ISSUING OFFICE Address correspondence to: WG950201 NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529		b. STREET ADDRESS ATTN: PROPERTY OFFICER BUILDING 3202	
KURT C. WEILBAECHER 228-688-2825		c. CITY STENNIS SPACE CENTER	d. STATE MS
7. TO: 00004157 TIN: 953630868		e. ZIP CODE 39529-6000	

8. TYPE OF ORDER	
<input type="checkbox"/> a. PURCHASE REFERENCE YOUR: Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	<input checked="" type="checkbox"/> b. DELIVERY Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.

9. ACCOUNTING AND APPROPRIATION BOC: See Attached Schedule	10. REQUISITIONING OFFICE NDBC
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11. BUSINESS CLASSIFICATION (Check appropriate box(es))

a. Small
 b. Other than small
 c. Disadvantaged
 d. Women-owned
 e. HUBZone
 f. Emerging small business
 g. Service-disabled veteran-owned

12. F.O.B. POINT DESTINATION	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE 31 Dec 2010	16. DISCOUNT TERMS 00.00% 0 Days Net 30
13. PLACE OF			
a. INSPECTION	b. ACCEPTANCE		

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)
0001	Base Period: 07/01/2009 - 06/30/2010 Labor with Min Fee for the following cost categories: Program Management (\$1,260,802.96) OPS Management (\$597,497.92) OPS Engineering Support	1	JB	5,280,461.85	5,280,461.85	

18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	17(h) TOTAL (Cont. pages)
21. MAIL INVOICE TO:			
a. NAME NATIONAL DATA BUOY CENTER			
b. STREET ADDRESS (or P.O. Box) BUILDING 1007			
c. CITY STENNIS SPACE CENTER		d. STATE MS	e. ZIP CODE 39529
7,171,331.97			17(i) GRAND TOTAL

22. UNITED STATES OF AMERICA BY (Signature) <i>Jeanette Spreemann</i>	23. NAME (Typed) JEANETTE SPREEMANN 301-713-0820 141. (TITLE CONTRACTING/ORDERING OFFICER)
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ORDER FOR SUPPLIES OR SERVICES - Continuation

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER 01 Jul 2009	CONTRACT NO. (if any) OA133005CO1035	ORDER NO. 0039
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ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)
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(\$315,626.77)
 DART O & M
 (\$452,860.24)
 DART Engineering
 (\$380,336.49)
 Weather O & M
 (\$875,478.72)
 Weather Engineering
 (\$480,845.49)
 TAO O & M
 (\$284,264.95)
 TAO Engineering
 (\$632,748.31)
 NOTE: DART O&M and TAO refresh are funded through approximately 01/10/2010

The negotiated amount for the Base Period is \$11,536,353.88 which includes a minimum fixed fee of [REDACTED]

Consumables are funded through 10/10/2009

COST PLUS FIXED FEE (CPFF)

Accounting and Appropriation Data:
 14.09.4RM9XW2.PMM.0007.040401005.2006000095020000.25130000.000000
 \$ 25,000.00
 14.09.G8K3BRI.P00.0089.010102059.2006000095020000.25130000.000000
 \$ 43,981.89
 14.09.4RM9X60.PMM.0007.040401005.2006000095020000.25130000.000000
 \$ 48,480.00
 14.09.4RM8XCH.PMM.0007.040401005.2006000095020000.25130000.000000
 \$ 65,000.00
 14.09.G8K3BCL.P00.0089.010102020.2006000095020000.25130000.000000
 \$ 75,000.00
 14.09.46M9XWH.PMM.0096.040401005.2006000095020000.25130000.000000
 \$ 106,000.00
 14.09.G8M5J14.PAM.0089.040401005.2006000095030000.25130000.000000
 \$ 236,588.33

14.09.G8M5J14.PD5.0089.040401005.2006000095020000.25130000.000000
 \$ 279,500.00
 14.09.G8M8JDB.PAB.0089.040401010.2006000095020000.25130000.000000
 \$ 448,935.62
 14.09.G8M5J14.PK4.0089.040401005.2006000095020000.25130000.000000

ORDER FOR SUPPLIES OR SERVICES - Continuation

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER 01 Jul 2009	CONTRACT NO. (if any) OA133005CO1035	ORDER NO. 0039
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ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)	
0002	<p>\$ 607,884.67 14.09.G8M5J14.P3R.0089.040401005.2006000 095020000.25130000.000000</p> <p>\$ 637,513.26 14.09.G8M6JU9.P58.0089.040401033.2006000 095020000.25130000.000000</p> <p>\$ 833,196.73 14.09.G8M5J14.P3Q.0089.040401005.2006000 095020000.25130000.000000</p> <p>\$ 849,166.72 14.09.G8M6JU9.P58.0089.040401033.2006000 095030000.25130000.000000</p> <p>\$ 1,024,214.63</p> <p>Incentive Fee (target)</p> <p>If contractor earns maximum fee, this clin will be modified to incorporate that incentive.</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Program Management [REDACTED]</p> <p>OPS Management [REDACTED]</p> <p>OPS Engineering Support [REDACTED]</p> <p>DART O & M [REDACTED]</p> <p>DART Engineering [REDACTED]</p> <p>Weather O & M [REDACTED]</p> <p>Weather Engineering [REDACTED]</p> <p>TAO O & M [REDACTED]</p> <p>TAO Engineering [REDACTED]</p> <p>The negotiated Incentive Fee (target) for the base period is [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8M8IDB.PAB.0089.040401010.2006000 0095020000.25130000.000000 [REDACTED]</p> <p>14.09.G8M6JU9.P58.0089.040401033.2006000 095020000.25130000.000000 [REDACTED]</p> <p>14.09.G8M5J14.P3R.0089.040401005.2006000 095020000.25130000.000000 [REDACTED]</p> <p>14.09.G8M5J14.PAM.0089.040401005.2006000 095030000.25130000.000000</p>	1	JB	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

ORDER FOR SUPPLIES OR SERVICES - Continuation

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER: 01 Jul 2009
 CONTRACT NO. (if any): OA133005CO1035
 ORDER NO.: 0039

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)
0003	<p>14.09.G8M5J14.PK4.0089.040401005.2006000 095020000.25130000.000000</p> <p>ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2010 Consumables are funded through 10/10/2009</p> <p>Program Management (\$1,353,324.40) OPS Management (\$31,992.40) OPS Engineering Support (\$11,090.30) DART O & M (\$80,771.76) DART Engineering (\$0.00) Weather O & M (\$263,716.46) Weather Engineering (\$7,683.94) TAO O & M (\$29,621.67) TAO Engineering (\$2,192.63) The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BRL.P00.0089.010102059.20060000 95030000.26190000.000000 \$ 3,000.00</p> <p>14.09.1BK5BDA.P00.0006.010201000.1014000 100000000.26190000.000000 \$ 7,000.00</p> <p>14.09.G8M8JDB.PAB.0089.040401010.200600 0095030000.26190000.000000 \$ 9,318.50</p> <p>14.09.G8M8JDB.PAB.0089.040401010.200600 0095020000.26190000.000000 \$ 11,180.00</p> <p>14.09.G8K3BCL.P00.0089.010102020.2006000 095030000.26190000.000000 \$ 20,000.00</p> <p>14.09.4RM9XKB.PMM.0007.040401005.20060 00095030000.26190000.000000 \$ 30,000.00</p> <p>14.09.G8M5J14.P3R.0089.040401005.2006000 095020000.26190000.000000</p>	1	JB	1,780,393.56	1,780,393.56	

ORDER FOR SUPPLIES OR SERVICES - Continuation

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IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER: 01 Jul 2009
 CONTRACT NO. (if any): OA133005CO1035
 ORDER NO.: 0039

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)
	\$ 31,814.30 14.09.G8R1AD1.P01.0089.030106013.2006000 095020000.26190000.000000 \$ 50,000.00 14.09.G8M6JU9.P58.0089.040401033.2006000 095020000.26190000.000000 \$ 80,771.76 14.09.G8M5J14.P3R.0089.040401005.2006000 095030000.26190000.000000 \$ 116,000.00 14.09.G8M6JU5.P58.0089.040401033.2006000 095030000.26190000.000000 \$ 182,500.00 14.09.G8M5J14.PK4.0089.040401005.2006000 095020000.26190000.000000 \$ 246,303.10 14.09.G8M5J14.PAM.0089.040401005.2006000 095030000.26190000.000000 \$ 299,883.73 14.09.G8M6JU9.P58.0089.040401033.2006000 095030000.26190000.000000 \$ 692,622.17					
0004	<p>Option 1 Period: 07/01/2010 - 12/31/2010</p> <p>Labor with Min Fee for the following cost categories:</p> <p>Program Management OPS Management OPS Engineering Support DART O & M DART Engineering Weather O & M Weather Engineering TAO O & M TAO Engineering</p> <p>FUNDUED THROUGH 12/31/2010</p> <p>COST PLUS FIXED FEE (CPFF)</p>	0	EA	0.00	0.00	
0005	<p>Incentive Fee (target fee)</p> <p>If contractor earns maximum fee, this clin will be modified to incorporate that incentive</p> <p>FUNDED THROUGH 12/31/2010</p>	0	EA	0.00	0.00	

ORDER FOR SUPPLIES OR SERVICES - Continuation

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OF PAGES

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IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER

CONTRACT NO. (if any)

ORDER NO.

01 Jul 2009

OA133005CO1035

0039

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)
0006	<p>ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2010</p> <p>The Technical Management Plan (TMP), dated 07/01/2009, control #1 is hereby attached and incorporated into this Task Order</p> <p>General Conditions for Award: All training and travel will be approved in advance by the COTR. Such approval will be submitted with the invoice for processing.</p> <p>Note: NDBC will be looking for substantial Justification for training and travel under this task. NDBC will prefer a more modest approach to training and travel to be managed by SAIC as this contract comes to an end.</p> <p>2. All vacancies, excluding key personnel, will require the approval of the COTR prior to a replacement being rehired. This will give the COTR an opportunity to discuss with the Program Manager the skill mix and ensure it still fits the Governments' immediate and future plans. The SAIC Program Manager will provide the NDBC Management Team (all Branch Chiefs and Director) and the Contracting Officer a monthly status of all vacancies.</p> <p>3. NDBC will employ a NTE element to each category of work. Exceeding the NTE amounts will require the Contracting Officer's approval.</p> <p>The following contract clauses are hereby incorporated into this task order:</p> <p>52.217-8 Option to Extend Services. (Nov 1999)</p> <p>The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written</p>	0	EA	0.00	0.00	

ORDER FOR SUPPLIES OR SERVICES - Continuation

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IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER 01 Jul 2009	CONTRACT NO. (if any) OA133005CO1035	ORDER NO. 0039				
ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QTY ACCEPT. (g)

notice to the Contractor within 30 calendar days.

**52.217-9 Option to Extend the Term of the Contract.
(Mar 2000)**

(a) The Government may extend the term of this contract by written notice to the Contractor within 30 calendar days; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 60 calendar days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 18 months.

BONNIE BARNUM
SAIC CONTRACTS REPRESENTATIVE

2. Amendment/Modification No. 0001	3. Effective Date Sep 4, 2009	4. Requisition/Purchase Req. No. NWWG9503-09-24214	5. Project No. (if applicable)
6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 KURT C.WEILBAECHER 228-688-2825	Code WG950201	7. Administered By (if other than Item 6) SEE BLOCK 6	Code NDBC 2009 SEP -9 A 6:59 SSC MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1	<input checked="" type="checkbox"/>	9A. Amendment of Solicitation No.
		9B. Date (See Item 11)
	<input checked="" type="checkbox"/>	10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039
		10B. Date (See Item 13) Jul 1, 2009
Code	Facility Code	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required)
See Schedule \$ US 591,553.57

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

<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

1. The purpose of this modification is to de-obligate CLIN 0001 in the amount of \$18,726.32 and incrementally fund CLIN 0003 in the amount of \$610,279.89.

a. CLIN 0001 is changed from \$5,280,461.85 to read \$5,261,735.53, a net decrease of \$18,726.32

Accounting:
14.09.G8M6JU9.P58.0089.040401033.2006000095030000.25130000.000000 -\$18,726.32

15A. Name and Title of Signer (Type or Print)	16A. Name and title of Contracting Officer (Type or Print) KURT C.WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offeror	16B. United States of America
(Signature of person authorized to sign)	(Signature of Contracting Officer) <i>Kurt C. Weilbaecher</i>
15C. Date Signed	16C. Date Signed Sep 4, 2009

b. CLIN 0003 is changed from \$1,780,393.56 to read \$2,390,673.45, a net increase of \$610,279.89

Accounting:

14.09.G8M6JU9.P58.0089.040401033.2006000095030000.26190000.000000	\$252,881.42
14.09.G8M5J14.PAM.0089.040401005.2006000095030000.26190000.000000	\$357,398.42

2. The total funded amount of this order is now \$7,762,885.54

3. All other terms and conditions remain unchanged and in full effect.

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	<p>Base Period: 07/01/2009 - 06/30/2010 Labor with Min Fee for the following cost categories:</p> <p>Program Management (\$1,242,076.64) OPS Management (\$597,497.92) OPS Engineering Support (\$315,626.77) DART O & M (\$452,860.24) DART Engineering (\$380,336.49) Weather O & M (\$875,478.72) Weather Engineering (\$480,845.49) TAO O & M (\$284,264.95) TAO Engineering (\$632,748.31)</p>	1	JB	5,261,735.53	5,261,735.53
	<p>NOTE: DART O&M and TAO refresh are funded through approximately 01/10/2010</p>				
	<p>The negotiated amount for the Base Period is \$11,536,353.88 which includes a minimum fixed fee of [REDACTED]</p>				
	<p>Accounting and Appropriation Data: 14.09.4RM9XW2.PMM.0007.040401005.2006000 095020000.25130000.000000 US\$ 25,000.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.25130000.000000 US\$ 43,981.89 14.09.4RM9X60.PMM.0007.040401005.20060000 95020000.25130000.000000 US\$ 48,480.00 14.09.4RM8XCH.PMM.0007.040401005.2006000 095020000.25130000.000000 US\$ 65,000.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5020000.25130000.000000 US\$ 75,000.00 14.09.46M9XWH.PMM.0096.040401005.2006000 095020000.25130000.000000 US\$ 106,000.00 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.25130000.000000 US\$ 236,588.33 14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.25130000.000000 US\$ 279,500.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.25130000.000000 US\$ 448,935.62 14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.25130000.000000 US\$ 607,884.67</p>				

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.25130000.000000 US\$ 637,513.26</p> <p>14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.25130000.000000 US\$ 814,470.41</p> <p>14.09.G8M5J14.P3Q.0089.040401005.2006000095 020000.25130000.000000 US\$ 849,166.72</p> <p>14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.25130000.000000 US\$ 1,024,214.63</p> <p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$1,963,604.24) OPS Management (\$31,992.40) OPS Engineering Support (\$11,090.30) DART O & M (\$80,771.76) DART Engineering (\$0.00) Weather O & M (\$263,716.46) Weather Engineering (\$7,683.94) TAO O & M (\$29,621.67) TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00</p> <p>14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,000.00</p> <p>14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000 US\$ 9,318.50</p> <p>14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00</p> <p>14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000 US\$ 20,000.00</p>	1	JB	2,390,673.45	2,390,673.45

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	14.09.4RM9XKB.PMM.0007.040401005.2006000 095030000.26190000.000000 US\$ 30,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.26190000.000000 US\$ 31,814.30				
	14.09.G8R1AD1.P01.0089.030106013.200600009 5020000.26190000.000000 US\$ 50,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000 US\$ 116,000.00				
	14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.26190000.000000 US\$ 246,303.10				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000 US\$ 333,653.18				
	14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.26190000.000000 US\$ 657,282.20				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 692,622.17				

2. Amendment/Modification No. 0002 3. Effective Date Sep 15, 2009 4. Requisition/Purchase Req. No. NWWG9503-09-24666 5. Project No. (if applicable)

6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 Code WG950201 7. Administered By (If other than Item 6) SEE BLOCK 6 Code NDBC 2009 SEP 22 A 5:54 SSC, MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1 9A. Amendment of Solicitation No. 9B. Date (See Item 11) 10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039 10B. Date (See Item 13) Jul 1, 2009

Code Facility Code 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required) See Schedule \$ US -218,861.28

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

(X) 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. X B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

1. The purpose of this modification is to de-obligate funds on CLINs 0001, 0002 and 0003 in the amount of \$218,861.28 as follows:
a. Change CLIN 0001 from \$5,261,735.53 to read \$5,102,480.55, a net decrease of \$159,254.98
Accounting:
14.09.G8M5J14.PD5.0089.040401005.2006000095020000.25130000.000000 -\$123,458.25
14.09.G8M5J14.PK4.0089.040401005.2006000095020000.25130000.000000 -\$35,796.73

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) KURT C.WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov 16B. United States of America 16C. Date Signed (Signature of person authorized to sign) (Signature of Contracting Officer)

b. Change CLIN 0002 from [REDACTED] to read [REDACTED], a net decrease of [REDACTED]

Accounting:

14.09.G8M5J14.P3R.0089.040401005.2006000095020000.25130000.000000 [REDACTED]

14.09.G8M5J14.PK4.0089.040401005.2006000095020000.25130000.000000 [REDACTED]

c. Change CLIN 0003 from \$2,390,673.45 to read \$2,332,682.33, a net decrease of \$57,991.12

Accounting:

14.09.G8M6JU9.P58.0089.040401033.2006000095020000.26190000.000000 -\$57,991.12

2. The total funded amount of this order is now \$7,544,024.26.

3. All other terms and conditions remain unchanged and in full effect.

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	<p>Base Period: 07/01/2009 - 06/30/2010 Labor with Min Fee for the following cost categories:</p> <p>Program Management (\$1,242,076.64) OPS Management (\$597,497.92) OPS Engineering Support (\$315,626.77) DART O & M (\$452,860.24) DART Engineering (\$380,336.49) Weather O & M (\$839,681.99) Weather Engineering (\$480,845.49) TAO O & M (\$160,806.70) TAO Engineering (\$632,748.31)</p> <p>NOTE: DART O&M and TAO refresh are funded through approximately 01/10/2010</p> <p>The negotiated amount for the Base Period is \$11,536,353.88 which includes a minimum fixed fee of ██████████</p> <p>Accounting and Appropriation Data: 14.09.4RM9XW2.PMM.0007.040401005.2006000 095020000.25130000.000000 US\$ 25,000.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.25130000.000000 US\$ 43,981.89 14.09.4RM9X60.PMM.0007.040401005.20060000 95020000.25130000.000000 US\$ 48,480.00 14.09.4RM8XCH.PMM.0007.040401005.2006000 095020000.25130000.000000 US\$ 65,000.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5020000.25130000.000000 US\$ 75,000.00 14.09.46M9XWH.PMM.0096.040401005.2006000 095020000.25130000.000000 US\$ 106,000.00 14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.25130000.000000 US\$ 156,041.75 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.25130000.000000 US\$ 236,588.33 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.25130000.000000 US\$ 448,935.62 14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.25130000.000000 US\$ 572,087.94</p>	1	JB	5,102,480.55	5,102,480.55

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$1,963,604.24)</p> <p>OPS Management (\$31,992.40)</p> <p>OPS Engineering Support (\$11,090.30)</p> <p>DART O & M (\$22,780.64)</p> <p>DART Engineering (\$0.00)</p> <p>Weather O & M (\$263,716.46)</p> <p>Weather Engineering (\$7,683.94)</p> <p>TAO O & M (\$29,621.67)</p> <p>TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of \$ [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,000.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000 US\$ 9,318.50 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000 US\$ 20,000.00 14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000 US\$ 22,780.64 14.09.4RM9XKB.PMM.0007.040401005.2006000 095030000.26190000.000000 US\$ 30,000.00 14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.26190000.000000 US\$ 31,814.30 14.09.G8R1AD1.P01.0089.030106013.200600009 5020000.26190000.000000 US\$ 50,000.00 14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000 US\$ 116,000.00 14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000</p>	1	JB	2,332,682.33	2,332,682.33

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095				
	020000.26190000.000000				
	US\$ 246,303.10				
	14.09.G8M5J14.PAM.0089.040401005.200600009				
	5030000.26190000.000000				
	US\$ 657,282.20				
	14.09.G8M6JU9.P58.0089.040401033.2006000095				
	030000.26190000.000000				
	US\$ 945,503.59				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT 1. Contract ID Code Page of Pages
1 6

2. Amendment/Modification No. 0003	3. Effective Date Sep 15, 2009	4. Requisition/Purchase Req. No. NWWG9502-09-24594	5. Project No. (if applicable)
6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 KURT C.WEILBAECHER 228-688-2825		Code WG950201	7. Administered By (If other than Item 6) SEE BLOCK 6 NDBC 2009 SEP 22 A 5:54 SSC, MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1	(X)	9A. Amendment of Solicitation No.
		9B. Date (See Item 11)
	X	10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039 10B. Date (See Item 13) Jul 1, 2009
Code	Facility Code	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required)
See Schedule \$ US 334,741.53

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

(x)	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.
X	B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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)

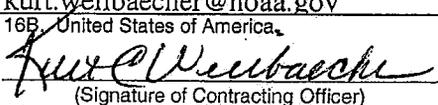
E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. Description of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

1. The purpose of this modification is to incrementally fund CLINs 0001, 0002 and 0003 in the amount of \$334,741.53 as follows:

- a. Change CLIN 0001 from \$5,102,480.55 to read \$5,202,382.81, a net increase of \$99,902.26
- Accounting:
- | | |
|---|-------------|
| 14.09.G8K3BJR.P00.0089.010102065.1012000000000000.25130000.000000 | \$43,142.67 |
| 14.09.G8M6JU9.P58.0089.040401033.2006000095020000.25130000.000000 | \$56,759.59 |

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) KURT C.WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offendor (Signature of person authorized to sign)	15C. Date Signed 16B. United States of America  (Signature of Contracting Officer)
	16C. Date Signed Sep 15, 2009

b. Change CLIN 0002 from [REDACTED] to read [REDACTED], a net increase of \$ [REDACTED]

Accounting:

14.09.G8M5J14.PK4.0089.040401005.2006000095020000.25130000.000000 [REDACTED]

14.09.G8M6JU9.P58.0089.040401033.2006000095020000.25130000.000000 [REDACTED]

c. Change CLIN 0003 from \$2,332,682.33 to read \$2,565,358.89, a net increase of \$232,676.56

Accounting:

14.09.G8M5J14.PD5.0089.040401005.2006000095020000.26190000.000000 \$42,810.03

14.09.G8M5J14.PK4.0089.040401005.2006000095020000.26190000.000000 \$189,866.53

2. The total funded amount of this order is now \$7,878,765.79.

3. All other terms and conditions remain unchanged and in full effect.

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	Base Period: 07/01/2009 - 06/30/2010 Labor with Min Fee for the following cost categories:	1	JB	5,202,382.81	5,202,382.81
	Program Management (\$1,242,076.64) OPS Management (\$597,497.92) OPS Engineering Support (\$315,626.77) DART O & M (\$509,619.83) DART Engineering (\$380,336.49) Weather O & M (\$882,824.66) Weather Engineering (\$480,845.49) TAO O & M (\$160,806.70) TAO Engineering (\$632,748.31)				
	NOTE: DART O&M and TAO refresh are funded through approximately 01/10/2010				
	The negotiated amount for the Base Period is \$11,536,353.88 which includes a minimum fixed fee of \$ [REDACTED]				
	Accounting and Appropriation Data: 14.09.4RM9XW2.PMM.0007.040401005.20060000 095020000.25130000.000000 US\$ 25,000.00 14.09.G8K3BJR.P00.0089.010102065.1012000000 000000.25130000.000000 US\$ 43,142.67 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.25130000.000000 US\$ 43,981.89 14.09.4RM9X60.PMM.0007.040401005.20060000 95020000.25130000.000000 US\$ 48,480.00 14.09.4RM8XCH.PMM.0007.040401005.20060000 095020000.25130000.000000 US\$ 65,000.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5020000.25130000.000000 US\$ 75,000.00 14.09.46M9XWH.PMM.0096.040401005.20060000 095020000.25130000.000000 US\$ 106,000.00 14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.25130000.000000 US\$ 156,041.75 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.25130000.000000 US\$ 236,588.33 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.25130000.000000 US\$ 448,935.62				

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.25130000.000000 US\$ 572,087.94 14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.25130000.000000 US\$ 637,513.26 14.09.G8M5J14.P3Q.0089.040401005.2006000095 020000.25130000.000000 US\$ 849,166.72 14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.25130000.000000 US\$ 889,956.32 14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.25130000.000000 US\$ 1,005,488.31				
0002	Incentive Fee (target) If contractor earns maximum fee, this clin will be modified to incorporate that incentive. FUNDED THROUGH 12/31/2009 Program Management [REDACTED] OPS Management [REDACTED] OPS Engineering Support [REDACTED] DART O & M [REDACTED] DART Engineering [REDACTED] Weather O & M [REDACTED] Weather Engineering [REDACTED] TAO O & M [REDACTED] TAO Engineering [REDACTED] The negotiated Incentive Fee (target) for the base period is [REDACTED] Accounting and Appropriation Data: 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.25130000.000000 US\$ [REDACTED] 14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.25130000.000000 US\$ [REDACTED] 14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.25130000.000000 US\$ [REDACTED] 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.25130000.000000 US\$ [REDACTED] 14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.25130000.000000 US\$ [REDACTED]	1	JB	[REDACTED]	

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$1,963,604.24)</p> <p>OPS Management (\$31,992.40)</p> <p>OPS Engineering Support (\$11,090.30)</p> <p>DART O & M (\$22,780.64)</p> <p>DART Engineering (\$0.00)</p> <p>Weather O & M (\$453,582.99)</p> <p>Weather Engineering (\$7,683.94)</p> <p>TAO O & M (\$72,431.70)</p> <p>TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,000.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000 US\$ 9,318.50 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000 US\$ 20,000.00 14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000 US\$ 22,780.64 14.09.4RM9XKB.PMM.0007.040401005.2006000 095030000.26190000.000000 US\$ 30,000.00 14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.26190000.000000 US\$ 31,814.30 14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.26190000.000000 US\$ 42,810.03 14.09.G8R1AD1.P01.0089.030106013.200600009 5020000.26190000.000000 US\$ 50,000.00</p>	1	JB	2,565,358.89	2,565,358.89

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000 US\$ 116,000.00				
	14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.26190000.000000 US\$ 436,169.63				
	14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.26190000.000000 US\$ 657,282.20				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 945,503.59				

2. Amendment/Modification No. 0004	3. Effective Date Sep 17, 2009	4. Requisition/Purchase Req. No. NWWG9502-09-24881	5. Project No. (if applicable)
6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 KURT C.WEILBAECHER 228-688-2825		7. Administered By (If other than Item 6) SEE BLOCK 6 NDBC 2009 SEP 21 A 6 12	

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1	(X) SSC, MS Amendment of Solicitation No.
	9B. Date (See Item 11)
	10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039 10B. Date (See Item 13) Jul 1, 2009

Code _____ Facility Code _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS
 The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required)
 See Schedule \$ US 214,769.44

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

(x)	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.
X	B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

1. The purpose of this modification is to incrementally fund CLIN 0003 (ODCs/Materials) in the amount of \$219,888.67.

a. Change CLIN 0003 from \$2,565,358.89 to read \$2,78,0128.33, a net increase of \$214,769.44

Accounting:

14.09.G8K3BRI.P00.0089.010102059.2006000095020000.26190000.000000	\$76.64
14.09.G8R1AD1.P01.0089.030106013.2006000095030000.26190000.000000	\$756.23
14.09.G8K3BJR.P00.0089.010102065.1012000000000000.26190000.000000	\$47.90

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) KURT C.WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offeror	16B. United States of America
(Signature of person authorized to sign)	(Signature of Contracting Officer) 
15C. Date Signed	16C. Date Signed Sep 17, 2009

SF30 Continuation of Block Narrative

14.09.G8R1CPM.PAB.0089.030106013.5027000000000000.26190000.000000	\$2,400.00
14.09.G8M5J14.P3Q.0089.040401005.2006000095030000.26190000.000000	\$8,425.68
14.09.G8M8JDB.PAB.0089.040401010.2006000095030000.26190000.000000	\$9,471.05
14.09.G8M5J14.P3R.0089.040401005.2006000095030000.26190000.000000	\$16,729.22
14.09.G8M6JU9.P58.0089.040401033.2006000095030000.26190000.000000	\$67,000.00
14.09.G8M5J14.PAM.0089.040401005.2006000095030000.26190000.000000	\$109,862.72

2. The total funded amount is changed to \$8,093,535.23.
 3. All other terms and conditions remain unchanged and in full effect.
-

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$2,175,849.14)</p> <p>OPS Management (\$34,516.94)</p> <p>OPS Engineering Support (\$11,090.30)</p> <p>DART O & M (\$22,780.64)</p> <p>DART Engineering (\$0.00)</p> <p>Weather O & M (\$453,582.99)</p> <p>Weather Engineering (\$7,683.94)</p> <p>TAO O & M (\$72,431.70)</p> <p>TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BJR.P00.0089.010102065.101200000 000000.26190000.000000 US\$ 47.90 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.26190000.000000 US\$ 76.64 14.09.G8R1AD1.P01.0089.030106013.200600009 5030000.26190000.000000 US\$ 756.23 14.09.G8R1CPM.PAB.0089.030106013.50270000 00000000.26190000.000000 US\$ 2,400.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,000.00 14.09.G8M5J14.P3Q.0089.040401005.2006000095 030000.26190000.000000 US\$ 8,425.68 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000 US\$ 18,789.55</p>	1	JB	2,780,128.33	2,780,128.33

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000 US\$ 20,000.00				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000 US\$ 22,780.64				
	14.09.4RM9XKB.PMM.0007.040401005.2006000 095030000.26190000.000000 US\$ 30,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.26190000.000000 US\$ 31,814.30				
	14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.26190000.000000 US\$ 42,810.03				
	14.09.G8R1AD1.P01.0089.030106013.200600009 5020000.26190000.000000 US\$ 50,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000 US\$ 132,729.22				
	14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.26190000.000000 US\$ 436,169.63				
	14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.26190000.000000 US\$ 767,144.92				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.26190000.000000 US\$ 1,012,503.59				

2. Amendment/Modification No. 0005 3. Effective Date Sep 18, 2009 4. Requisition/Purchase Req. No. NWWG9502-09-24922 5. Project No. (if applicable)

6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 Code WG950201 7. Administered By (If other than Item 6) SEE BLOCK 6 Code NDBC
2009 SEP 21 A 6: 01
SSC, MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) Vendor ID: 00004157 DUNS: 148095086 CAGE: 0T5L1
SCIENCE APPLICATIONS INTERNATIONAL CORPO 10260 CAMPUS POINT DRIVE MAIL STOP G2 SAN DIEGO CA 921211578
9A. Amendment of Solicitation No. (X) 9B. Date (See Item 11) 10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039 10B. Date (See Item 13) Jul 1, 2009

Code Facility Code 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required) See Schedule \$ US -2,296.32

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

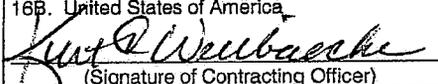
- (x) A. This change order is issued pursuant to: (Specify authority) The changes set forth in item 14 are made in the Contract Order No. in item 10A.
- X B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

- 1. The purpose of this modification is to de-obligate funds on CLIN 0003 in the amount of \$2,296.32 as follows:
 - a. Change CLIN 0003 from \$2,780,128.33 to read \$2,777,832.01 , a net decrease of \$2,296.32
- Accounting:
 14.09.G8M5J14.P3R.0089.040401005.2006000095030000.26190000.000000 -\$4.00
 14.09.G8M6JU9.P58.0089.040401033.2006000095030000.26190000.000000 -\$584.32
 14.09.G8M5J14.PAM.0089.040401005.2006000095030000.26190000.000000 -\$118.00
 14.09.G8R1CPM.PAB.0089.030106013.5027000000000000.26190000.000000 -\$1,590.00

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) KURT C. WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offeror (Signature of person authorized to sign)	15C. Date Signed 16B. United States of America  (Signature of Contracting Officer)
	16C. Date Signed Sep 18, 2009

2. This will change the total amount of this order to read \$8,091,238.91.
 3. All other terms and conditions remain unchanged an in full effect.
-

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$2,175,142.82)</p> <p>OPS Management (\$32,926.94)</p> <p>OPS Engineering Support (\$11,090.30)</p> <p>DART O & M (\$22,780.64)</p> <p>DART Engineering (\$0.00)</p> <p>Weather O & M (\$453,582.99)</p> <p>Weather Engineering (\$7,683.94)</p> <p>TAO O & M (\$72,431.70)</p> <p>TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.G8K3BJR.P00.0089.010102065.1012000000 000000.26190000.000000 US\$ 47.90 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.26190000.000000 US\$ 76.64 14.09.G8R1AD1.P01.0089.030106013.200600009 5030000.26190000.000000 US\$ 756.23 14.09.G8R1CPM.PAB.0089.030106013.50270000 00000000.26190000.000000 US\$ 810.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,000.00 14.09.G8M5J14.P3Q.0089.040401005.2006000095 030000.26190000.000000 US\$ 8,425.68 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000 US\$ 18,789.55 14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000</p>	1	JB	2,777,832.01	2,777,832.01

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	US\$ 20,000.00				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000				
	US\$ 22,780.64				
	14.09.4RM9XKB.PMM.0007.040401005.2006000 095030000.26190000.000000				
	US\$ 30,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.26190000.000000				
	US\$ 31,814.30				
	14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.26190000.000000				
	US\$ 42,810.03				
	14.09.G8R1AD1.P01.0089.030106013.200600009 5020000.26190000.000000				
	US\$ 50,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000				
	US\$ 132,725.22				
	14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000				
	US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.26190000.000000				
	US\$ 436,169.63				
	14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.26190000.000000				
	US\$ 767,026.92				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.26190000.000000				
	US\$ 1,011,919.27				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code _____ Page 1 of Pages 4

2. Amendment/Modification No. 0006	3. Effective Date Sep 18, 2009	4. Requisition/Purchase Req. No. NWWG9502-09-24924	5. Project No. (if applicable)
6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 KURT C. WEILBAECHER 228-688-2825		7. Administered By (if other than Item 6) SEE BLOCK 6	Code NDBC 2009 SEP 21 A 6:01 SSC, MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1	<input checked="" type="checkbox"/>	9A. Amendment of Solicitation No.
		9B. Date (See Item 11)
	<input checked="" type="checkbox"/>	10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039
		10B. Date (See Item 13) Jul 1, 2009
Code _____	Facility Code _____	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required)
See Schedule \$ US 41,757.85

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

<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

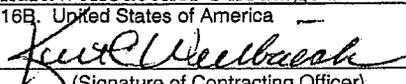
1. The purpose of this modification is to incrementally fund CLIN 0003 (ODCs/Materials) in the amount of \$41,757.85.

a. Change CLIN 0003 from \$2,777,832.01 to read \$2,819,589.86, a net increase of \$41,757.85

Accounting:

14.09.4RM9XKB.PMM.0007.040401005.2006000095020000.26190000.000000	\$40.72
14.09.1BK5BDA.P00.0006.010201000.1014000100000000.26190000.000000	\$77.00
14.09.G8M8JDB.PAB.0089.040401010.2006000095030000.26190000.000000	\$9,638.28

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) KURT C. WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offeror	16B. United States of America
(Signature of person authorized to sign)	 (Signature of Contracting Officer)
15C. Date Signed	16C. Date Signed Sep 18, 2009

14.09.G8M5J14.PAM.0089.040401005.2006000095030000.26190000.000000 \$10,529.88
14.09.G8M6JU9.P58.0089.040401033.2006000095030000.26190000.000000 \$21,471.97

2. The total funded amount is changed to \$8,132,996.76.
 3. All other terms and conditions remain unchanged and in full effect.
-

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$2,216,782.95) OPS Management (\$33,044.66) OPS Engineering Support (\$11,090.30) DART O & M (\$22,780.64) DART Engineering (\$0.00) Weather O & M (\$453,582.99) Weather Engineering (\$7,683.94) TAO O & M (\$72,431.70) TAO Engineering (\$2,192.63)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.4RM9XKB.PMM.0007.040401005.2006000 095020000.26190000.000000 US\$ 40.72 14.09.G8K3BJR.P00.0089.010102065.101200000 000000.26190000.000000 US\$ 47.90 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.26190000.000000 US\$ 76.64 14.09.G8R1AD1.P01.0089.030106013.200600009 5030000.26190000.000000 US\$ 756.23 14.09.G8R1CPM.PAB.0089.030106013.50270000 00000000.26190000.000000 US\$ 810.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,077.00 14.09.G8M5J14.P3Q.0089.040401005.2006000095 030000.26190000.000000 US\$ 8,425.68 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000</p>	1	JB	2,819,589.86	2,819,589.86

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	US\$ 20,000.00				
	14.09.G8M6JU9.P58.0089.040401033.2006000095				
	020000.26190000.000000				
	US\$ 22,780.64				
	14.09.G8M8JDB.PAB.0089.040401010.20060000				
	95030000.26190000.000000				
	US\$ 28,427.83				
	14.09.4RM9XKB.PMM.0007.040401005.2006000				
	095030000.26190000.000000				
	US\$ 30,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095				
	020000.26190000.000000				
	US\$ 31,814.30				
	14.09.G8M5J14.PD5.0089.040401005.2006000095				
	020000.26190000.000000				
	US\$ 42,810.03				
	14.09.G8R1AD1.P01.0089.030106013.200600009				
	5020000.26190000.000000				
	US\$ 50,000.00				
	14.09.G8M5J14.P3R.0089.040401005.2006000095				
	030000.26190000.000000				
	US\$ 132,725.22				
	14.09.G8M6JU5.P58.0089.040401033.2006000095				
	030000.26190000.000000				
	US\$ 182,500.00				
	14.09.G8M5J14.PK4.0089.040401005.2006000095				
	020000.26190000.000000				
	US\$ 436,169.63				
	14.09.G8M5J14.PAM.0089.040401005.200600009				
	5030000.26190000.000000				
	US\$ 777,556.80				
	14.09.G8M6JU9.P58.0089.040401033.2006000095				
	030000.26190000.000000				
	US\$ 1,033,391.24				

2. Amendment/Modification No. 0007 3. Effective Date Sep 21, 2009 4. Requisition/Purchase Req. No. NWWG9503-09-25009 5. Project No. (if applicable)

6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 FAITH SMITH 228-688-1706 Code WG950201 7. Administered By (if other than Item 6) SEE BLOCK 6 Code NDBC 2009 SEP 22 A 5: 54 SSC, MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1 9A. Amendment of Solicitation No. (X) 9B. Date (See Item 11) 10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039 10B. Date (See Item 13) Jul 1, 2009

Code Facility Code 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required) See Schedule \$ US 11,084.77

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

- (x) 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.
- X B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

1. The purpose of this modification is to incrementally fund CLIN 0003 in the amount of \$11,084.77.
a. Change CLIN 0003 from \$2,819,589.86 to read \$2,830,674.63.
1409G8M8JDBPAB0089040401010200600009503000026190000000000
\$1,200.63
1409G8M5J14P3Q0089040401005200600009503000026190000000000
\$9,884.14

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) KURT C. WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov 16B. United States of America 16C. Date Signed Sep 21, 2009 (Signature of person authorized to sign) (Signature of Contracting Officer)

2. The total funded amount is changed to \$8,144,081.53.
3. All other terms and conditions remain the same and in full effect.

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0003	<p>Task Order 39 - Contract Year 5</p> <p>Purpose: Incrementally Fund ODCs/MATERIALS (inclusive of fee)</p> <p>FUNDED THROUGH 12/31/2009</p> <p>Consumables are funded through 10/31/2009</p> <p>Program Management (\$1,360,324.40)</p> <p>OPS Management (\$31,992.40)</p> <p>OPS Engineering Support (\$10,999.88)</p> <p>DART O & M (\$70,455.62)</p> <p>DART Engineering (\$0.00)</p> <p>Weather O & M (\$243,764.10)</p> <p>Weather Engineering (\$4,701.63)</p> <p>TAO O & M (\$52,903.12)</p> <p>TAO Engineering (\$5,252.41)</p> <p>The negotiated amount for the Base Period is \$5,636,934.78 with a fixed fee of [REDACTED]</p> <p>Accounting and Appropriation Data: 14.09.4RM9XKB.PMM.0007.040401005.2006000 095020000.26190000.000000 US\$ 40.72 14.09.G8K3BJR.P00.0089.010102065.1012000000 000000.26190000.000000 US\$ 47.90 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.26190000.000000 US\$ 76.64 14.09.G8R1AD1.P01.0089.030106013.200600009 5030000.26190000.000000 US\$ 756.23 14.09.G8R1CPM.PAB.0089.030106013.50270000 00000000.26190000.000000 US\$ 810.00 14.09.G8K3BRI.P00.0089.010102059.2006000095 030000.26190000.000000 US\$ 3,000.00 14.09.1BK5BDA.P00.0006.010201000.101400010 0000000.26190000.000000 US\$ 7,077.00 14.09.G8M8JDB.PAB.0089.040401010.20060000 95020000.26190000.000000 US\$ 11,180.00 14.09.G8M5J14.P3Q.0089.040401005.2006000095 030000.26190000.000000 US\$ 18,309.82 14.09.G8K3BCL.P00.0089.010102020.200600009 5030000.26190000.000000</p>	1	JB	2,830,674.63	2,830,674.63

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
	US\$ 20,000.00 14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.26190000.000000				
	US\$ 22,780.64 14.09.G8M8JDB.PAB.0089.040401010.20060000 95030000.26190000.000000				
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	US\$ 50,000.00 14.09.G8M5J14.P3R.0089.040401005.2006000095 030000.26190000.000000				
	US\$ 132,725.22 14.09.G8M6JU5.P58.0089.040401033.2006000095 030000.26190000.000000				
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	US\$ 436,169.63 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.26190000.000000				
	US\$ 777,556.80 14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.26190000.000000				
	US\$ 1,033,391.24				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code _____ Page 1 of Pages 3

2. Amendment/Modification No. 0008	3. Effective Date Oct 29, 2009	4. Requisition/Purchase Req. No. NWWG9503-10-01919	5. Project No. (if applicable)
6. Issued By NATIONAL DATA BUOY CENTER BUILDING 1007 STENNIS SPACE CENTER, MS 39529 KURT C.WEILBAECHER 228-688-2825		7. Administered By (if other than Item 6) SEE BLOCK 6	Code NDBO 2009 NOV -3 A 8:42 SSG MS

8. Name and Address of Contractor (No., Street, County, and Zip Code) SCIENCE APPLICATIONS INTERNATIONAL CORPO Vendor ID: 00004157 10260 CAMPUS POINT DRIVE DUNS: 148095086 MAIL STOP G2 SAN DIEGO CA 921211578 CAGE: 0T5L1	(X)	9A. Amendment of Solicitation No.
		9B. Date (See Item 11)
	X	10A. Modification of Contract/Order No. QA1330-05-CQ-1035 0039
		10B. Date (See Item 13) Jul 1, 2009

Code _____ Facility Code _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers is extended 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 you 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 Appropriation Data (if required)
See Schedule \$ US 320,000.00

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

(x)	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.
X	B. The above numbered Contract/Order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) Set fourth 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.)

- The purpose of this modification is to incrementally fund CLIN 0001 in the amount of \$320,000.00.
 - Change CLIN 0001 from \$5,202,382.81 to read \$5,522,382.81.
Acctg: 1410H8M5J14PAM1001040401005200600009503000025130000000000 \$320,000.00
- The total funded amount is changd to \$8,464,081.53.
- All other terms and conditions remain the same and in full effect.

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) KURT C.WEILBAECHER 228-688-2825 Contracting Officer kurt.weilbaecher@noaa.gov
15B. Contractor/Offeror	16B. United States of America
(Signature of person authorized to sign)	(Signature of Contracting Officer) <i>Kurt C. Weilbaecher</i>
15C. Date Signed	16C. Date Signed Oct 29, 2009

SCHEDULE

Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	Base Period: 07/01/2009 - 06/30/2010 Labor with Min Fee for the following cost categories:	1	JB	5,522,382.81	5,522,382.81
	Program Management (\$1,260,802.96) OPS Management (\$597,497.92) OPS Engineering Support (\$315,351.98) DART O & M (\$318,481.75) DART Engineering (\$246,483.03) Weather O & M (\$1,460,889.30) Weather Engineering (\$483,750.97) TAO O & M (\$154,087.01) TAO Engineering (\$443,116.93)				
	NOTE: DART O&M and TAO refresh are funded through approximately 01/10/2010				
	The negotiated amount for the Base Period is \$11,536,353.88 which includes a minimum fixed fee of ██████████				
	Accounting and Appropriation Data: 14.09.4RM9XW2.PMM.0007.040401005.2006000 095020000.25130000.000000 US\$ 25,000.00 14.09.G8K3BJR.P00.0089.010102065.101200000 000000.25130000.000000 US\$ 43,142.67 14.09.G8K3BRI.P00.0089.010102059.2006000095 020000.25130000.000000 US\$ 43,981.89 14.09.4RM9X60.PMM.0007.040401005.20060000 95020000.25130000.000000 US\$ 48,480.00 14.09.4RM8XCH.PMM.0007.040401005.20060000 095020000.25130000.000000 US\$ 65,000.00 14.09.G8K3BCL.P00.0089.010102020.200600009 5020000.25130000.000000 US\$ 75,000.00 14.09.46M9XWH.PMM.0096.040401005.20060000 095020000.25130000.000000 US\$ 106,000.00 14.09.G8M5J14.PD5.0089.040401005.2006000095 020000.25130000.000000 US\$ 156,041.75 14.09.G8M5J14.PAM.0089.040401005.200600009 5030000.25130000.000000 US\$ 236,588.33 14.10.H8M5J14.PAM.1001.040401005.200600009 5030000.25130000.000000 US\$ 320,000.00				

SCHEDULE

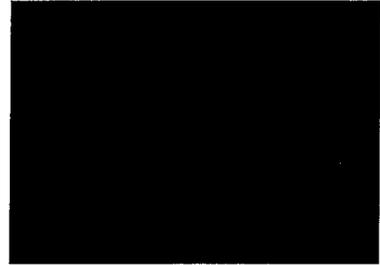
Item No.	Supplies/Services	Quantity	Unit	Unit Price	Amount
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	14.09.G8M5J14.PK4.0089.040401005.2006000095 020000.25130000.000000 US\$ 572,087.94				
	14.09.G8M5J14.P3R.0089.040401005.2006000095 020000.25130000.000000 US\$ 637,513.26				
	14.09.G8M5J14.P3Q.0089.040401005.2006000095 020000.25130000.000000 US\$ 849,166.72				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 020000.25130000.000000 US\$ 889,956.32				
	14.09.G8M6JU9.P58.0089.040401033.2006000095 030000.25130000.000000 US\$ 1,005,488.31				

Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems, CY05, Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)



SAIC PROPRIETARY
SAIC's proposal, contained herein, includes information and data which are privileged, confidential, and/or proprietary to SAIC. This information and data is commercially sensitive and/or financial in nature, is not made available for public review, and is submitted to the government on a confidential basis only for evaluation in relation to this proposal and is exempt under the Freedom of Information Act. The information contained herein is protected, among other things, by the Trade Secrets Act, as codified, and any improper use, distribution, or reproduction is specifically prohibited. No license or right of any kind whatsoever is granted to any third party to use the information contained herein unless a written agreement exists between SAIC and the third party which desires access to the information. The information contained herein is submitted to the government for purposes of review and evaluation in connection with SAIC's proposal denoted herein. No other use of the information and data contained herein is permitted without the express written permission of SAIC. Under no condition should the information contained herein be provided in any manner whatsoever to any third party without first receiving the express written permission of SAIC.

Contract No: QA1330-05-CQ-1035 / Task Order No: Task Order 34, Observing Systems, CLIN 0301X CY04
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year 05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)



SAIC PROPRIETARY
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Contract No.: QAI330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CY04
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year 05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0301XA Operations Management



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CY04
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year 05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0301XB Operational Engineering



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CY04

Offeror: *Science Applications International Corporation - TSC (Co 6)*

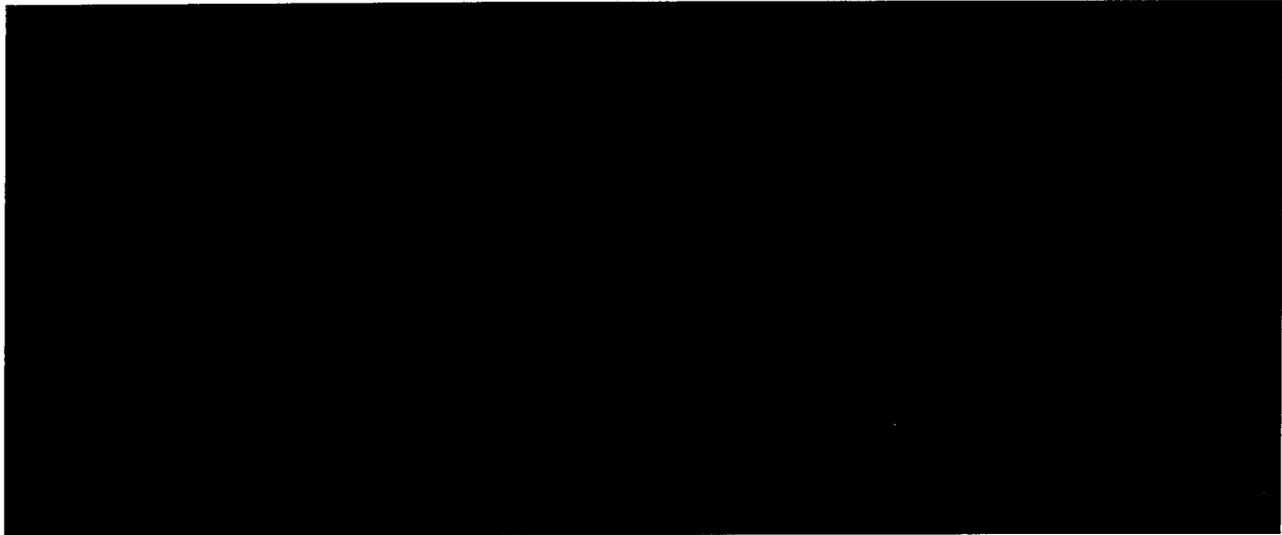
Proposal No.: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision

Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

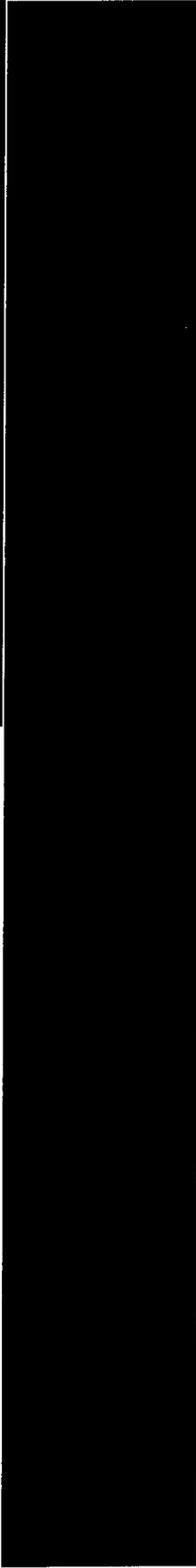
0301XB ODCs



Contract No.: QA1310-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CV04
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems, CLIN 0301X, CY05, Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X, Contract Year 05
Period of Performance: 01 Jul 09 - 30 Jun 10



Travel Detail 0301XB TRAVEL



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CY04

Offeror: *Science Applications International Corporation - TSC (Co 6)*

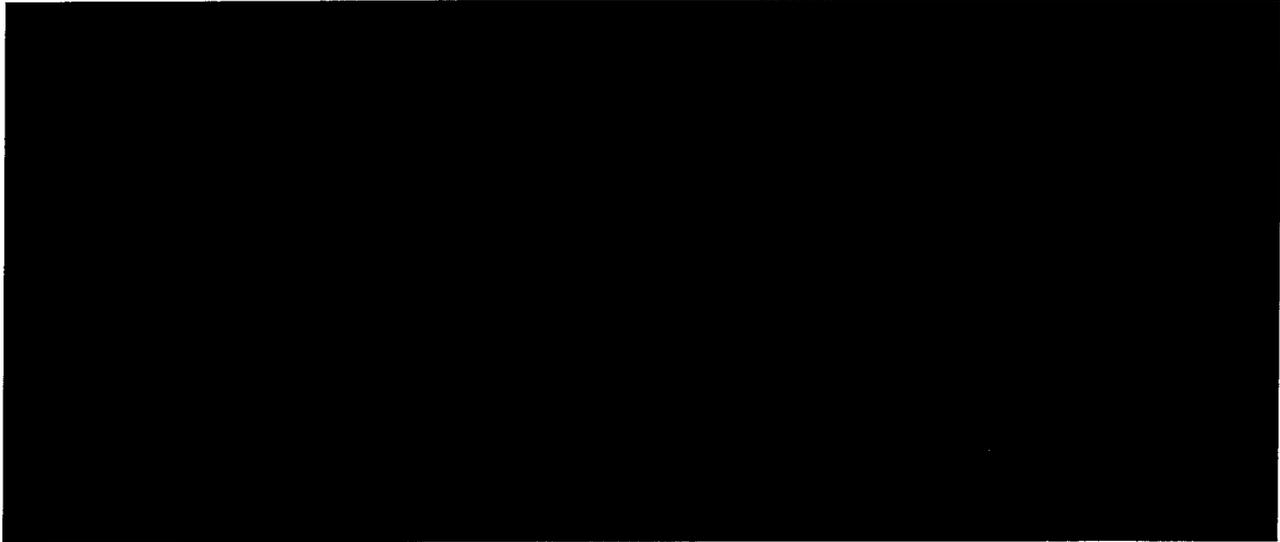
Proposal No.: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision

Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

0301XD COMMUNICATIONS



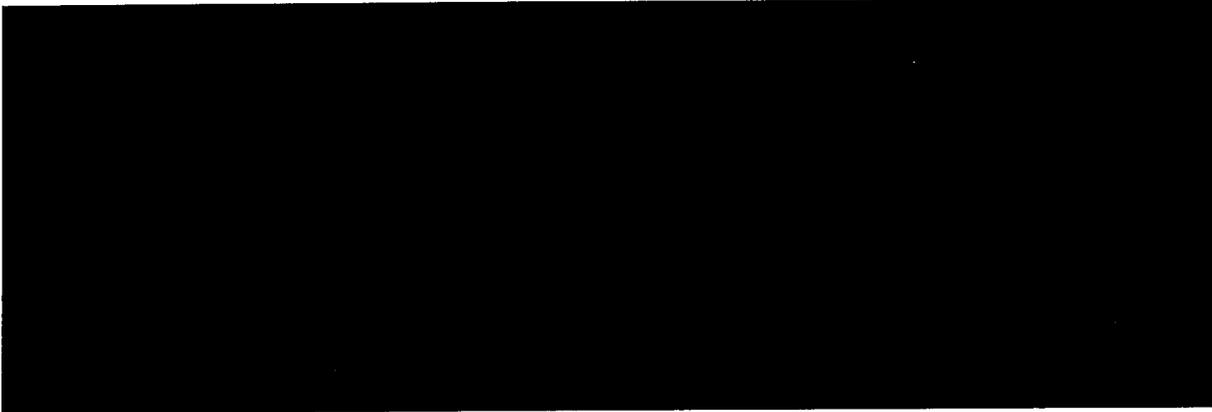
SAIC PROPRIETARY

Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems, CLIN 0301X CY04
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0301X, CY05, Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS), CLIN 0301X Contract Year 05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0301XF Other Engineering Support



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)



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Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF 0302AE DART Production



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: Science Applications International Corporation - TSC (Co 6)

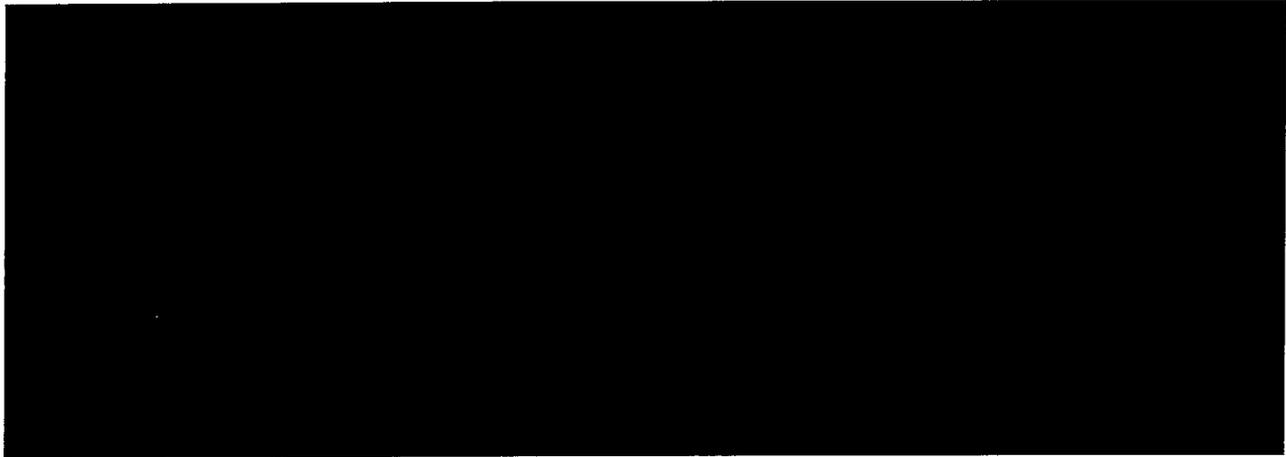
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision

Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

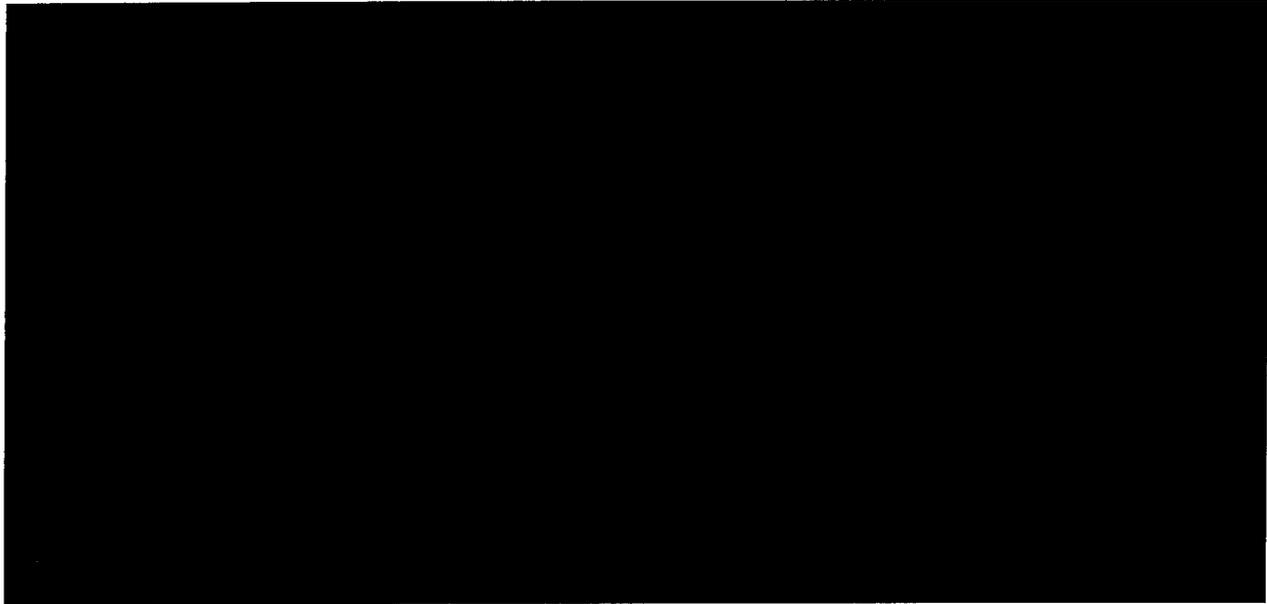
0302AE DART Production CY05



Contract No.: QAI330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

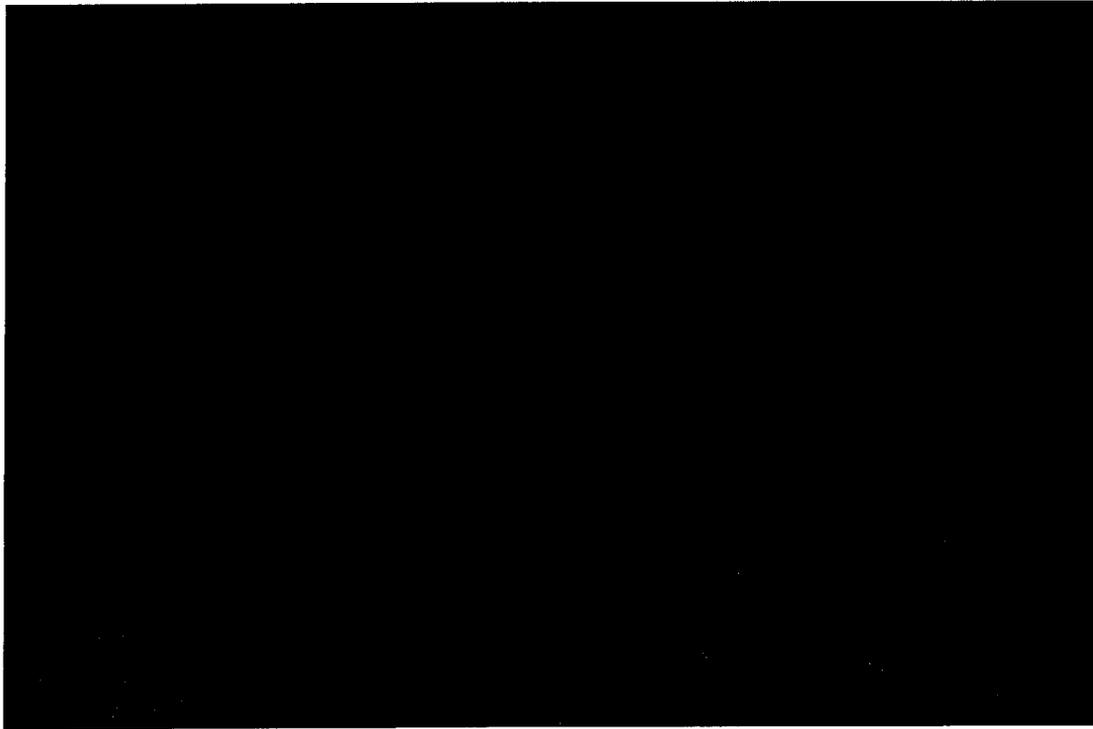
Consumables / Bill of Material (BOM) Detail

0302AE DART Production CY05



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF 0302AB DART Field Service



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: Science Applications International Corporation - TSC (Co 6)

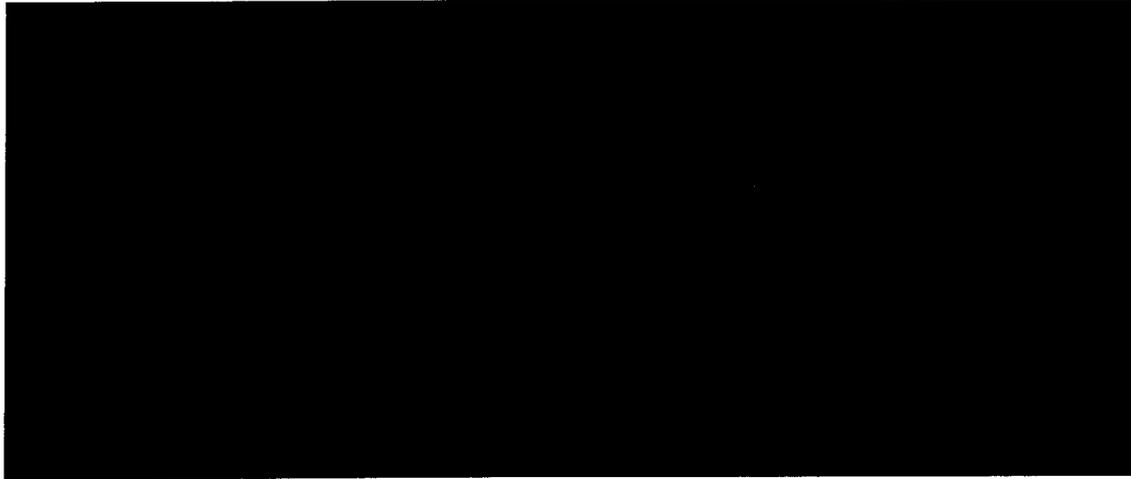
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision

Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

0302AB DART Field Service ODCs

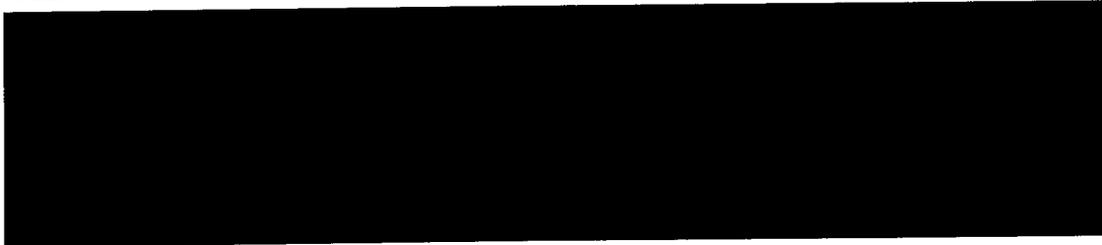


SAIC PROPRIETARY

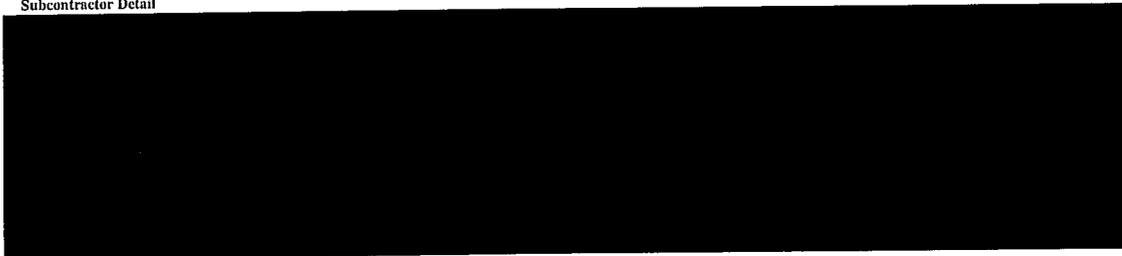
Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302, CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail

0302AB DART Field Service CY05

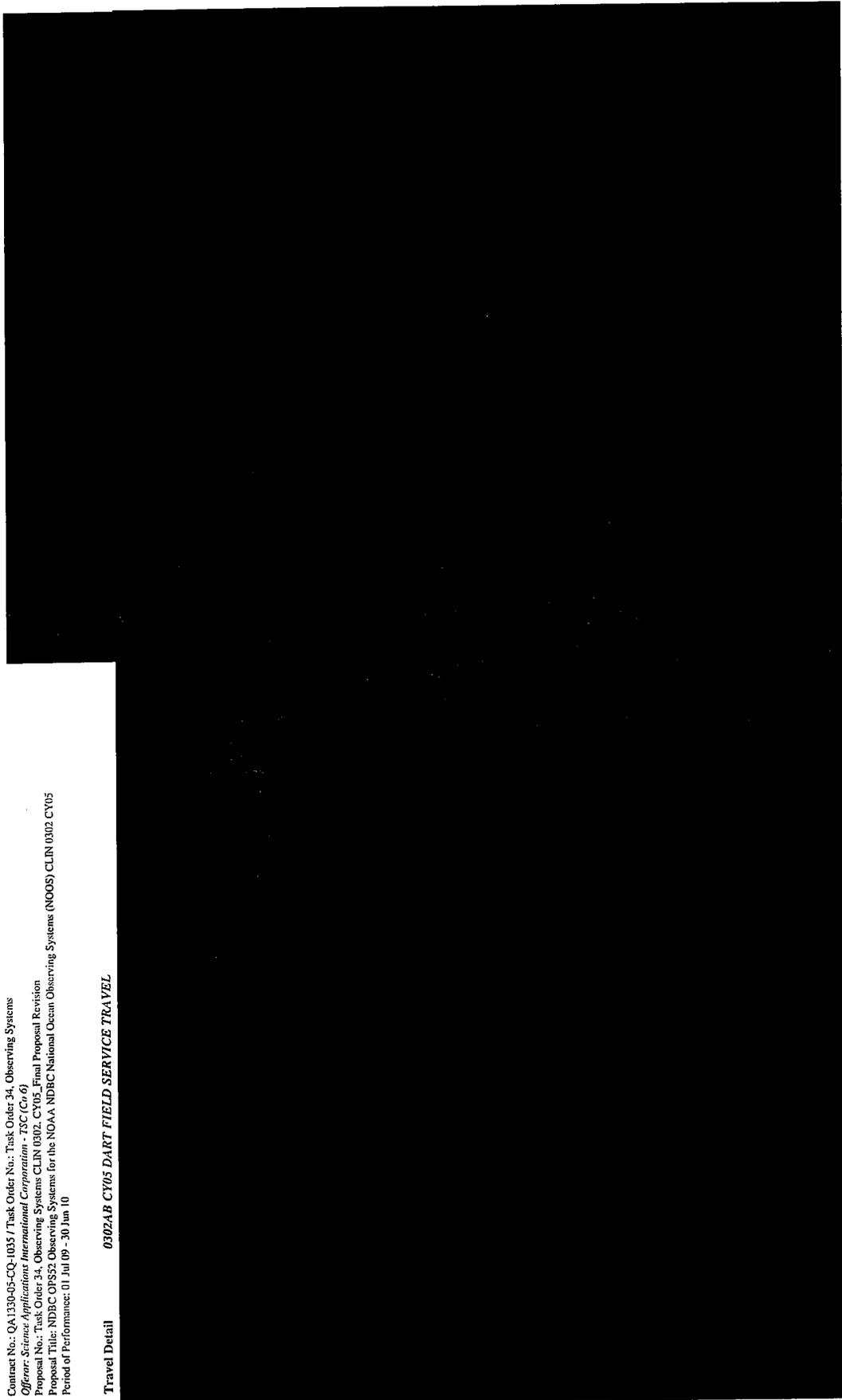


Subcontractor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Officer: Science Applications International Corporation - TSC (Cv 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPS22 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

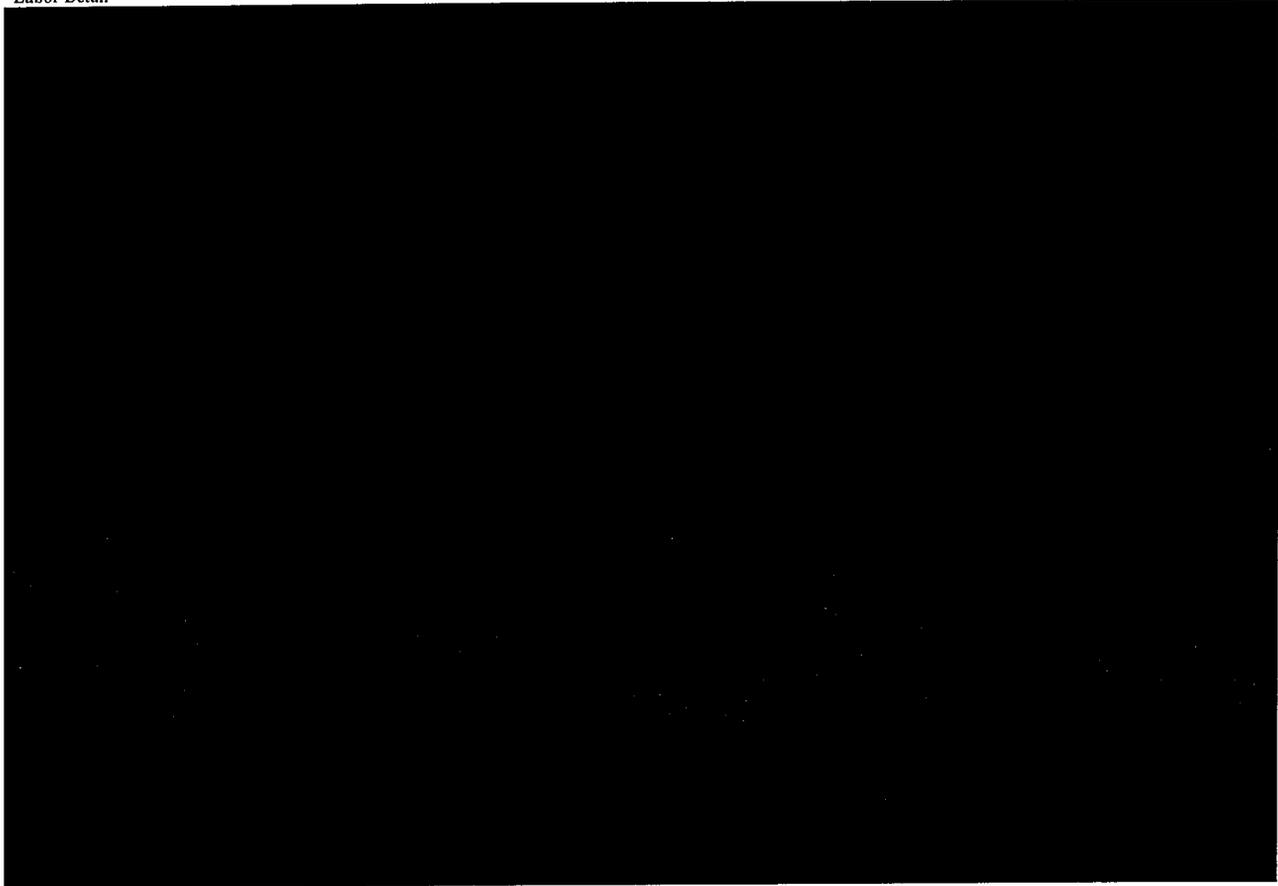
Travel Detail 0302AB CY05 DART FIELD SERVICE TRAVEL



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0302AC DART Operational Engineering

Labor Detail



0302AC DART OPS ENG Description	1.1	1.2	1.3	1.4
	CPFF	CPFF	CPFF	CPFF
	Maintain DART Software deployed on DART stations Spring of 2009	Mooring Support	Support for Back Channel Maintenance	CY05 ESR Support

SAIC PROPRIETARY

"Use or disclosure of the data contained on this sheet is subject to the restrictions contained on the cover page of this proposal or quotation."

Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0302, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0302 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0302AF DART Tech Refresh

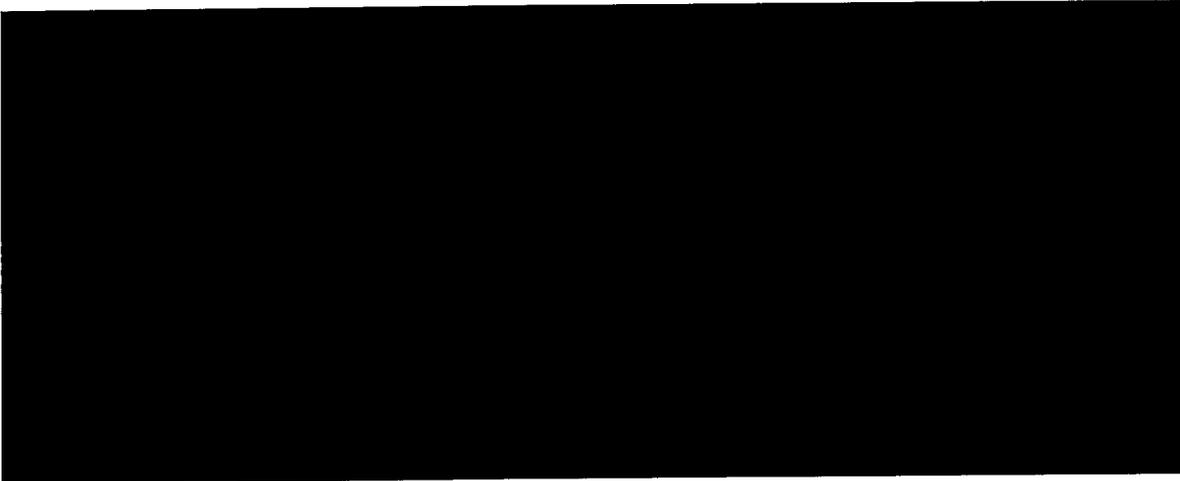
Labor Detail



0302AD DART Tech Refresh	1.1 CPFF	1.2 CPFF	1.3 CPFF	1.4 CPFF
Description	Part Obsolescence	Provide technical assistance evaluation of vessel utilized for field activities	Continue Evaluation of AMPS Payload for DART	Evaluate Glider Deployment

SAIC PROPRIETARY

Contract No.: Q11330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)



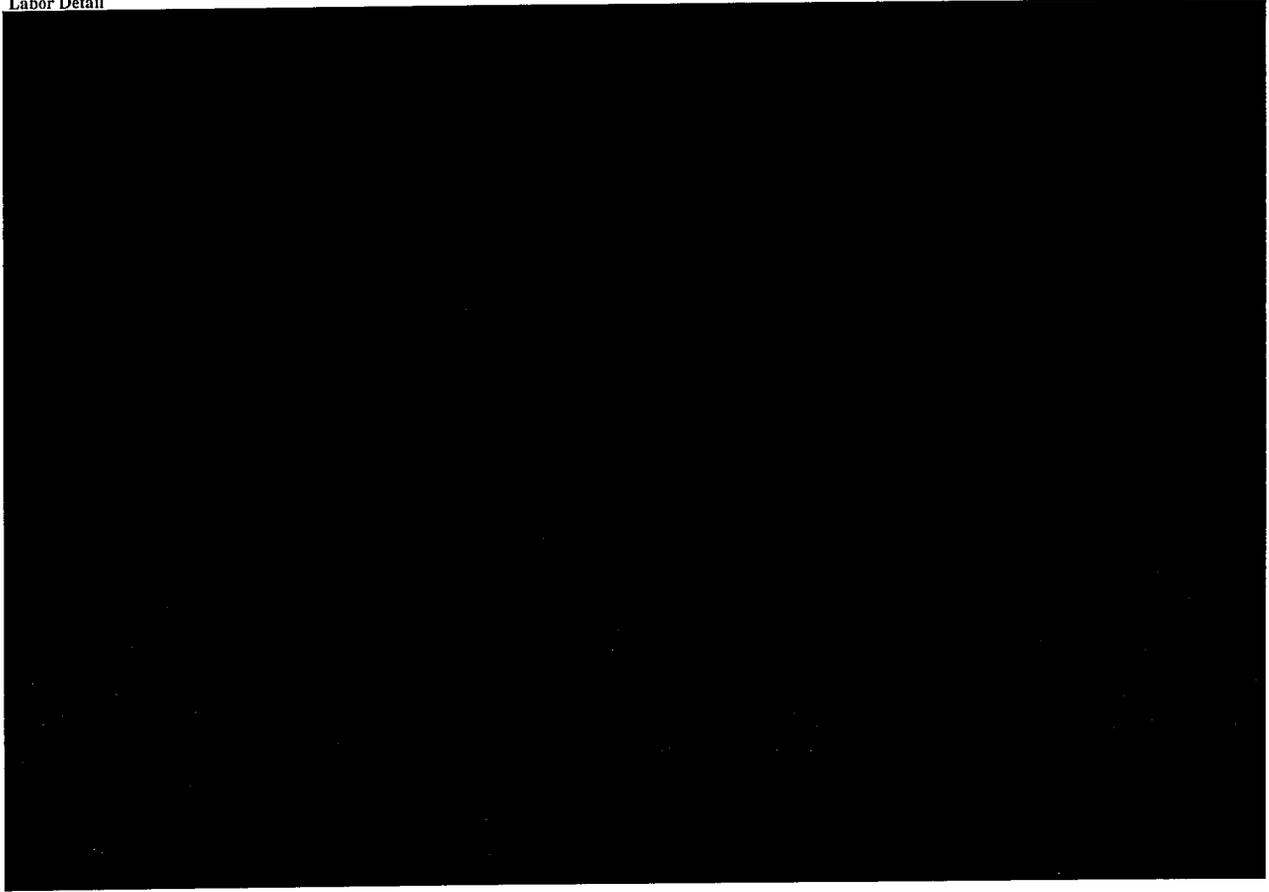
SAIC PROPRIETARY

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Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BA WxOP Production Primary

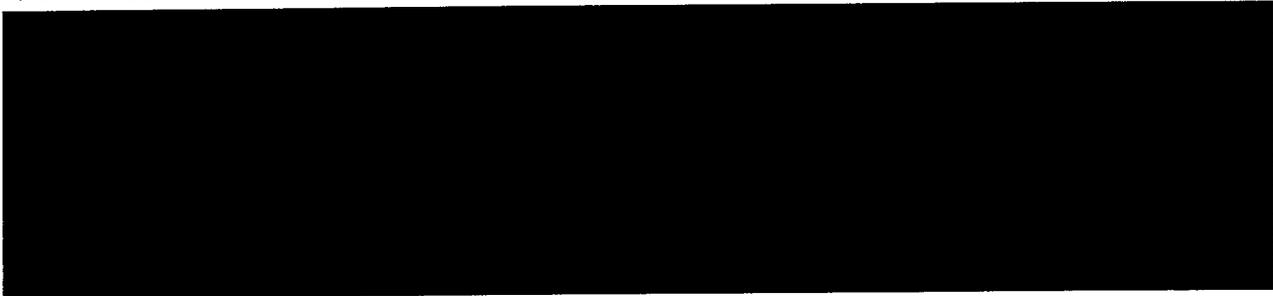
Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
 Offeror: Science Applications International Corporation - TSC (Co 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
 Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
 Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail

CLIN 0303BA WxOP Production - Primary



Subcontractor Detail

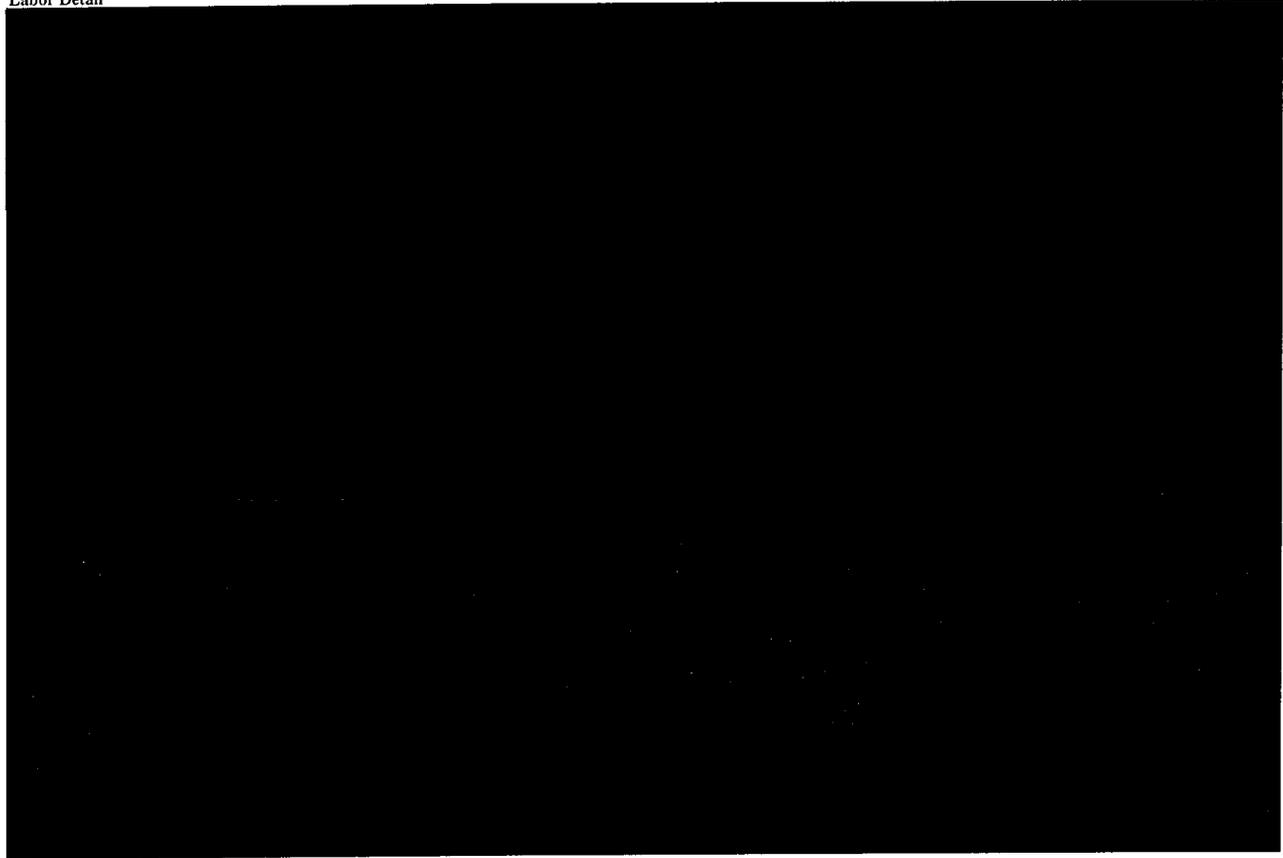
Ref No.:	Subcontractor Name	Item Description	Qty	Unit Measure	Unit Price	Ext. Price
1				ea		-
2						-
3						-
4						-
5						-
6						-
7						-
8						-
9						-
52						-

Subtotal Subcontractors

Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BB WxOP Production Options

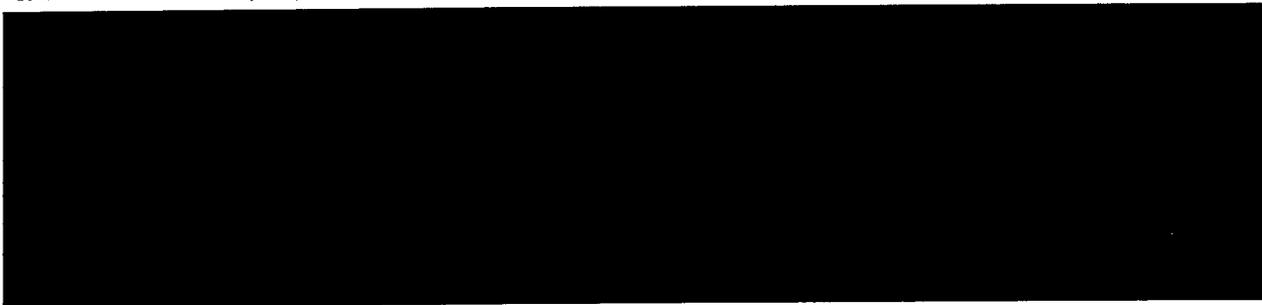
Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
 Offeror: Science Applications International Corporation - TSC (Co 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
 Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
 Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail

CLIN 0303BB - WxOP Production - Options



Subcontractor Detail

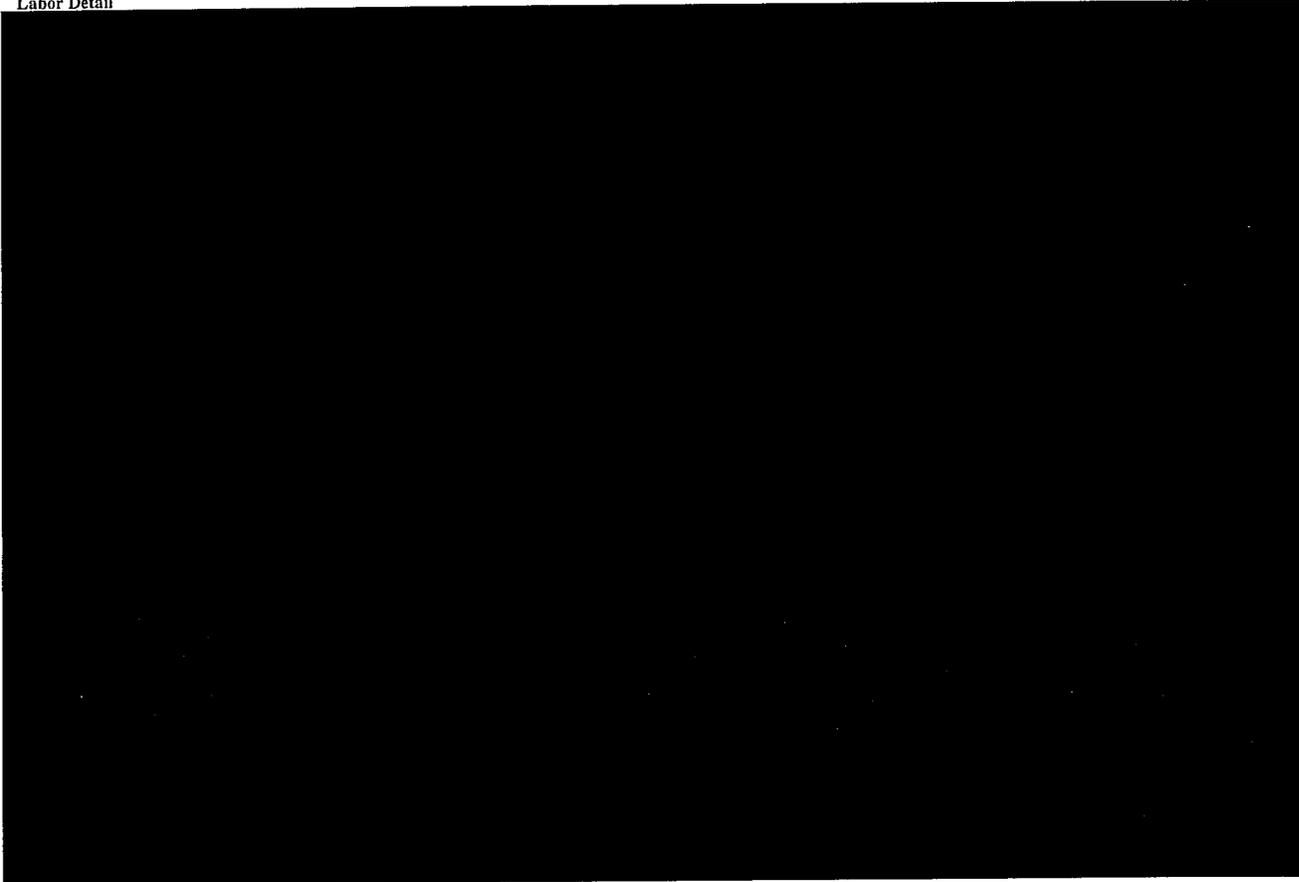
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6						-
7						-
8						-
9						-
52						-

Subtotal Subcontractors

Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BC WxOP Field Service

Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: Science Applications International Corporation - TSC (Co 6)

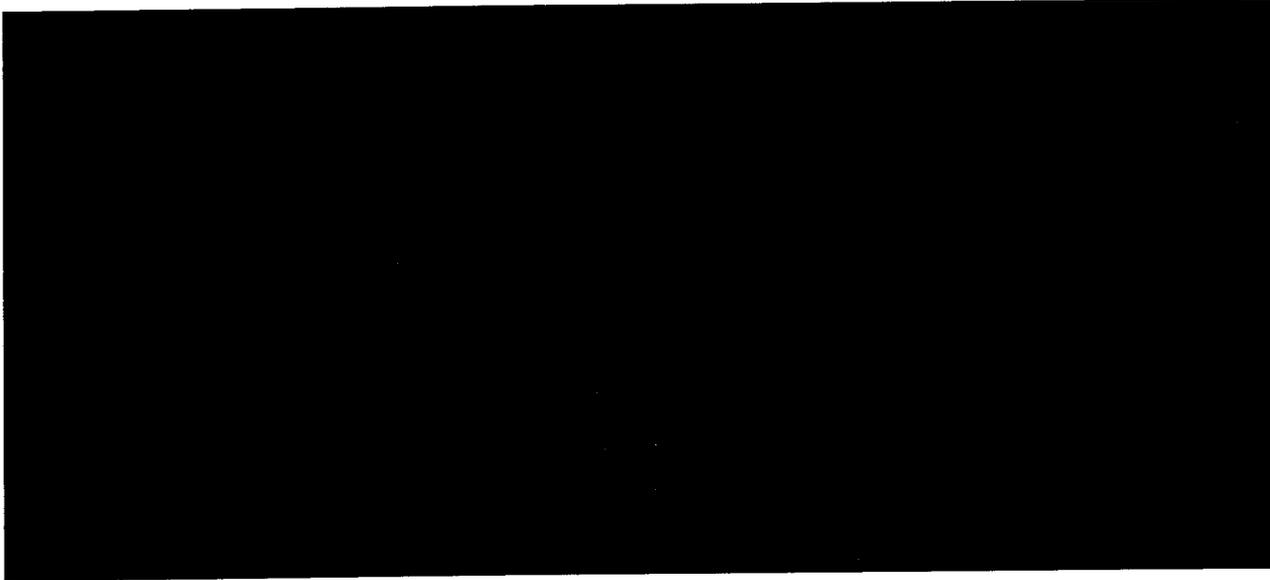
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision

Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

0303BC CY05 WxOP Field Service ODCs



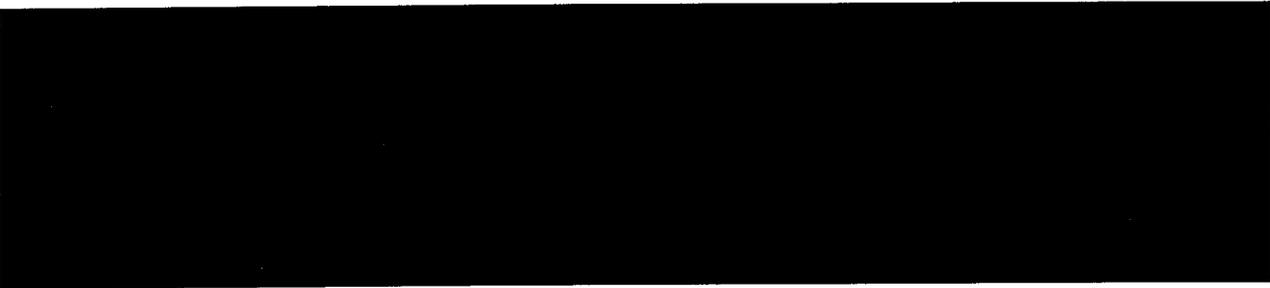
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 Offeror: Science Applications International Corporation - TSC (Co 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
 Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
 Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail 0303BC CY05 WxOP Field Service M&S

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9								-
52								-

Subtotal Materials

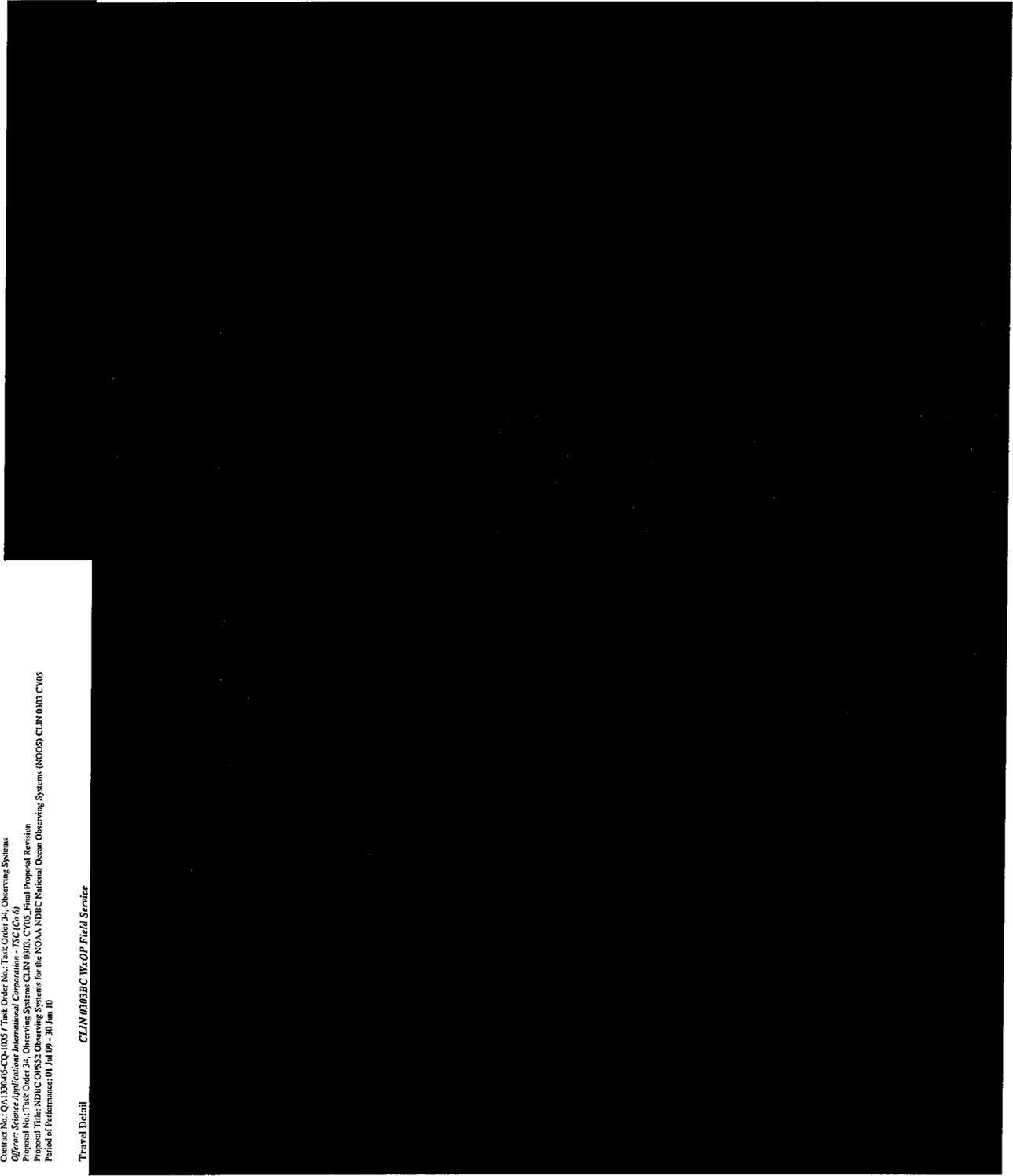
Subcontractor Detail



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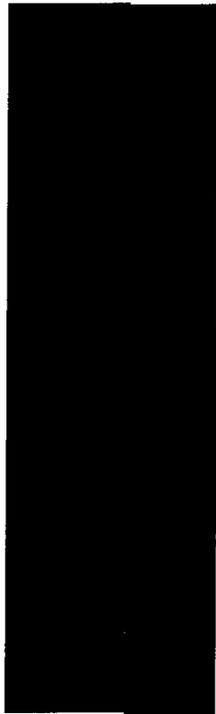
Contract No.: OAI13P-05-CQ-005 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation / ISC (2)(b)
Contract Title: Observing Systems CLIN W-OP Field Proposal Revision
Proposal Title: NDAC OHSO Observing Systems for the NOAA-NDBC National Ocean Observing System (NOOS) CLIN 0308 C1W6
Period of Performance: 01 Jul 09 - 30 Jun 10

Travel Detail *CLIN 0308BC W-OP Field Service*



Contract No.: QAL130-05-CQ-005 / Task Order No.: Task Order 34, Observing Systems
 Offeror: Science Applications International Corporation - TSC (Cv 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
 Proposal Title: NDHC OPSS: Observing Systems for the NOAA NDHC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
 Period of Performance: 01 Jul 05 - 30 Jun 10

Travel Detail **CLIN 0303BC WOP Field Service**



Contract No.: QAI330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BD WxOP Operational Engineering

Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BE WxOP Technical Refresh

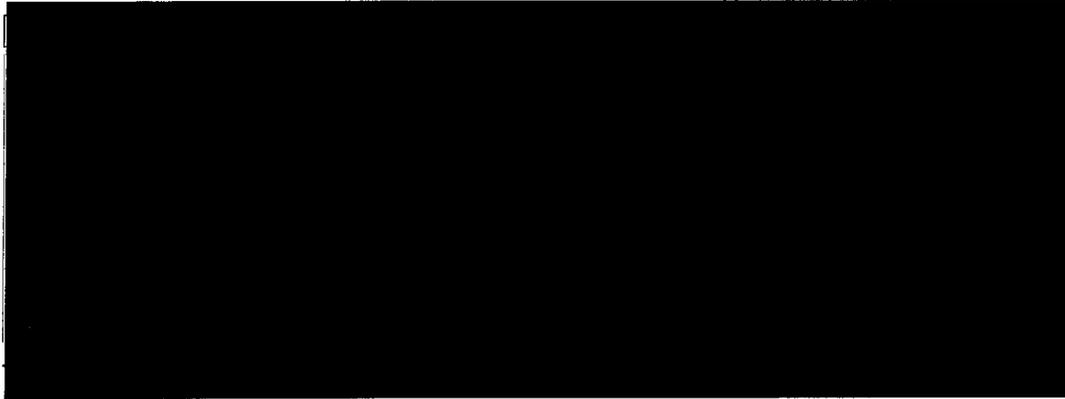
Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co G)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

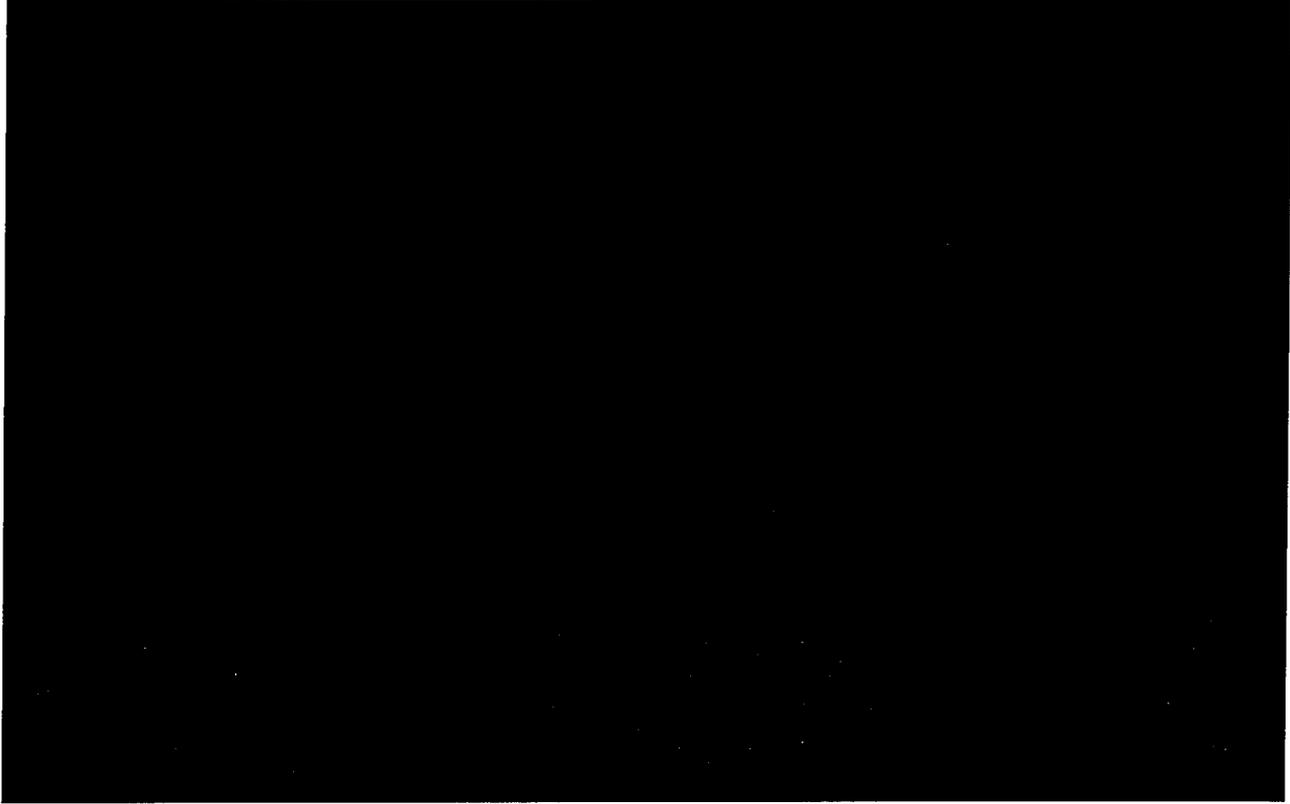
Consumables / Bill of Material (BOM) Detail

0303BE - Yellow Buoy Tech Refresh CY05



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0303BF WxOP Hurricane Deployments



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: Science Applications International Corporation - TSC (Co 6)

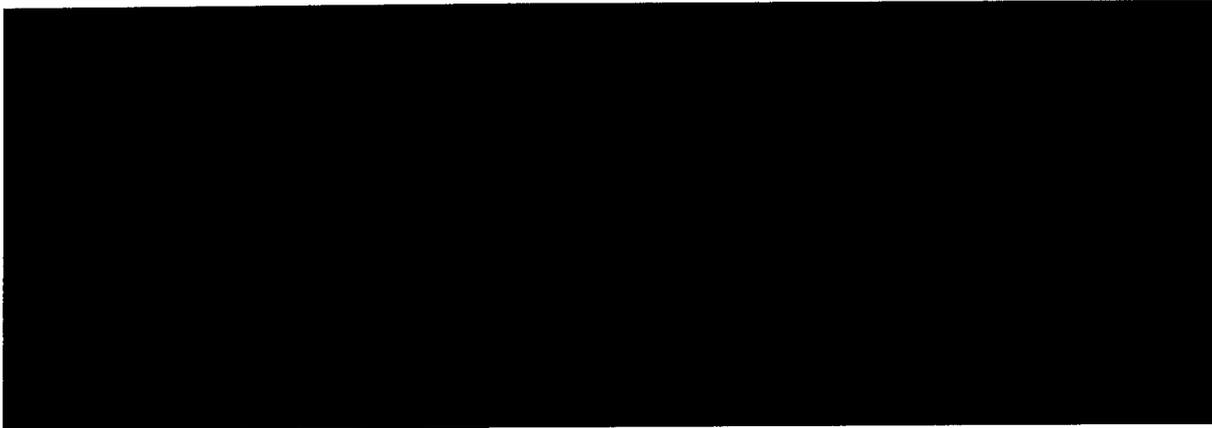
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision

Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

0303BF CY05 Hurricane Buoy Service ODCs



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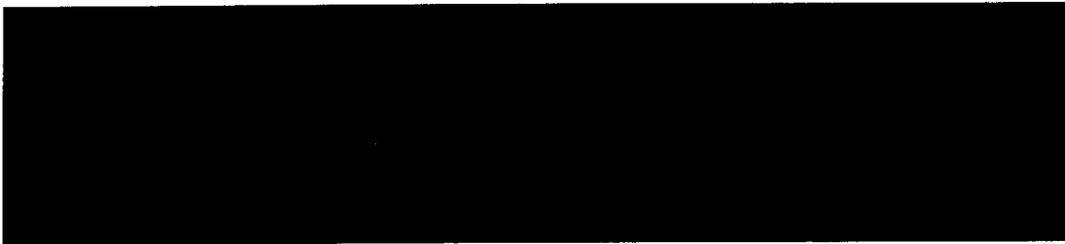
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 Offeror: Science Applications International Corporation - TSC (Co 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
 Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0303 CY05
 Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail 0303BF CY05 Hurricane Buoy Service M&S

Ref No.	Vendor Name	Part Number	Manufacturer	Item Description	Qty	Unit Measure	Unit Price	Ext. Price
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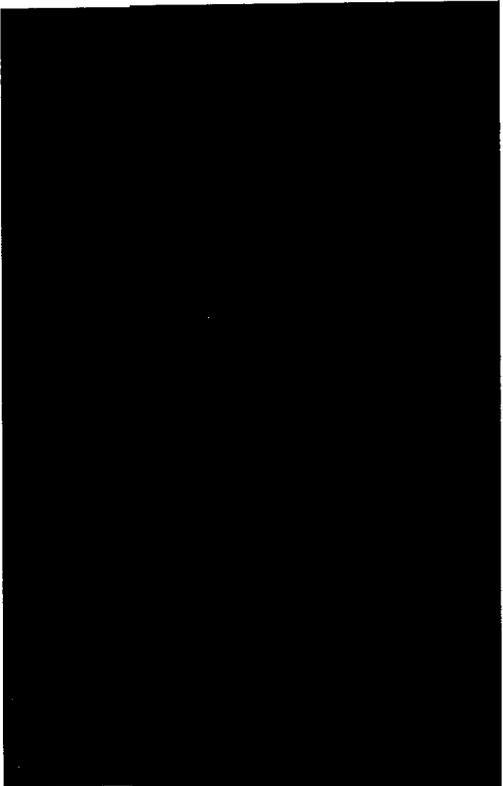
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Subcontractor Detail

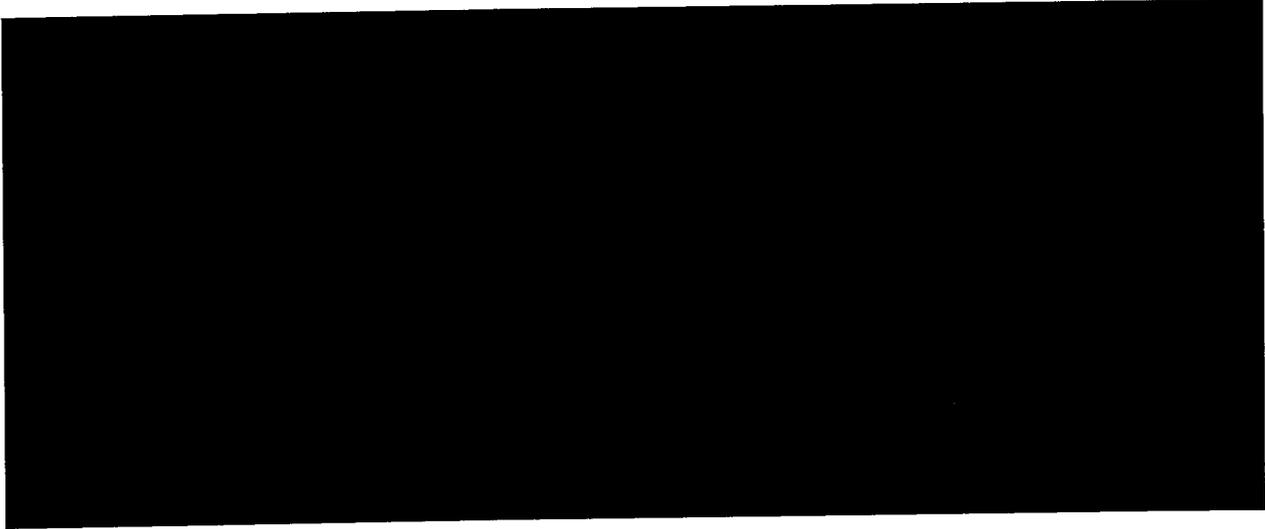


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Officer, Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0303, CY05_Final Proposal Revision
Proposal Title: NDHC OPSS52 Observing Systems for the NOAA NDHC National Ocean Observing Systems (NOOS)
Period of Performance: 01 Jul 07 - 30 Jun 08

Travel Detail *CLIN 0303BF WxOP Field Service - Hurricane Deployments*



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

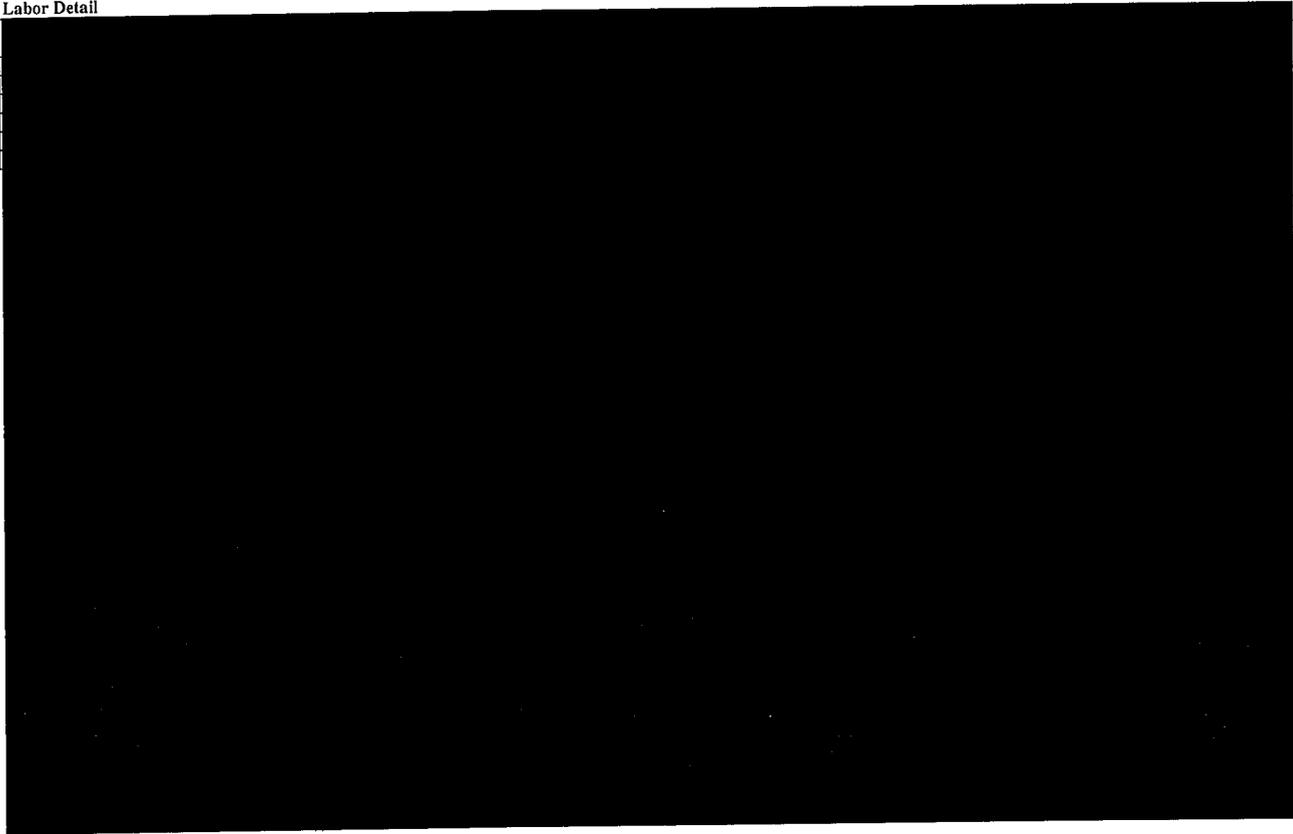


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Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0304CA TAO Production Legacy Systems

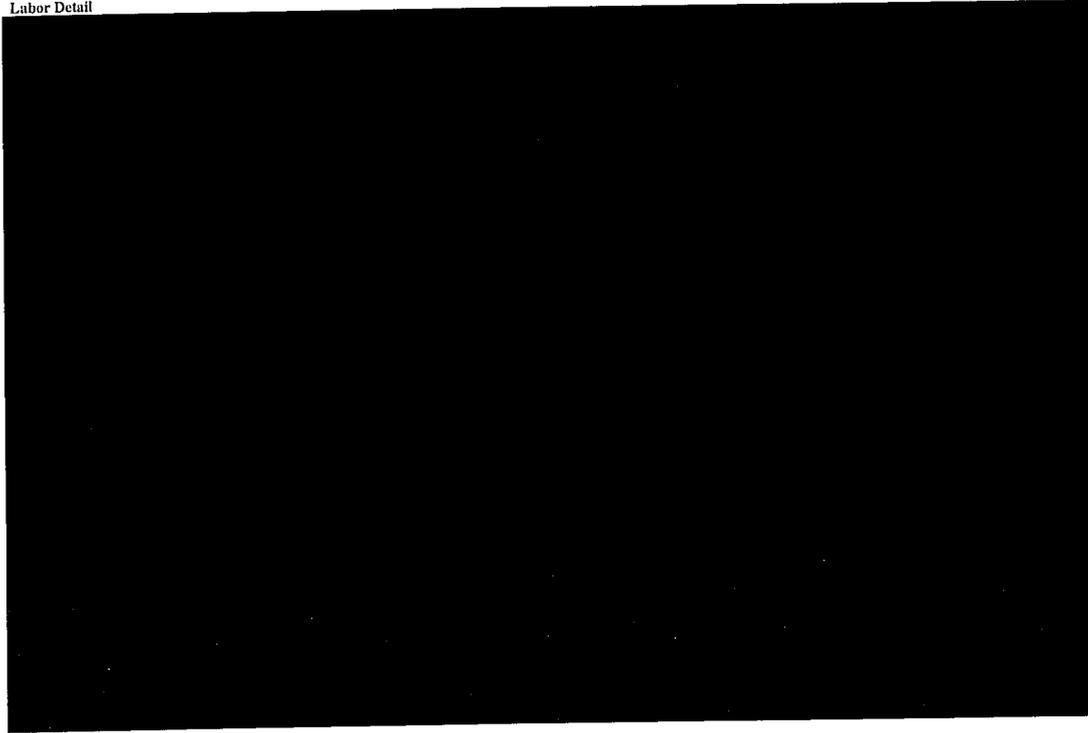
Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 304CB TAO Field Service

Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: Science Applications International Corporation - TSC (Co 6)

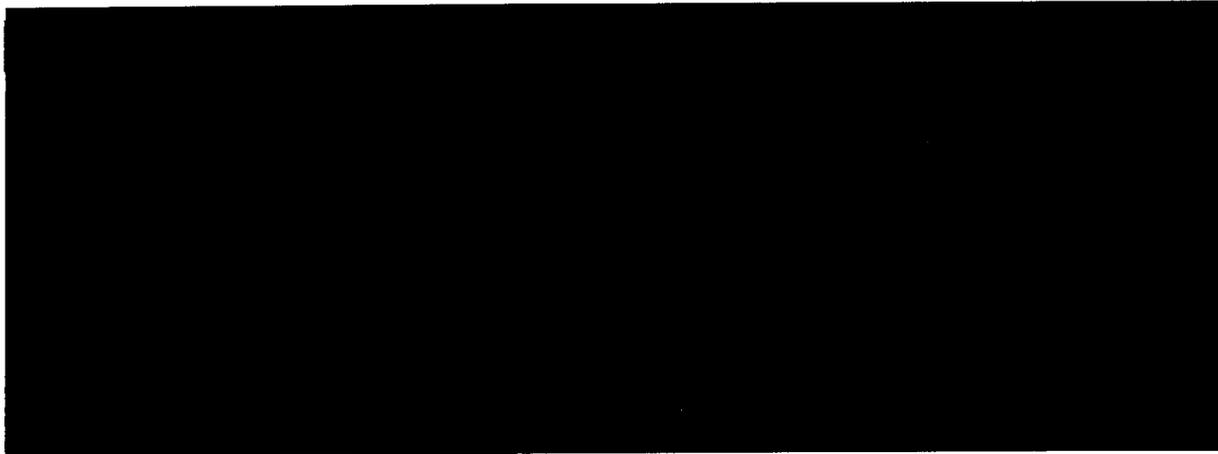
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Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

0304CB TAO Field Service ODCs



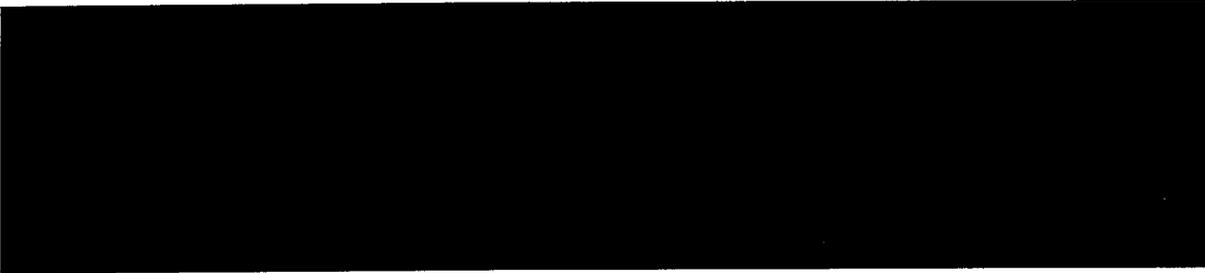
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 Offeror: Science Applications International Corporation - TSC (Co 6)
 Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
 Proposal Title: NDBC OPSS2 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
 Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail 0304CB TAO Field Service

Ref No.:	Vendor Name	Part Number	Manufacturer	Item Description	Qty	Unit Measure	Unit Price	Ext. Price
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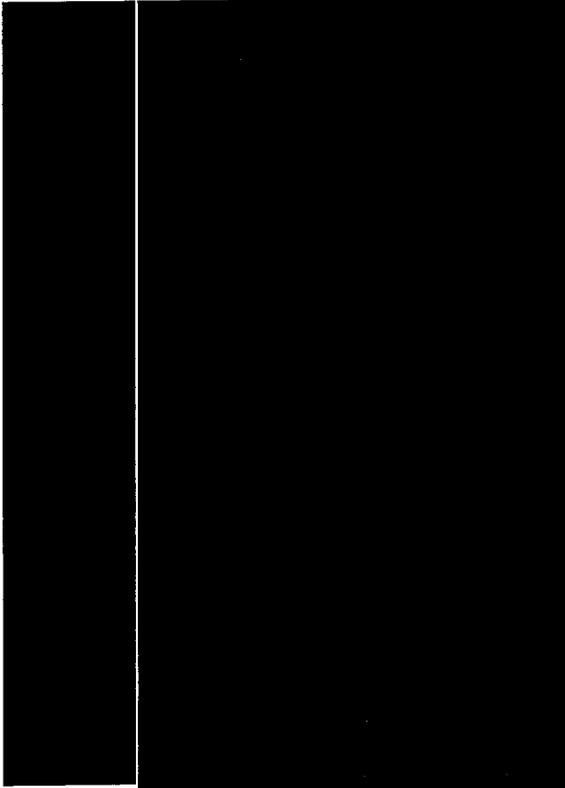
Subtotal Materials

Subcontractor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
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Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05 - Final Proposal Revision
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Period of Performance: 01 Jul 09 - 30 Jun 10

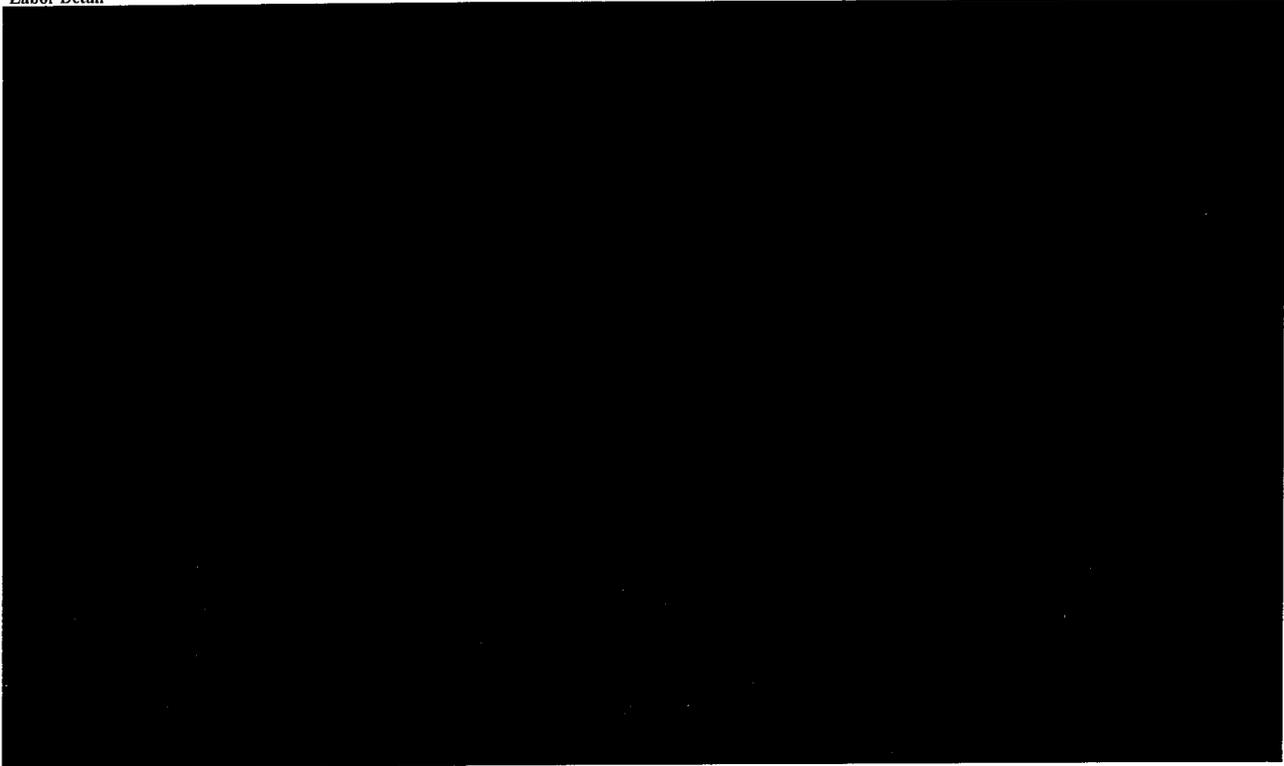
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Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0304CC Ops Engineering

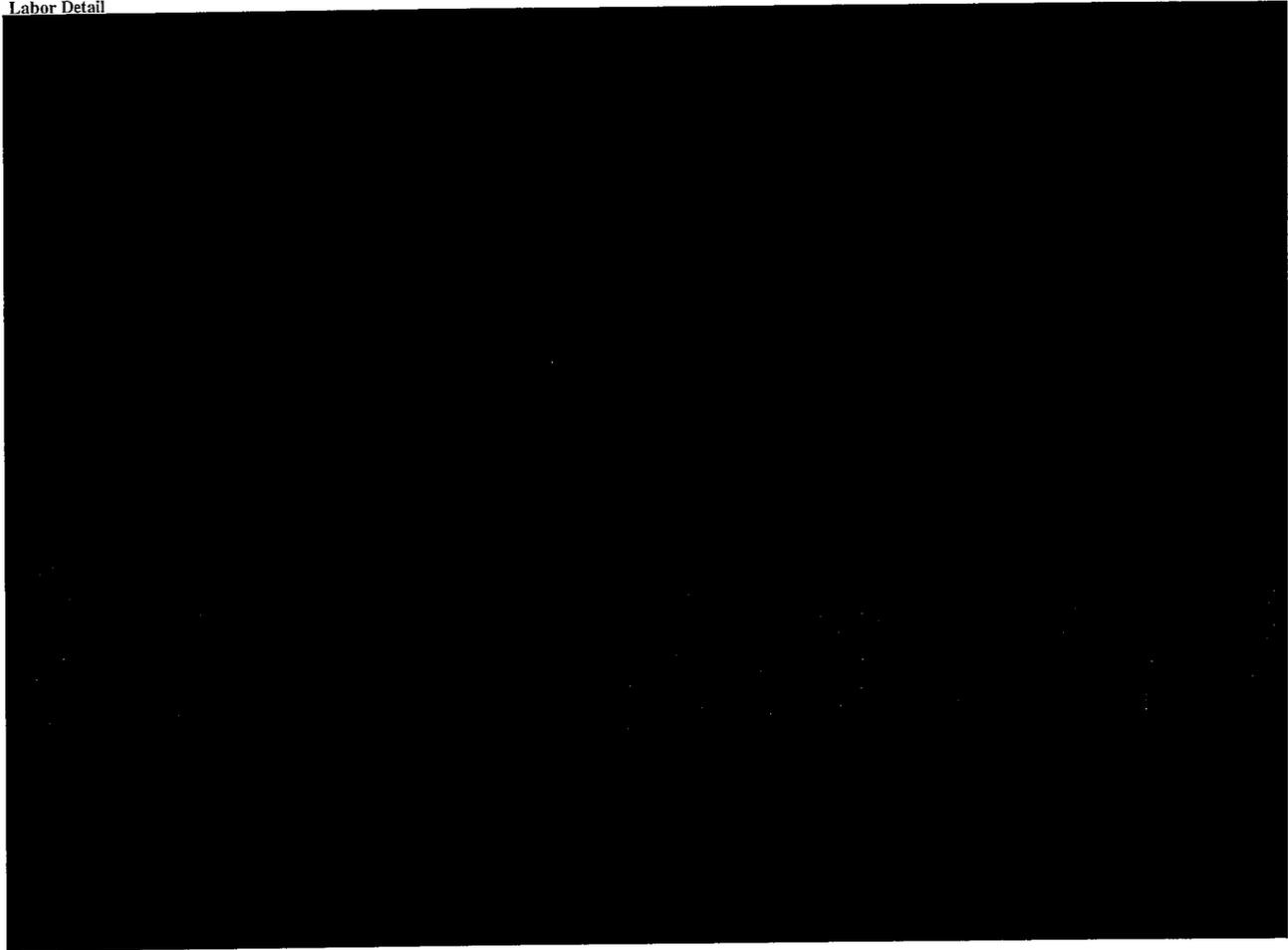
Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems
Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: All Periods (01 Jul 09 - 30 Jun 10)

CPFF CLIN 0304CD TAO Tech Refresh

Labor Detail



Contract No.: QA1330-05-CQ-1035 / Task Order No.: Task Order 34, Observing Systems

Offeror: *Science Applications International Corporation - TSC (Co 6)*

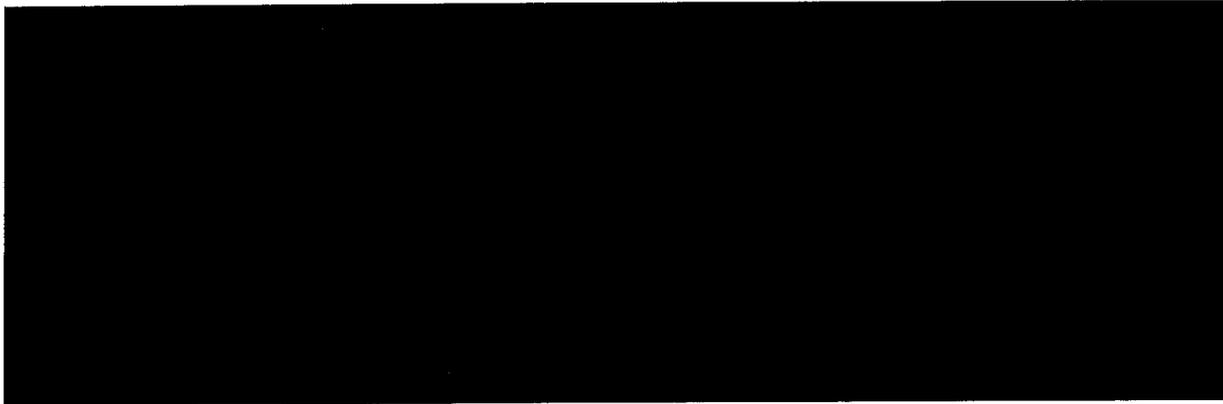
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Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05

Period of Performance: 01 Jul 09 - 30 Jun 10

Other Direct Costs (ODCs)

TAO Technical Refresh ODCs

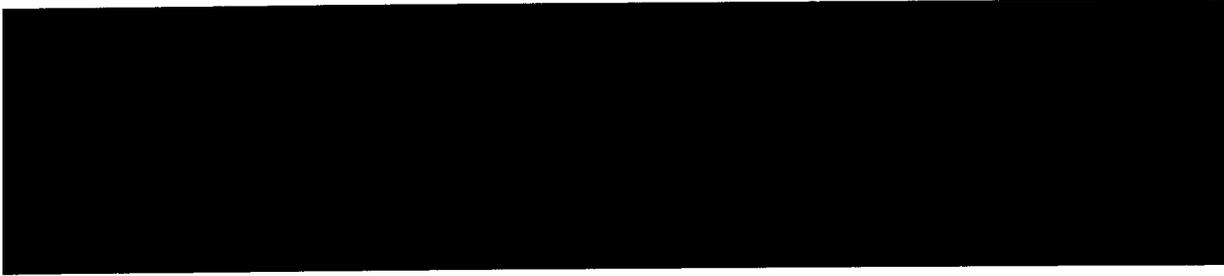


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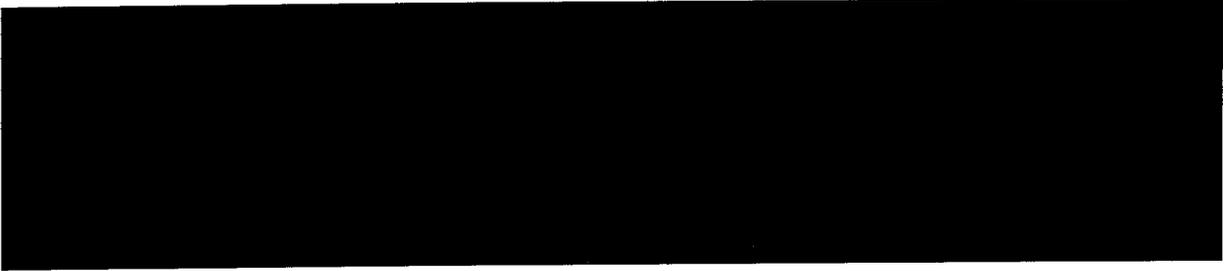
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Offeror: Science Applications International Corporation - TSC (Co 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Proposal Title: NDBC OPS52 Observing Systems for the NOAA NDBC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

Consumables / Bill of Material (BOM) Detail

CLIN 0304CD TAO Tech Refresh

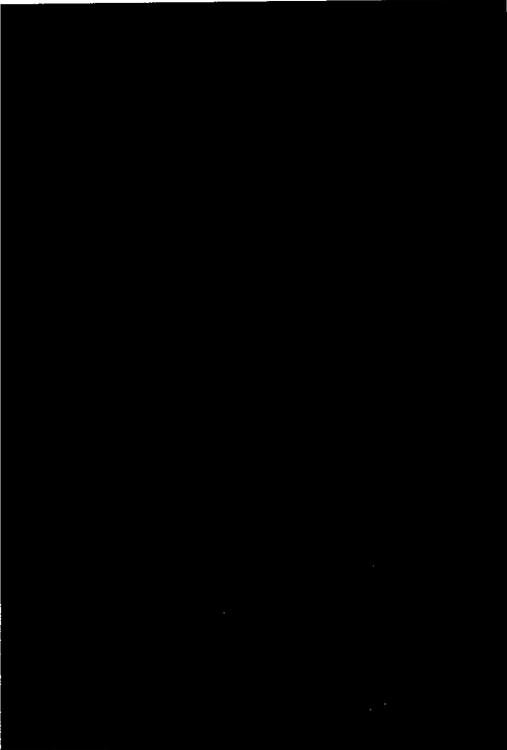


Subcontractor Detail



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Offshore Science Applications International Corporation - 73C (Cv 6)
Proposal No.: Task Order 34, Observing Systems CLIN 0304 - CY05_Final Proposal Revision
Period of Performance: NDRC OPS52 Observing Systems for the NOAA NDRC National Ocean Observing Systems (NOOS) CLIN 0304 CY05
Period of Performance: 01 Jul 09 - 30 Jun 10

Travel Detail **CLIN 0304CD TAO Tech Refresh**



Task Order 34 CLIN 0304CD
CY05 Task Breakdown

CLIN 0304CD	CPFF	CPFF	CPFF	CPFF	CPFF	CPFF	CPFF	CPFF	CPFF	CPFF
Task Breakdown Description	Mechanical Hardening	Apps Payload Hardening	Tests/System Verification	Shore-Side Processing	Web Support, Data Distribution, Data Mgmt	Procedural Development	Deploy and Maintain TAO Refresh Test Platforms (GOMA & SSC)	TAO Tech Refresh Production (8 Systems)		

Technical Management Plan

Title:	Observing Systems Operation and Maintenance
---------------	--

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ATTACHMENTS, APPENDICES, FIGURES AND TABLES

Appendix A – Work Breakdown Structure

Appendix B - Reserved

Appendix C – Deliverables

**Appendix D-2 – Engineering Project Plan – CLIN 0303BE WxOP/C-MAN
Operations and Engineering Support – CY05 WxOP Technical Refresh Project Plan**

**Appendix E-1 – Engineering Project Plan – CLIN 0304CD CY05 TAO Technical
Refresh**

Table 1 - Communication Breakdown by Program

Table 2 – WxOP Production Quantities

Table 3 – RIT Definitions

Table 4 - TAO Production Quantities

Table 5 – TAO Cruise List

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	Version Number:	1
	Issue Date:	1 July 2009

PERIOD OF PERFORMANCE: July 1, 2009 – June 30, 2010
SIX-MONTH OPTION PERIOD: July 1, 2010 – December 31, 2010

TO TYPE: CPFF

Overview/Statement of Work

To maintain observing system field assets in order to provide reliable and accurate meteorological, atmospheric, oceanographic, tsunamic, water level and other observations in real time for the National Weather Service (NWS) National Ocean Observing System (NOOS) program, SAIC will maintain the network of buoys encompassing the Deep-Ocean Assessment and Reporting of Tsunamis (DART), “WxOP”/CMAN activities, and the Tropical Atmosphere Ocean (TAO) buoy array. This Task Management Plan incorporates a new “end-to-end” approach to operational support, including equipment preparation, industrial facility support, laboratory operations, cost-effective scheduled and unscheduled field service (including installation, deployments and equipment exchanges for all three buoy programs), as well as the operational engineering support to maximize the data availability of the existing network. Additionally, the scope of this TMP includes re-engineering efforts to improve the existing buoy programs.

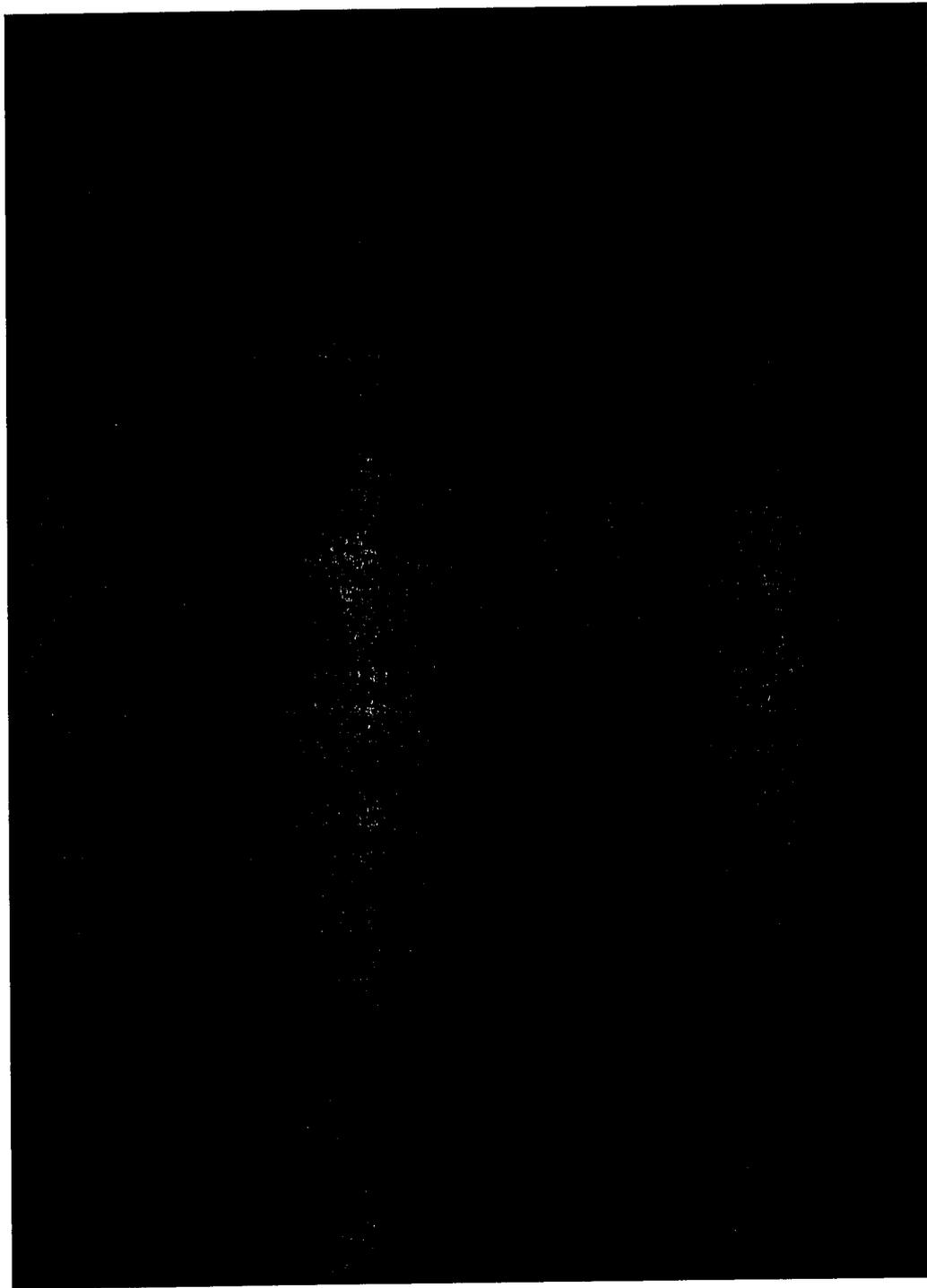
This is a hybrid Task Order. Beginning in Contract Year 05, the labor hours for management services are CPFF. The labor hours for production/integration, engineering, field service, travel, port services and communications are CPFF.

1.0 Operations Infrastructure Management Approach (0301)

The general management approach on this Task Order involves a new approach, combining multiple task orders from previous years into one overarching task order covering the production/integration efforts, the field service components, the operational engineering and re-engineering efforts for the DART, WxOP/CMAN and TAO buoy programs. The use of the term “Observing Systems” in this document refers to the collective DART, WxOP/CMAN and TAO buoy programs. The overarching tasks for Observing Systems encompassing Operations Infrastructure include Operations Management, Facility Management and Maintenance, Operations Engineering, Port Services and Communication Services and are described in this section. Accomplishment of tasks specific to the DART, WxOP/CMAN and TAO buoy programs are described in subsequent sections of this TMP.

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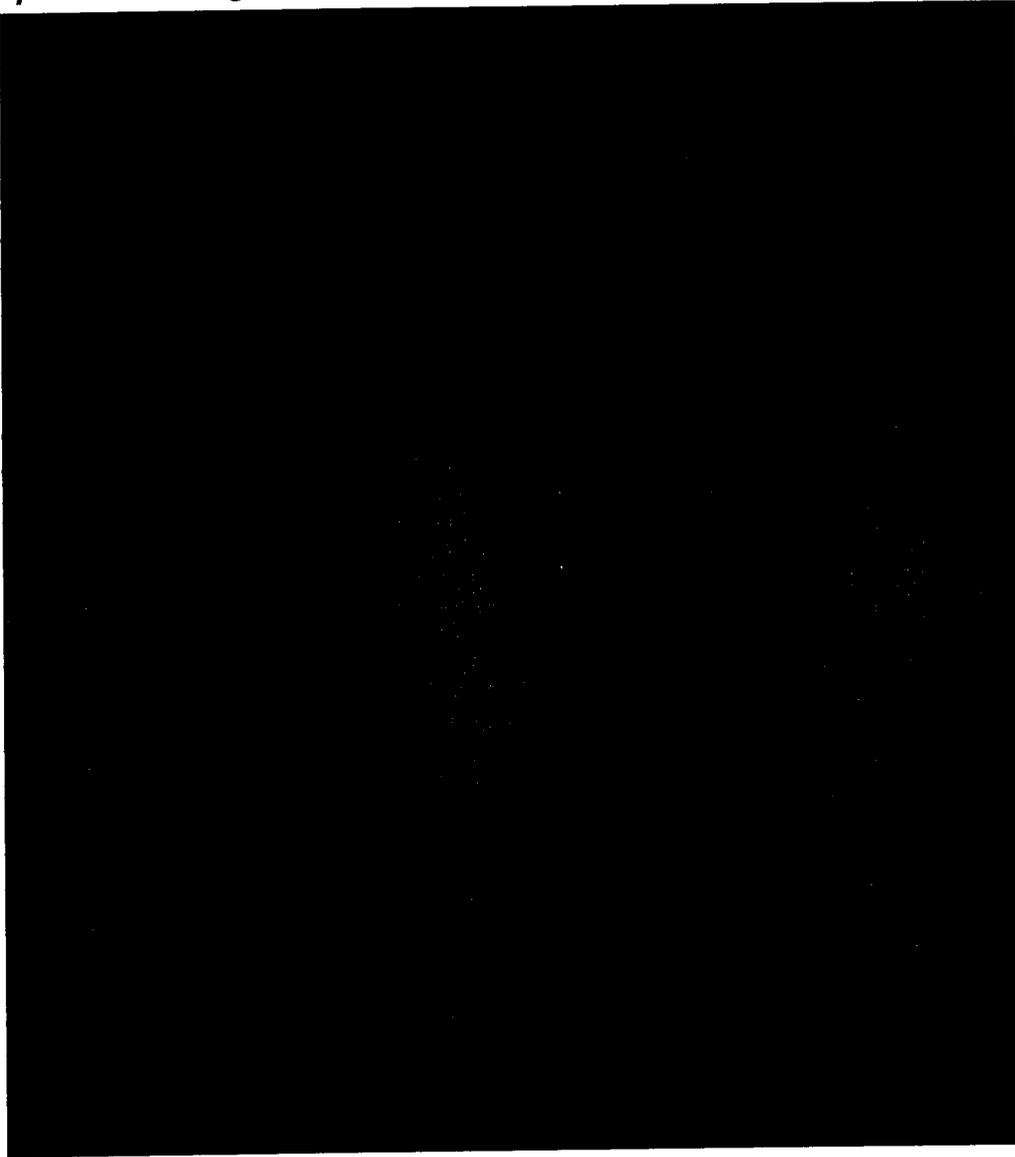
1.1 Operations Management All Programs (0301XA)



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1.2 Operations Engineering All Programs (0301XB)



1.3 Communication Services (0301XD)

SAIC will provide necessary field communications to support field service missions. Communications include cellular and satellite phones, as well as the phone service plans.



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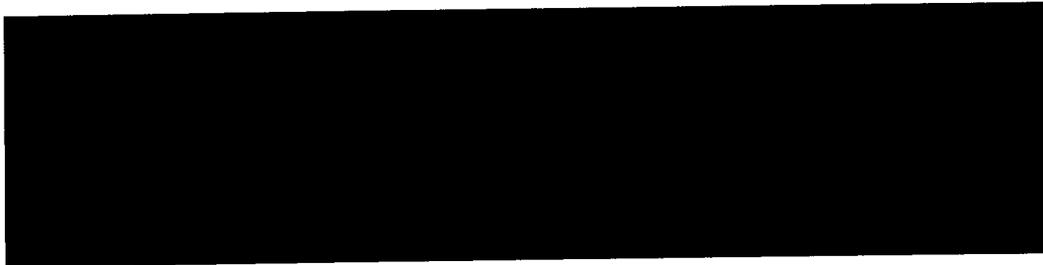
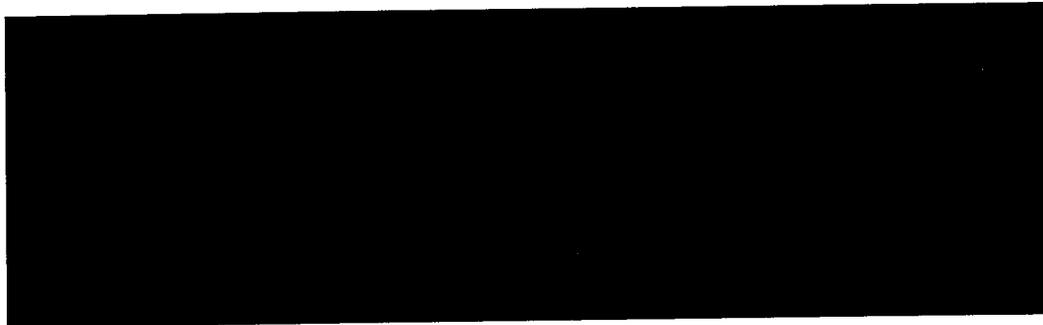


Table 1



1.4 Marine Services

When NDBC provides direct support for vessel services, SAIC will coordinate shipboard activities and special needs with the NDBC-USCG office or the NOAA fleet representative. We will provide as much information as possible to facilitate scheduling for SAIC technicians and equipment to access the vessel and successfully complete the mission.

When NDBC cannot provide a support vessel, SAIC may be requested to perform surveys to locate a suitable vessel for the mission, providing cost estimates and submitting purchase requests to NDBC for the appropriate level of licensed contract vessel. If SAIC is directed to conduct field services on any non-governmental vessel (NOAA, USCG, etc), it will be the responsibility of SAIC to obtain risk insurance for their employees.

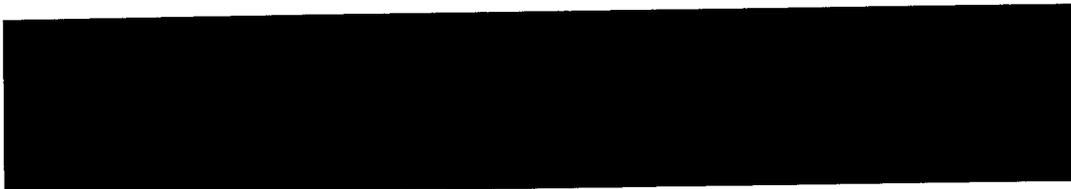
SAIC will refer to, and abide by, the most recent NOAA Administrative Order on Charter Vessel Safety for locating suitable vessels. SAIC will provide to NDBC vessels that have been approved through the NOAA Charter Vessel Clearance process.

For CY05 this Task Order contains vessel support for the Hurricane Buoy Service Mission scheduled for CY05 4th Quarter. We recognize there may be other instances such as recovering adrift buoys where these services are necessary. NDBC's Contracting Officer will assign a budget limit and a period of performance

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when tasking SAIC to locate a vessel. This will allow SAIC to secure the services for the best price, but afford the ability to acquire a rapid, firm commitment to the vessel's leasing agent. SAIC will not proceed with securing vessel services without direction from the Contracting Officer.

Upon tasking from NDBC for securing the services of a vessel provider, SAIC will provide Ship Certification Documentation and Ship Technical Information and photographs to NDBC as required in time to complete the NOAA Charter Vessel Clearance process and obtain clearance prior to sailing.



1.5 Fabrication of 3-Meter Buoy Hulls

There are no 3-meter aluminum hull builds included in CY05 production efforts.

1.6 Reliability Engineering, Drafting and Configuration Management, Frequency Management Support, and Corrective and Preventive Maintenance (0301XF)

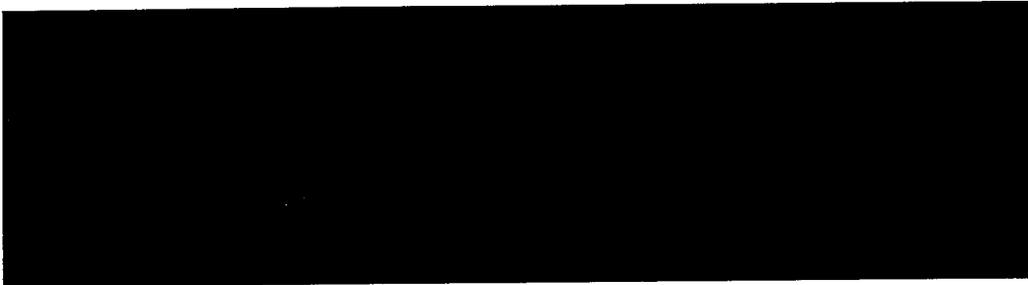
We will provide reliability engineering functions and provide regular reports to document and analyze equipment failures, making recommendations where necessary for improvements. This function will incorporate cost engineering, trend analysis and market surveys to identify those components which will increase reliability of systems and data availability. SAIC will submit an engineering performance report monthly, and a comprehensive annual reliability report, which provides information regarding NDBC's equipment performance history for moorings, sensors, payloads, communications, power, positioning and peripherals installed on buoys and CMAN stations with a list of recommendations.

Drafting support will be provided for engineering configuration modifications and maintenance of operational drawings and other operational documentation that supports the NOOS. We will provide drafting support to electronically document equipment and system designs, which will contribute to the overall Configuration Management program.

Included in this support is transitioning Engineering Test Plan (ETP) to NDBC Procedures when the design is proven and the NDBC and SAIC Configuration Management team agree on the requirements.

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SAIC will maintain a Configuration Management Office that provides the control for engineering drawings, test plans and procedures, deviations and waivers to drawings and/or test procedures, and firmware documentation. Drawing packages will be electronically sent to NDBC for review and comment. SAIC's CMO point of contact will work with NDBC to ensure timely return of comments, and these comments will then be subsequently cycled back to engineering for review, modification, and implementation as necessary. **(Deliverable associated with this section)**



SAIC will provide lifecycle maintenance for all NDBC Industrial, Test facilities and equipment and Government owned/leased industrial equipment. This facility maintenance entails the lifecycle maintenance for NDBC test facilities/equipment and Government owned/leased industrial equipment. 



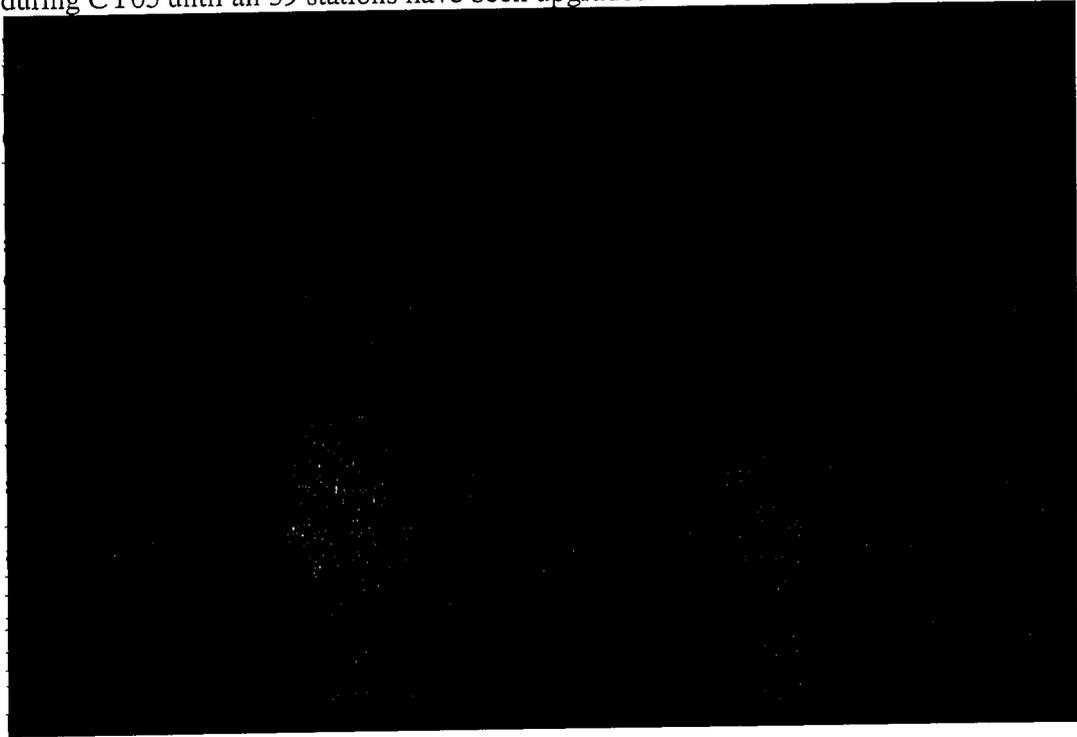
The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on same level of effort as in previous contract years for Drafting, Configuration Management, Drafting, Frequency Management Support, Corrective and Preventative Maintenance during this extension period.

2.0 DART Management Approach (0302)

During this period of performance, the DART program will be in an O&M phase to maintain the established DART network of 39 stations. Without an increase in the number of required DART stations (such an increase is outside the scope of this task order), the focus for production will be on building a maintenance sparing of systems adequate to support the DART network at a high level of reliability. This will require production of ready to deploy spare systems along with at-sea refurbishments. The field service schedule shifts to primarily DART service visits for existing stations. These service visits will be either a 1-year buoy maintenance visit or a 2-year maintenance visit involving the buoy and bottom pressure recorder

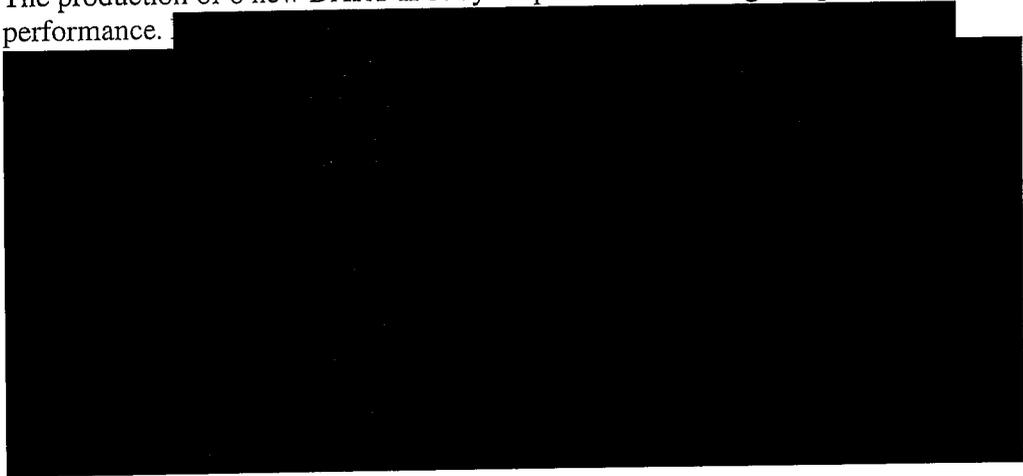
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(BPR). Operational Engineering will focus on increasing the efficiency and reliability of mooring, mechanical and electrical aspects of the DART system. With the release of the upgraded DART Firmware (Buoy Payload Version 2.39 and BPR Version 2.78) and upgrades to the Buoy and BPR CPU Boards during CY04, upgrades to stations in the DART array commenced. These upgrades will continue during CY05 until all 39 stations have been upgraded.

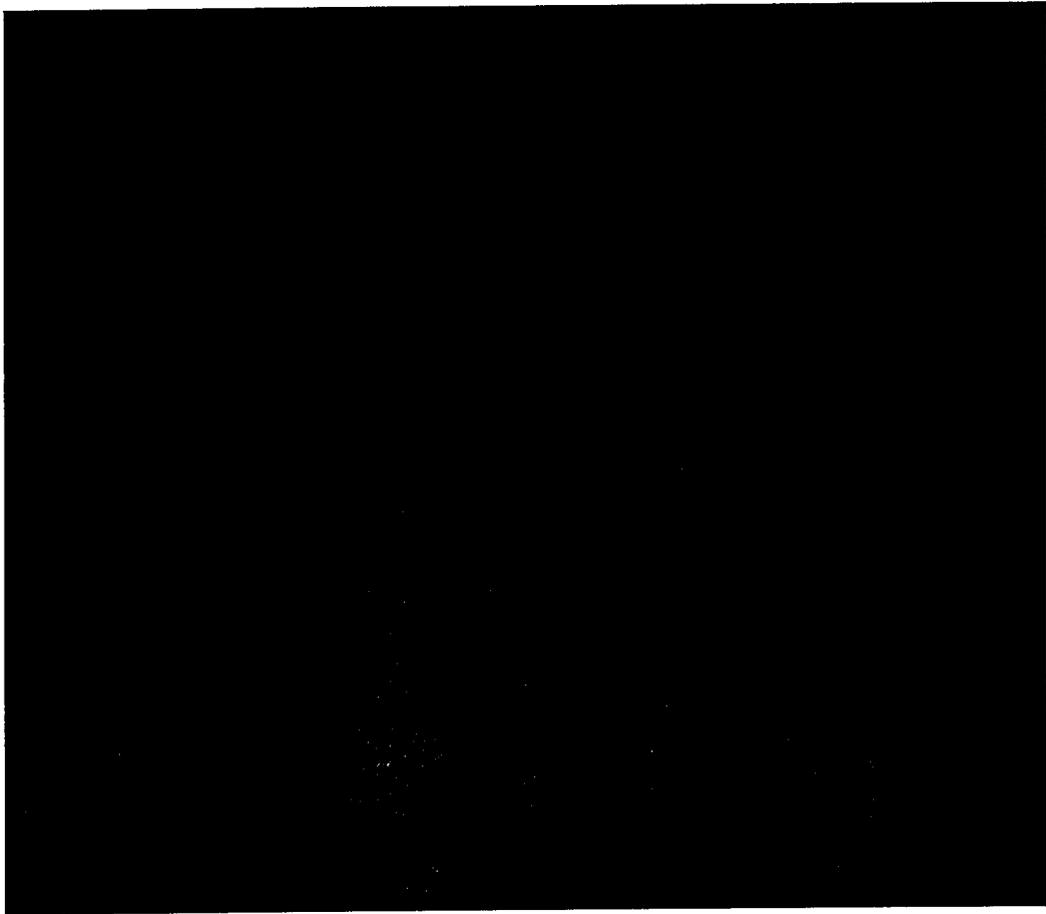


2.1 DART Production/Integration (0302AA)

The production of 6 new DART II buoys is planned for during this period of performance.



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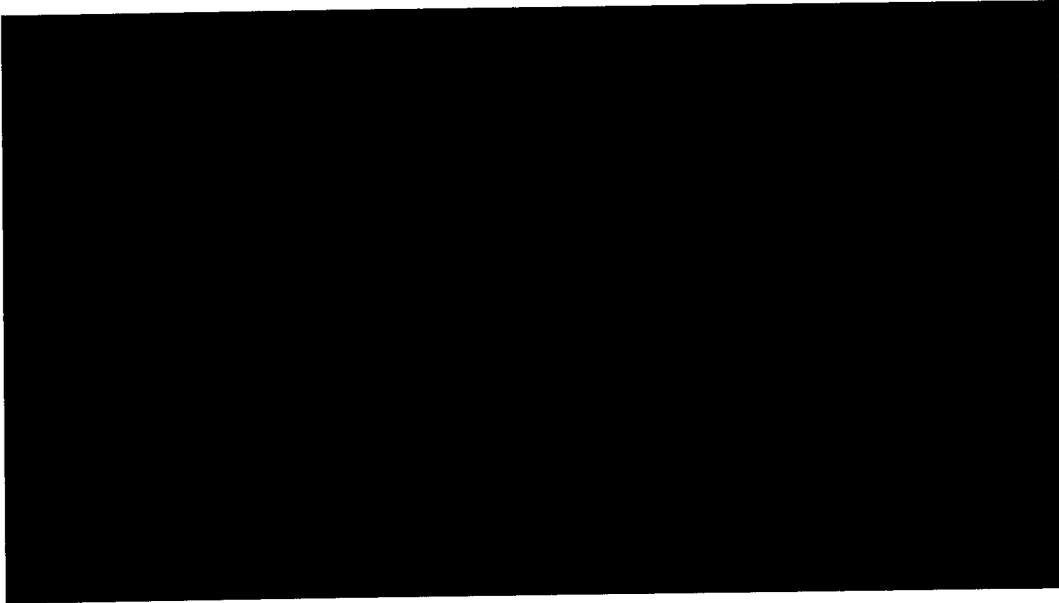
SAIC will also perform post-production activities for returned equipment, such as repairing damaged equipment, order replacement equipment, or remove from property if unusable.

SAIC will support Engineering to ensure all service preparation SOPs and checklists are maintained and updated.

SAIC will provide a quantitative recommendation of DART equipment required to maintain the network. This will be accomplished by reviewing the current Max/Mins in the DART Consumable Inventory and adjusting it, as required. SAIC will ensure all service parts and equipment are procured to successfully accomplish the production tasks of this document. **(Deliverables associated with this section)**

SAIC will provide recommendations and work efficiently to maximize data availability. **(Deliverables associated with this section)**

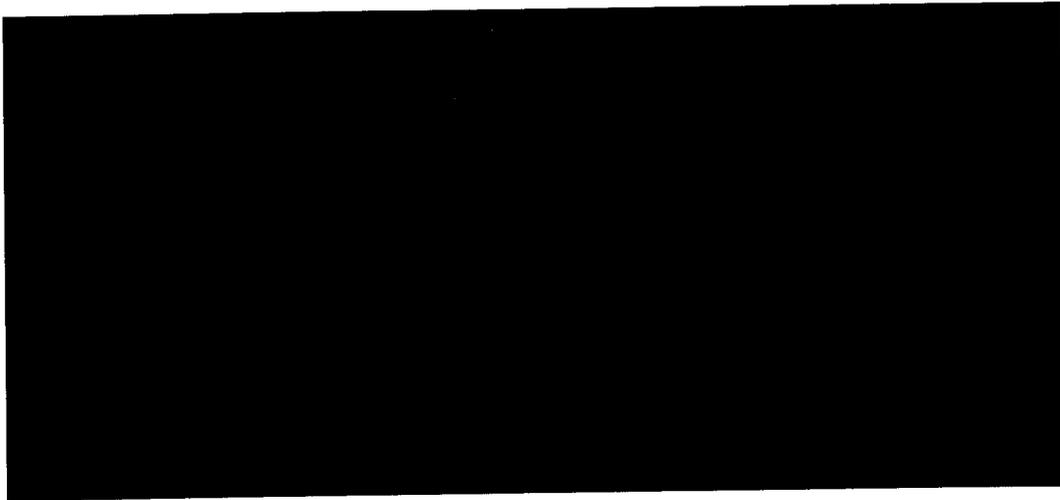




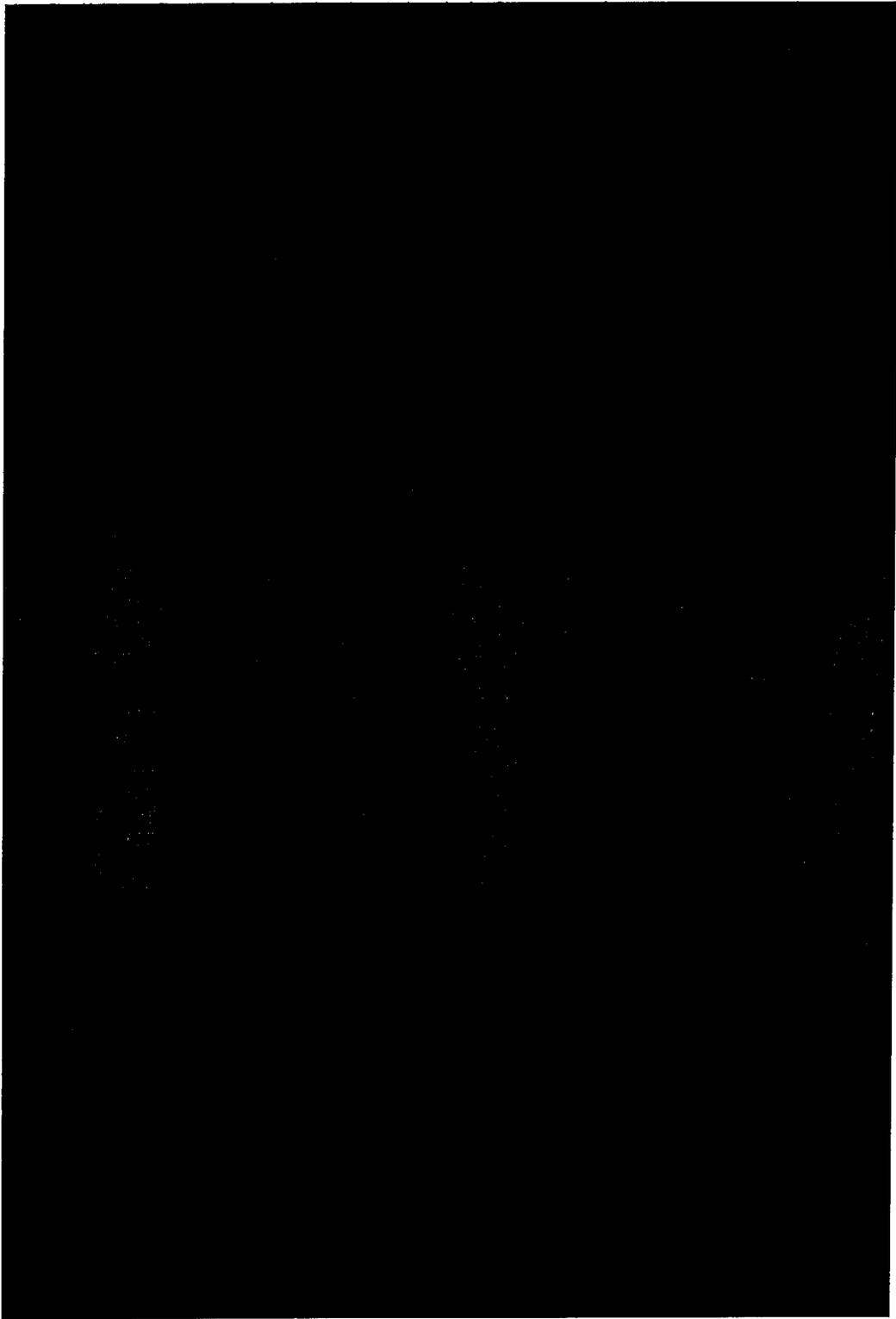
SAIC will construct a DART mobile workshop from a previously procured twenty-foot CONEX box. This workshop will be equipped to provide storage and workspace for DART technicians in the field and aboard ship. This workshop will include shelving, a work bench, be configured for electricity/lighting and be equipped with environmental controls to maintain technician comfort. (Deliverables associated with this section)

For the six-month option period, SAIC's production activities are projected to include three (3) new DART II buoys, two (2) refurbishments, and preparation activities necessary to accomplish eighteen (18) one-year service visits.

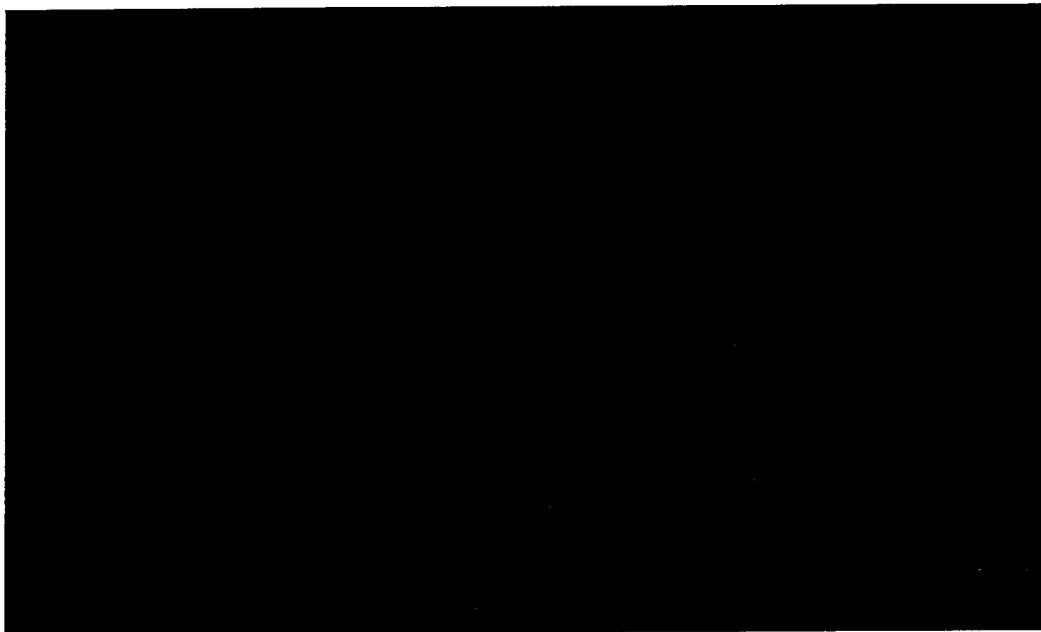
2.2 DART Field Service (0302AB)



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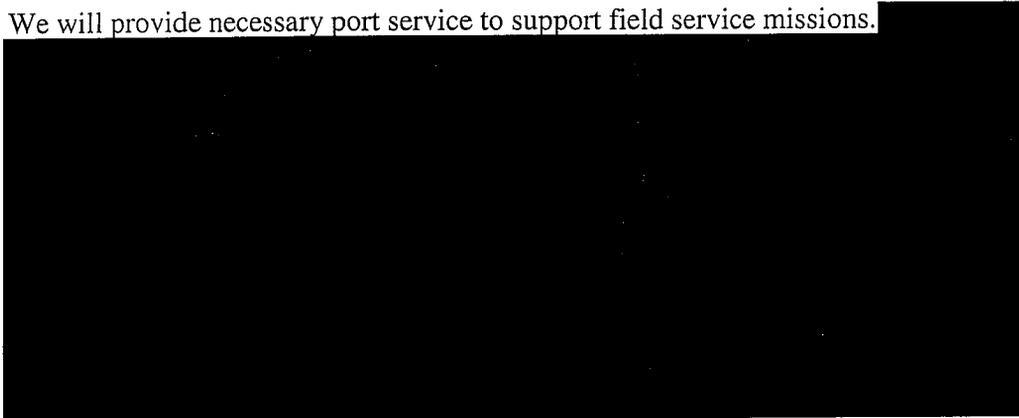


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2.3 DART Port Services

We will provide necessary port service to support field service missions.



2.4 DART Operations Engineering (0302AC)

Identify components, processes and procedures for improving the data availability of the DART network. Recommend and implement changes to improve data availability. Support the networks operational engineering activities as they arise.

Maintain DART Software deployed on DART stations beginning Spring 2009
Document and conduct comparison evaluations at sites in the DART array used for In-Situ Inter-comparisons Assessment. This tasking will help identify the actual

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performance of stations deployed with the new PMEL code completed Spring 2009 and compare to stations without the updated buoy or BPR firmware.

Mooring

SAIC will provide operational engineering support to evaluate and recommend mooring improvements to improve their reliability.

Support for Back Channel Maintenance

The deployed buoys are monitored daily to ensure robust and complete data is derived from each station. When issues arise, DART personnel are able, in most cases, to “back-channel” into the buoy to evaluate the operations of the buoy and BPR in near real time utilizing a satellite communications network.

The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on the same level of effort as in previous contract years for projected ESRs for DART Operations Engineering.

SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment. For all engineering efforts that are approved for work, SAIC will provide an Engineering Support Request (ESR) that will define tasks, deliverables and status. All operational and technical refresh projects require Government approval of an ESR prior to the commencement of work. Information will be tracked in the RAZOR Engineering Support Request System.

2.5 DART Re-Engineering (Tech Refresh) (0302AF)

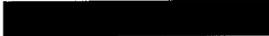
As the DART program shifts to an O&M phase, there will be opportunities for DART systems upgrades and improvements. SAIC will provide the necessary systems engineers, software engineers, and ocean mechanical engineers to re-engineer the existing DART buoy systems as re-engineering needs are identified via ESR only.

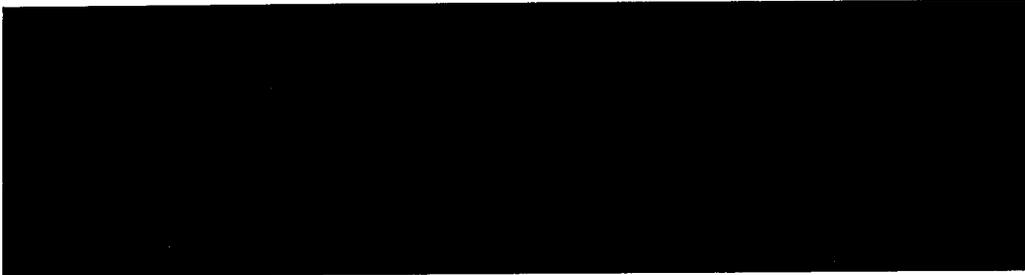
2.5.1 DART Technical Refresh (CY05)

In CY05, the DART Data Management System tasking which originally began under TO-32 Clin 3, will be continued under TO-34 CLIN 0302AF. This tasking is detailed in Appendix G of TMP-34.

Engineering DART Technical Refresh efforts during CY05 will also continue to evaluate the obsolescence issues with DART components.

SAIC will provide technical assistance to support the identification, specification and inspection of all vessels utilized to support the field activities associated with this tasking. Engineering will coordinate with field technician to gather some information of requirements and lessons learned. A field service trip to inspect a ship may be required to finalize details. A report will be written that details what are the required types of ship capabilities and preferred for DART moorings and equipment. Also, may include any trip reports for any trips taken to inspect ship.

Continue evaluation of AMPS Payload for DART usage. 



Evaluate use of glider type vehicle for discrepancy response. 



The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on same level of tasks provided in CY05 DART Technical Refresh.

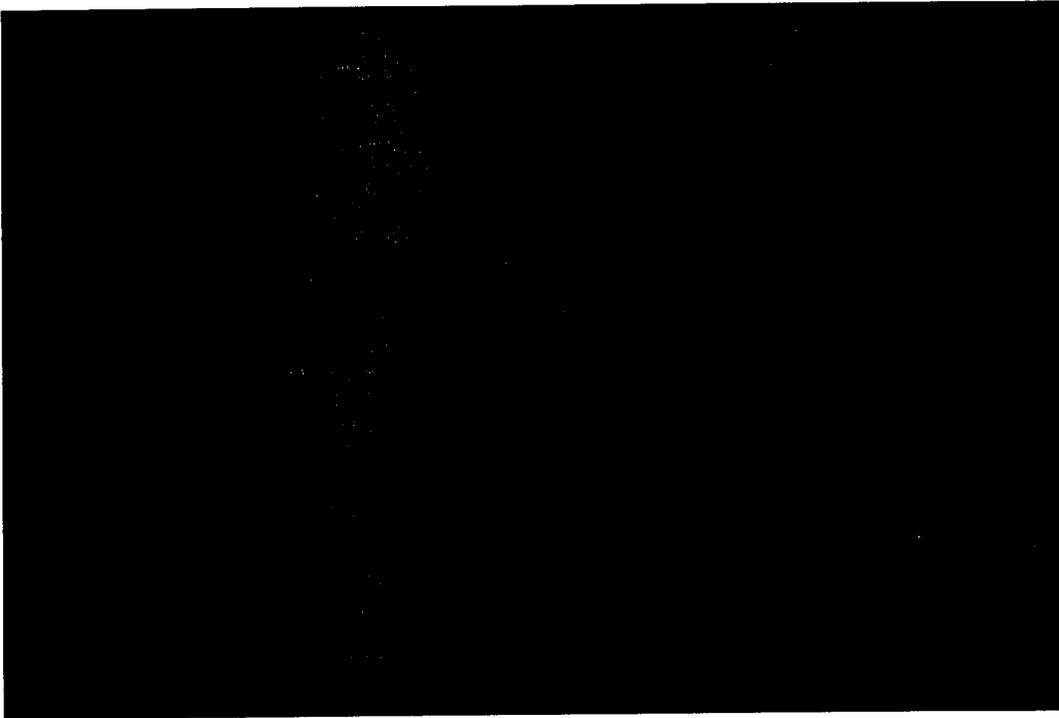
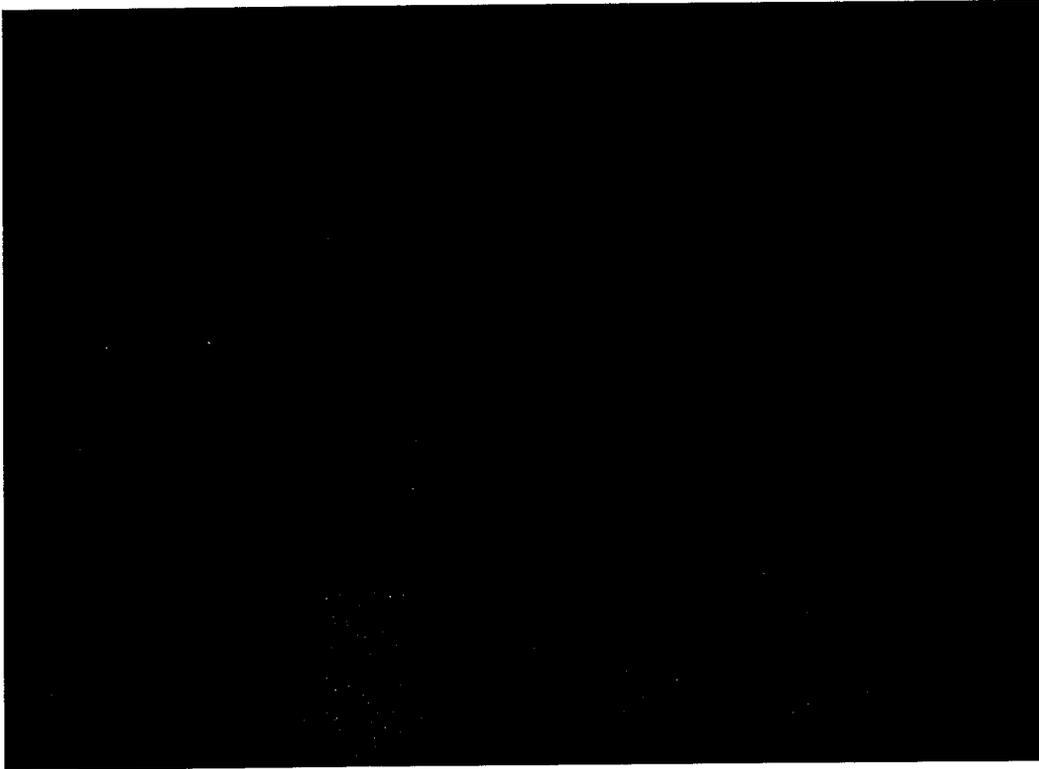
SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment. **(Deliverables associated with this section)**

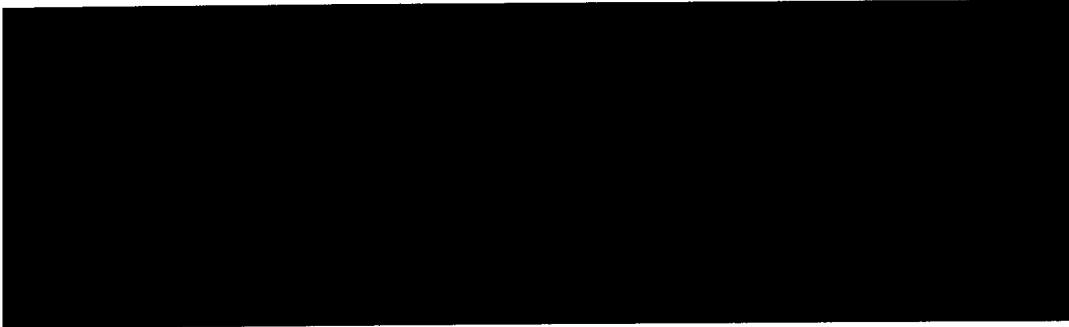
3.0 WxOP/CMAN Management Approach (0303)

During this period of performance, the WxOP/CMAN management approach will be to Refurbish, Integrate and Test (RIT) available hulls in accordance with guidance described in NDBC-4000 and conduct field service visits on a 3-4 year maintenance cycle (based on buoy type) to cost-effectively maximize data availability.

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3.1 WxOP/CMAN Production/Integration (0303BA)





For the six-month option period all WxOP production will be conducted under CLIN 0303BB as indicated in Table 2.

TABLE 2 – WXOP/CMAN PRODUCTION QUANTITIES

	1 st Qtr (Jul-Sep)	2 nd Qtr (Oct-Dec)	3 rd Qtr (Jan-Mar)	4 th Qtr (Apr-Jun)	Total
<u>Primary Order</u>					
3m Full RIT	4	2	4	4	14
6m Full RIT	0	0	0	1	1
Hurricane Buoy RITs (NOOSS)	0	4	4	0	8
3m Partial RIT	2	2	2	1	7
6m Partial RIT	0	0	0	1	1
CMAN fabrication	1	0	0	0	1
3m racks	1	1	1	1	4
Full Moorings	4	6	6	6	22
Partial Moorings	1	3	4	4	12
LRU sets-Buoy	25	25	25	25	100
LRU sets-CMAN	4	8	8	8	28
Service preps	30	30	30	30	120
<u>Maximum Additional Order</u>					
3m Full RIT	2	2	2	2	8
6m Full RIT	0	0	0	1	1
Hurricane Buoy RIT	0	0	2	0	2
3m Partial RIT	0	2	2	1	5

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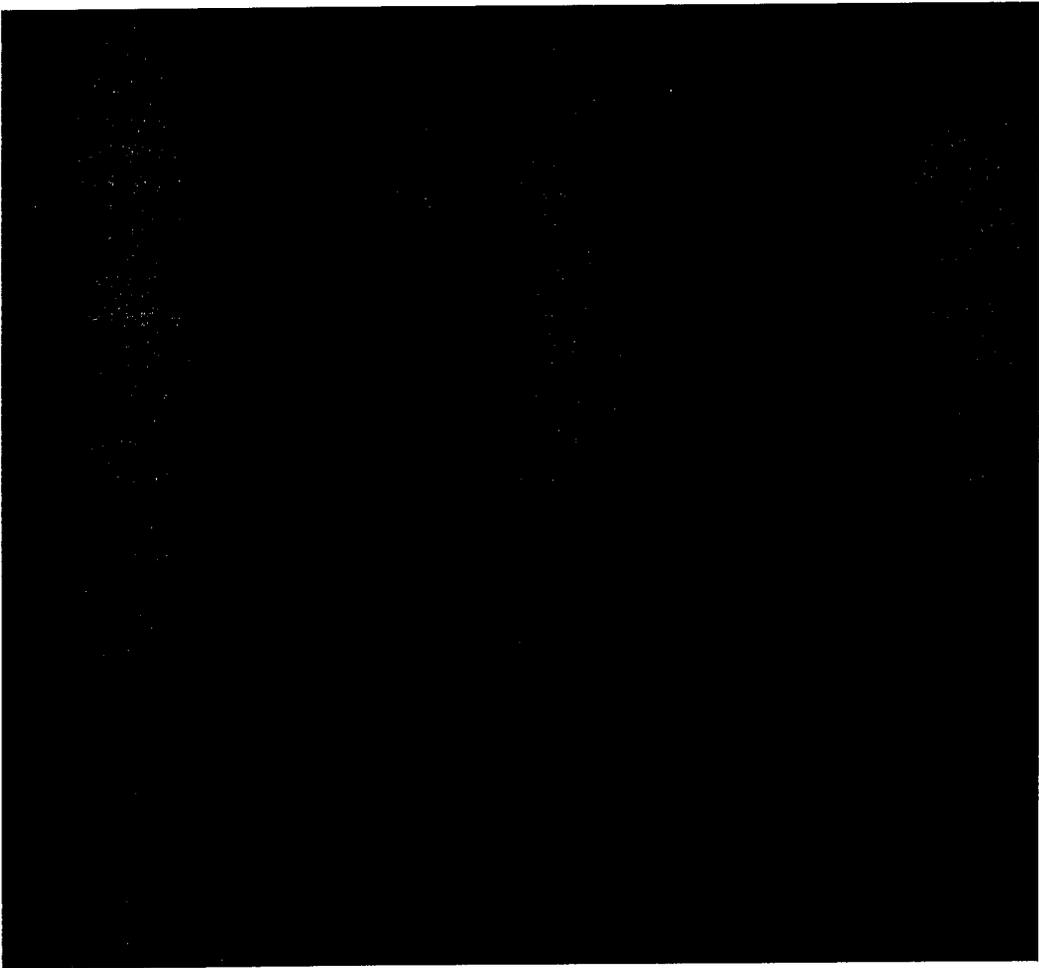
6m Partial RIT	0	0	0	1	1
CMAN fabrication	0	0	0	1	1
3m racks	1	2	2	1	6
AMPS Asy (in Encl)	0	10	10	0	20
3-Meter Foam Hulls	2	3	3	2	10
3-Meter Equip Compartment	3	4	3	0	10
3-Meter Bridle	2	3	3	2	10
Full Moorings	2	2	2	2	8
Partial Moorings	0	2	2	1	5
LRU sets-Buoy	0	0	20	10	30
LRU sets-CMAN	4	8	8	8	28
Service preps	0	0	0	30	30
Ocean Measurements					
DW Units	3	4	4	4	15
Surface Currents	1	2	4	5	12
Current Profiles	0	0	1	1	2
Point Salinity	1	2	2	1	6
1.8 Meter RIT	0	1	2	0	3

SIX-MONTH OPTION EXTENSION (July 1, 2010 – December 31, 2010)

3 Meter Full RIT	4	7			11
3 Meter Partial RIT	3	3			6
6 Meter Full RIT	0	1			1
6 Meter Partial RIT	1	1			2
C-MAN Fabrication	0	1			1
3 Meter Racks	2	2			4
Full Mooring	5	6			11
Partial Mooring	8	8			16
LRU Buoys	30	35			65
LRU C-MAN	14	14			28
Service Preparations	35	40			75
Hurricane Buoy	0	5			5
RITs					
Amps Assembly (in enclosure)	0	10			10
3 Meter Hulls	2	3			5
3 Meter Equipment	2	3			5
Compartments					
3 Meter Superstructure/Bridle	2	3			5
Ocean					

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Measurements			
Directional Waves	3	4	7
Surface Currents	3	3	6
Current Profiles	1	1	2
Point Salinity	1	2	3
1.8 Meter RIT	1	1	2



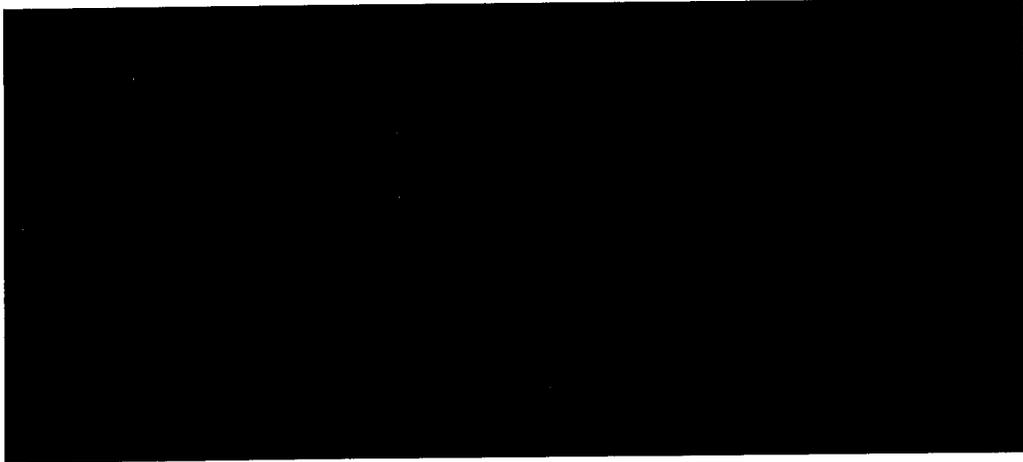
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TABLE 3 – RIT DEFINITIONS

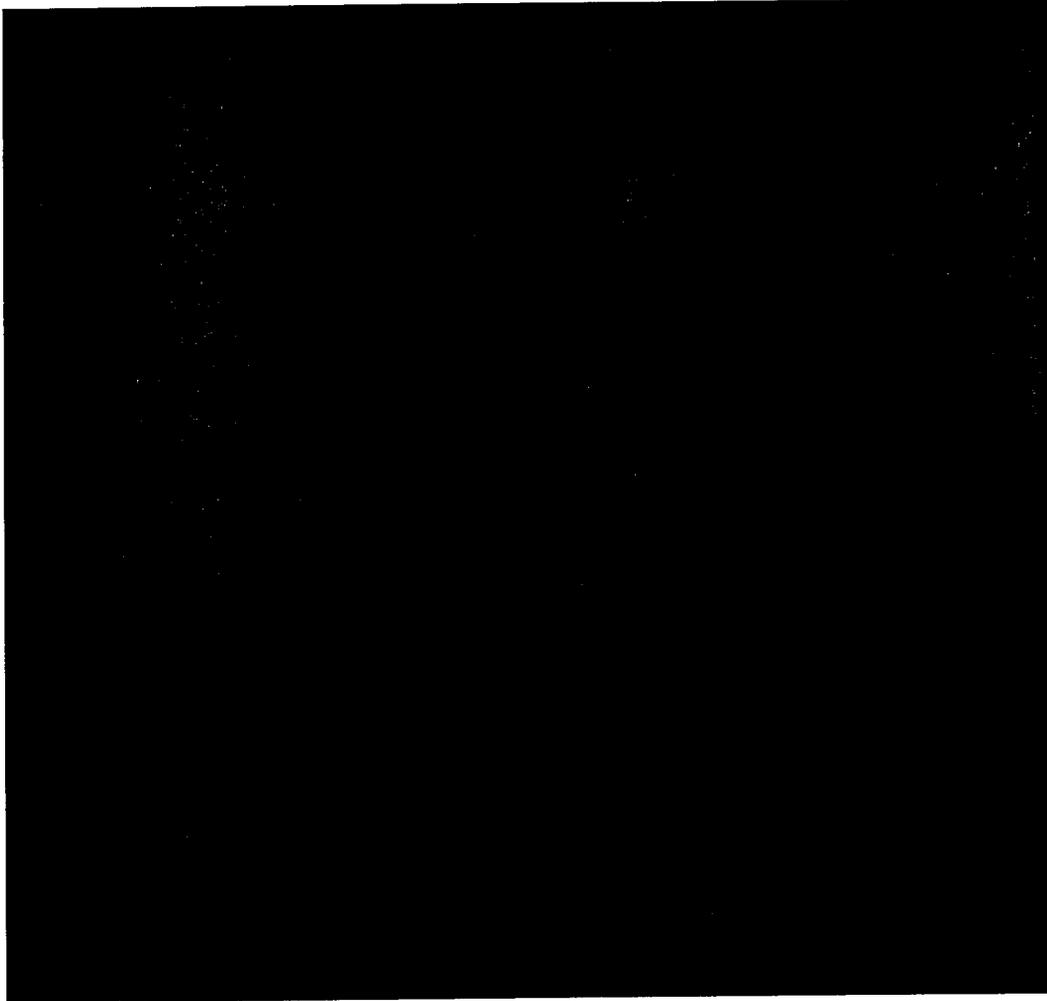
<u>Item</u>	<u>Includes –</u>
3-Meter (Full)	<ul style="list-style-type: none"> - Full Mechanical Refurbishment with hull repairs up to 150% of standard hull refurbishment (SHR). [REDACTED] - Full Preparation and Paint - Full Integration minus Augmentation - Testing through Successful Blue Tag-
3-Meter (Partial)**	<ul style="list-style-type: none"> <u>Includes –</u> - Includes some level of refurbishment and Integration - Testing through Successful Blue Tag
6-Meter (Full)**	<ul style="list-style-type: none"> <u>Includes –</u> - Full Mechanical Refurbishment with hull repairs up to 150% of standard hull refurbishment. [REDACTED] - Full Preparation and Paint - Full Integration minus Augmentation - Testing through Successful Blue Tag
6-Meter (Partial)**	<ul style="list-style-type: none"> <u>Includes –</u> - Includes some level of refurbishment and Integration - Testing through Successful Blue Tag
10/12-Meter (Full)**	<ul style="list-style-type: none"> <u>Includes –</u> - Full Mechanical Refurbishment with hull Repairs up to 150% of standard hull refurbishment. [REDACTED] - Full Preparation and Paint - Full Integration minus Augmentation - Testing through Successful Blue Tag
Moorings (full)	- Complete Mooring
Moorings (partial)	- Upper Mooring
Service Preparation	<ul style="list-style-type: none"> - C-MAN Fabrication; not to exceed 1 major overhaul - FSV

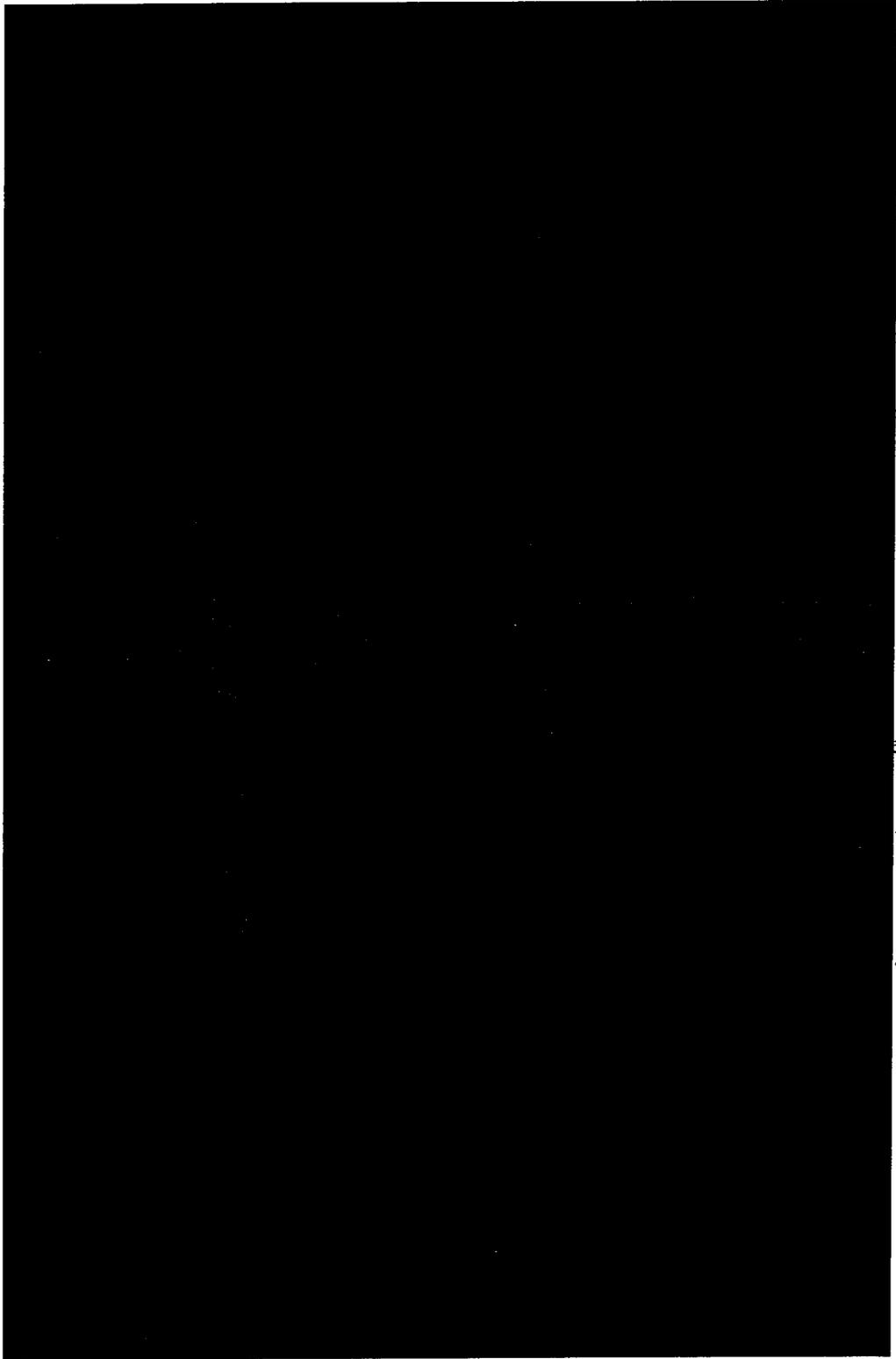
** Contains LRU Set to support this task order and the field service task order throughout the period. Repair work conducted on buoys after the Blue Tag process is complete, will be charged to field service tasking.

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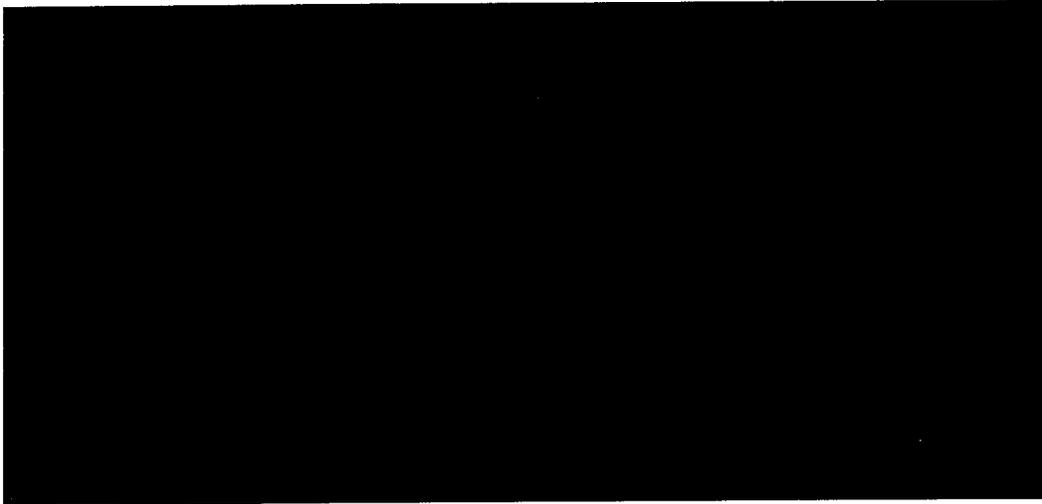


3.2 WxOP/CMAN Field Service (0303BC)



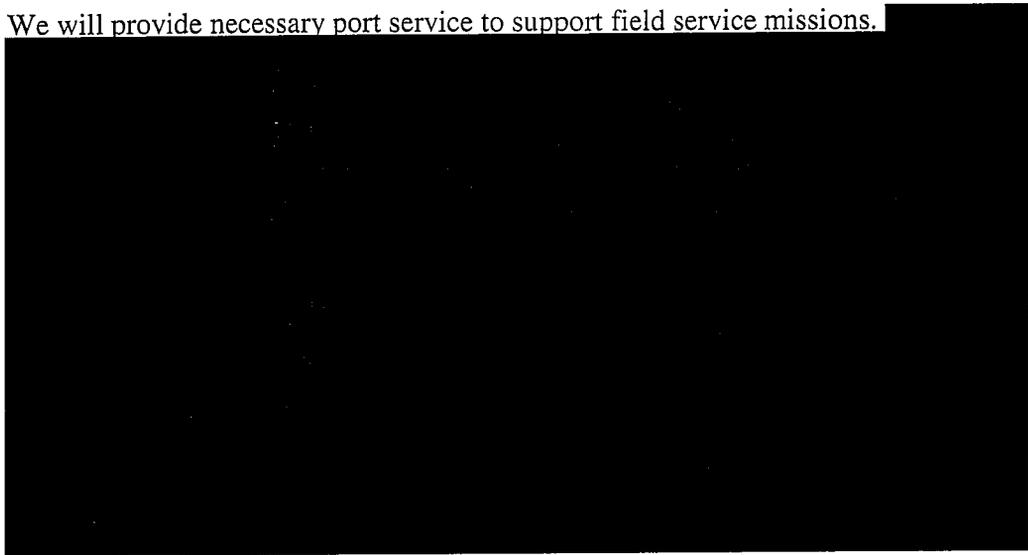


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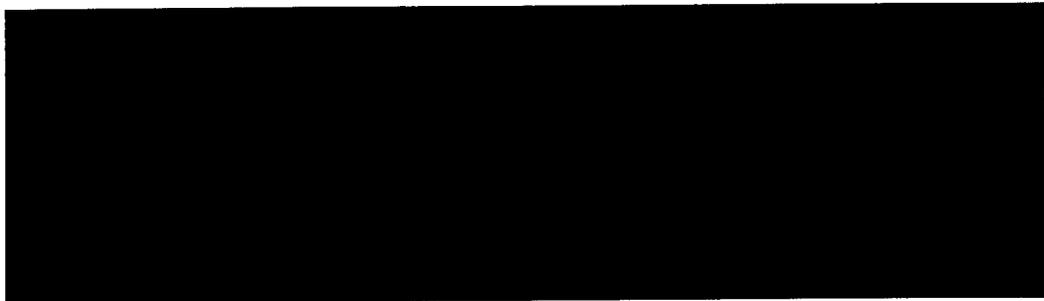


3.3 WxOP Port Services

We will provide necessary port service to support field service missions.



3.4 WxOP/CMAN Operations Engineering (0303BD)



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The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on projected ESRs for WxOPs Operations Engineering based on previous contract years.

SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment. For all engineering efforts that are approved for work, SAIC will provide an Engineering Support Request (ESR) that will define tasks, deliverables and status. All operational and technical refresh projects require Government approval of an ESR prior to the commencement of work. Information will be tracked in the RAZOR Engineering Support Request System.

3.5 WxOP/CMAN Re-Engineering (Tech Refresh) (0303BE)

As re-engineering efforts are identified, SAIC will provide the necessary systems engineers, software engineers, ocean mechanical engineers and technicians to provide re-engineering services.

3.5.1 CY05 WxOP Technical Refresh

See Appendix D-2 for the scope of work and schedule for CY05 WxOP Technical Refresh efforts. **(Deliverables associated with this section)**

SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment.

For the CY05 6 month extension for WxOP Technical Refresh, SAIC has included a level of effort based on the taskings provided in CY05 WxOPs Technical Refresh.

3.6 WxOP Hurricane Network Servicing (0303BF)

For CY05 SAIC will provide the necessary labor, travel and vessel support for performance of the Hurricane Buoy Service Mission scheduled for CY05 4th Quarter.

SAIC will provide Ship Certification Documentation and Ship Technical Information and photographs to NDBC as required in time to complete the NOAA

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Charter Vessel Clearance process and obtain clearance prior to sailing. [REDACTED]

[REDACTED]

SAIC will, through coordination with WxOP / OPS52, provide a detailed itinerary of the Hurricane service visit cruise, its estimated dates for on scene activities and work to be accomplished, and daily updates of events in the DAC morning brief.

A comprehensive Field Service Plan will be submitted for each deployment leg and cover all buoy stations that will be serviced in the Hurricane network. These plans will be created to allow both SAIC and NDBC personnel to plan for the upcoming service, including travel arrangements, shipping information, anticipated weather, procedures for conducting the field service, applicable drawings, and points of contact.

Pre-deployment planning will incorporate Engineering review of current power system performance on each station to determine the extent of needed service to return station to an acceptable operational state.

4.0 TAO Management Approach (0304)

During this period of performance, the Tropical Atmosphere/Ocean (TAO) Program management approach will focus on coordination and operational scope development to a mutually understood scope baseline. This baseline will incorporate the requirements to coordinate operational planning and conduct field service to effectively operate and maintain the TAO array. A programmatic performance plan that includes cost, schedule and quality performance reporting will be developed to support the program scope. When this performance plan is mutually agreed upon by the NDBC (Government) and NTSC (SAIC) then it will be adhered to during the performance period.

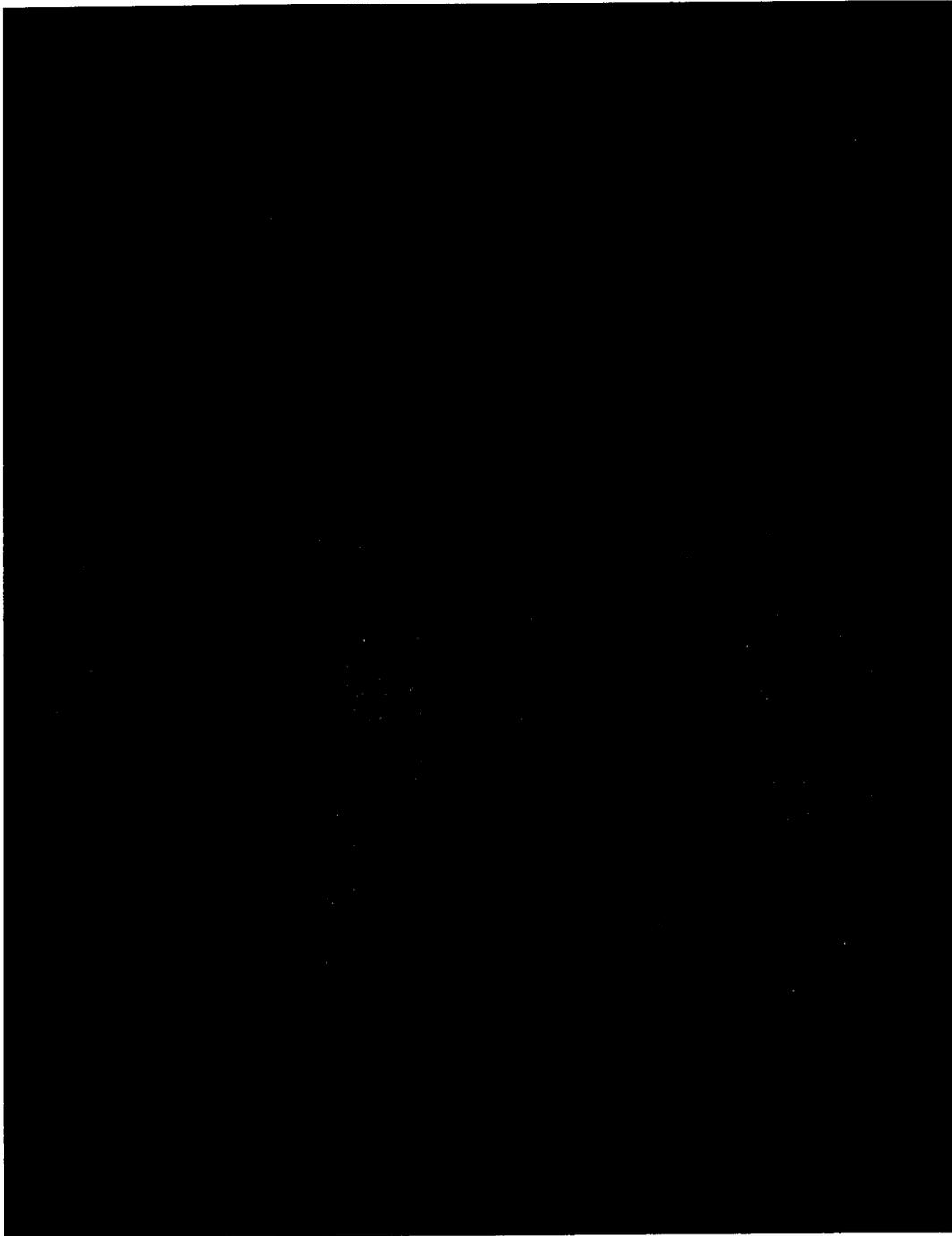
The following is a listing of tasks necessary to successfully accomplish the TAO Program which are not considered deliverables:

Task	Due Date
Coordinate with government TAO program office and conduct operational scope planning	As directed
The planning, production, refurbishment, integration and testing of TAO systems.	As directed
Provide programmatic performance reporting. This includes cost and schedule performance per an established scope	Update as needed

baseline.	
Foreign Clearance Document Requests and contact Ancillary Scientists	24 weeks prior to cruise start
Execute scheduled field service activities in accordance with TAO Standard Operating Instructions and NDBC Station maintenance directives	As directed
Planning and Detail (P&D) sent to PMEL with follow-up revisions and copies as they occur	24 weeks prior to cruise start
Provide NDBC approved TAO draft cruise plan	60 days prior to cruise start
Assign a technically competent person to function as Cruise Lead	30 calendar days prior to cruise start
Assign a technically qualified team for all TAO cruises	30 calendar days prior to cruise start
Interface with and aid Ancillary Scientist aboard NOAA vessel	During and after cruises
Provide Operational Planning and Time sensitive response to unplanned outages	As directed
Provide timely quotes for contract mission support	As directed
Conduct Mid-Cruise and Final Cruise inventories of items on ships and remote storage locations	Middle of cruise and upon final cruise
Identify and Equipment shortages or projected shortages to TAO Operations	Mid Cruise
Conduct and update the Hazardous Material Inventory	Completion of each cruise
Coordinate with DAC and Data analysis to develop operational procedures for data collection	During each cruise
TAO Cruise Lead complete and distribute the NMAO Customer Satisfaction Survey and Trip Report	Upon completion of cruise
Review and maintain the TAO At Sea Handbook to include any and all operational changes identified	Annual
Collect raw data files of all data collected during the TAO cruise	Upon Completion of cruise
Conduct operational status briefing	Weekly
Complete cruise personnel travel documents NOAA Health Questionnaire Passport Travel Letters	12 weeks prior to cruise start
Fully tested equipment at deployment site	No later than 3 working days prior to ship departure

4.1 TAO Production/Integration (0304CA)





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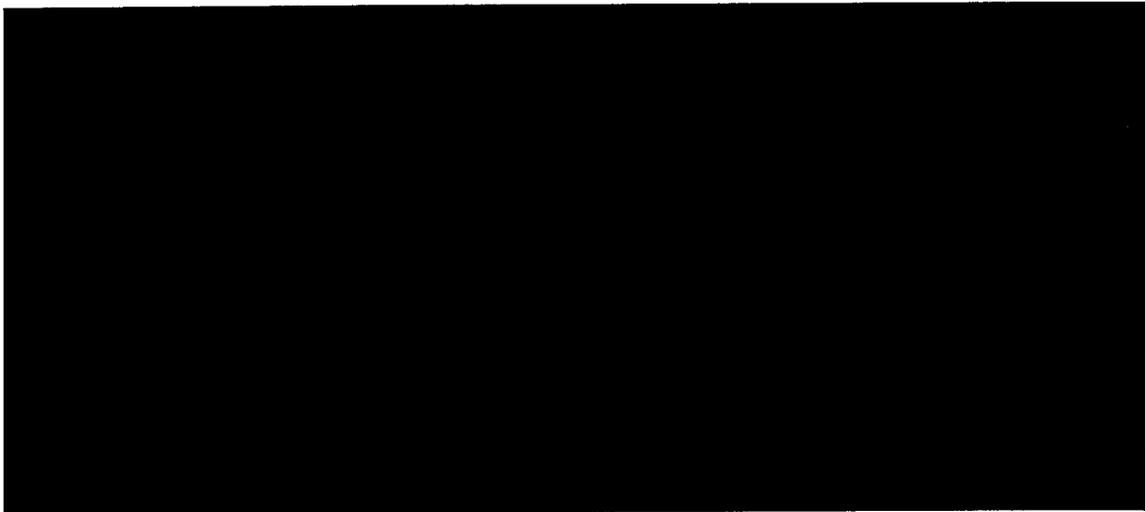
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4.2 TAO Field Service (0304CB)

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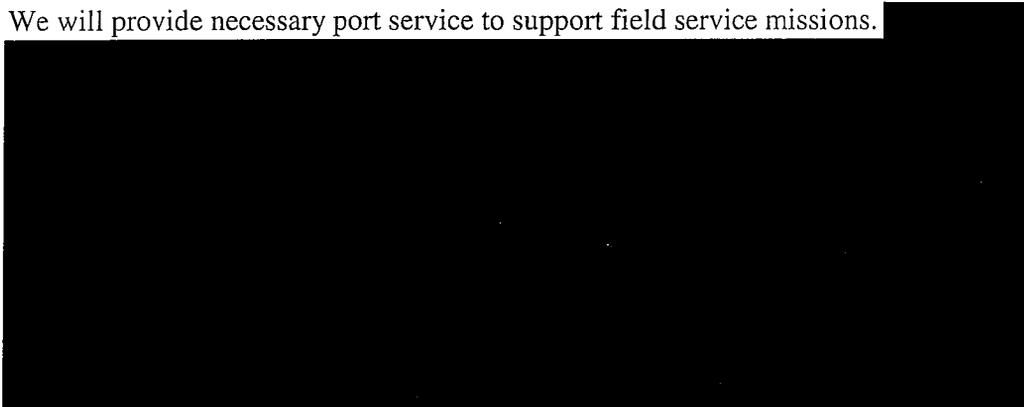


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4.3 TAO Port Services

We will provide necessary port service to support field service missions.



4.4 TAO Operations Engineering (0304CC)

SAIC will provide operations engineering support to develop mooring diagrams and mechanical/electrical equipment upgrades as necessary. Included in this support are all Engineering Test Plan (ETP) revision and development efforts and changes to drawing packages as a result of the previous mentioned efforts. Included in this support is transitioning Engineering Test Plan (ETP) to NDBC Procedures when the design is proven and the NDBC and SAIC Configuration Management team agree on the requirements. This also includes generating green-tag procedures for TAO sensors. This also includes ensuring green-tag procedures for TAO sensors and systems are current. These tasks include supporting fifty-five TAO buoys, four ADCP subsurface moorings located in the Equatorial Pacific. SAIC will continue to provide configuration files for ADCPs. SAIC will complete engineering analysis of operating TAO buoy systems. We will perform post-production activities for returned equipment as identified by TAO operations for engineering support. Evaluations of TAO moorings will be completed on newly deployed stations and recovered remnants. Maintain TAO legacy Configuration Management by keeping all engineering documentation up-to-date and stored in CM. Conduct reliability analysis of TAO Legacy equipment such as moorings, ADCPs, hulls, mast and acoustic releases. At this time, all sensors are maintained by PMEL, therefore, only data availability comparison can be used to assist in reliability of equipment deployed for legacy systems. Attend training and seminars to stay current on developing engineering for use on TAO legacy systems.

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SAIC will provide operations engineering support to troubleshoot TAO buoy system failures beyond the scope of the TAO technicians and provide Cruise Lead support as necessary.

SAIC will provide operations engineering support to evaluate the efficiency of moorings as well as the mechanical and electrical aspects of the TAO buoys, making recommended improvements as needed.

The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on projected ESRs for TAO Operations Engineering based on previous contract years.

SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment. For all engineering efforts that are approved for work, SAIC will provide an Engineering Support Request (ESR) that will define tasks, deliverables and status. All operational and technical refresh projects require Government approval of an ESR prior to the commencement of work. Information will be tracked in the RAZOR Engineering Support Request System. The operational engineering level of effort for CY05 is based upon the level of support that was provided in CY04.

4.5 TAO Re-Engineering (Tech Refresh) (0304CD)

When NDBC approves a recommended re-engineering effort, SAIC will provide the necessary systems engineers, software engineers, and ocean mechanical engineers needed to provide re-engineering services along with the cost and materials estimates as appropriate prior to approval of rendered services.

4.5.1 TAO Technical Refresh

See Appendix E-1 for TAO Technical Refresh efforts planned for CY05.
(Deliverables associated with this section)

Upon acceptance and approval from NDBC/SAIC the TAO Refresh Troubleshooting Manual and TAO Refresh Project Plan will be included in the project configuration management schema.

SAIC will team with NDBC to identify and prioritize engineering tasks up to the level of effort established for this CLIN. For any desired taskings that go beyond the level of effort planned for CY05, SAIC will submit a Change Proposal and will negotiate with NDBC for an equitable adjustment.

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The tasking provided in this section also covers the CY05 6 month extension. Tasking is based on a decreased level of tasks from those provided in CY05 for TAO Technical Refresh due to the assumption that the Mechanical hardening and AMPS Payload projects will be complete and only new refresh tasks will be established as it relates to maintaining hull, bridle, mooring, payloads, and sensor systems.

5.0 Supporting Documents and References

NDBC-4000 (Station Requirements Matrix Document)
 NDBC Instruction 200.01 (Station Failure Response Policy)
 K-Ship Standard Operating Instructions
 TAO Field Service Manual

6.0 Implementation Plan

6.1 Work Breakdown Structure

See Appendix A for the work breakdown structure.

6.2 Performance Specification and Metrics

SAIC will deliver a Quality Assurance Plan (QAP) within fifteen (15) business days after award of this Task Order, which will allow NDBC to develop a Quality Assurance Surveillance Plan (QASP), which will be mutually agreed upon by the parties. The mutually accepted QASP will be incorporated into this task order.

6.3 Materials, Tools, Equipment and Training

All hardware, software, tools, equipment and operational materials necessary to perform the work covered by this task are provided by NDBC. SAIC will utilize Document all available GFE/GFI in the performance of this work. SAIC has not included costs for any materials, tools or equipment in the cost proposal for this tasking, unless otherwise specifically noted.

Training is required under this task order to keep personnel up-to-date with industry standards and to maintain certifications to operate machinery and participate in certain field service activities. SAIC has proposed training for these personnel in the cost proposal for this task order. This training includes fall protection, soldering, forklift operations, small boat operations and first aid/CPR.

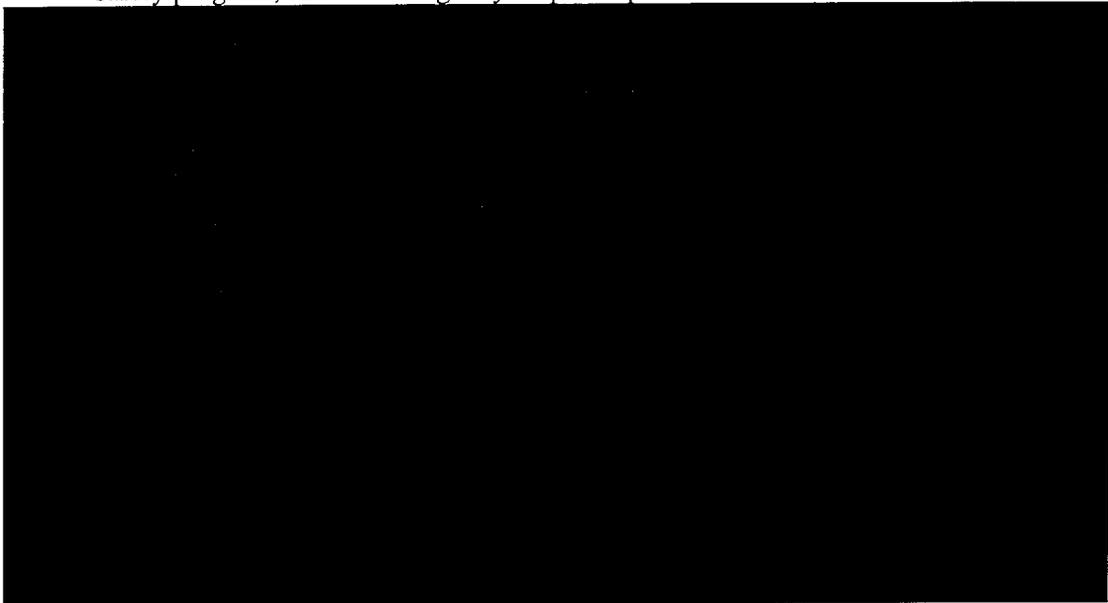
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Travel is required under this task order and costs for travel are included within the cost proposal.

6.4 Assumptions and Constraints

Assumptions

1. The government will arrange and provide ship support for activities in this Task Order unless the Contracting Officer requests in writing that the NTSC provide that support.
2. If the Government-operated vessel fleet (USCG, NOAA) cannot support necessary missions, the Contractor will deliver market survey data for alternative commercial vessel. If requested by the Contracting Officer in writing, a Technical Proposal for contracting suitable vessel directly will be delivered.
3. All Government Furnished Equipment (GFE) will be available in workable condition in time for NTSC to perform the production/field service activities outlined in this Task Order.
4. The NTSC will be responsible for ensuring that all equipment, including replacement buoys and/or moorings, have been delivered – completed, tested, and ready for deployment at the point of embarkation, by the scheduled date.
5. The network will continue to be maintained by adhering to best marine practices and maintenance schedules.
6. NTSC shall have in place a configuration management, safety and environmental safety program; and an emergency response plan.



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Constraints

1. All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, policy and procedures.
2. Operational schedules and activities are fixed. If the execution of the scheduled activity changes, the scheduled date will NOT be changed, but rather the execution floated on the schedule until the activity is accomplished and the maintenance interval can start over.
3. Workmanship will be evaluated using NDBC instructions, procedures, and documentation, as well as general industry standards for marine workmanship. (WxOP addendum)- Buoy and CMAN stations will be configured using NDBC approved baseline documentation, NDBC-4000, and to meet operational schedules.
4. Configuration of DART equipment is to meet operational requirements in accordance with the NDBC 4000 and appropriate level of configuration documentation
5. Assembly and/or RIT of the DART systems shall meet or exceed the operational requirements of the DART program deployment and maintenance schedule
6. All efforts will be made to minimize cost without sacrificing quality or workmanship
7. The NTSC will interface and coordinate directly with the NOAA NDBC – US Coast Guard office, or with the OPS52 NOAA Fleet Working Group Representative.
8. If NTSC is tasked to contract a vessel for voyages beyond 200 nautical miles from US shoreline, all vessels will be in compliance with Chapter I of the Code of Federal Regulations Title 46 or identified as a “Class I Vessel.” All paperwork for the proposed vessel, including the COI and copies of applicable officer’s licensing will be received by the Government no later than five (5) calendar days after the vessel is submitted for Government consideration. The Government Reserves the right to provide contract vessel in lieu of Contractor furnished.

7.0 Deliverables

7.1 Schedule

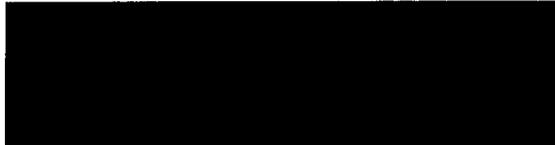
See Appendix B for the program performance schedule.

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7.2 Deliverables

See Appendix C for the Deliverables/Submittals Table.

8.0 Points of Contact



9.0 Cost Proposal

See the attached cost proposal. SAIC's cost proposal is based on the following:

1. SAIC has proposed labor costs in accordance with the subject contract Section B.6 Rate Schedule for Contract Year 5.
2. All assumptions included within this TMP.
3. All travel will be in accordance with the Federal Travel Regulations.
4. The negotiated/funded period of performance is beginning from July 1, 2009 through June 30, 2010, with a six-month option period from July 1, 2010 through December 31, 2010.

9.1 Terms and Conditions

Terms and conditions governing this Task Order will be those currently in effect for Contract No. QA1330-05-CQ-1035.

9.2 Contract Type

This task order is a Cost Plus Fixed Fee contract type. For Contract Year 05, SAIC has proposed Cost Plus Fixed Fee (CPFF) pricing for management labor, production labor, field Service labor and Engineering labor. Other direct costs, to include travel, training, port services and communications for field service will be reimbursed on a CPFF basis.

10.0 Payment Terms

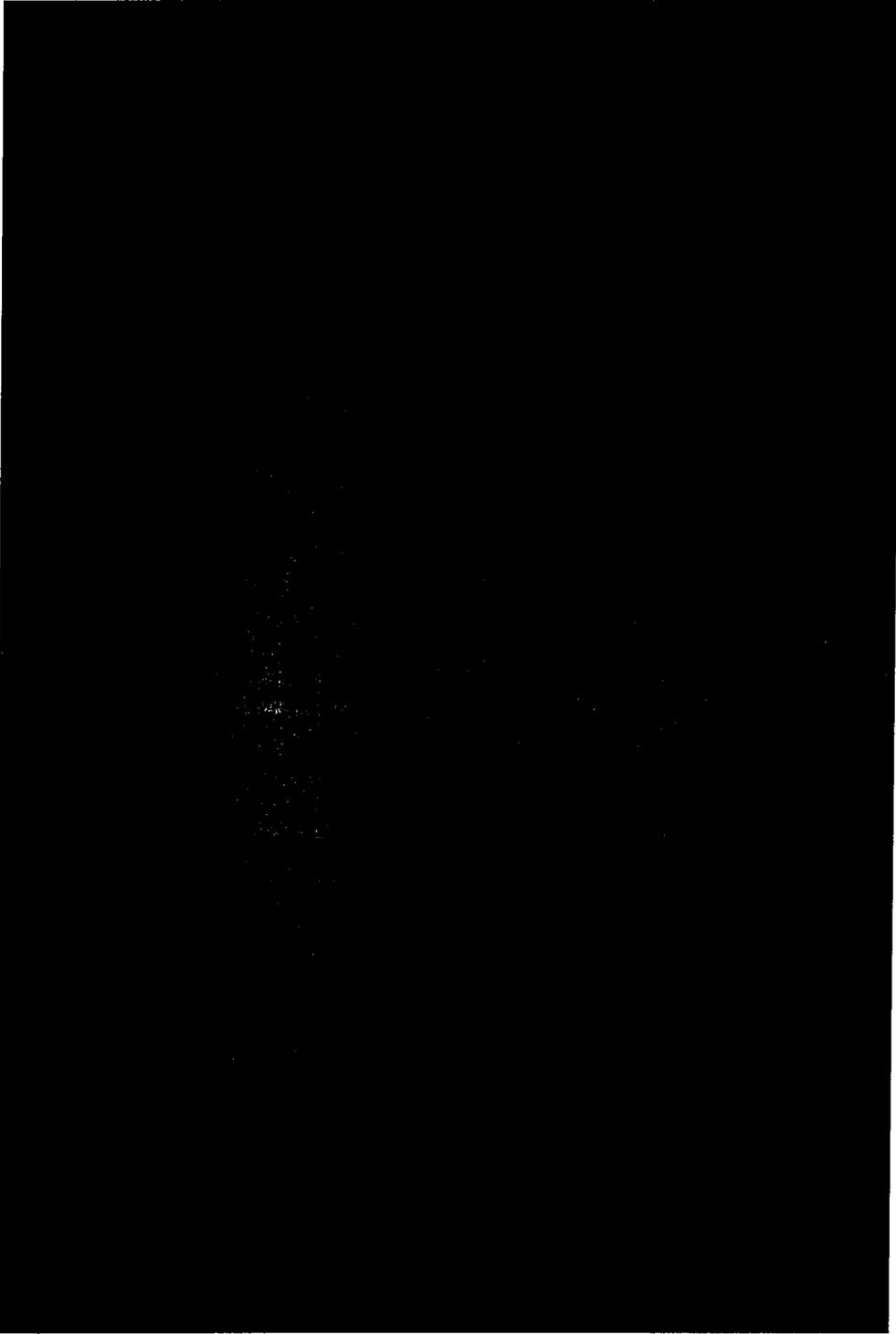
- For the Cost Plus Fixed Fee elements of this task order, invoices shall be submitted upon completion of each SAIC accounting period. Payment shall be made within 30 days.



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APPENDIX A – Work Breakdown Structure



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APPENDIX B - RESERVED

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APPENDIX C – DELIVERABLES/SUBMITTALS TABLE

Deliverables/Submittals	Due Date	Acceptance Criteria
CLIN 1—Operations Infrastructure		
Operations Management		
Monthly Preventative Maintenance/Calibration Logs	5 business days after each month end	Upon submission
Ship Certification Documentation	Within time required to complete the NOAA Charter Vessel Clearance process	Upon submission
Ship Technical Information and Photographs	Within time required to complete the NOAA Charter Vessel Clearance process	Upon submission
Operational Engineering		
Bi-weekly Report of Engineering Activities	Every other Tuesday beginning 7/7/2009	Upon submission
DART Management		
Weekly DART Production Status Report	Every Thursday	Upon submission
DART Field Service Plans (FSPs) for scheduled field service	Two (2) weeks prior to field service	Upon submission
DART FSPs for unscheduled field service	As soon as practical	Upon submission
WXOP/CMAN Management		
Moored Buoy Operations Schedule (MBOS)	10 calendar days before given quarter	Upon submission
Semi-annual CMAN Operations Schedule	12/21/2009, 6/22/2010	Upon submission
Bi-weekly Task Order Performance Reports	1 st and 15 th of each month	Upon submission
Quarterly GFE Confirmation and Mitigation Report	30 days before given quarter	Upon submission
Long Range Hull/Payload Availability Estimation Plan	9/30/2009	Upon submission
Asset Support Requests (ASRs) for scheduled field service	Six (6) weeks prior to scheduled activity	Upon submission
ASRs for unscheduled field service maintenance	As soon as practical	Upon submission
Field Service Plans (FSPs) for scheduled field service	Two (2) weeks prior to scheduled activity	Upon submission
FSPs for unscheduled field service	As soon as practical	Upon submission
Trip Reports	2 weeks after cruise end	Upon submission
Weekly Field Service/Production briefings	Each Wednesday	When held
Monthly Field Service Report of Activities	5 working days after each month	Upon submission
Coast Guard support requirements for FY10	7/10/09	Upon submission
TAO Management		

Deliverables/Submittals	Due Date	Acceptance Criteria
Coordinate with government TAO program office and conduct TAO production scope planning	As directed	NDBC Approved
Plan, produce, integrate, refurbish and test all applicable TAO systems per a collaborative scope plan	As directed	NDBC Approved
Provide a programmatic performance reporting plan	Annual	NDBC Approved
Review inventory levels and make recommendations for inventory levels necessary to operationally support the operational scope	Quarterly	NDBC Approved
Review equipment transportation cost and provide review of expenditures and projection of funds	Quarterly	NDBC Approved
Execute TAO production per coordination in accordance with TAO legacy replacement and management plan and other applicable planning documentation	Daily	NDBC Approved
Ensure the timely delivery of fully functional and tested equipment at vessel loading point of each mission	Per deployment	NDBC Approved
Provide technical support to ensure field service tasks are followed and adhered to each cruise	Per deployment	NDBC Approved
Reliability/Engineering		
Monthly Equipment Performance Report	5 business days after each month end	Upon submission
2009 Annual Equipment Performance Summary and Recommendations	4/30/2010	Upon submission
NTIA Spectrum monthly status report meeting on updates with the NDBC Frequency Coordinator	5 business days after each month	Upon submission
CLIN 2—DART		
Quantitative recommendation of DART equipment requirement to maintain network	7/7/2009	Upon submission
DATA Availability and Improvement Plan	7/31/2009	Upon submission
DART production of Buoy #61-#62	9/30/2009	Successful blue-tag
DART production of Buoys #63-#64	12/31/2009	Successful blue-tag
Production of Mobile Workshop	12/31/2009	Completion
DART production of Buoy #65	3/31/2010	Successful blue-tag
Acquisition/preparation of equipment to support 11 RITs	3/31/2010	Upon submission
Acquisition/preparation of equipment to support 23 One-Year Service Visits	3/31/2010	Upon submission
DART production of Buoy #66	6/30/2010	Successful blue-tag
DART Trip Reports for scheduled/unscheduled field service	Within two (2) weeks of technician's return from field service activity	Upon submission
DART Operational Schedule	7/7/2009	Upon submission
GFE Property Requirements Report	7/7/2009, then quarterly	Upon submission
Quarterly Update to GFE Property Requirements Report	Fifteen (15) working days prior to beginning of quarter	Upon submission

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Deliverables/Submittals	Due Date	Acceptance Criteria
CLIN 3 – WOP/CMAN		
Fourteen 3m Full RITs	6/30/2010	Successful Blue tag
One 6m Full RITs	6/30/2010	Successful Blue tag
Seven 3m Partial RITs	6/30/2010	Successful Blue tag
One 6m Partial RITs	6/30/2010	Successful Blue tag
Four 3-meter Rack Fabrications	6/30/2010	Upon QA acceptance
One CMAN fabrication	6/30/2010	Upon QA acceptance
Twenty two Full Moorings	6/30/2010	Upon QA acceptance
Twelve Partial Moorings	6/30/2010	Upon QA acceptance
One hundred LRU sets-Buoy	6/30/2010	Successful Green Tag
Twenty-eight LRU sets-CMAN	6/30/2010	Successful Green Tag
One hundred and twenty Service Preps	6/30/2010	Upon completion of checklist in FSP
Eight hurricane buoy RITs (NOOSS)	3/30/2010	Successful Blue Tag
Trip reports for scheduled/unscheduled field service	Within two (2) weeks of technician's return from field service trip	Upon submission
Operational Engineering Project Plans	Within 10 working days following approval to proceed	Upon submission
Optional CLIN 3 Deliverables		
One 10/12m Full RIT (carryover from CY04)	7/31/2009	Successful Blue Tag
Eight 3m Full RITs	6/30/2010	Successful Blue Tag
One 6m Full RITs	6/30/2010	Successful Blue Tag
Five 3m Partial RITs	6/30/2010	Successful Blue Tag
One 6m Partial RIT s	6/30/2010	Successful Blue Tag
One CMAN Fabrication	6/30/2010	Upon QA acceptance
Eight Full Moorings	6/30/2010	Upon QA acceptance
Five Partial Moorings	6/30/2010	Upon QA acceptance
Thirty LRU sets-Buoy	6/30/2010	Successful Green Tag
Twenty-eight LRU Sets-CMAN	6/30/2010	Successful Green Tag
Thirty Service Preps	6/30/2010	Upon completion of checklist in FSP
Fifteen Directional Wave Units Installed	6/30/2010	Successful Blue Tag
Six 3-m Rack Fabrications	6/30/2010	Upon QA Acceptance
Two hurricane buoy RITs (NOOSS)	3/30/2010	Successful Blue Tag
Ten 3 meter hulls (foam)	6/30/2010	Upon QA acceptance
Ten 3 meter equip compartments	3/30/2010	Upon QA acceptance
Ten 3 meter superstructure/bridle (mast and mounts)	6/30/2010	Upon QA acceptance
Twelve surface currents	6/30/2010	Successful Blue Tag
Two current profiles	6/30/2010	Successful Blue Tag
Six point salinity	6/30/2010	Successful Blue Tag
Three 1.8 meter RITs	3/30/2010	Successful Blue Tag
AMPS Circuit Board Sets in Enclosures		
Thirty Green Tagged AMPS Payloads in Enclosures	(10) 9/30/2009	Successful Green Tag

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Deliverables/Submittals	Due Date	Acceptance Criteria
	(10) 12/31/2009 (10) 3/31/2010	Cover sheet uploaded to Inun

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APPENDIX D-2

Engineering Project Plan

Task Order 39, CLIN 0303BE – Weather Buoy/C-MAN Operations and Engineering Support - CY05 Weather Buoy Technical Refresh

PERIOD OF PERFORMANCE: Base - July 1, 2009 – June 30, 2010
Option – July 1, 2010 – December 31, 2010

1.0 SCOPE and STATEMENT of WORK

1.1 *General Scope:*

The scope of Project Plan is to provide operational engineering support for a number of improvements to existing NOOSS systems which have been identified, that will improve reliability, serviceability and data availability. SAIC will develop requirements, design, build prototypes, provide for testing, development and operational engineering support, complete studies for the tasking in the following Statement of Work.

NDBC developed sub-task heading for the Technical Refresh work in previous contract year and will be used again in CY05 for estimation purposes. The headings are:

- Task 1 Mechanical/Architectural Projects
- Task 2 Communications Projects
- Task 3 Payload Projects
- Task 4 Ocean Sensor Projects
- Task 5 Power System Projects
- Task 6 Waves Projects
- Task 7 Meteorological (Met) Sensor Projects
- Task 8 Laboratory/Process Improvements

BACKGROUND:

The NDBC wishes to maintain the cost structure of the Weather and Ocean Platform (WxOP) Technology Refresh CLIN as CPFF. The level of effort on this CLIN is expected to be based on contract years three and four previous performance. The technology refresh individual project tasks will be submitted and managed to SAIC via Engineering Support Requests or MS Project. With this change in task management some basic ground rules should be established:

- Only NDBC personnel will submit technology refresh project via the Engineering Support Requests (ESRs) system.

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- Any NTSC project proposals for technology refresh must be submitted through the NDBC engineering staff.
- The NDBC Engineering Technical Coordinator will review and approve/reject all submitted technology refresh ESRs.
- The NDBC Engineering Technical Coordinator and the NTSC Engineering Manager will coordinate the release and management of technology refresh ESRs as NDBC and NTSC resources and priorities change.
- Technology refresh projects will follow a basic engineering process as described in NDBC Procedure NDBC-7007. The engineering process defined NDBC-7007 will be scaled to the size of the project.
- The individual tasks will be estimated for approval by labor hours and materials cost (for items procured by SAIC).
- The individual tasks will be tracked by labor hours and materials cost (for items procured by SAIC).
- MS Project will be used as the method used to track technology refresh task deliverable due dates.

The NDBC is continuing to develop ideas for technology refresh in conjunction with the NTSC hence not all projects listed will be assigned and others may be substituted. However, it is recognized that SAIC has projected an overall estimated cost for WxOP Tech Refresh for CY05 based on the tasks described herein. If the size and scope of approved projects for CY05 differs from the negotiated cost estimate based on the taskings described herein, any such change shall give rise to a proposal for an equitable adjustment to the Task Order accordingly. As technology, priorities, and resources change new tasks may be added, individual tasks may be halted or suspended, or deliverable due dates may be modified, therefore the Microsoft Project schedule included in this Appendix is for planning purposes only and may be modified upon the agreement of the NDBC Engineering Technical Coordinator and NTSC Engineering Manager. These efforts will be coordinated with the NTSC Engineering Manager through the NDBC Engineering Technical Coordinator. As the new contract year approaches the current tasks will be prioritized by the NDBC and released to the NTSC as resources (both NDBC and NTSC) become available.

Table 1. WxOP Technology Refresh Task Listing

Task #	Title	NDBC POC
2.4	ARGOS II Evaluation	Pete Lessing
2.5	Test and Evaluation of Data Collection Platform Interrogate (DCPI) System	Pete Lessing
3.3	Real Time Operating System Feasibility and Proof-of-Concept for NDBC Payloads	Pete Lessing
3.4	1.8-Meter Buoy Enhancements	Bill Hansen
3.5	Combine AMPS GPS Systems	Ralph Cambre
4.1	Add ADCP, CT, and SCM to Buoy Level A Drawings	Rodney Riley
4.2	Improve/Elevate CT and SCM ETPs to NDBC Instructions	Rodney Riley
4.3	Develop CT, ADCP, and SCM Lifecycle Documentation	Rodney Riley
4.4	Improve Cabling on 3-m CT, SCM and ADCP Fixed Mount Installations	Rodney Riley
4.5	Deploying Standard Buoy with SCM and AWAC on a Sled Near 42007 for Comparison	Rodney Riley
4.6	Support Service & Installation of Waves & Currents Test on 42007	Rodney Riley
5.1	Investigate a Lithium Secondary Battery Power System for NOOS Optimization and TAO Buoy	Ralph Cambre
5.2	Investigate a Rechargeable Power System For Standard Buoy	Ralph Cambre
6.3	DDWM Documentation: Document Implementation of Wave Algorithm	Rodney Riley
6.4	Develop Method to Eliminate Gyrocompass	Bill Hansen
6.5	Develop & Document Uniform Cable Layout for 3-Meter AMPS/DDWM Buoy	Bill Hansen
6.6	Implement/Support Modifications to Standard Buoy for Improvement on Swell in Directional Waves Measurement	Rodney Riley
7.3	Smart Sensor Module Enhancements & Wireless Communications	Rodney Riley
8.1	Incorporate GPS Compass Into NDBC CMAN Anemometer Alignment Procedure	Rodney Riley
8.2	Complete Setup of Ocean Cal Lab	Regina Moore
8.3	Develop Automated AMPS Green Tag Tester	Regina Moore

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0303BE TASKS:

3. Mechanical/Architectural Projects

None at this time.

4. Communications Projects

2.1 ARGOS III Evaluation

BACKGROUND: This task is intended to provide an evaluation of an ARGOS III Platform Messaging Transceiver (PMT) this is to be provided by North American CLS (NACLS) gratis for the purpose of evaluating ARGOS III two-way communications, bandwidth, data rates and other aspects of ARGOS III communications. In addition to the PMT, NACLS will provide no-cost ARGOS telecommunications services for the period of the evaluation. This estimate is for engineering services required to evaluate the ARGOS III transceiver capabilities.

SCOPE: For the purposes of this task estimate, the ARGOS III PMT is assumed to include an RS-232 serial interface and serial software command interface to execute basic functions of an ARGOS III PMT for two-way communications. The evaluation will require action on the part of NDBC IT to setup an email account or other means of receiving data from NACLS transmitted by the PMT, as well as a means of interfacing with NACLS for transmissions of commands to NACLS for uplink to the NOAA NPOESS satellite NOAA N' and final receipt by the ARGOS PMT. Procurement of material is not required for this task, evaluation only. Engineering will coordinate with IT to for evaluation to develop in separate environment instead of real-time production system.

TASKS:

1. Review documentation associated with the ARGOS III PMT, and determine the best method for interfacing a laptop to the device for evaluation of power consumption, data throughput, bandwidth limitations, system latencies, and other recommended evaluation factors.
2. Perform an analysis of the ARGOS III PMT power consumption under a programmed data transmission of a pseudo-position message, receipt, acknowledgement and response to received commands, and any other recommended scenario.
3. Develop either a simplified software interface or command scripts to:
 - Execute basic commands to transmit data from the transmitter, such as period pseudo data messages or positions
 - Receive pseudo-commands transmitted by the NPOESS N' satellite to the PMT, process these commands and provide command response or acknowledgement to the NDBC sender.

- Evaluate and characterize command latency for two-way communications between NDBC and a PMT.
 - Evaluate and determine data rates for two-way communications between NDBC and a PMT.
 - Evaluate and determine data bandwidth limitations such as message sizes, transmit repetition rate limitations, and any other bandwidth limitations observed.
4. Write a report on the results and findings of the above tests, including an evaluation of hardware, power consumption, estimated costs to operate, system latencies, data rates, and bandwidth limitations, if any.

DELIVERABLES:

- Report/whitepaper on the results and findings of the above tests. The report will include further engineering efforts and IT requirements to implement into production system.

SCHEDULE:

- NDBC Procurement of loaner ARGOS III PMT

NDBC POC: Pete Lessing-Payload & communication systems

2.5 Test and Evaluation of Data Collection Platform Interrogate (DCPI) System

BACKGROUND: At present, there exists no method for two-way communication with NDBC payloads operating exclusively on the Geosynchronous Operating Environmental Satellite (GOES) system. Sutron, Corp. was awarded a Small Business Innovative Research (SBIR) Phase I grant to determine the feasibility of designing a two-way communications capability using spread spectrum techniques. Sutron Corp. was subsequently awarded a Phase II SBIR to develop prototype hardware for a GOES DCPI that provides for two-way communications using this spread spectrum technique. The use of spread spectrum techniques for outbound communications (user to payload), resulted in a dramatic increase in the bandwidth and lengths of messages that can be transmitted to a remote Data Collection Platform (DCP) since the outbound communications path uses the entire GOES band on a non-interfering basis. As a result, it is now possible to transmit an entire payload configuration file for dynamic payload configuration changes and adaptive sampling in response to environmental events, request re-transmission of data that may have been missed in a self-timed transmission from a DCP, or request and retrieve extended diagnostic information from remote DCPs. The purpose of this task is to determine NDBC requirements for a DCPI command interface and evaluate the suitability of a Sutron DCPI for use with NDBC GOES payloads.

SCOPE: Procure two DCPI units, acceptance test the units, and perform extended evaluation testing for use with NDBC payloads including: power

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consumption analysis; two-way command transfer capabilities; analysis and characterization of command and command response latencies; determination of the Wallops Island Command and Data Acquisition System (CDAS) interface requirements for issuance of outbound commands and GOES channel/band requirements for command response; determination of command functions of use in NDBC payload operations and engineering diagnostics; compile a written report detailing results of all testing performed. As these units are the first production run of prototypes, liaison with the DCPI manufacturer and Wallops CDAS engineering will be required to work out requirements and procedures for the CDAS command interface.

TASKS:

1. Determine two-way command and response requirements for payload operations and engineering diagnostics by consultation with DAC personnel and payload engineers. Provide written documentation of these requirements.
2. Coordinate with NDBC for procurement of two DCPI units.
3. Design and Develop software/scripts to simulate the issuance, execution, and response to the commands determined useful in the requirements document. The scripts/software should be developed with the view to porting the software for simulating payload command responses to both and ARES and AMPS payloads and/or laptop, that is, the command response simulation software should be compatible with these payloads' software language and software interfaces for command responses. Some payload command responses will require the use of a GOES transmitter dynamically reconfigured from a self-timed mode to use a random channel for response, and as a result the simulation software shall include interface to and initialization of a GOES high data rate transmitter to send a simulated, self-timed message in order to determine timing for command responses that utilize random channels such that command responses do not interfere with self-timed transmissions. Scripts developed to issue commands through Wallops CDAS should be developed with a view toward operational usage of these scripts by DAC personnel. Provide draft design documentation detailing the commands and command responses implemented including data formats of commands and responses.
4. Perform power consumption analysis of the DCPIs, including minimum and maximum input voltage, minimum and maximum current draw, average current consumption, ampere hrs/day of usage, and other relevant power analysis information and provide a written report documenting the results.
5. Perform an analysis and evaluation of command to command-response latencies, including any latencies introduced by the Wallops CDAS

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interface. Perform an analysis and evaluation of command and command response success rates and provide a written report of the results.

DELIVERABLES:

- Requirements document listing DCPI commands and command responses that can be used for two-way payload communications by NDBC payload operations and for engineering diagnostics.
- Draft design document detailing implemented commands and responses including data formats of commands and responses.
- Payload compatible software simulating command responses and scripts for issuing commands through the Wallops CDAS DCPI command interface.
- Report detailing: System power consumption and power consumption analysis; command and command response success evaluation and results; overall observations and evaluation of the DCPI and Wallops CDAS interface; and recommendations for operational implementation.

SCHEDULE:

- Procurement of DCPI units

NDBC POC: Pete Lessing-Payload & communication systems

5. Wx Payload Projects

3.3 Real Time Operating System Feasibility and Proof-of-Concept for NDBC Payloads

BACKGROUND: NDBC environmental measurement embedded systems, or payloads, are custom-designed embedded systems that implement custom hardware and custom software to implement a variety of real time measurement and communications tasks. Present engineering methods of implementing the operating system software of the payload embedded systems consist of a custom-designed, pseudo real-time operating system kernel that control system tasks, task timing, and implement system hardware drivers. The nature of a custom-designed, pseudo real-time system is such that it is non-deterministic, that is, when adding new software tasks or modifying existing software tasks, particularly those that affect system timing, the effect of these additions and modifications on the system timing of other tasks are usually incapable of being precisely determined as a result of the pseudo real-time kernel not precisely characterized or its complexity. This can result in software that, although presented as being modular, is not always completely modular in the sense that a modification to one modular task can have unpredictable effects on other system tasks. This is often manifested by unpredictable system behavior when

system configurations change that may affect task timing, and new timing scenarios are encountered that may not have been fully tested in previous software configurations, thus resulting in additional code modifications and testing to take into account these unforeseen timing relationships.

The solution to addressing these issues is use of a certified, real-time operating system, or RTOS. An RTOS is a multi-tasking operating system that is intended for real-time applications. NDBC environmental measurement systems are examples of real-time applications, as these systems require environmental measurements to occur in real-time at precise, synoptic intervals, require environmental sampling to occur at precise, real-time rates, require data transmission to occur during precise, assigned real-time windows (or GOES time slots), and require certain inter-sensor communications to occur at precise moments in time relative to other sensor communications or internal processes to avoid system or processor conflicts.

An RTOS facilitates the creation of a real-time system, or in other words, if used properly, guarantees real-time deadlines (such as transmissions during assigned GOES time slots, issuance and servicing of communications and other system interrupts, sampling, or other real-time deadlines) can be met either generally (soft real-time) or deterministically (hard real-time). It provides a developer with the tools necessary to produce deterministic behavior in a final system design. In addition, it guarantees true modularity of code implementation as "tasks" (or subroutines that perform specific functions such as MET sampling, MET averaging, GOES transmission, and other functions) are completely separate from the RTOS and communicate with the RTOS via semaphores or global variables thus truly separating the implementation of a task from the operating system functions of scheduling, timing, and task or context switching. Use of an RTOS can not only result in more reliable software, but dramatically reduce software development and testing time and costs since adding new functions do not require any modification of the underlying operating system kernel which is an independent entity from tasks.

SCOPE: This task is intended to survey commercial RTOSes available on the market, as well as open-source, royalty-free, no-cost RTOSes for applicability to NDBC payload systems and recommend a possible solution. In addition, this task is intended to either procure a commercial RTOS or obtain a copy of an open source, royalty-free, no-cost RTOS and implement the RTOS on existing AMPS hardware with a reduced set of measurements to determine feasibility and proof-of-concept of the use of an RTOS on NDBC payloads. Both commercial and open source RTOSes support a number of processor families, which include the processor used on the AMPS payload and thus it is believed that an RTOS can be ported to AMPS.

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TASKS:

1. Review the available commercial and open source RTOSes available for use with the AMPS Advanced RISC Machine (ARM) processor. Provide a recommendation for a RTOS to use for proof-of-concept.
2. Purchase or obtain a copy of either a commercial or open source RTOS best suited for implementation on the AMPS ARM processor. Port the RTOS to the AMPS payload. Select and recommend a reduced set of tasks, such as one each of every primary meteorological measurement and GOES transmission of a meteorological message, port the existing code for these tasks from the AMPS payload into the required modular interface to the RTOS, and implement these tasks in the selected RTOS.
3. Provide documented evidence of the deterministic implementation of these tasks in the RTOS demonstrating hard real-time determinism using either Rate Monotonic Analysis or other industry accepted methods.
4. Test the implementation in a laboratory environment, and provide a report on the results.

DELIVERABLES:

- Written recommendation for selection of an RTOS for use on AMPS ARM processor and recommendation of a selected set of environmental measurements and communications tasks to be implemented on the AMPS RTOS.
- Source code implementing both the AMPS RTOS and task implementation.
- Documented evidence of deterministic nature of task execution using Rate Monotonic Analysis or other industry accepted method along with a report detailing the results of the proof-of-concept implementation of the AMPS RTOS and environmental measurement and communications tasks.

SCHEDULE:

- NDBC approval of selected RTOS for testing and approval of set of environmental measurements and communications tasks to be implemented
- Procurement of RTOS

NDBC POC: Pete Lessing-Payload & communication systems

3.4 1.8-Meter Buoy Enhancements

BACKGROUND: NDBC plans to retire the WAMDAS from service. The AMPS with a DDWM will be used in its place. This will further reduce the number of equipment types and configurations in NDBC systems. NDBC has deployed several 1.8 m buoys and gained performance information. The tasks below identify modifications that need to be made to the 1.8 m buoy design.

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SCOPE: All of the tasks below shall be implemented together. Modify drawings and test procedures to implement the tasks outlined below. Conduct lab and buoy tests at SSC to demonstrate operational capability. Configuration of a 1.8m buoy will be required for this tasking.

TASKS:

1. Complete trade analysis of 1.8m buoy and Datawell Waverider.
2. Implement AMPS DDWM in the 1.8 m buoy. Integrate the AMPS payload and DDWM into the 1.8 m buoy. This will require an analysis of what AMPS boards are required, power budget and re-use of any existing AMPS configuration and packaging. A PDR and CDR shall be conducted. At the conclusion of the design, implement one system for testing. Conduct the test at SSC and write a test report.
3. Modify internal connections to prevent corrosion. In previous deployments water intrusion occurred, internal molex type connections corroded. These and potential other types need to be replaced with a more water resistant connector. Also, identify and design how to improve venting under dome to prevent moisture. Materials will be purchased to help with venting. After engineering analysis, brief NDBC on the analysis and recommendations. Modify and test one buoy with new design.
4. Add/Modify to Implement a Power Shut-off or Deep Sleep Mode. Investigate ways to save battery life in the event a 1.8 m buoy is fully integrated and tested but is not deployed for some time. In this case, the non-rechargeable battery system needs to be conserved. After engineering analysis, brief NDBC on the analysis and recommendations. Modify and test one buoy with new design.

DELIVERABLES:

- Trade Analysis of 1.8m buoy and Datawell Waverider
- NDBC Approval to proceed
- Requirements Document
- Preliminary Design Review (PDR)
- Critical Design Review (CDR)

Above must include design analysis and recommendations on corrosion resistant internal connections and power shut-off/deep sleep mode.

- Updated Level B drawing package approved in CMO
- Updated test procedures
- Test report

SCHEDULE:

1. NDBC approval at PDR

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2. NDBC approval at CDR
3. Availability of AMPS payload and 1.8-meter hull

NDBC POC: Bill Hansen-MOP Field/Operations Engineer

3.5 Combine AMPS GPS Systems

BACKGROUND: The present version of AMPS software uses its internal GPS unit for time and positioning. The Sutron HDR transmitter also has an internal GPS unit. Thus, buoys with an AMPS payload and HDR transmitter require two GPS antennas (& cables) be installed. The NDBC has already addressed the same issue in the ARES and MARS software to make use of the HDR GPS so that a second GPS system is not required. This AMPS firmware revision should be coordinated with other AMPS revisions (including revisions from other programs) to reduce the cost of laboratory and field certifications.

SCOPE: AMPS software should be modified to include the ability to use the HDR transmitter's internal GPS unit for time and positioning data. It is expected that this firmware revision will be incorporated with other AMPS revisions and, as such, will be included in combined Software Version Descriptions, Users Manuals, etc., and in laboratory and STF testing efforts. Further, it is assumed that the certification testing of the new AMPS firmware version is not included in the scope of this individual project.

TASKS:

1. Modify AMPS firmware to use the HDR GOES internal GPS for system time and positioning data.
2. Include firmware revision in a Software Version Description and other documents (i.e., Users Manual, System Design Document) as necessary.
3. Perform laboratory and STF testing to ensure new AMPS firmware version functions as required.

DELIVERABLES:

- Preliminary Design Review (if other processes are revised in this AMPS version)
- Critical Design Review (CDR)
- New firmware version of AMPS
- Test plan for regression testing of the AMPS firmware
- Data Analysis and Report describing results of regression testing
- Software Version Description
- Revised Users Manual and other documents as necessary

SCHEDULE:

4. NDBC approval at PDR (if required)

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5. NDBC approval at CDR

NDBC POC: Ralph Cambre-Power systems Engineer

6. Ocean Sensor Projects

4.1 *Add ADCP, CT, and SCM to Buoy Level A Drawings*

BACKGROUND: NDBC is in the process of finalizing the buoy configurations shown in yellow in the table below (other configurations are shown for reference only). Drawings for these configurations need to be finalized and elevated to NDBC production documentation (i.e, level A drawings and NDBC procedures (covered in task 4.4)).

Measurement	Configuration	1.8m	2.3m	3m	6m
Surface Currents	Sontek (thru hull)	NA	NA	NA	*
	Sontek (bridle)	NA	-	/	NA
	Aanderaa (bridle)	NA	NA	*	NA
Surface Salinity	Seabird (thru hull)	NA	NA	NA	/
	Seabird (bridle)	NA	-	/	NA
OSM	OSM	NA	NA	-	NA
Current Profile	RDI (Bridle)	/	NA	/	NA
	RDI (window)	NA	-	NA	NA

Legend for above table

*	Level B package in CMO no modification needed
/	Configurations that need work
-	Work addressed in other funding
NA	Not an applicable configuration

SCOPE: Incorporate any redlines and modifications to drawings required to produce the five configurations shown in the table above in yellow. Then modify existing NDBC 3-m level A drawings to include these drawings. Complete ECP approval process for drawings. Conduct briefings as required to coordinate all (NDBC and Operations) drawing reviews and resolve conflicting inputs/edits.

TASKS:

1. Incorporate redlines and modifications to drawings for the following configurations:
 - ADCP in bridle of 1.8-meter buoy

- Sontek SCM (thru hull) in 3-meter buoy
 - CT in bridle of 3-meter buoy
 - ADCP in bridle of 3-meter buoy
 - CT (thru hull) of 6-meter buoy
2. Modify existing level A drawings to include these drawings.
 3. Complete ECP approval process for drawings.
 4. Conduct briefings to coordinate drawing reviews.

DELIVERABLES:

- Submit ECPs for Level A drawings

SCHEDULE:

6. NDBC approval at design review (if required)

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

4.2 Improve/Elevate CT and SCM ETPs to NDBC Instructions

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. Functional test procedures for these configurations need to be finalized and elevated to NDBC production documentation (NDBC procedures).

SCOPE: Incorporate any redlines and modifications to the ETPs for functional verification. Then convert the ETPs to NDBC instructions through the ECP process. Develop and incorporate changes to NDBC 1002 and 1001 which are used in the blue tag process. The changes will provide more specific guidance for the DAC in evaluating the ocean systems. Conduct briefings as required to coordinate all (NDBC and Operations) reviews and resolve conflicting inputs/edits.

TASKS:

1. Incorporate redlines and modifications to the ETPs for the functional verification of CTs and SCMs.
2. Incorporate changes into NDBC 1002 (PEST) and 1001 (FIT) for blue tag (burn in) testing
3. Complete ECP approval process for NDBC Instructions.
4. Conduct briefings to coordinate reviews as required.

DELIVERABLES:

- Submitted ECPs with finalized updated NDBC procedures:
 - a. CT verification
 - b. SCM verification
 - c. NDBC 1002 Preliminary Electronic Systems Testing (PEST)
 - d. NDBC 1001 Field Integration Testing (FIT)

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SCHEDULE:

7. NDBC approval at design review (if required)

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

4.3 Develop CT, ADCP, and SCM Lifecycle Documentation

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. The lifecycle of these ocean sensors should be fully documented from verification testing to preparing for deployment and recovering data from the sensors after deployment.

SCOPE: Develop in ETP form documentation that describes the life cycle processes for the CT, ADCP and SCM sensors. One life cycle document has been started by NDBC for the CT. This format and style should be followed. That document should be evaluated and updated as required. Conduct briefings as required to coordinate all (NDBC and Operations) reviews and resolve conflicting inputs/edits.

TASKS:

1. Create ETP that describes lifecycle processes for CT sensors.
2. Create ETP that describes lifecycle processes for ADCP sensors.
3. Create ETP that describes lifecycle processes for SCM sensors.
4. Conduct briefings to coordinate reviews as required.
5. Submit ETPs for NDBC review

DELIVERABLES:

- ETP that describes lifecycle processes for CT sensors
- ETP that describes lifecycle processes for ADCP sensors
- ETP that describes lifecycle processes for SCM sensors

SCHEDULE:

8. NDBC approval of lifecycle ETPs

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

4.4 Improve Cabling on 3-m CT, SCM and ADCP Fixed Mount Installations

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. Past deployments of ocean sensors on 3-meter buoys in bridle mounts have indicated cable fatigue problems.

SCOPE: Even though these designs are bridle mount type, cable breakage or fatiguing problems are still suspected. In addition, present drawings do not detail cable routing on the bridle which allows each technician to route cables

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differently. In some drawings, the cables are too long. This task will access and address the cabling to produce a uniform and documented method for protecting and routing the sensor cables.

TASKS:

1. Develop designs for routing and fixating bridle mounted CT, ADCP, and SCM cables.
2. Submit designs for NDBC review and approval
3. Modify existing level A drawings to include these drawings.
4. Complete ECP approval process for drawings.
5. Conduct briefings to coordinate drawing reviews.

DELIVERABLES:

- Design review for routing and fixating bridle mounted CT, ADCP, and SCM cables
NDBC review and approval required
- Complete modifications to existing level A drawings to include CT, ADCP, and SCM cables

SCHEDULE:

9. NDBC approval of routing and fixating ocean sensor cabling.

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

4.5 Deploying Standard Buoy with SCM and AWAC on a Sled Near 42007 for Comparison

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. To date the Standard Buoy (SB) has not been deployed with a SCM. Deployment of Standard Buoy to be funded from NOSS Optimization Certification effort.

SCOPE: This task will coordinate with the tasking to augment 42007 and deploy two oceanographic sleds in the area of 42007. This effort shall be coordinated with the NOSS optimization project for the purposes of commissioning the SCM measurement on the SB platform.

TASKS:

1. Develop designs for bridle mounted SCM on Standard Buoy.
2. Submit designs for NDBC review and approval
3. Modify existing level A drawings to include these drawings.
4. Complete ECP approval process for drawings.
5. Conduct briefings to coordinate drawing reviews.

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- Complete Level A drawing of Standard Buoy with bridle mount SCM and submit ECP
- Test report on field testing of SB w/ SCM

SCHEDULE:

10. NDBC approval of design
11. Availability of Standard Buoy
12. Ship time for deployment

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

4.6 Support Service & Installation of Waves & Currents Test on 42007

BACKGROUND: Buoy 42007 is planned to be deployed with an experimental sensor from Nortek in a self record mode.

SCOPE: This task will complete efforts to install two oceanographic sleds and augment 42007 to include acoustic communications. Efforts will include testing support for the acoustic system, current profilers mounted on the sleds, while at SSC and at-sea integration and test. Some shop fabrication is expected.

TASKS:

1. Test the acoustic system.
2. Test the sled mounted current profilers.
3. Update level B package for 42007.
4. Fabricate NDBC designed mounts.
5. Report on installation.

DELIVERABLES:

- Test Acoustic System and Sled Mounted Profilers
- Fabricate NDBC Design Mounts
- Trip report for installation

SCHEDULE:

13. NDBC approval of design
14. Deployment of 42007

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

7. Power System Projects

5.0 Investigate a Lithium Secondary Battery Power System for NOOS Optimization and TAO Buoy

BACKGROUND: NDBC began using lithium batteries in the TAO program in 2007. Due to the higher cost and hazards of transporting, warehousing and

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handling lithium primary batteries, and the move of the industry toward rechargeable lithium types it is believed that rechargeable lithium batteries might be more beneficial for NDBC applications.

SCOPE: The purpose of this task is to identify available lithium battery chemistries and formats that would be suitable for use in the TAO program and in the NOOS optimization buoy. A cost / benefit analysis will be provided that evaluates the benefits of available rechargeable lithium batteries over the primary lithium batteries currently used.

TASKS:

1. Compare areas of safety, handling, and transportation, and warehousing costs.
2. Determine rational/recommendations for procuring at least three alternative prototype rechargeable lithium batteries for evaluations

DELIVERABLES:

- White paper on the benefits of rechargeable lithium batteries recommend for use by NDBC. (Note: If other battery types that might be better suited for NDBC applications have been identified during this task, identify such for NDBC consideration.)

SCHEDULE: None

NDBC POC: Ralph Cambre-Power Systems Engineer

5.1 Investigate a Rechargeable Power System For Standard Buoy

BACKGROUND: The Standard Buoy (SB) development is very near completing a baseline design. Early test results show the promise that the buoy will be used in the NDBC network. One of the feedback items during the development was to use a rechargeable power system. This was not completed during the initial development partially because of the potential complexity in the effort.

SCOPE: This task will conduct a white paper type analysis to outline the potential design configurations and evaluate the pros and cons of each, as well as any rationale for not making a change from the non-rechargeable configuration. This task should not be an intensive effort concluded with a large paper report. Instead, a small number (2 to 3) of designs similar to what is used in the 3-m buoy should be reviewed, scaled, and/or repackaged for the SB platform.

TASKS:

1. Conduct an engineering review and provide a report that addresses the question of a rechargeable power system on the SB for the Weather and Ocean (WxO) program only.
2. Provide a simple brief to NDBC at the conclusion of the effort.

DELIVERABLES:

- White paper with executive summary

SCHEDULE: None

NDBC POC: Ralph Cambre-Power Systems Engineer

6. Waves Projects

6.2 DDWM Documentation: Document Implementation of Wave Algorithm

BACKGROUND: NDBC is in the process of refreshing buoy hardware & software including wave systems. NDBC will retire older wave systems and consolidate, where appropriate, to two or three systems. The standard system per platform type is shown below (10/12 -m are not listed since NDBC plans to discontinue use of these hulls). Thus documentation will need updating and buoy drawings modified for integration of these systems. New technology exist that could increase NDBC's production and testing efficiency in terms of costs and schedule. This task will develop the technology integration into the buoy and C-MAN systems including drawings, procedures, and reports.

Standard NDBC Wave Systems

Platform	Wave System
1.8-m	AMPS DDWM
2.3 or 2.4-m	AMPS DDWM
3-m	AMPS DDWM
6-m	AMPS DDWM (Non dir. Mode)
Fixed Platform	1.8 m buoy

SCOPE: NDBC continues to enhance the DDWM and refine supporting documentation. A thematic outline for a System Design Document will be provided. The implementation of the waves processing algorithm will be documented in the SDD. Other system functions and overall system operation will be documented. The system User's manual and Software Maintenance Manual will be updated as necessary to document enhancements, corrections and updates.

TASKS:

1. Create DDWM System Design Document

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2. Update DDWM User's Manual and Software Maintenance Manual as necessary.

DELIVERABLES:

- DDWM System Design Document
- Updated Level B package

SCHEDULE: None

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

6.3 Develop Method to Eliminate Gyrocompass

BACKGROUND: Presently NDBC uses a Gyro compass to develop and test buoy hull magnetic coefficients (HMCs) for compasses used in Winds observations and magnetometers for Directional Waves observations. The Gyro is bulky, expensive to maintain, and requires extra time to setup and breakdown. A GPS compass or other less expensive method could be used in the verification test and perhaps in the development of the HMCs.

SCOPE: NDBC has previously procured two GPS compasses. These have been used for anemometer alignments (buoy & C-MAN). Some work has been completed to use the GPS compass as a Gyro replacement in development of buoy hull magnetic coefficients (HMCs) for the DDWM. One issue that has not been resolved is the GPS compass latency (time delay from actual heading to serial output of the heading). The issue needs to be resolved, or an alternative method developed that is more efficient and reliable than using the Gyro. This task will complete the engineering analysis and provide a written engineering analysis and recommendation to NDBC.

TASKS:

1. Investigate to resolve latency issue on GPS compass
2. Investigate other methods of eliminating the Gyrocompass.

DELIVERABLES:

- Technical Analysis Report for eliminating Gyrocompass

SCHEDULE: None

NDBC POC: Bill Hansen-MOP Field/Operations Engineer

6.4 Develop & Document Uniform Cable Layout for 3-Meter AMPS/DDWM Buoy

BACKGROUND: Cable routing could impact performance of compass and magnetometer measurements in 3-m buoy systems. Presently there is no

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documentation or direction for where cables are to be placed and/or routed inside the 3-m electronics compartment.

SCOPE: The new AMPS enclosure connector layout supports an improved and standard cable routing scheme. This task will build on lessons learned from AMPS 3-m buoy integration and document where appropriate cable routing, bundling, and cable lengths. The effort will follow the standard NDBC engineering development of PDR, CDR, and test and documentation, all scaled to an appropriate level of effort.

TASKS:

1. Design cable routing, bundling, and cable lengths for AMPS/DDWM 3-meter buoy.
2. Modify 3-meter AMPS level A drawings for cable lengths, routing, and bundling.
3. Complete ECP approval process for drawings.
4. Perform testing at SSC to ensure new cableway have not impact on function.

DELIVERABLES:

- Preliminary Design Review
- Critical Design Review
- Modified level A 3-meter AMPS drawings with cable routing defined and submit ECP
- Test report on new cableways

SCHEDULE:

- NDBC approval at PDR
- NDBC approval at CDR

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

6.5 Implement/Support Modifications to Standard Buoy for Improvement on Swell in Directional Waves Measurement

BACKGROUND: Testing of the Standard Buoy (SB) in the summer of 2009 off Southern California at station 46090 revealed problems in detecting low amplitude long swell waves. The exact cause is not known.

SCOPE: This task will investigate, propose, and document ideas for how to improve the directional wave performance. The task includes all engineering and technical work required to prepare one new system for field testing. Testing should receive engineering attention especially in the area of testing for magnetic effects (e.g., verify 3DM-GX1, mounted in rack, magnetic uniformity on compass rose). Deployment of the system is excluded from this task.

TASKS:

1. Investigate and propose ideas for how to improve the directional wave performance with respect to low amplitude long swell waves on the DDWM Standard Buoy configuration.
2. Upon NDBC approval implement design to improve wave measurements.
3. Test new configuration.
4. Prepare one new configuration for deployment for field testing
5. Prepare report on field testing of optimized configuration.

DELIVERABLES:

- Preliminary Design Review
- Critical Design Review
- Design Document for SB modification recommendations for Directional Waves
- ECPs to document any firmware or hardware changes
- Test report on field testing

SCHEDULE:

- NDBC approval at PDR
- NDBC approval at CDR

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

7. Met Sensors Projects

7.3 *Smart Sensor Module Enhancements & Wireless Communications*

BACKGROUND: A Smart Sensor Module has been developed and was integrated with a Rotronics MP101A sensor. These tasks will improve the analog performance, and implement wireless communications.

SCOPE: As required, conduct development, analysis and lab tests to accomplish the following tasks. All associated documentation for the project will be updated to reflect any changes. Existing units in NDBC inventory will be upgraded with improvements completed in this effort.

TASKS:

1. Implement Wireless Communications. The SSM contains hardware and firmware support for wireless communications. The firmware will be modified, and tested to implement the wireless communications.
2. Conduct lab test and test on the OSTF area or similar outside area to confirm operation of wireless communications.
3. Update power consumption information, all documentation.

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4. A design review will be conducted to address the wireless implementation. This review should be conducted prior to full implementation in the code, but after the implementation scheme is developed.
5. Write System Design Document (SDD)
6. In the prior SSM development, it was noted that the analog system did not provide the accuracy that one would expect for a 16 bit A/D system. This issue shall be investigated and documented. The document will include a diagnosis of the problem and recommendations to resolve the issue.
7. A briefing will be provided to NDBC to summarize the document and provide a forum for questions and answers.
8. Conduct end-to-end test with a payload at SSC test stand
9. All associated documentation for the SSM project will be updated to reflect any changes.
10. Write all inclusive test report
11. Exiting units in NDBC inventory will be upgraded with improvements completed in this effort.

DELIVERABLES:

- Wireless Implementation Plan Brief
- Analog performance analysis & brief
- Updated SDD, Level B package, Green tag procedure, Calibration procedure

SCHEDULE: None

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

8. Laboratory/Process Improvement Projects

8.1 Incorporate GPS Compass Into NDBC CMAN Anemometer Alignment Procedure

BACKGROUND: Modify NDBC CMAN alignment procedures (NDBC-8028) to add use of the GPS compass to align anemometer mounts C-MAN stations. This will benefit NDBC by reducing repair/overhaul costs of \$12k every two years on the Sperry gyrocompass and production costs.

SCOPE: Modify NDBC-8028 procedures via ETP. Conduct at least one dry run. Make any necessary modifications and submit as level A.

TASKS:

1. Modify NDBC-8028 procedures via ETP to incorporate the use of the GPS compass, the original options in the ETP will not be obsolete in the event older system is needed.
2. Conduct at least one dry and make any necessary modifications to the procedures.

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3. Submit Level A Procedures via ECP process.

Deliverables:

- ETP for C-MAN installation of anemometers using the GPS compass
- ECP to update NDBC-8028
- Approved NDBC-8028 with GPS compass alignment

SCHEDULE:

- None

NDBC POC: Rodney Riley-Ocean and Wave measurement systems

8.2 Complete Setup of Ocean Cal Lab

BACKGROUND: In 2005 NDBC began developing an Ocean Sensor Calibration Laboratory in Building 3206. While most the large equipment has been installed there remain some issues that need to be completed to get the Ocean Cal Lab fully functional.

SCOPE: The purpose of this task is to complete the setup of the Ocean Cal Lab for use by TAO, reimbursable projects, and NDBC ocean sensor support. NDBC will provide guidance on the layout general concept of the laboratory. A future task(s) will automate the test processes in the lab.

TASKS:

1. Install sink per NDBC sketch.
2. Fabricate and install cabinets around salt baths. Cabinets should have supports for suspending sensors and probes in the baths.
3. Install stirrer motor mounts on cabinets. Will require the shortening of the stirrer rods.
4. Modify salt bath lids with cutouts and hinges to allow for stirrers and sensor removal while reducing evaporation.
5. Install cable trays to run temperature probes to multiplexing bridge.

Tasks 1- 5 are covered under All Programs tasking.

6. Develop specifications for de-ionized water system and recommend vendor/model
7. Develop specifications for system to test pressure portion of CTD and recommend vendor/model.
8. Prepare procedures for filtering, cleaning, and maintaining temperature and salinity baths.
9. Attend in-house Metrology training provided by NDBC
10. Modify existing ocean sensor calibration or functional tests to make use of facility.

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DELIVERABLES:

- Specifications and recommendation on de-ionized water system
- Specification and recommendation on pressure testing system
- NDBC procedures for operating and maintaining Ocean Cal Lab
- NDBC procedures for ocean sensor calibrations or functional tests using Ocean Cal Lab

SCHEDULE:

- None

NDBC POC: Regina Moore-Sensor systems & Technical Coordinator

8.3 Develop Automated AMPS Green Tag Tester

BACKGROUND: Payloads must be tested and certified with a green tag before they are ready to be used in support of NDBC operations. Green Tagging a payload is one of the most time consuming tests performed by technicians, requiring many measurements to be manually taken and is prone to human error. This test is one of the most important mission critical tests, as it certifies a payload as operationally ready for installation into a buoy. The repetitive nature of this testing, the length of the test, and frequency of testing, make the payload green tag test an ideal candidate for automation. Lab automation can save technicians time and reduce cost by reducing human error. Additionally, a more detailed and thorough test can be performed in a fraction of the time it takes to test a unit manually, improving quality control for our payloads.

SCOPE: This proposal is to develop an automated test platform for performing the AMPS green tag test. The test platform would consist of several commercial off-the-shelf (COTS) modules to be integrated into an enclosure/rack. A simple PC application would control the hardware via a single USB interface cable. A cable harness would connect the test platform to the payload.

The test platform would have the following capabilities:

- Test accuracy and function of all analog channels
- Test accuracy and function of all power channels
- Test functionality of all serial channels
- Test functionality of 3 RS485 channels
- Test functionality and voltage levels of 16 DIO channels
- Test GPS for proper functionality
- Validate analog board calibration
- Validate all firmware versions
- Test IMM
- Graphical User Controls

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- Print out a data sheet listing all test performed and pass/fail status of each test

The current green tag test involves a technician supplying and measuring signals using standard lab equipment. After each measurement/test in the procedure, the technician must re-wire the test setup to move on to the next channel. Human error is always a risk with highly repetitive task such as this. Due to time constraints, minimal testing is done to each input and output to validate correct operation. Even with the limited testing, the AMPS green tag tests take on average 3.5 hours for a single payload. Multiple tests cannot be run concurrently, limiting the lab to green tagging 2 - 3 units a day. It is always a possibility that the payload may pass the criteria that are used for green tag certification, but still have problems that are not caught by our test cases. An automated tester could test every input and output, using multiple test conditions at relatively high speeds.

Utilizing an automated tester could reduce the testing time for each payload down to about 30 minutes or less, depending on the detail level of the testing criteria. Once started the technician would be free to work on other task until the test is completed. A more detailed and thorough payload test increases the possibility that any faulty equipment is identified before going out the door. In addition, the test results can be saved in a digital format, uniquely identified by serial number, to facilitate the collection of reliability data and to easily track the performance of particular payloads over time.

Many COTS modules exist for test and measurement automation. All modules must be compatible with National Instruments Test and Measurement development environments, to facilitate a rapid development cycle and prevent any hardware conflicts. To prevent the test platform from having to be tied to a specific computer, it would be advisable to stick to USB based modules. All USB modules can be fed into a USB hub attached to the test platform, allowing a single USB cable to interface between the computer and the test platform. The test software can then be installed on several of the laptops in the Engineering Lab, and used interchangeably with whichever laptop is available at test time.

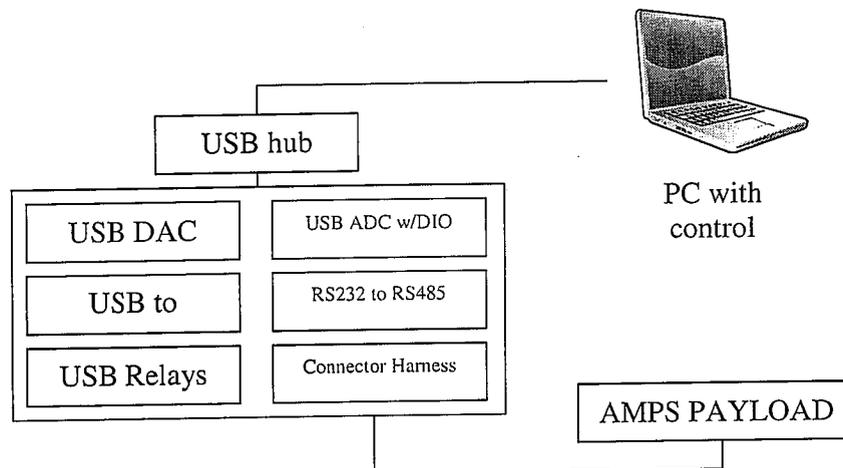


Figure 1- Diagram of Automated Test Platform

The above diagram illustrates the types of modules needed to assemble an automated test platform for the green tag test. A quick survey of USB modules was made, and there is a large variety of options available on the market. An economical solution that meets the specifications for the green tag test can be assembled for approximately \$3,500.00. This includes all necessary test hardware, but does not include mounting hardware or test harness cables.

Currently National Instruments (NI) is the standard for test and automation software. They make a variety of software development tools that are used industry wide, including LabView. Most Test and Automation software today is developed using either NI Labview or NI Test and Measurement Studio in conjunction with Microsoft's Visual Studio. NI Test and Measurement Studio has been replacing LabView, as the standard, as many companies have realized that their software engineers have more experience with C/C++ and can develop quality code in a shorter time as opposed to using LabView. It is recommended that the software for an automated test platform be developed using NI Test and Measurement Studio, which would require the software be purchased. A copy of Measurement Studio would cost approximately \$500.00 and would be re-usable for any future automation projects.

The control software should be modular, consisting of generic routines that perform a single measurement task. For example, there would be single software routine that measures a user specified analog input channel testing for user specified pass/fail criteria. The routine would return the results of the test. Another routine would test a user specified serial channel, against a user specified data set, returning the result of the test. Additional routines would

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exist for each test type. This would allow for new green tag test to be generated for new AMPS configurations, or other payloads, without having to make significant changes to the control software. The software would be structured to be as generic as possible, to support systems other than AMPS, should such requirements arise at a later date.

A simple text file would store all test parameters for the green tag test. The control software would read in the text file, and sequentially execute the test as specified in the file. After completion of all tests, the control software would generate a print out of all results, formatted in a suitable manner for QA records.

To support easy communication between the payload and the automated control software, some changes to the AMPS firmware should be made. This should consist of simple commands that the automated control software can send to the payload to perform testing related task, and get simple responses from the payload. All the required functionality already exists on the AMPS payload, but was coded for a human interface (technician) and is not automation friendly. These automation commands would be added to the AMPS firmware and would not change the operational behavior of the payload.

Design documentation would be to the level NDBC requires. At a minimum, a simple drawing sketch of all hardware should be created as well as some user instructions. More detailed documentation would be prudent, if for no other reason than maintainability.

TASKS:

1. Select and purchase equipment
2. Develop software control application
3. Modify AMPS firmware if required to accept automation commands (AMPS firmware revisions should be minimized as much as possible to accommodate the automated testing)
4. Test, debug and validate automated testing
5. Document automated testing application (may include system design document, user's manual, updated NDBC procedures, etc.)

Deliverables:

- Fully automated AMPS green tag tester
- Hardware necessary for automated testing (e.g., cables, connectors, etc.)
- Documentation per NDBC specification
- Updated AMPS firmware if required

SCHEDULE:

- None

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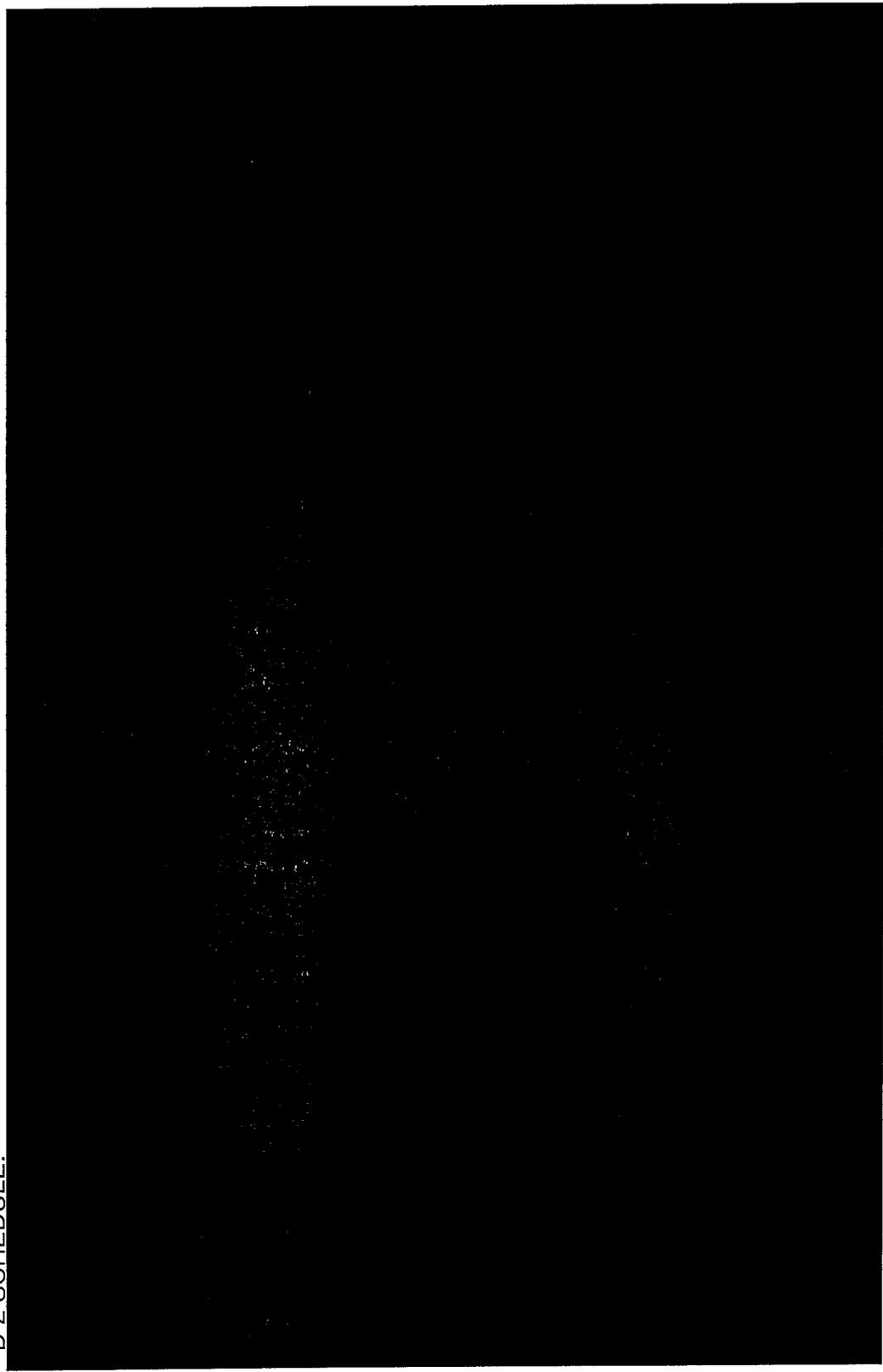
NDBC POC: Regina Moore-Sensor systems & Technical Coordinator



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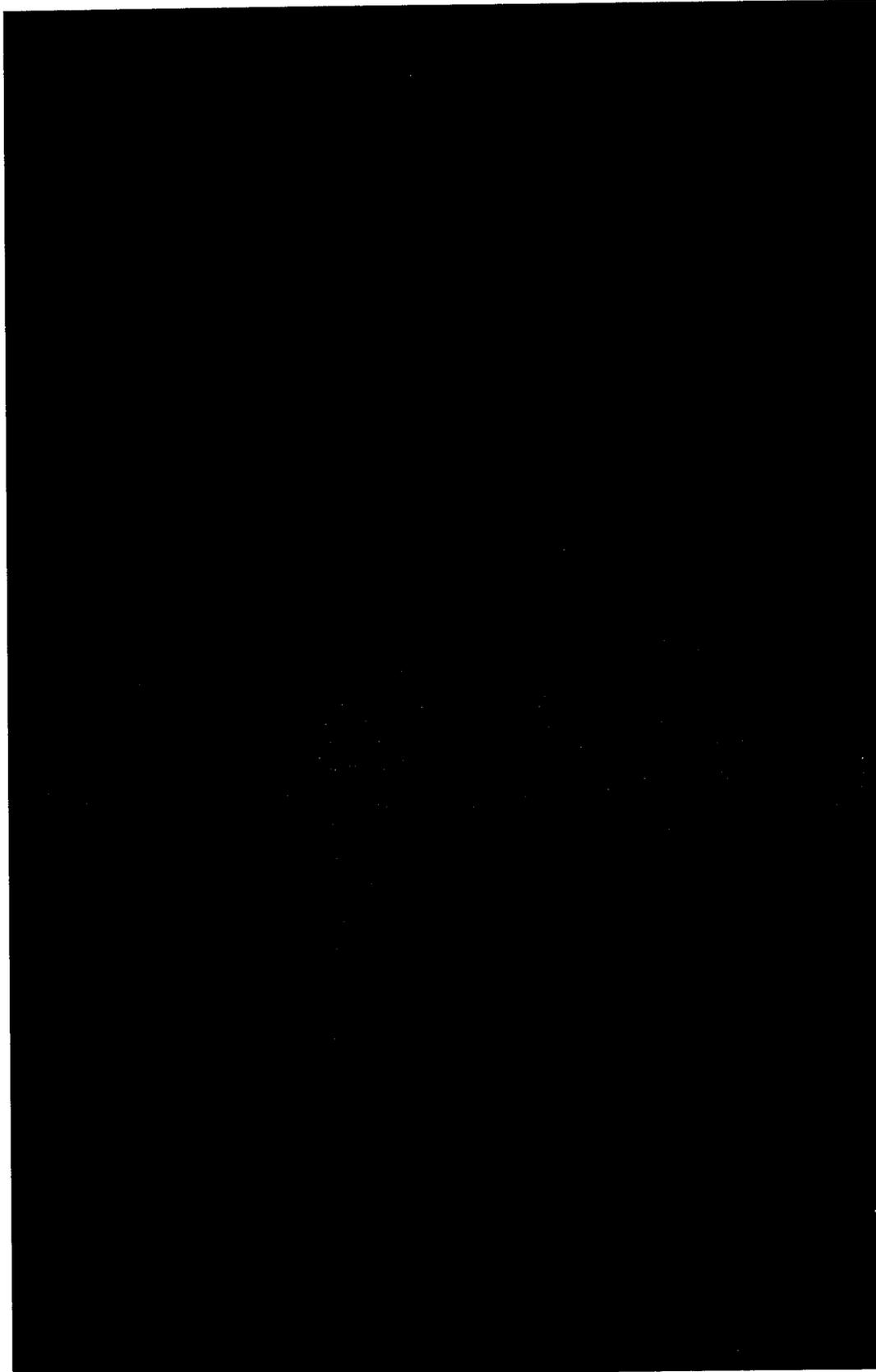
10.0 D-2 SCHEDULE:





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11.0 D-2 Delivery Schedule:

Task #	Weather Buoy Technical Refresh	Acceptance Criteria
2.4	ARGOS III Evaluation	
	ARGOS III Evaluation report/whitepaper on the results power consumption, data throughput, bandwidth limitations, system latencies	Deliver to iNUN
2.5	Test and Evaluation of Data Collection Platform Interrogate (DCPI) System	
	GOES Requirements document listing DCPI commands and command responses II Evaluation	Deliver to iNUN
	DCPI Draft design document	Deliver to CM
	DCPI Payload compatible software	Deliver to CM
	Report detailing system power consumption and analysis; command and command response success evaluation and results	Deliver to iNUN
3.3	Real Time Operating System Feasibility and Proof-of-Concept for NDBC Payloads	
	Written recommendation for selection of an RTOS for use on AMPS ARM processor and selected set of environmental measurements and communications tasks	Deliver to iNUN
	Source code implementing both the AMPS RTOS and task implementation.	Deliver to CM
	Documented evidence of deterministic nature of task execution using Rate Monotonic Analysis or other industry accepted method along with a report detailing the results of the proof-of-concept implementation of the AMPS RTOS and environmental measurements	Deliver to iNUN
3.4	1.8-Meter Buoy Enhancements	
	Trade Analysis of 1.8m buoy and Datawell Waverider	Deliver to iNUN
	<i>NDBC Approval to Proceed</i>	
	AMPS DDWM 1.8m Requirements Document	Deliver to iNUN
	1.8m Preliminary Design Review (PDR)	Deliver to iNUN
	1.8m Critical Design Review (CDR)	Deliver to iNUN
	1.8m Updated Level B drawing package approved in CMO	Deliver to CM
	1.8m Updated test procedures	Deliver to CM
	1.8m Report on test conducted at SSC and write a test report	Deliver to iNUN
3.5	Combine AMPS GPS Systems	
	AMPS GPS Preliminary Design Review (if other processes are revised in this AMPS version)	Deliver to iNUN
	AMPS GPS Critical Design Review (CDR)	Deliver to iNUN
	New firmware version of AMPS	Deliver to CM
	Test plan for regression testing of the AMPS firmware with GPS enhancements	Deliver to iNUN

	Data Analysis and Report describing results of regression testing AMPS firmware with GPS enhancements	Deliver to iNUN
	AMPS GPS Software Version Description	Deliver to CM
	Revised AMPS Users Manual and other documents as necessary	Deliver to CM
4.1	Add ADCP, CT, and SCM to Buoy Level A Drawings	
	Submit ECPs for Ocean Sensors Level A drawings	Deliver to CM
4.2	Improve/Elevate CT and SCM ETPs to NDBC Instructions	
	<i>Submitted ECPs with finalized updated NDBC procedures:</i>	Deliver to iNUN
	CT verification	Deliver to CM
	SCM verification	Deliver to CM
	NDBC 1002 Preliminary Electronic Systems Testing (PEST)	Deliver to CM
	NDBC 1001 Field Integration Testing (FIT)	Deliver to CM
4.3	Develop CT, ADCP, and SCM Lifecycle Documentation	
	ETP that describes lifecycle processes for CT sensors	Deliver to CM
	ETP that describes lifecycle processes for ADCP sensors	Deliver to CM
	ETP that describes lifecycle processes for SCM sensors	Deliver to CM
	Conduct briefings to coordinate reviews as required for Ocean Sensors.	Deliver to iNUN
	Submit Ocean Sensor ETPs for NDBC review	Deliver to CM
4.4	Improve Cabling on 3-m CT, SCM and ADCP Fixed Mount Installations	
	Design review for routing and fixating bridle mounted CT, ADCP, and SCM cables	Deliver to iNUN
	<i>NDBC review and approval required</i>	NDBC Approval Via Email
	Complete modifications to existing level A drawings to include CT, ADCP, and SCM cables	Deliver to CM
4.5	Deploying Standard Buoy with SCM and Deploying AWAC on a Sled Near 42007 for Comparison	
	Level A drawing of Standard Buoy with bridle mount SCM	Deliver to CM
	Test report on field testing of Standard Buoy w/ SCM	
4.6	Support Service & Installation of Waves & Currents Test on 42007	
	Test Acoustic System and Sled Mounted Profilers	Deliver to iNUN
	Fabricate NDBC Design Mounts	Deliver to iNUN
	Trip report for installation of two oceanographic sleds on 42007	Deliver to iNUN
5.1	Investigate a Lithium Secondary Battery Power System for NOOS Optimization and TAO Buoy	
	White paper on the benefits of rechargeable lithium batteries recommend for use by NDBC.	Deliver to iNUN
5.2	Investigate a Rechargeable Power System For Standard Buoy	

	Conduct an engineering review and provide a report that addresses the question of a rechargeable power system on the SB for the Weather and Ocean (WxO) program only.	Deliver to iNUN
6.3	DDWM Documentation: Document Implementation of Wave Algorithm	
	DDWM System Design Document	Deliver to CM
		Deliver to CM
6.4	Develop Method to Eliminate Gyrocompass	
	Technical Analysis Report for eliminating Gyrocompass	Deliver to iNUN
6.5	Develop & Document Uniform Cable Layout for 3-Meter AMPS/DDWM Buoy	
	AMPS DDWM Preliminary Design Review	Deliver to iNUN
	AMPS DDWM Critical Design Review	Deliver to iNUN
	Modified level A 3-meter AMPS drawings with cable routing defined and submit ECP	Deliver to CM
	Test report on new AMPS/DDWM cableways	Deliver to iNUN
6.6	Implement/Support Modifications to Standard Buoy for Improvement on Swell in Directional Waves Measurement	
	Standard Buoy Preliminary Design Review Directional Waves	Deliver to iNUN
	<i>NDBC Approval to Implement SB Design</i>	NDBC Approval Via Email
	Standard Buoy Critical Design Review Directional Waves	Deliver to iNUN
	Design Document for SB modification recommendations for Directional Waves	Deliver to CM
	ECPs to document any SB firmware or hardware changes	Deliver to CM
	Prepare new SB configuration deployment for field testing	Deliver to iNUN
	Test report on field testing for SB Directional Waves	Deliver to iNUN
7.3	Smart Sensor Module Enhancements & Wireless Communications	
	Smart Sensor Accuracy Investigation	Deliver to iNUN
	<i>NDBC Approval to Proceed</i>	
	Wireless Implementation Plan Brief	Deliver to iNUN
	Analog performance analysis & brief	Deliver to iNUN
	Updated SDD, Level B package, Green tag procedure, Calibration procedure	Deliver to CM
8.1	Incorporate GPS Compass Into NDBC C-MAN Anemometer Alignment Procedure	
	ETP for C-MAN installation of anemometers using the GPS compass	Deliver to CM
	ECP to update NDBC-8028	Deliver to CM
8.2	Complete Setup of Ocean Cal Lab	
	Specifications and recommendation on de-ionized water system	Deliver to iNUN

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	Specification and recommendation on pressure testing system	Deliver to iNUN
	NDBC procedures for operating and maintaining Ocean Cal Lab	Deliver to CM
	NDBC procedures for ocean sensor calibrations or functional tests using Ocean Cal Lab	Deliver to CM
8.3	Develop Automated AMPS Green Tag Tester	
	Fully automated AMPS green tag tester	Deliver to iNUN
	Assemble hardware necessary for automated testing (e.g., cables, connectors, etc.)	Deliver to iNUN
	Documentation per NDBC specification	Deliver to CM
	Updated AMPS firmware if required	Deliver to CM

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APPENDIX E-1

Engineering Project Plan

Task Order 39, CLIN 0304CD – TAO Buoy Operations and Engineering Support - CY05 TAO Buoy Technical Refresh

**PERIOD OF PERFORMANCE: Base - July 1, 2009 – June 30, 2010
Option – July 1, 2010 – December 31, 2010**

NDBC developed sub-task heading for the Technical Refresh work in previous contract year and will be used again in CY05 for estimation purposes. The headings are:

- Task 1 Mechanical/Architectural Projects
- Task 2 Communications Projects
- Task 3 Payload Projects
- Task 4 Ocean Sensor Projects
- Task 5 Power System Projects
- Task 6 Waves Projects
- Task 7 Meteorological (Met) Sensor Projects
- Task 8 Laboratory/Process Improvements

All TAO Refresh tasks will be conducted utilizing the Engineering Support Request (ESR) system.

Numbering convention from WxOP Tech Refresh used for AMPS projects:

TAO Technology Refresh Task Listing		
Task #	Title	NDBC POC
1.3	Mechanical Hardening of Refreshed Buoy	Lex Leblanc
1.4	Convert TAO Level B package to Level A	Lex Leblanc
3.6	Develop AMPS Deployment Mode Reporting Capability	Ralph Cambre
3.7	Troubleshoot and Correct Inductive Modem Module (IMM) AMPS Interface	Ralph Cambre
3.8	Improve AMPS Housekeeping Power Indicators	Ralph Cambre

1. Mechanical/Architectural Projects

1.3 Mechanical Hardening of Refreshed Buoy

Tasking includes the following items: Tube Package Modifications, IM Coupler Final Design Determination, External Battery Pack capable of 18 month deployments. Redesign of the TAO tube to include the following features: In light of recent events and lessons learned from operating the current TAO refreshed design in CY04. A cost benefits analysis using a single tube design for NOOSS & TAO was completed in CY04 in trying to determine design layout.

TASKS

The design should incorporate the following features:

1. Increase the watertight integrity of the existing design. As much as practical utilize the NOOS TAO tube design. For examples plugs at the bottom of the canister.
2. External battery pack. Designed for 18-month deployments, with method to inert and pressure relief.
3. Method to fill TAO payload container with inert gas.
4. Any design must have the capability of rigidity mounting to:
 - KA test stands.
 - Existing TAO towers
 - Existing NOOS buoys towers
 - SSC TAO test stands
5. Method of conducting compass compensation procedures, which removes user bias in the procedure.
6. Proper and consistent anemometer alignment between payload compass and wind sensor.
7. If at all practical, protect interface antennas from environment by including within the TAO AMPS package design.
8. Written Documentation required:
 - ETPs as required for steps 2, 5 & 6 above.
9. ETPs for TAO payload assembly and Green Tag Procedures.
10. Procure material and build prototype of Redesigned TAO Electronics enclosure and battery enclosure for testing at SSC.

DELIVERABLES

- Cancel/supersede existing procedures by either combining with the existing Green Tag procedures for AMPS, WX, NOOS, DART payloads or issuing a new ETP specific to TAO AMPS, whichever is most cost affective.
- Update TAO Refreshed drawing packages. Coordinate with TAO Operations to assist in update to at sea standard operating procedures recommendations to TAO Operations.
- Develop a consumable inventory checklist for integrations of new design of TAO refreshed buoys.
- Mechanical Hardening of Refreshed Buoy to include the following items: Tube Package Modifications, IM Coupler Final Design Determination, External Battery Pack capable of 18 month deployments.

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1.4 Convert TAO Level B package to Level A

Develop a system documentation that establishes TAO Refreshed Base-line, Complete Functional Audit, Complete Physical Audit. Present a configuration Management plan for the TAO refreshed system included in the plans are:

- Level A package for the TAO refreshed system to establish TAO Refreshed Base-line.
- System test procedures (Blue Tag)- Update Refresh buoy ETPs & NDBC procedures
- Shipboard operating procedures for refreshed TAO buoys
- System block diagrams
- Firmware requirements, payload and sensors.

3. TAO Payload Projects

3.6 *Develop AMPS Deployment Mode Reporting Capability*

BACKGROUND: The present versions of AMPS do not have the “Deployment Mode Reporting” capability. Deployment Mode Reporting is where sensor data is collected and reported (possibly at increased rates) at the time of deployment to allow ground truth observations of the data to determine if the sensors/system is functioning properly. Currently the non-AMPS DART systems provide a Deployment Mode to ensure that the bottom pressure recorder is functioning prior to departing the station. This same capability would be required for the AMPS-DART systems. In a TAO configuration, the Deployment Mode would poll the IM line sensors and transmit this data via the RF transmitters every 10 minutes. This mode would enable the technicians to confirm proper operation of the ocean sensors as part of the buoy mooring operations. During TAO buoy deployment operations, once both ends of the IM line are submerged, all work is halted until confirmations of all IM line sensors is working. Once the sensors operations are confirmed deployment is continued. Presently the only method of confirming the operations is to use the RF transmitter and enter the AMPS TAO test menu and poll IM line sensors. This provides an opportunity for human error to be introduced if parameters are improperly set in the AMPS. Without a “deployment mode”, NTSC Engineering staff knowledgeable of AMPS interface is required to augment TAO cruises for Refreshed buoy deployment. Previously buoys were deployed without IMM line communication during deployment because of the technician’s lack of knowledge or clearly written procedures for the still-developmental AMPS payloads. In a Weather Buoy configuration both ocean and met sensors could be sampled and reported via the previously developed wireless RF interface every 10 minutes or at the hourly reporting schedule to the technicians deploying the buoy. This could potentially shorten the ground truth period to 30 minutes instead of three hours. This AMPS firmware revision should

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be coordinated with other AMPS revisions (including revisions from other programs) to reduce the cost of laboratory and field certifications.

SCOPE: Determine the requirements of all three programs as they relate to Deployment Mode Reporting and provide an informal report, with estimated LOE, for each program. Modify AMPS firmware to provide Deployment Mode reporting for all programs. Efforts should be made to minimize program specific firmware changes. It is expected that this firmware revision will be incorporated with other AMPS revisions and as such will be included in combined Software Version Descriptions, Users Manuals, TAO Operations Manuals, etc., and in laboratory and STF testing efforts.

TASKS:

1. Determine all program requirements for Deployment Mode Reporting.
2. Modify AMPS firmware to perform Deployment Mode Reporting for the three programs.
3. Include firmware revision in a Software Version Description and other documents (i.e., Users Manual, System Design Document, TAO Operations at Sea Handbook, etc.) as necessary.
4. Perform laboratory and STF testing to ensure new AMPS firmware version functions as required.

DELIVERABLES:

- Requirements Document with estimated LOE for each program.
- Preliminary Design Review (if other processes are revised in this AMPS version)
- Critical Design Review (CDR)
- New firmware version of AMPS
- Test plan for regression testing of the AMPS firmware
- Data Analysis and Report describing results of regression testing
- Software Version Description
- Revised Users Manual and other documents as necessary

SCHEDULE:

- NDBC approval at PDR (if required)
- NDBC approval at CDR

NDBC POC: Ralph Cambre

3.7 Troubleshoot and Correct Inductive Modem Module (IMM) AMPS Interface

BACKGROUND: In previous AMPS and Seabird versions the Seabird sensors switched from the Transistor- Transistor-Logic (TTL) protocol to the RS-232 communication protocol for unknown reasons causing communication errors with the IMM. Seabird has written a special version of firmware for NDBC to make the Transistor- Transistor-Logic (TTL) the

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default communication protocol rather than the RS232. Although the latest Seabird firmware version seems to have corrected the problem, understanding the cause of the IMM to shift logic levels has never been explained or determined. If the AMPS is causing the IMM to reset, this issue could manifest into other problems that will be impossible to trouble shoot in remote locations. This AMPS firmware revision should be coordinated with other AMPS revisions (including revisions from other programs) to reduce the cost of laboratory and field certifications.

SCOPE: Perform an investigation into Inductive Modem Module (IMM) issues including loss of configuration information. Determine the cause of issues with inconsistent IMM ocean current sensor data. Perform firmware corrections where appropriate, unit test, and regression test firmware. It is expected that this firmware revision will be incorporated with other AMPS revisions and as such will be included in combined Software Version Descriptions, Users Manuals, TAO Operations Manuals, etc., and in laboratory and STF testing efforts.

TASKS:

1. Investigate and correct IMM configuration data loss issue.
2. Investigate and correct character dropout issue occurring on 2nd IMM line sensor (and other sensors, if applicable).
3. Modify AMPS firmware as necessary to correct IMM issues.
4. Include firmware revision in a Software Version Description and other documents (i.e., Users Manual, System Design Document, TAO Operations at Sea Handbook, etc.) as necessary.
4. Perform laboratory and STF testing to ensure new AMPS firmware version functions as required.

DELIVERABLES:

- Preliminary Design Review (if other processes are revised in this AMPS version)
- Critical Design Review (CDR)
- New firmware version of AMPS
- Test plan for regression testing of the AMPS firmware
- Data Analysis and Report describing results of regression testing
- Software Version Description
- Revised Users Manual and other documents as necessary

SCHEDULE:

- NDBC approval at PDR (if required)
- NDBC approval at CDR

NDBC POC: Ralph Cambre

3.8 Improve AMPS Housekeeping Power Indicators

BACKGROUND: NDBC Engineering reverse engineering of the AMPS power board firmware revealed potential issues with gain settings on the power board that could result in erroneous TAO current and system voltage measurements under some circumstances. Since the current versions of AMPS report housekeeping power indicators that lack accuracy, they are not used as a method to determine the length of buoy deployments or as indications of buoy problems. Accurate indications of the supply voltage and current consumption reported shore side are required to determine if a sensor shorted during deployment, resulting in increased power consumption and need for early replacement. Once a base line is established for AMPS power demand, blue tag test would reveal potential power problems and shortened deployment on AMPS buoys.

SCOPE: Correct the power board measurement issue of AMPS main board firmware not providing proper gain settings when system voltage and electrical current measurements are made and thus potentially not properly scaling these data correctly. Also determine the correct values of input offset voltages of the differential amplifiers on the AMPS power boards that measure system electrical currents and correct scaling to include these input offset voltages. Correct system electrical current scaling to include conversion back to electrical current by scaling for the voltage drop across the current sense resistors. A full description of the power board gain and current scaling issues with suggested corrections are described in the attached draft system design document of the AMPS power board system housekeeping measurement firmware. These scaling corrections shall be corrected in either firmware or parameter load files as determined appropriate by the NTSC software engineer. Finally, investigate and implement an algorithm for more accurate system voltage and electrical current housekeeping measurements in TAO mode to replace the single sample measurement currently performed. It is expected that this firmware revision will be incorporated with other AMPS revisions and as such will be included in combined Software Version Descriptions, Users Manuals, TAO Operations Manuals, etc., and in laboratory and STF testing efforts.

TASKS:

1. Investigate and correct TAO power board gain errors, input offset voltage scaling errors, and sense resistor scaling errors.
2. Modify AMPS firmware as necessary to correct power housekeeping issues.
3. Include firmware revision in a Software Version Description and other documents (i.e., Users Manual, System Design Document, TAO Operations at Sea Handbook, etc.) as necessary.

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4. Perform laboratory and STF testing to ensure new AMPS firmware version functions as required.

DELIVERABLES:

- Preliminary Design Review (if other processes are revised in this AMPS version)
- Critical Design Review (CDR)
- New firmware version of AMPS
- Test plan for regression testing of the AMPS firmware
- Data Analysis and Report describing results of regression testing
- Software Version Description
- Revised Users Manual and other documents as necessary

SCHEDULE:

- NDBC approval at PDR (if required)
- NDBC approval at CDR

NDBC POC: Ralph Cambre

After all TAO firmware enhancements are complete, determine TAO-Firmware version for commissioning and commission the TAO AMPS.

The remaining tasking will be completed for TAO Technical Refresh with the SAIC IT and DAC departments. DAC tasking will be funded under TO-33 and IT tasking will be funded in TO-34 Engineering TAO Technical Refresh.

TASKS

DAC

1. Conduct TAO Legacy/ Refresh Ocean Sensor Comparison evaluations at sites in the Pacific array used for In-Situ Inter-comparisons Assessment: In-situ comparisons of at least one equatorial site and one non-equatorial site, provide TAO Refresh System Evaluation Reports for all in-situ and system accuracy tests.
2. Review Gulf of Mexico TAO Refreshed buoy data from 42A70 & 42B70 for both performance and accuracy.
3. Performance and data comparison reports for GOM deployed test buoys – six weeks after deployment.
4. DAC support to handle the increased volume of Real-Time data of TAO refreshed system and to meet NWS requirements for Max Delay and Quality Flags inclusions, and generate the necessary metadata to support research and climate record continuity, data verification, QA and storage, and provide improved data distribution methods. Currently quality flags are not available on Public web page, NDBC

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currently uses PMEL transitioned quality flags. The NWS requirement will have to be reviewed to understand what is required for quality flags.

5. Perform parallel testing between the refreshed and legacy real-time systems.

IT

6. IT support for WEB based data display of 55+ refresh sites for real-time and delayed mode data display and storage. IT will make the legacy and refresh system compatible for web data display and delivery.
7. DAC shore-side data interface maintenance and distributions. Console will continue to be improved as needed.
8. Data Management Procedures to support a 55 buoy array of TAO refresh that covers: delayed mode data recovery procedures for field operations, delayed mode QA and storage requirements, TAO Refreshed Buoy Data Administrative Procedures.
9. Continue and complete IT architecture/system for the TAO refresh. IT will update and deliver IT architecture document.
10. Load delayed mode data into MYSQL database for both TAO and PIRATA (if data available).

Operations

11. Administrative Procedure for Refresh Buoy Build, Test, and Deployment.
12. Refreshed Buoy at Sea Handbook to support any and all changes in Refreshed TAO buoy system
13. Calibrations Management Procedure
14. Refresh Buoy Builds\Deployments (8 per year)
 - a. Pacific Deployments- Deploy 6 buoy in FY2010 in the Pacific array
 - b. Gulf of Mexico – Deploy 1 Engineering test platform in Gulf of Mexico FY09.
 - c. Maintain TSTF1 for comparison testing of TAO Refresh Systems at SSC.
 - d. Establish and maintain one TAO Refresh system at SSC for long term engineering testing.
 - e. Deploy and continue to maintain the TAO refresh test buoy in the Gulf of Mexico and plan on quarterly service visits.

DELIVERABLES

DAC

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- Document and conduct TAO Legacy/ Refresh Ocean Sensor Comparison evaluations at sites in the Pacific array used for In-Situ Inter-comparisons Assessment: In-situ comparisons of at least one equatorial site and one non-equatorial site.
- Review Gulf of Mexico TAO Refreshed buoy data from 42A70 & 42B70 for both performance and accuracy.
- Conduct TAO Refresh system endurance test- Prototype at SSC and Gulf of Mexico
- DAC support to handle the increased volume of Real-Time data of TAO refreshed system and to meet NWS requirements for Max Delay and Quality Flags inclusions, and generate the necessary metadata to support research and climate record continuity, data verification, QA and storage, and provide improved data distribution methods

IT

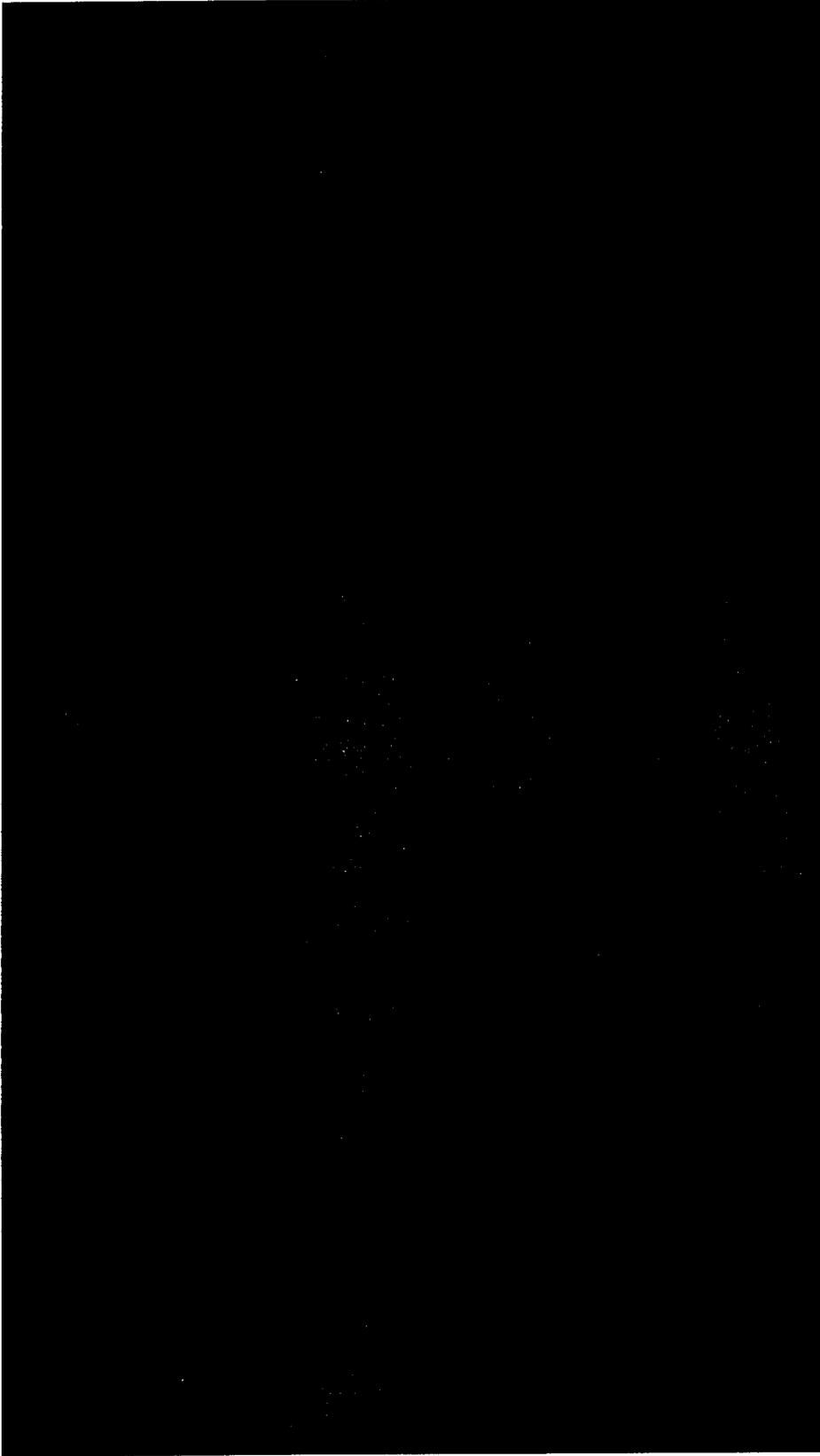
- IT support for WEB based data display of 55+ refresh sites for real-time and delayed mode data display and storage will be completed by 6/1/2010.
- Develop approved Data Management Procedures to support a 55 buoy array of TAO refresh that covers: delayed mode data recovery procedures for field operations, delayed mode QA and storage requirements.

Operations

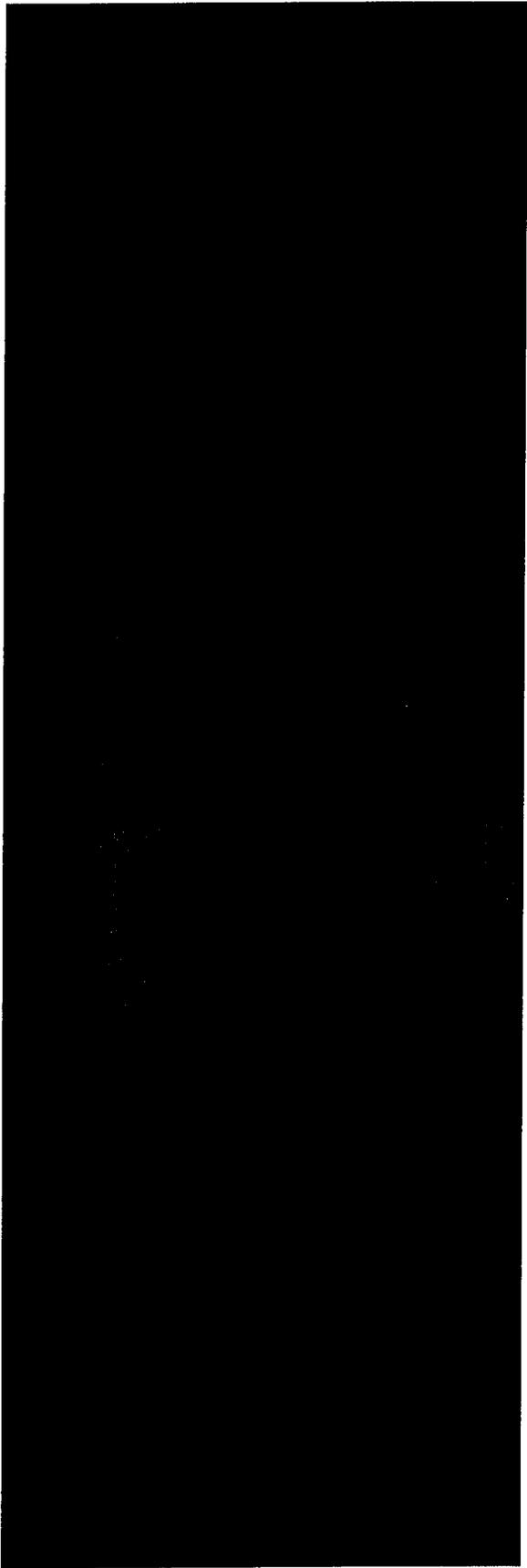
- Field service plans for GOM services two weeks before each field service mission.
- Field service reports GOM services two weeks after each field service.
- Develop approved Administrative Procedure for Refresh Buoy Build, Test, and Deployment.
- Update as required the “Refreshed Buoy at Sea Handbook” to support any and all changes in Refreshed TAO buoy system
- Refresh Buoy Builds\Deployments (8 per year)
 - Pacific Deployments- Deploy 6 buoy in FY2009 in the Pacific array
 - Pacific deployments will be conducted in tandem with the Legacy cruises under CLIN 0304CB
 - Gulf of Mexico – Deploy 1 Engineering test platform in Gulf of Mexico FY09.
 - Maintain TSTF1 for comparison testing of TAO Refresh Systems at SSC.
 - Establish and maintain one TAO Refresh system at SSC for long term engineering testing.
 - Deploy and Continue to maintain the TAO refresh test buoy in the Gulf of Mexico and plan on quarterly service visits.
 - Conduct system Endurance Test- Prototype at SSC and Gulf of Mexico.
 - Vessel support necessary for the Gulf of Mexico deployment and service visits will be provided by NDBC.

 Science Applications <i>International Corporation</i> <small>From Science to Solutions™</small>	Document Number:	TMP-39-2
	Version Number:	1
	Issue Date:	1 July 2009

10.0 E-1 SCHEDULE:



	Document Number:	TMP-39-2
	Version Number:	1
	Issue Date:	1 July 2009



TAO Refresh Buoy		
1.1	Mechanical Hardening	Acceptance Criteria
1.1.1	Tube Package Modifications	Deliver to CM
1.1.2	External Battery Pack	Deliver to CM
1.1.3	IM Coupler Final Design Determination	Deliver to iNUN
1.1.4	Convert Level B drawing package to Level A	Deliver to CM
1.1.5	Update, cancel/supersede procedures	Deliver to CM
1.1.6	Procure & Build Prototype TAO Refresh System for SSC testing	Deliver to iNUN
1.2	Amps Payload Hardening	
1.2.1	Deployment mode development and testing	Deliver to CM
1.2.2	Troubleshoot and Correct Inductive Modem Module (IMM) AMPS Interface Software or Hardware Issue	Deliver to CM
1.2.3	Correct house keeping and data display	Deliver to CM
1.2.4	File Naming Convention	Deliver to CM
1.2.5	Finalize AMPS Stacks Power Draw Investigation	Deliver to iNUN
1.2.6	Final TAO-Firmware version certification	Deliver to iNUN
1.2.7	AMPS System Test Plan, Analysis and Report	Deliver to iNUN
1.2.8	Shared Documentation Update	Deliver to iNUN
1.3	Tests/System Verification	
1.3.1	TAO Legacy/Refresh Ocean Sensor Comparison	Deliver to iNUN
1.3.2	System Endurance Test-Prototype (SSC and GOM)	Deliver to iNUN
1.3.3	In-Situ Intercomparisons Assessment	Deliver to iNUN
1.3.4	TAO Refresh System Evaluation Report	Deliver to iNUN
1.4	Shore-Side Processing	
1.4.1	<i>DAC support to handle increased volume of TAO data</i>	
1.4.1.1	Data Verification	Deliver to iNUN
1.4.1.2	Data QA and Storage	Deliver to iNUN
1.4.1.3	Improved Data distribution methods	Deliver to iNUN
1.5	Web Support	
1.5.1	Data Display for 55+ Refresh Sites Real Time & Delayed Mode	Deliver to iNUN
1.5.2	Interface Maintenance	Deliver to iNUN
1.5.3	<i>Data Distribution</i>	
1.5.3.1	Determination of data distribution to end users	Deliver to iNUN
1.5.4	<i>Data Management</i>	
1.5.4.1	Delayed Mode Data recovery procedures for field	Deliver to iNUN
1.5.4.2	Delayed mode QA and storage requirements	Deliver to iNUN
1.5.4.3	Refreshed Buoy Data Administrative Procedures	Deliver to iNUN

1.6	Procedural Development	
1.6.1	Develop Administrative Procedures	Deliver to iNUN
1.6.2	Redline Refreshed Buoy at Sea Handbook	Deliver to iNUN
1.6.3	Calibrations Management Procedure	Deliver to iNUN
1.6.4	Convert ETPs to NDBC Procedures	Deliver to CM
1.6.5	System documentation to support TAO Buoy Operations	Deliver to CM
1.6.6	Configuration Management	Deliver to CM
1.7	Deploy and Maintain TAO Refresh Test Platforms	
1.7.1	<i>GOM</i>	
1.7.1.2	Deploy TAO Test Buoy GM-10-01	Deliver to iNUN
1.7.1.4	Quarterly Service Visit GM-10-02	Deliver to iNUN
1.7.1.6	Quarterly Service Visit GM-10-03	Deliver to iNUN
1.7.2	<i>SSC</i>	
1.7.2.1	Configure and Maintain TAO Refresh System at SSC	Deliver to iNUN
1.7.2.2	Maintain TSTF1 for Comparison Testing	Deliver to iNUN
1.7.3	TAO Refresh Mooring Designs and Improvement	Deliver to CM

Title of Task Order:	Contract Operations Supporting the NWS/NDBC Ocean Observing System of Systems (NOOSS)- Task Order 35
NDBC Branch:	OPS 50 and OPS 53
Performance Period:	CLIN: July 1, 2007 – June 30, 2010 Current Contract Year: July 1, 2009 – June 30, 2010
Task Order Type:	Cost Plus Fixed-Fee (CPFF)
Purpose:	The purpose of this NTSC task order is: 1) to operate the NTSC such that all NDBC performance requests tasked to the NTSC are met within budget and on time, and 2) to provide performance-based services in the following functional areas: mail services, property, shipping, receiving, consumable supplies & inventory, vehicle management, technical multimedia, and financial services. These services directly support the operational mission of the NDBC.
Background:	The NWS/NDBC Ocean Observing System of Systems (NOOSS) is an integrated, sustained ocean observation and information delivery system that serves U.S. coastal waters, as well as the offshore waters of the Pacific and Atlantic Oceans and the Gulf of Mexico. The NOOSS is NOAA's National Backbone for Marine Observations. The system consists of headland, moored and mobile data acquisition platforms, real-time processing and information quality control, and product delivery systems. The delivery system components include: Moored Buoys, Fixed Coastal Sites (CMAN), Voluntary Observing Ship Program, Oceanographic Drifting Buoys and Subsurface Oceanographic "Floats", Deep Ocean Assessment and Reporting of Tsunami (DART) buoys, and the Equatorial TAO Array. NDBC is charged with the optimal operations and maintenance of the NOOSS and all its observing components.
Scope of Effort:	The objective of this task order is for the NTSC to operate in such a way to provide program-wide support to NWS' NDBC Ocean Observing System of Systems (NOOSS), a primary element of NOAA's Integrated Ocean Observing System and maintain close liaison with the NDBC Contracting Officer, COTR, ACOTRs, and Senior Management Team to achieve program goals, assure effective use of resources, and clarify requirements within the framework of the tasks assigned. The scope of this effort includes all activities and resources required to provide management, supervision and operation of the support contract including, but not limited to, the oversight of cost, schedule, performance, and metrics on all task orders. The contractor will reach back to access contractor corporate resources as required to support the NOOSS or IOOS.

Environmental program such that all regulatory requirements and NOAA policy and procedures are met.

- h. Provide project control and human resources support.
- i. Update the Emergency Response Plan and be ready to provide a cost estimate before execution.
- j. Update the Hurricane Preparedness Plan.
- k. Provide **full** time administrative support which possesses the following capabilities to perform daily activities. This support will be through December 2009.
 - Type a variety of material such as letters, memoranda, reports, plans, etc. and assembles enclosures and background material
 - Maintain files according to NOAA disposition guide
 - Perform secretarial duties for special meetings or activities
 - Screen and route incoming correspondence, reports, etc. and track those requiring responses
 - Prepare training requests, schedule and maintain calendar of meetings and appointments for branch managers
 - Ensure branch managers receive and sign leave requests and forward on time to time-keeper
 - Maintain calendar and post leave and travel to calendar
 - Prepare documentation for expenses such as employee training and travel
 - Prepare and process travel orders and vouchers including TDY orders for Coast Guard personnel; maintain separate log for USCG personnel
 - Coordinate all travel arrangements using government travel reservations systems
 - Prepare documentation to secure government passports
 - Coordinate, prepare and process NDBC requisitions using C-request

2. Mail:

- a. Provide one (1) daily incoming U.S. Postal Service pickup and twice-daily mail delivery and pickup for all NDBC incoming, outgoing, U.S. mail, international, government-contracted express mail and internal mail at John C. Stennis Space Center (SSC).
- b. Provide U.S. mail metering services, mail sorting and delivery. Mail is to be sorted by Branch and bagged in U.S. Government envelopes.

Tasks (cont...)

3. Property:

- a. Account for inventory and manage all NDBC-owned property through the existing government-provided management system or through an inventory management system provided by the contractor.
- b. Provide and maintain a traceable audit trail for all government property.
- c. Receive, identify, report, store, and distribute incoming and outgoing property.
- d. Process proper documentation, and turn-in to NASA redistribution, all excess personal property received into the property office within 90 days of receipt.
- e. Assign and affix property tags to applicable property items within five (5) business days of receipt.
- f. Prepare Department of Commerce and NASA property forms for inventory additions, changes, and deletions within five (5) business days of receipt of new, change, or deletion requests.

4. Minor Maintenance:

- a. Maintain a log and monitor performance of all Minor Maintenance Orders and Minor Service Orders submitted to the SSC Facilities Service Contractor for all Buildings 3202, 3203, 3205, 3206, 3208, 3209, 3150 & 3203A.
- b. Monitor preventative and scheduled maintenance of buildings and installed equipment.

5. Shipping and Receiving:

- a. Provide shipping and receiving services for all NDBC incoming, outgoing and external point-to-point shipments. Items received will need to have appropriate documentation completed within two (2) business days of receipt of material.
- b. Maintain and operate a receiving area in a secured environment.
- c. Arrange transportation services for buoys and material shipments by the most economical means to meet required delivery/operational schedules. Cost estimates must be provided to government one (1) business day prior to issuance of Commercial Bill of Lading.
- d. Stage, pack and deliver shipments for commercial transportation, including providing for the proper shipping, handling, and disposal of hazardous materials.
- e. Provide inspection of material received for compliance

	<p>with ordering specifications.</p> <ol style="list-style-type: none"> 6. Consumable supplies and inventory: <ol style="list-style-type: none"> a. Manage the consumable supplies and warehouse inventory including the procurement of all stock items. b. Procure and manage all Personal Protective Equipment (PPE) items with the exception of winterized equipment. c. Annually review items in the consumable inventory for continued need to stock based on usage and to ensure shelf-life policies are adhered to. 7. GSA Vehicles: <ol style="list-style-type: none"> a. Operate and manage the use and maintenance of GSA vehicles. 8. Technical Publications: <ol style="list-style-type: none"> a. Provide technical publications support in preparation and layout of graphic arts, video, multimedia presentations, charts, documents, maps, and web-based publications.. b. Arrange and provide for photo development of various types including digital photograph capture, display, storage and distribution. c. Provide resources for conference/event set up of exhibits/ displays. d. Control and maintain electronic and hard copy files of technical documents, current administrative documents, films, photographs, video tapes and other materials. 9. Financial Services: <ol style="list-style-type: none"> a. Provide invoices and the summary of costs reports which are consistent. b. Provide Limitation of Funds letters per FAR 52.232-22 (c) for all task orders and clins.
<p>Assumptions/ Constraints (Security, Safety, Accessibility, etc...)</p>	<ol style="list-style-type: none"> 1. IAW Contract Proposal - Volume II. 2. Contractor will propose this master management effort across the whole scope of NOOSS operational requirements. 3. Contractor will provide deliverables to appropriate NDBC points of contact (POC), or designee, in addition to the COTR. 4. All mail processing will follow U.S. Postal Service Regulations and National Data Buoy Center Procedures. 5. All property management functions will conform to Federal Property Management Regulations. 6. Minor Maintenance Log to be maintained using Power DOCS

	<p>software application.</p> <ol style="list-style-type: none"> 7. Transportation services will be arranged utilizing NOAA Tenders provided by the government or by most economical means. Contractor will maintain records of transportation cost estimates. 8. Management of all vehicles provided by the government will be in accordance with all applicable GSA rules & regulations. 9. Definitions: <ol style="list-style-type: none"> a) Consumables: that material which is not otherwise tracked with an NDBC or CD Property tag and for which a certain Control number, Minimum, and Maximum are established to maintain in stock in the warehouse. b) Non-Accountable Property: Property procured for use by NDBC or its contractors that is not otherwise controlled as a consumable or Accountable Property. It includes LRUs, test & shop equipment, certain tools, etc. c) Accountable Property: all property procured for use by NDBC or its contractors that costs \$5,000 or more, ADP software costing \$25,000 or more, and Sensitive Property regardless of cost (e.g. cameras, portable computers, phones, or other highly pilferable items). 10. All NDBC spaces will be maintained in a clean and orderly fashion at all times. 11. Procurement and use of PPE will follow NDBC Instruction 205.00 (Personal Protective Equipment Issuance and Use).
<p>Deliverables:</p>	<p>All deliverables will be posted to iNUN:</p> <ol style="list-style-type: none"> 1. Provide the monthly presentation from the In Process Review. 2. Provide an annual implementation plan for the Internship Program to include events, travel, and all potential costs by July 30, 2009. The annual plan covers the period October 2009 thru June 2010. 3. Provide an updated Hurricane Preparedness plan & Emergency Action Plan. 4. Provide a monthly Quality Assurance, Safety, and Environmental services report by the 5th business day after the end of a month. 5. Provide annual report of accountable property count by February 28, 2010, and non-accountable property count by April 30, 2010. 6. Provide annual report of consumable warehouse count by October 30, 2009. 7. Provide annual report of shelf life analysis & control number deletions by November 30, 2009.

	<p>8. Submit invoices, by contractor accounting period, within ten (10) business days after the end of an accounting period. Each task order & clin should be invoiced separately along with summary of costs justification.</p> <p>9. Provide monthly report of additions and changes to min/max quantities for items in the consumable inventory by the five (5) business days after then end of the month.</p> <p>10. Provide Limitation of Funds letters per FAR 52.232-22 (c) for all task orders and clins when applicable.</p>
Program Objectives/ Possible Performance Measures:	The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this contract. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.
Inspection/Acceptance:	Final inspection and acceptance of all work performed will be conducted by the COTR or other designee. Inspection will include but is not limited to the review of reports, work performed and spot checks.
Travel:	Travel is required to support this task order. The contractor shall provide cost estimates for all travel in the cost proposal and the travel expenses must comply with the Federal Travel Regulations.
Additional information and/or submittals to be included in this Task Order response:	<p>Include in proposal package submission:</p> <ul style="list-style-type: none"> • Task Management Plan (TMP) • Program Management Plan • Cost Proposals by quarter for each task shall include: <ul style="list-style-type: none"> CLIN 0301L – CPFF -Management & Support Services Support CLIN 0301LA – CPFF -10th Federal Holiday, Travel/ODCs CLIN 0302L - CPFF - Consumable materials by programs (e.g. TAO, YB, DART, Hurricane, General) CLIN 0306L – CPFF - Intern Program

Version 5

Task Order Statement (Task Order 0034)

Title of Task Order:	Observing Systems for the NOAA NDBC National Ocean Observing System (NOOS)																																																												
NDBC Branch:	OPS 52 - Observing Systems Branch																																																												
Performance Period:	07/01/2009 through 06/30/2010																																																												
Task Order Type: (FFP or CPFF)	<p>FFP/CPFF Hybrid; as follows by CLIN:</p> <table border="0"> <tr><td>0301XA</td><td>Ops Mgt, All Programs</td><td>CPFF Change</td></tr> <tr><td>0301XB</td><td>Ops Engineering, All Programs</td><td>CPFF No Change</td></tr> <tr><td>0301XC</td><td>Tech. Refresh, All Programs</td><td>CPFF No Change</td></tr> <tr><td>0301XD</td><td>Communications, All Programs</td><td>CPFF No Change</td></tr> <tr><td>0301XE</td><td>Price List All Programs</td><td>FFP No Change</td></tr> <tr><td>0301XF</td><td>Other Facility/Ops Support</td><td>CPFF No Change</td></tr> <tr><td>0302AA</td><td>DART Prod./Integration</td><td>CPFF No Change</td></tr> <tr><td>0302AB</td><td>DART Field Service</td><td>CPFF No Change</td></tr> <tr><td>0302AC</td><td>DART OPS Engineering</td><td>CPFF No Change</td></tr> <tr><td>0302AD</td><td>DART Tech. Refresh</td><td>CPFF No Change</td></tr> <tr><td>0303BA</td><td>WxOP Prod./Integration</td><td>CPFF Change</td></tr> <tr><td>0303BB</td><td>WxOP Optional Production</td><td>CPFF Change</td></tr> <tr><td>0303BC</td><td>WxOP Field Service</td><td>CPFF No Change</td></tr> <tr><td>0303BD</td><td>WxOP OPS Engineering</td><td>CPFF No Change</td></tr> <tr><td>0303BE</td><td>WxOP Tech. Refresh</td><td>CPFF No Change</td></tr> <tr><td>0303BF</td><td>Hurricane Field Service</td><td>CPFF No Change</td></tr> <tr><td>0304CA</td><td>TAO Prod./Integration</td><td>CPFF No Change</td></tr> <tr><td>0304CB</td><td>TAO Field Service</td><td>CPFF No Change</td></tr> <tr><td>0304CC</td><td>TAO Ops Engineering</td><td>CPFF No Change</td></tr> <tr><td>0304CD</td><td>TAO Tech Refresh</td><td>CPFF No Change</td></tr> </table> <p>Refer to Program Addendums and Technical Refresh Task Statement for program specific details</p>	0301XA	Ops Mgt, All Programs	CPFF Change	0301XB	Ops Engineering, All Programs	CPFF No Change	0301XC	Tech. Refresh, All Programs	CPFF No Change	0301XD	Communications, All Programs	CPFF No Change	0301XE	Price List All Programs	FFP No Change	0301XF	Other Facility/Ops Support	CPFF No Change	0302AA	DART Prod./Integration	CPFF No Change	0302AB	DART Field Service	CPFF No Change	0302AC	DART OPS Engineering	CPFF No Change	0302AD	DART Tech. Refresh	CPFF No Change	0303BA	WxOP Prod./Integration	CPFF Change	0303BB	WxOP Optional Production	CPFF Change	0303BC	WxOP Field Service	CPFF No Change	0303BD	WxOP OPS Engineering	CPFF No Change	0303BE	WxOP Tech. Refresh	CPFF No Change	0303BF	Hurricane Field Service	CPFF No Change	0304CA	TAO Prod./Integration	CPFF No Change	0304CB	TAO Field Service	CPFF No Change	0304CC	TAO Ops Engineering	CPFF No Change	0304CD	TAO Tech Refresh	CPFF No Change
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Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To maintain observing system field assets in order to provide reliable and accurate meteorological, atmospheric, oceanographic, Tsunamic, water level and other observations in real time for the National Weather Service (NWS) National Ocean Observing System (NOOS) program, encompassing the DART, Weather and Ocean Platforms (WxOP), TAO buoy programs. This new "end-to-end" approach to operational support includes equipment preparation, industrial facility support, laboratory operations, and cost-effective station field service, installations, deployments and equipment exchanges.																																																												
Background:	<p>NDBC has requirements to supply timely, accurate, and reliable marine atmospheric, oceanographic and tsunami event data from the National Ocean Observing System (NOOS), and to maintain its reputation as the NWS center of Excellence for Marine Technology.</p> <p>This Task Order provides the key components and support necessary</p>																																																												

	to maintain the observing system platforms in a high and reliable state of operation. The model and basic services provided for in the existing Task Order shall be continued into the next period.
Scope of Effort:	<p>The scope of this Task Order includes the following elements for the DART, WxOP, and TAO programs:</p> <ul style="list-style-type: none"> • Production/integration-includes mechanical and electrical efforts, lab support, and all testing/green-tagging/blue-tagging of systems • Field Service-includes all field service activities to service existing stations and to deploy new stations, as well as port services and communications required to complete the field service missions • Operations Engineering-includes troubleshooting, payload parameter development, mooring development and analysis, power system analysis/capacity budgeting and tech refresh for each specific buoy program • Re-engineering or "Technology Refresh" includes any efforts to improve existing buoys or equipment. <p>Additionally, the scope of this Task Order includes an overarching Operations Management element which includes all supervisory personnel, CMO, drafting, reliability and operational logistics. Finally, an overarching Operations Engineering element includes the same activities discussed above, but involving efforts that relate to more than one buoy program to gain efficiencies.</p>
Tasks:	<p>Provide all current task order activities (currently tasked in this Task Order) except as noted or if noted in the attached Program Addendum (change document). In general, this includes:</p> <p><u>Production Tasks (applicable to all three buoy programs)</u></p> <ol style="list-style-type: none"> 1. Provide Operational Planning and Time Sensitive Response 2. Provide in-house management and life cycle support 3. Equipment Preparation in accordance with documentation contained herein <p><u>Field Service Tasks (applicable to all three buoy programs)</u></p> <ol style="list-style-type: none"> 1. Execute scheduled field service activities in accordance with NDBC station maintenance directives 2. Execute field service activities in response to station failures and discrepancies, as practical, factoring seasonal weather conditions, ship availability and criticality of the discrepancy/failure 3. Deliver comprehensive Field Service Plans

4. For GFE ship support, delivery timely coordination documentation (Asset Support Requests-ASRs) for all applicable missions
5. Provide necessary port and other operational field services (cranes, gases, divers, transportation, small vessel transport, etc)
6. Provide field service communication (cell phone, satellite phone, etc)
7. Provide timely quotes for contract mission support

Operational Engineering Tasks (applicable to all three buoy programs)

1. Provide payload parameter table development support
2. Provide mooring development and analysis support
3. Provide power system analysis/capacity budgeting support
4. Provide troubleshooting beyond usual debugging
5. Other Assigned Engineering Support defined by ESR.

Other Facility and Operations Support (applicable to Programs)

1. Provide Configuration Management, Drafting, Documentation services, and Frequency Management support
2. Provide lifecycle maintenance for all NDBC Industrial and Test facilities and equipment and Government owned/leased industrial equipment.

Assumptions/
Constraints
(Security, Safety,
Accessibility, etc...)

All assumptions are applicable to all three buoy programs unless otherwise noted.

1. **ASSUMPTION:** The NTSC shall have in place a safety and environment safety program (this function is covered under another Task Order).
2. **CONSTRAINT:** All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, policy and procedures.
3. **CONSTRAINT:** Operational schedules and activities are fixed. If the execution of the scheduled activity changes, the scheduled date will NOT be changed, but rather the execution floated on the schedule until the activity is accomplished and the maintenance interval can start over.
4. **CONSTRAINT:** Workmanship will be evaluated using NDBC

instructions, procedures, and documentation, as well as general industry standards for marine workmanship. (WxOP addendum)- Buoy and CMAN stations will be configured using NDBC approved baseline documentation, NDBC-4000, and to meet operational schedules.

5. **CONSTRAINT:** All efforts will be made to minimize cost without sacrificing quality or workmanship.

6. **ASSUMPTION (WxOP):** The Government will arrange and provide ship support for activities in this Task Order, unless the Contracting Officer requests in writing that the NTSC provide that support.

7. **CONSTRAINT (WxOP):** The NTSC will interface and coordinate directly with the NOAA NDBC - US Coast Guard office, or with the OPS52 NOAA Fleet Working Group Representative.

8. **ASSUMPTION:** All equipment, including replacement buoys and/or moorings, have been delivered - completed, tested, and ready for deployment at the point of embarkation, by the scheduled date.

9. **CONSTRAINT:** No management level operational planning will occur under this task order.

10. **ASSUMPTION:** If the Government-operated vessel fleet (USCG, NOAA) cannot support necessary missions, the Contractor will deliver market survey data for alternative commercial vessel. If requested by the Contracting Officer in writing, a Technical Proposal for contracting suitable vessel directly will be delivered.

11. **ASSUMPTION:** The network will continue to be maintained by adhering to best marine practices and maintenance schedules.

Deliverables:

Provide all current task order deliverable (currently tasked in this Task Order) except as noted /if noted in the attached Program Addendum (Change Document). In general, this includes:

DART Program

1. Execute DART production per the DART network expansion and maintenance plan.
2. Execute Field Service mission supported by the documentation contained herein.

Weather and Ocean Platform (WxOP)

1. Refer to Attachment A, WxOP Production Deliverables." The associated information shall be incorporated into TMP's deliverables section with corresponding due dates. Buoys and CMAN station will be configured using NDBC baseline documentation, NDBC-4000 and to meet operational schedules.
2. Submit Moored Buoy Operations Schedule (MBOS) quarterly
3. Submit CMAN Operations Schedule semi-annually
4. Submit Coast Guard support requirements for FY10 NLT 7/1/2009
5. Submit Equipment Performance Summary monthly
6. Submit Task Order Performance Reports bi-weekly
7. Submit Preventive Maintenance/Calibration Logs monthly
8. Submit the 2009 Annual Equipment Performance Summary NLT 3/30/2010
9. Submit GFE Confirmation and Mitigation Report quarterly at least 30 days prior to a given quarter
10. Submit a Long Range Hull/Payload Availability Estimation Plan NLT 6/30/2009
11. Provide full tested and integrated buoys, and "green tagged" equipment (data acquisition systems, including payloads, sensors, power systems, position fixing systems, communications and other equipment required to support the mission) available and ready for installation/integration/shipping in sufficient quantities to support the MBOS and CMAN Operations Schedule.
12. Submit as-required for Scheduled Activities -- Asset Support Requests (ASRs) for USCG support, or other available Government furnished assets, a minimum of six (6) weeks prior to scheduled activity and annotated with the following heading "*Scheduled Maintenance Support Request.*" The ASR shall identify the Moored Buoy Operations Schedule (MBOS) or C-MAN scheduled date. The ASR will be sent to the USCG scheduling office a minimum of six (6) weeks prior to the scheduled activity. If the contractor cannot support the field service event as originally planned, the ASR must clearly state that the planned date cannot be met, the reason the planned date cannot be met, and must specify an alternate timeframe that can be met. The USCG will decide based upon this ASR whether to postpone or cancel the support entirely. **Note: The Government requests a proposed performance metric, for consideration, that will be a function of this planned activity.**
13. Submit as-required for Failure Response/Discrepancy Response Activities -- ASRs for USCG support, or other available Government furnished assets, as soon as practical after the failure is identified and a support team can be identified as available to respond. The ASR will be annotated with the following heading

"Failure Response Support Request." Likewise, ASRs for Discrepancy Response will be submitted as-required, as soon as practical or as the opportunity is apparent to correct a discrepancy coinciding with another scheduled activity or available asset. The ASR shall be annotated with the following heading *"Scheduled Maintenance Support Request."*

14. Submit Field Service Plans (FSP) no less than two (2) weeks prior to scheduled activity, and as early as practical for unscheduled activity. The FSPs will be placed in an accessible, common electronic storage location.

15. Executed Field Service Missions supported by the documentation contained herein.

16. Submit Trip Reports that include, but are not limited to, the description (text and photo, as appropriate) of station conditions at arrival and departure; maintenance activities performed, and problems or "watch items" for future service. These shall be delivered within a two (2) weeks period following a field service mission.

17. Hold Weekly Field Service/Production Briefings.

18. Submit a Field Service Report of Activities, to include planned versus actual field service missions, monthly.

TAO Tasks

1. Execute TAO production per the TAO Legacy Replacement and Maintenance Plan (not yet developed).

2. Execute Field Service mission supported by the documentation contained herein.

Operational Engineering

Deliver an Engineering Activity report bi-weekly.

Upload Delivered Documentation to Inun and notify/brief Government POC on specifics and status of ESR if warranted.

GFE/GFI:

GFE/GFI is available to support this effort. The Government will make available payloads, sensors, consumables, internally and externally powered fixed and portable tools, hand tools, shop, laboratory equipment and space. The Government requests that your technical proposal state whether you intend to utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost impact of that decision.

Program Objectives/
Possible Performance
Measures:

The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.

Inspection/Acceptance:	Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	Travel may be required to support the production element of this task order, and travel is required to support the field service element of this task order. The contractor shall provide cost estimates for all travel in the cost proposal and the travel expenses must comply with the Federal Travel Regulations.
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<ol style="list-style-type: none"> 1. Task Management Plan (TMP): <ol style="list-style-type: none"> a. Clearly defined Table of Deliverables with corresponding due dates. b. Work Breakdown Structure (WBS) c. Cost per Schedule of Supplies/Services and/or major components (e.g. hardware). d. Proposed performance specifications and metrics 2. Port/Operational Services: Propose a Not to Exceed (NTE) limit for each occurrence as well as a ceiling for the Task Order for providing sub-contracting for Port Services (including, but not limited to cranes, gases, machine shop, small boat, diver). 3. Field Service Communications: Propose a Not to Exceed (NTE) Limit for field service communications. 4. Quarterly Breakdown: Submit the estimated costs (NTSC labor/travel, consumable items, other components, shipping of equipment to/from field, and other contract services except ship support) by quarter.

PROGRAM ADDENDUM

Title of Task Order:	TO34 0301 ALL PROGRAMS																		
NDBC Branch:	OPS 52 – Observing Systems Branch																		
Performance Period:	07/01/2009 – 06/30/2010																		
Task Order Type: (FFP or CPFF)	FFP AND CPFF (PR NWWG9502-8-37497 + Others by CLIN)																		
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To incorporate changes in requirements and deliverables for TO 34 CLINs to support contract year five (5) requirements																		
Background:	The current CLIN structure was established prior to contract year three (3) to accomplish contract year three (3) tasking. The period for the existing structure will be extended to encompass contract year five (5) tasking.																		
Scope of Effort:	In accordance with the existing TMP for the following CLINs – (Proposed Changes in Red): <table border="0"> <tr> <td>0301XA</td> <td>Ops Mgt, All Programs</td> <td>CPFF Change</td> </tr> <tr> <td>0301XB</td> <td>Ops Engineering, All Programs</td> <td>CPFF No Change</td> </tr> <tr> <td>0301XC</td> <td>Tech. Refresh, All Programs</td> <td>CPFF No Change</td> </tr> <tr> <td>0301XD</td> <td>Communications, All Programs</td> <td>CPFF No Change</td> </tr> <tr> <td>0301XE</td> <td>Price List All Programs</td> <td>FFP No Change</td> </tr> <tr> <td>0301XF</td> <td>Other Facility/Ops Support</td> <td>CPFF No Change</td> </tr> </table>	0301XA	Ops Mgt, All Programs	CPFF Change	0301XB	Ops Engineering, All Programs	CPFF No Change	0301XC	Tech. Refresh, All Programs	CPFF No Change	0301XD	Communications, All Programs	CPFF No Change	0301XE	Price List All Programs	FFP No Change	0301XF	Other Facility/Ops Support	CPFF No Change
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0301XD	Communications, All Programs	CPFF No Change																	
0301XE	Price List All Programs	FFP No Change																	
0301XF	Other Facility/Ops Support	CPFF No Change																	
Tasks:	(Proposed Changes in Red): 0301XA Ops Management (All Programs) – Change cost structure of CLIN (from FFP to CPFF) 0301XB Ops Engineering (All Programs) – <ul style="list-style-type: none"> - Estimate Level of Effort required based upon Tasks from CY3 and CY4 - Actual Tasking will be given via Engineering Support Requests (ESRs) 0301XC Tech. Refresh (All Programs) – No Change																		

	<p>0301XD Communications (All Programs) –</p> <ul style="list-style-type: none"> - Eliminate C-MAN cell phone coverage requirement <p>0301XE Price List (All Programs) –</p> <ul style="list-style-type: none"> - Separate Tasking to be submitted at a later date. <p>0301XF Other Facility Support/Ops Support (All Programs) –</p> <ul style="list-style-type: none"> - Change the title of this CLIN only. The tasking remains the same as CY4 which includes facility maintenance and support, drafting, and configuration management operation and document support.
Assumptions/ Constraints (Security, Safety, Accessibility, etc...)	<p>All base task order requirements continue to apply.</p> <p>Workmanship will be evaluated using the most current NDBC instructions, procedures, and documentation.</p> <p>All efforts will be made to minimize cost without sacrificing quality or workmanship.</p>
Deliverables:	<p>Incorporate the requirements included herein into the Table of Deliverables with the appropriate delivery dates.</p>
GFE/GFI:	<p>GFE/GFI is available to support this effort in accordance with current inventory levels.</p>
Program Objectives/ Possible Performance Measures:	<p>In accordance with existing task order goals/measures.</p>
Inspection/Acceptance:	<p>Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.</p>
Travel:	<p>Travel may be required to support this task order:</p>
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<ol style="list-style-type: none"> 1. Amended Task Management Plan within 2 weeks of NTP <ol style="list-style-type: none"> a. Clearly Defined Table of Deliverables with corresponding due dates. b. Cost per Schedule of Supplies/Services identified as follows:

PROGRAM ADDENDUM

Title of Task Order:	TO34 0303 Weather and Ocean Platforms (WxOP)																		
NDBC Branch:	OPS 52 – Observing Systems Branch																		
Performance Period:	07/01/2009 – 06/30/2010																		
Task Order Type: (FFP or CPFF)	CPFF (PR NWWG9502-8-37497 + Others by CLIN)																		
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To incorporate changes in requirements and deliverables for TO 34 CLINs to support contract year five (5) requirements																		
Background:	The current CLIN structure was established prior to contract year three (3) to accomplish contract year three (3) tasking. The period for the existing structure will be extended to encompass contract year five (5) tasking.																		
Scope of Effort:	In accordance with the existing TMP for the following CLINs – (Proposed Changes in Red): <table border="0" style="margin-left: 20px;"> <tr> <td>0303BA</td> <td>WxOP Prod./Integration</td> <td>CPFF Change</td> </tr> <tr> <td>0303BB</td> <td>WxOP Optional RITs</td> <td>CPFF Change</td> </tr> <tr> <td>0303BC</td> <td>WxOP Field Service</td> <td>CPFF No Change</td> </tr> <tr> <td>0303BD</td> <td>WxOP OPS Engineering</td> <td>CPFF No Change</td> </tr> <tr> <td>0303BE</td> <td>WxOP Tech. Refresh</td> <td>CPFF No Change</td> </tr> <tr> <td>0303BF</td> <td>Hurricane Field Service</td> <td>CPFF No Change</td> </tr> </table>	0303BA	WxOP Prod./Integration	CPFF Change	0303BB	WxOP Optional RITs	CPFF Change	0303BC	WxOP Field Service	CPFF No Change	0303BD	WxOP OPS Engineering	CPFF No Change	0303BE	WxOP Tech. Refresh	CPFF No Change	0303BF	Hurricane Field Service	CPFF No Change
0303BA	WxOP Prod./Integration	CPFF Change																	
0303BB	WxOP Optional RITs	CPFF Change																	
0303BC	WxOP Field Service	CPFF No Change																	
0303BD	WxOP OPS Engineering	CPFF No Change																	
0303BE	WxOP Tech. Refresh	CPFF No Change																	
0303BF	Hurricane Field Service	CPFF No Change																	
Tasks:	<p>(Proposed Changes in Red):</p> <p>0303BA WxOP – Production and Integration –</p> <ul style="list-style-type: none"> - Change Cost Structure of CLIN (from FFP to CPFF) - Change Production Deliverables per the new enclosed table at the end of this addendum <p>Section 3.1, Table 2 (Yellow Buoy/C-MAN) Production Quantities: The quarterly amounts may be adjusted accordingly to reflect schedule and resources based upon lessons learned this year; if any.</p> <p>0303BB WxOP – Production Optional Units – (Production Optional Units in accordance with the enclosed table in at the end of this addendum)</p> <ul style="list-style-type: none"> - Change Cost Structure of CLIN (from FFP to CPFF) - Change Production Deliverables per the new enclosed table at the end of this addendum 																		

0303BC WxOP – Field Service –
No Change

(Field Service in accordance with the existing TMP)

For estimating purposes Failure/Discrepancy response shall not exceed 40% of all field service.

Deliver Coast Guard Support Requirements for FY10 NLT than 07/10/2008

0303BD WxOP – Operational Engineering –

- Estimate Level of Effort required based upon Tasks from CY3 and CY4
- Actual Tasking will be given via Engineering Support Requests (ESRs)

0303BE WxOP – Technical Refresh –

- Estimate Level of Effort required based upon Tasks from CY3 and CY4
- Actual Tasking will be given via Engineering Support Requests (ESRs) and will fall into one or all of the following categories:

- Task 1 Mechanical/Architectural Projects
- Task 2 Communications Projects
- Task 3 Payload Projects
- Task 4 Ocean Sensor Projects
- Task 5 Power System Projects
- Task 6 Waves Projects
- Task 7 Met Sensors Projects
- Task 8 Laboratory Improvement Projects

0303BF Hurricane Buoy – Contract Vessel Support

No Change

(In accordance with the existing TMP) Note: Actual requirements may change to reflect schedule adjustments.

Note: On voyages beyond 200 nautical miles from US shoreline, all vessels will be in compliance with Chapter I of the Code of Federal Regulations Title 46 or identified as a "Class I Vessel." All paperwork for the proposed vessel, including the COI and copies of

	<p>applicable officer's licensing will be received by the Government no later than five (5) calendar days after the vessel is submitted for Government consideration.</p> <p>The Government Reserves the right to provide contract vessel in lieu of Contractor furnished.</p>
Assumptions/ Constraints (Security, Safety, Accessibility, etc...)	<p>All base task order requirements continue to apply.</p> <p>Workmanship will be evaluated using the most current NDBC instructions, procedures, and documentation.</p> <p>All efforts will be made to minimize cost without sacrificing quality or workmanship.</p>
Deliverables:	<p>Incorporate the requirements included herein into the TMP Table of Deliverables with the appropriate delivery dates.</p> <p>Deliverables for Engineering (Tech. Refresh and Operational Engineering) will be as specified in ESR Refer to Tech. Refresh TOS at the end of statement.</p>
GFE/GFI:	<p>GFE/GFI is available to support this effort in accordance with current inventory levels.</p>
Program Objectives/ Possible Performance Measures:	<p>In accordance with existing task order goals/measures.</p>
Inspection/Acceptance:	<p>Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.</p>
Travel:	<p>Travel may be required to support this task order.</p>
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<p>1. Amended Task Management Plan within 2 weeks of NTP</p> <p>a. Clearly Defined Table of Deliverables with corresponding due dates.</p> <p>b. Cost per Schedule of Supplies/Services identified as follows:</p> <p>Pricing for the "Core Order" including options will be priced in accordance with contract year 3 pricing structure but utilizing CY 4 costs.</p> <p>All new items included herein will be priced or itemized separately so that accounting for the earmarks and special projects can be evaluated and documented.</p>

Task Order 0034 Weather and Ocean Platform (WxOP) Deliverables by Quarter (Primary Order) -
Attachment A

Category of Production	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Quantities
3 Meter Full RIT	4	2	4	4	14
3 Meter Partial RIT	2	2	2	1	7
6 Meter Full RIT	0	0	0	1	1
6 Meter Partial RIT	0	0	0	1	1
C-MAN Fabrication	1	0	0	0	1
3 Meter Racks	1	1	1	1	4
Full Mooring	4	6	6	6	22
Partial Mooring	1	3	4	4	12
LRU Buoys	25	25	25	25	100
LRU C-MAN	4	8	8	8	28
Service Preparations	30	30	30	30	120
Hurricane Buoy RITs	0	4	4	0	8

(Additional Maximum Deliverables Order)

3 Meter Full RIT	2	2	2	2	8
3 Meter Partial RIT	0	2	2	1	5
6 Meter Full RIT	0	0	0	1	1
6 Meter Partial RIT	0	0	0	1	1
C-MAN Fabrication	0	0	0	1	1
3 Meter Racks	1	2	2	1	4
Full Mooring	2	2	2	2	8
Partial Mooring	0	2	2	1	12 5
LRU Buoys	0	0	20	10	30
LRU C-MAN	4	8	8	8	28
Service Preparations	0	0	0	30	30
Hurricane Buoy RITs	0	0	2	0	2
Amps Assembly (in enclosure)	0	10	10	0	20
3 Meter Hulls	2	3	3	2	10
3 Meter Equipment Compartments	3	4	3	0	10
3 Meter Superstructure/Bridle	2	3	3	2	10
Ocean Measurements					
Directional Waves	3	4	4	3	15
Surface Currents	1	2	4	5	12
Current Profiles			1	1	2
Point Salinity	1	2	2	1	6
1.8 Meter RIT		1	2		3

* Note: Quantities may be shifted from quarter to quarter with technical concurrence between contractor and government management.

DEFINITIONS

Item _____
3-Meter

- Includes -
- Mechanical Refurbishment with hull repairs up to 150% of standard hull refurbishment (SHR). SHR = 240 hrs.
 - Full Preparation and Paint as required
 - Integration minus Augmentation
 - Testing through Successful Blue Tag

3-Meter (Partial)

Includes -

- Includes some level of refurbishment and Integration
- Testing through Successful Blue Tag

6-Meter (full)

Includes -

- Mechanical Refurbishment with hull repairs up to 150% of standard hull refurbishment. SHR = 400 hrs.
- Preparation and Paint
- Integration minus Augmentation
- Testing through Successful Blue Tag

6-Meter (Partial)

Includes -

- Includes some level of refurbishment and Integration
- Testing through Successful Blue Tag

Moorings (full)

Moorings (partial)

- Complete Mooring
- Upper Mooring

Service Preparation

- C-MAN Fabrication; not to exceed 1 major overhaul
- FSV; Planning, Pulling Stock, and Packing; refer to table for quantities

-
- Contains LRU Set to support this task order and the field service task order throughout the period; not to exceed specified sets.
 - Repair work conducted on buoys after Blue Tag process is complete will be charged to field service tasking.

PROGRAM ADDENDUM

Title of Task Order:	TO34 0302 Operation and Maintenance of the DART network												
NDBC Branch:	OPS 52 – Observing Systems Branch												
Performance Period:	07-1-09 to 06-30-10												
Task Order Type: (FFP or CPFF)	CPFF for CLINS 0001 and 0002, FFP for CLINS 0003 and 0004												
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	Support the National Weather Service (NWS) National Ocean Observing System (NOOS) with operation and maintenance of NOAA NDBC DART network. Includes acquisition, assembly, maintenance and improvement of DART network equipment for the delivery of reliable, timely, and accurate data.												
Background:	NDBC has a requirement to supply timely, accurate, and reliable marine atmospheric, oceanographic and tsunami event data from a Network of moored buoy, TAO, Coastal-Marine Automated Network (CMAN) stations and Deep-ocean Assessment and Reporting of Tsunami (DART) stations. This task supports the DART network portion of the requirement.												
Scope of Effort:	<p>In accordance with the existing TMP for the following CLINs – (Proposed changes in Red):</p> <table border="0"> <tr> <td>0302AA DART Production & Integration</td> <td>CPFF</td> <td>No change</td> </tr> <tr> <td>0302AB DART Field Service</td> <td>CPFF</td> <td>No change</td> </tr> <tr> <td>0302AC DART Operations Engineering</td> <td>CPFF</td> <td>No Change</td> </tr> <tr> <td>0302AD DART Tech Refresh</td> <td>CPFF</td> <td>No Change</td> </tr> </table> <p>The scope of this Task Order is to:</p> <ul style="list-style-type: none"> Provide the technical services for the operations and maintenance of the DART network. Maintain the established DART network of 39 stations. Establish new stations as requirements are developed. Recommend, acquire and assemble a sufficient quantity of DART systems to support the DART network at a high level of reliability. Identify components, processes and procedures for improving the data availability of the DART network and implement the improvements. Support the network operational engineering activities as they arise. 	0302AA DART Production & Integration	CPFF	No change	0302AB DART Field Service	CPFF	No change	0302AC DART Operations Engineering	CPFF	No Change	0302AD DART Tech Refresh	CPFF	No Change
0302AA DART Production & Integration	CPFF	No change											
0302AB DART Field Service	CPFF	No change											
0302AC DART Operations Engineering	CPFF	No Change											
0302AD DART Tech Refresh	CPFF	No Change											

Identify and address technological obsolescence issues. Propose and execute measures to combat obsolescence.

Tasks:

0302AA DART Production & Integration

- Produce 6 new DART systems
- Perform Refurbishment, Integration and Testing (RIT) at SSC, Guam and at-sea as necessary to maintain the network and adequate spares
- Arrange and conduct pressure testing on subsea components
- Perform conditioning of pressure sensors in accordance with ETP
- Maintain all field service preparation SOPs and checklists
- Perform post-production activities for returned equipment such as repairing damaged equipment, order replacement equipment or remove from property list if unusable
- Provide weekly reports to NDBC on production status and issues
- Construct a mobile workshop from a 20' container
- Prepare Guam warehouse as a remote RIT site

0302AB DART Field Service

- Prepare and maintain a DART service and installation schedule.
- Support all scheduled and unscheduled services.
- Provide a field service safety strategy which addresses measures to promote safe at-sea practices and addresses mitigation response actions to unforeseen field service accidents.
- Conduct field service briefs at SSC prior to departure
- Submit trip reports after return that provide a complete description of accomplishments and issues

0302AC DART Operational Engineering

- Identify components, processes and procedures for improving the data availability of the DART network
- Recommend and implement changes to improve data availability.

	<ul style="list-style-type: none"> • Support the networks operational engineering activities as they arise. <p>0302AD DART Tech Refresh</p> <ul style="list-style-type: none"> • Identify and address technological obsolescence issues. Propose and execute measures to combat obsolescence. • Provide technical assistance to support the identification, specification and inspection of all vessels utilized to support the field activities associated with this tasking. • Perform upgrades to the DART Management Console • Redesign the Bottom Pressure Recorder (BPR) • Continue evaluation of AMPS Payload for DART usage • Evaluated use of glider type vehicle for discrepancy response
<p>Assumptions/ Constraints (Security, Safety, Accessibility, etc...)</p>	<p>0302AA DART Production & Integration</p> <ul style="list-style-type: none"> • All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, or procedures • NTSC shall have in place a configuration management; safety, and environment safety programs; and an emergency response plan (this function is covered under another Task Order) • Configuration of equipment is to meet operational requirements in accordance with the NDBC 4000 and appropriate level of configuration documentation • Assembly and/or RIT of the DART systems shall meet or exceed the operational requirements of the DART program deployment and maintenance schedule • The NTSC will be responsible for ensuring observational platforms are completed and tested, at the point of embarkation, by the scheduled date • Workmanship will be evaluated using NDBC instructions, procedures, and documentation, as well as general industry standards for marine workmanship • All efforts will be made to minimize cost without sacrificing quality or workmanship. <p>0302AB DART Field Service</p> <ul style="list-style-type: none"> • Prepare and maintain a DART service and installation schedule • All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, or procedures • All efforts will be made to minimize cost without sacrificing quality or workmanship.

	<p>0302AC DART Operational Engineering</p> <ul style="list-style-type: none"> • Ops Eng projects to be scheduled via the Engineering Support Requests (ESRs) <p>0302AD DART Tech Refresh</p> <ul style="list-style-type: none"> • Any NTSC project proposals for technology refresh must be submitted through the NDBC engineering staff. • Only NDBC personnel will submit technology refresh project via the Engineering Support Requests (ESRs)
<p>Deliverables:</p>	<p>0302AA DART Production & Integration</p> <ul style="list-style-type: none"> • Weekly reports to NDBC on production status and issues O&M Schedule • Quantitative recommendation of DART equipment requirement to maintain network. • Data availability and improvement plans. • Acquisition and preparation of recommended equipment levels <p>0302AB DART Field Service</p> <ul style="list-style-type: none"> • DART field service schedule • Field service plans • Trip reports <p>0302AC DART Operational Engineering</p> <ul style="list-style-type: none"> • Engineering project documentation (requirements, calculations, procedures, designs, software code, etc.) <p>0302AD DART Tech Refresh</p> <ul style="list-style-type: none"> • Project documentation (requirements, calculations, procedures, designs, software code, etc.)
<p>GFE/GFI:</p>	<p>GFE/GFI is available to support this effort. The Government will make available all assembly equipment and space. The Government requests your technical proposal state whether you intend to utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost and schedule impact of that decision. Marine services (ship time) to support the O&M will be provided as GFE.</p>
<p>Program Objectives/ Possible Performance Measures:</p>	<p>The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those</p>

	goals. The most important attributes of successful execution of this task order is to meet mission schedule.
Inspection/Acceptance:	Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	NTSC may propose travel within the TMP.
Proposal Submittals:	<p>1. Task Management Plan</p> <ul style="list-style-type: none"> • Narrative that describes approach for execution of the objectives of this Task Order shows an understanding of all considerations and identifies concerns, and possible mitigation strategies that will ensure continued successful operation of the NOOS. • Production schedule with appropriate milestones in GANTT format. • Work Breakdown Structure (WBS) • Cost, Schedule and Performance Metrics • Estimated quantity, cost and delivery schedule for all consumable items to achieve objective of this TO. • Estimated quantity, cost and delivery schedule for all GRE required supporting this task. • Estimated cost for all shipping requirements. • Estimated cost for all associated services including port, technical, and training.)

PROGRAM ADDENDUM

Title of Task Order:	TO34 0304CA TAO Production & Integration
NDBC Branch:	OPS 52 – Observing Systems Branch
Performance Period:	07/01/2009 through 06/30/2010
Task Order Type: (FFP or CPFF)	FFP
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To maintain observing system field assets in order to provide reliable and accurate meteorological, atmospheric, oceanographic, observations in real time for the National Weather Service (NWS) National Ocean Observing System (NOOS) program, encompassing the TAO buoy programs. This new "end-to-end" approach to operational support includes equipment preparation, industrial facility support, laboratory operations, and cost-effective station field service, installations, deployments and equipment exchanges.
Background:	NDBC has requirements to supply timely, accurate, and reliable marine atmospheric, oceanographic and tsunami event data from the National Ocean Observing System (NOOS), and to maintain its reputation as the NWS center of Excellence for Marine Technology. Additionally, NDBC has requirements to support ancillary research and provide data to facilitate understanding, modeling, and prediction of the global inter-annual climate fluctuations associated with the El Nino-Southern Oscillation (ENSO) phenomenon along the TAO buoy array. NDBC is entering into a new arena in support of the TAO buoy program, and increased expertise is required by the contractor in shipping and logistics into foreign countries.
Scope of Effort:	The scope of this Task Order includes the following elements for the TAO programs: <ul style="list-style-type: none"> • Production/integration-includes mechanical and electrical efforts, lab support, and all testing/green-tagging/blue-tagging of systems. • Supporting fifty-five TAO buoys, four ADCP subsurface moorings located in the Equatorial Pacific • SAIC will maintain all field service preparation SOPs and checklists. • Perform post-production activities for returned equipment for each cruise such repair damaged equipment, order replacement equipment and any other activities associated with preparing the equipment for reuse or replacement. • TAO moorings are not pre-assembled as they are standardized configurations. As production processes are completed, the production components and equipment are staged in the TAO work area for shipment. • TAO Project Management will provide weekly status reports

	to NDBC and SAIC to disseminate production status and risks.
Tasks:	<u>Production Tasks</u> <ol style="list-style-type: none"> 4. Provide Operational Planning and Time Sensitive Response 5. Procure and build all non-property equipment necessary to support all TAO cruises (both mooring and sensor mounting equipment). 6. SAIC will produce equipment necessary to maintain the 55 TAO surface moorings and 4 ADCP subsurface moorings with in the TAO Array. 7. Green tag and refurbish up to 75 acoustic releases
Assumptions/ Constraints (Security, Safety, Accessibility, etc...)	<p>All assumptions are applicable:</p> <ol style="list-style-type: none"> 1. ASSUMPTION: The NTSC shall have in place a safety and environment safety program (this function is covered under another Task Order). 2. CONSTRAINT: All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, policy and procedures. 3. CONSTRAINT: All efforts will be made to minimize cost without sacrificing quality or workmanship. 4. ASSUMPTION: The Government will arrange and provide ship support for activities in this Task Order, unless the Contracting Officer requests in writing that the NTSC provide that support. 5. ASSUMPTION: All equipment, including replacement buoys and/or moorings, have been delivered – completed, tested, and ready for deployment at the point of embarkation, by the scheduled date. 6. CONSTRAINT: No management level operational planning (i.e. development of TMPs, etc) will occur under this task order.
Deliverables:	<u>TAO Tasks</u> <ol style="list-style-type: none"> 1. Execute TAO production per the TAO Legacy Replacement and Maintenance Plan 2. Fully tested equipment at deployment site, No later than 3 working days prior to ship departure 3. Review consumable inventory min max levels and adjust as required each quarter. 4. Track GFE and provide Quarterly estimate of needed GFE 5. TAO production of 55 moorings and 4 subsurface ADCP moorings.

GFE/GFI:	GFE/GFI is available to support this effort. The Government requests that your technical proposal state whether you intend to utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost impact of that decision.
Program Objectives/ Possible Performance Measures:	The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.
Inspection/Acceptance:	Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	Travel is not required for this task order.
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<ol style="list-style-type: none"> 1. Task Management Plan (TMP): <ol style="list-style-type: none"> a. Clearly defined Table of Deliverables with corresponding due dates. b. Work Breakdown Structure (WBS) c. Cost per Schedule of Supplies/Services and/or major components (e.g. hardware) d. Proposed performance specifications and metrics 2. Quarterly Breakdown: Submit the estimated costs by quarter.

PROGRAM ADDENDUM

Task Order – 34 304CB TAO Field Services Support

(04/14/09)

Title of Task Order:	TO 34 0304 CB Field Services Support
NDBC Branch:	OPS 52 – Observing Systems Branch
Performance Period:	07/01/2009 through 06/30/2010
Task Order Type: (FFP or CPFF)	CPFF
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To maintain observing system field assets in order to provide reliable and accurate meteorological, atmospheric, oceanographic, tsunami, water level and other observations in real time for the National Weather Service (NWS) National Ocean Observing System (NOOS) program, encompassing the TAO buoy programs. This new "end-to-end" approach to operational support includes equipment preparation, industrial facility support, laboratory operations, and cost-effective station field service, installations, deployments and equipment exchanges.
Background:	NDBC has requirements to supply timely, accurate, and reliable marine atmospheric, oceanographic and tsunami event data from the National Ocean Observing System (NOOS), and to maintain its reputation as the NWS center of Excellence for Marine Technology. Additionally, NDBC has requirements to support ancillary research and provide data to facilitate understanding, modeling, and prediction of the global inter-annual climate fluctuations associated with the El Nino-Southern Oscillation (ENSO) phenomenon along the TAO buoy array. NDBC is entering into a new arena in support of the TAO buoy program, and increased expertise is required by the contractor in shipping and logistics into foreign countries.
Scope of Effort:	The scope of this Task Order includes the following elements for the TAO programs: <ul style="list-style-type: none"> • Field Service-includes all field service activities to service existing stations and to deploy new stations, as well as port services and communications required to complete the field service missions Specifically for the TAO program, this scope includes: <ul style="list-style-type: none"> • Recover and deploy 55 TAO buoys with a combination of refreshed and legacy buoys and sensors • Recover and deploy 4 submerged ADCP moorings within the TAO array
Tasks:	<u>Field Service Tasks</u> 8. Execute scheduled field service activities in accordance with TAO Standard Operating Instructions, NDBC station

maintenance directives to maintain the 55 TAO buoys and 4 Submerged ADCP in the TAO array for the durations of this contract year with a combination of legacy and refreshed buoys and sensors. Execute each field service mission to every extent as written in supporting by pre-cruise documentation.

9. Draft the annual ship schedules for KA and update as schedule changes.
10. Annual Review and Updates to Standard Operating Instructions for NOAA vessel's crew/NDBC/SAIC personnel work performed aboard NOAA vessels
11. Follow and upgrade operational procedures for conducting and post-processing data from legacy TAO buoys and CTD equipment.
12. Planning and Detail Sheet completed and sent to PMEL 24 weeks prior to cruise start update and provide copy to PMEL each revision.
13. NDBC approved TAO draft cruise plans sixty (60) days prior to the start of each cruise.
14. Supply PMEL P&D sheets 24 weeks prior to cruise start.
15. Assign a technically competent person to function as a Cruise Lead/Chief Scientist a minimum of thirty (30) calendar days prior to the scheduled cruise. Note: the Chief Scientist will interface with the ship's operations officer and field operations officer as necessary to ensure all items listed in the final cruise plan are conducted.
16. Assign a lead technician on TAO cruise a minimum of thirty (30) calendar days in advance of the cruise. Note: the technician shall be fully training all aspects of TAO refreshed and legacy buoy systems and subsystems including system and sensor startup, testing, data downloading and recovery/deployment deck operations, mooring specifications, and ship's procedures during buoy operations. This technician's qualifications are to be documented in writing and approved by the TAO mission coordinator before fulfilling the role of lead technician aboard a cruise.
17. Interface with and aid Ancillary Scientist aboard NOAA vessels before, during and after TAO cruises
18. Complete required travel paperwork: Health questioner Passports, Travel letters etc 12 weeks prior to cruise start.
19. Provide Operational Planning and Time Sensitive Response to unplanned outages.
20. Provide timely quotes for contract mission support
21. Conduct Mid-Cruise and Final Cruise inventories of items on ships, and remote storage locations.
22. At mid cruise identify any equipment shortages or projected

	<p>shortages to TAO operations.</p> <ol style="list-style-type: none"> 23. Conduct and update the Hazardous Material inventory at the conclusion of each cruise. All HAZMAT used in the TAO program and located aboard NOAA vessels shall be included in the report. 24. Collect raw data files of all data collected during the TAO cruise: CTD, Delayed Mode Tube data, Delayed Mode Module data, Auto-salinity data, Ancillary Science Data at the end of each cruise 25. Coordinate with DAC and Data analysis to develop operational procedure for data collection. 26. Coordinate Foreign Clearance Documents Requests and contact Ancillary Scientists 24 weeks prior to cruise start 27. Complete required travel paperwork: Health questioner Passports, Travel letters etc 12 weeks prior to cruise start. 28. SAIC Cruise Lead/Chief Scientist will prepare and distribute at the end of each cruise the Ships NMAO Customer Satisfaction Survey. 29. Review and maintain the TAO at sea handbook to include any and all operational changes identified this contract year. 30. Produce weekly status report.
<p>Assumptions/ Constraints (Security, Safety, Accessibility, etc...)</p>	<p>All assumptions are applicable:</p> <ol style="list-style-type: none"> 1. ASSUMPTION: The NTSC shall have in place a safety and environment safety program (this function is covered under another Task Order). 2. CONSTRAINT: All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, policy and procedures. 3. CONSTRAINT: All efforts will be made to minimize cost without sacrificing quality or workmanship. 4. ASSUMPTION: The Government will arrange and provide ship support for activities in this Task Order, unless the Contracting Officer requests in writing that the NTSC provide that support. 5. ASSUMPTION: All equipment, including replacement buoys and/or moorings, have been delivered – completed, tested, and ready for deployment at the point of embarkation, by the scheduled date. 6. CONSTRAINT: No management level operational planning (i.e. development of TMPs, etc) will occur under this task order.
<p>Deliverables:</p>	<ol style="list-style-type: none"> 1. Execute Field Service mission required to maintain the 55

	<p>TAO moorings; combination of legacy and six refresh buoys and four (4) subsurface ADCP moorings located within the TAO array.</p> <ol style="list-style-type: none"> 2. Annual review and updates to Standard Operating Instructions for NOAA vessel's crew/NDBC/SAIC personnel work performed aboard NOAA vessels and update as needed 3. Annual review and update to TAO Field Service Administrative Procedures and update as needed. 4. Produce an annual schedule of all vessels used to support TAO operations and update as required to reflect latest knowledge. 5. Submit NDBC approved TAO final cruise plans thirty (30) calendar days prior to the start of each cruise. 6. Update the inventories of all TAO equipment, GFE, LRU, property and consumables items at SSC, remote storage locations, and aboard support vessels, each quarter. 7. Deliver raw data files of all data collected during the TAO cruise: CTD, Delayed Mode Tube data, Delayed Mode Module data, Auto-salinity data, Ancillary Science Data at the end of each cruise 8. Final Planning and Detail Sheet (P&D) 30 day prior to cruise start 9. Pre cruise brief conducted 2 weeks prior to cruise start. 10. Identify, survey, and inspect alternate vessels for TAO field service missions 11. Conduct weekly status brief.
GFE/GFI:	GFE/GFI is available to support this effort. The Government requests that your technical proposal state whether you intend to utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost impact of that decision.
Program Objectives/ Possible Performance Measures:	The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.
Inspection/Acceptance:	Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	Travel is required to support the field service element of this task order. The contractor shall provide cost estimates for all travel in the cost proposal and the travel expenses must comply with the Federal Travel Regulations.

Required information and/or submittals to be included in the required Task Management Plan (TMP):

1. **Task Management Plan (TMP):**

- a. Clearly defined Table of Deliverables with corresponding due dates.
- b. Work Breakdown Structure (WBS)
- c. Cost per Schedule of Supplies/Services and/or major components (e.g. hardware).
- d. Proposed performance specifications and metrics

2. **Operational Services:** Propose a Not to Exceed (NTE) limit for each occurrence as well as a ceiling for the Task Order for providing sub-contracting for Port Services (including, but not limited to cranes, gases, machine shop, small boat, diver).

3. **Quarterly Breakdown:** Submit the estimated costs (NTSC labor/travel, consumable items, other components, shipping of equipment to/from field, other contract services except ship support) by quarter.

PROGRAM ADDENDUM

Title of Task Order:	TO34 0304CC TAO Ops Engineering
NDBC Branch:	OPS 52 – Observing Systems Branch
Performance Period:	07/01/2009 through 06/30/2010
Task Order Type: (FFP or CPFF)	FFP
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	To maintain observing system field assets in order to provide reliable and accurate meteorological, atmospheric, oceanographic, observations in real time for the National Weather Service (NWS) National Ocean Observing System (NOOS) program, encompassing the TAO buoy programs. This new "end-to-end" approach to operational support includes equipment preparation, industrial facility support, laboratory operations, and cost-effective station field service, installations, deployments and equipment exchanges.
Background:	NDBC has requirements to supply timely, accurate, and reliable marine atmospheric, oceanographic and tsunami event data from the National Ocean Observing System (NOOS), and to maintain its reputation as the NWS center of Excellence for Marine Technology. Additionally, NDBC has requirements to support ancillary research and provide data to facilitate understanding, modeling, and prediction of the global inter-annual climate fluctuations associated with the El Nino-Southern Oscillation (ENSO) phenomenon along the TAO buoy array. NDBC is entering into a new arena in support of the TAO buoy program, and increased expertise is required by the contractor in shipping and logistics into foreign countries.
Scope of Effort:	The scope of this Task Order includes the following elements for the TAO programs: <ul style="list-style-type: none"> • Providing engineering support for production/integration-of both mechanical and electrical equipment used in TAO legacy program. • Engineering services to support technicians, lab support, and all testing/green-tagging/blue-tagging of systems. • Supporting fifty-five TAO buoys, four ADCP subsurface moorings located in the Equatorial Pacific • Engineering analysis of operating TAO buoy systems as identified by RAZOR\ESR tickets. • Perform post-production activities for returned equipment as identified by TAO operations. • Evaluations of TAO moorings. • Configurations management support. • Drafting support. •
Tasks:	Engineering Tasks

	<ol style="list-style-type: none"> 8. Provide engineering support of the Legacy TAO array and subsurface ADCP as identified by RAZOR tickets/ ESRs. 9. Provide Engineering support to planning time sensitive discrepancy response. 10. Conduct reliability analysis of TAO Legacy equipment. 11. Support operations, data analysis and field personnel in evaluations of TAO legacy. 12. Maintain the Configuration management of TOA legacy equipment. 13. Upgrading ETP's into NDBC instructions for TAO legacy equipment preparations. 14. Provide configuration files for ADCPs. 15. Attend training and seminars to stay current on developing engineering for use on TAO legacy systems.
<p>Assumptions/ Constraints (Security, Safety, Accessibility, etc...)</p>	<p>All assumptions are applicable:</p> <ol style="list-style-type: none"> 1. ASSUMPTION: The NTSC shall have in place a safety and environment safety program (this function is covered under another Task Order). 2. CONSTRAINT: All work will be performed in compliance with applicable federal, state, local laws or regulations, NASA, NOAA, NWS, and NDBC instructions, directives, policy and procedures. 3. CONSTRAINT: All efforts will be made to minimize cost without sacrificing quality or workmanship. 4. ASSUMPTION: The Government will arrange and provide ship support for activities in this Task Order, unless the Contracting Officer requests in writing that the NTSC provide that support. 5. ASSUMPTION: All equipment, including replacement buoys and/or moorings, have been delivered – completed, tested, and ready for deployment at the point of embarkation, by the scheduled date. 6. CONSTRAINT: No management level operational planning (i.e. development of TMPs, etc) will occur under this task order.
<p>Deliverables:</p>	<ol style="list-style-type: none"> 6. Execute TAO operational engineering services as identified by RAZOR tickets, and ESRs. 7. Maintain TAO legacy Configuration Management. 8. Conduct reliability analysis of TAO Legacy equipment
<p>GFE/GFI:</p>	<p>GFE/GFI is available to support this effort. The Government requests that your technical proposal state whether you intend to</p>

	utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost impact of that decision.
Program Objectives/ Possible Performance Measures:	The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.
Inspection/Acceptance:	Periodic and final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	Travel is not required for this task order.
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<ol style="list-style-type: none"> 1. Task Management Plan (TMP): <ol style="list-style-type: none"> a. Clearly defined Table of Deliverables with corresponding due dates. b. Work Breakdown Structure (WBS) c. Cost per Schedule of Supplies/Services and/or major components (e.g. hardware). d. Proposed performance specifications and metrics 2. Quarterly Breakdown: Submit the estimated costs by quarter.

PROGRAM ADDENDUM

Task Order: 09-TOS-34 CLIN 0304CD TAO Tech Refresh

Dated April 15, 2009

Title of Task Order:	Tropical Ocean Atmosphere (TAO) Technology Refresh
NDBC Branch:	Program Planning & Integration
Performance Period:	Date of Award through June 30, 2010
Task Order Type: (FFP or CPFF)	CPFF
Purpose: (How this TO relates to NDBC's Mission or What Problem needs to be solved)	Under various NDBC projects (e.g., Convert Weather Buoys-ConWxB, C-GOOS, TAO refresh), NDBC will either augment its stations with oceanographic measurements (including Acoustic Doppler Current Profilers (ADCPs), Conductivity, Temperature, Depth (CTD), directional waves, and other oceanographic measurements) or deploy additional stations to support meteorological and oceanographic measurements. The purpose of this task order is to provide all technology development and refresh efforts to TAO in order that NDBC can fulfill its mission.
Background:	Beginning in FY '06, NDBC assumed operational responsibility for maintaining the NOAA Tropical Atmosphere Ocean (TAO) array in the Equatorial Pacific Ocean. NDBC development of the AMPS payload to support the ConWxB effort also incorporated support of TAO measurement requirements to allow use of the AMPS data logger and sensor development as technology refresh for the TAO array. NDBC plans to deploy several TAO buoys with AMPS payloads for extended field testing. These field tests will include both standard and flux-site configuration.
Scope of Effort:	The purpose of this new tasking is to continue the TAO Refresh efforts which include the engineering, operations, and IT for the TAO Refreshed System.
Tasks:	<ol style="list-style-type: none"> 1. Coordinate with AMPS project lead to complete the following items in TAO refreshed: develop firmware modifications to support an AMPS deployment mode development and testing, correct house keeping power measurement data displays shore side 2. Determine TAO-Firmware version for commissioning and commission the TAO AMPS. 3. Mechanical Hardening of Refreshed Buoy to include the

following items: Tube Package Modifications, IM Coupler Final Design Determination, External Battery Pack capable of 18 month deployments,

4. Convert Level B drawing package to Level A
5. Conduct TAO Legacy/ Refresh Ocean Sensor Comparison evaluations at sites in the Pacific array used for In-Situ Inter-comparisons Assessment: In-situ comparisons of at least one equatorial site and one non-equatorial site, provide TAO Refresh System Evaluation Reports for all in-situ and system accuracy tests.
6. Review Gulf of Mexico TAO Refreshed buoy data from 42A70 & 42B70 for both performance and accuracy.
7. Conduct system Endurance Test- Prototype at SSC and Gulf of Mexico
8. DAC support to handle the increased volume of Real-Time data of TAO refreshed system and to meet NWS requirements for Max Delay and Quality Flags inclusions, and generate the necessary metadata to support research and climate record continuity, data verification, QA and storage, and provide improved data distribution methods
9. IT support for WEB based data display of 55+ refresh sites for real-time and delayed mode data display and storage.
10. DAC shore-side data interface maintenance and distributions
11. Data Management Procedures to support an 55 buoy array of TAO refresh that covers: delayed mode data recovery procedures for field operations, delayed mode QA and storage requirements, TAO Refreshed Buoy Data Administrative Procedures
12. Administrative Procedure for Refresh Buoy Build, Test, and Deployment.
13. Refreshed Buoy at Sea Handbook to support any and all changes in Refreshed TAO buoy system
14. Calibrations Management Procedure
15. Refresh buoy ETPs & NDBC procedures
16. Develop a system documentation establish TAO Refreshed Base-line, Complete Functional Audit, Complete Physical Audit. Present a configuration Management plan for the TAO refreshed system
17. Refresh Buoy Builds\Deployments (8 per year)
 - a. Pacific Deployments- Deploy 6 buoy in FY2009 in the Pacific array
 - b. Gulf of Mexico – Deploy 1 Engineering test platform in Gulf of Mexico FY09.
 - c. Maintain TSTF1 for comparison testing of TAO Refresh Systems at SSC.
 - d. Establish and maintain one TAO Refresh system at

	<p>SSC for long term engineering testing.</p> <p>e. Deploy and Continue to maintain the TAO refresh test buoy in the Gulf of Mexico and plan on quarterly service visits.</p> <p>18. Continue engineering refresh efforts to design and test of lithium battery pack, etc. Evaluation of the IM coupler designs</p> <p>19. Continue and complete IT architecture/system for the TAO refresh.</p> <p>20. Perform parallel testing between the refreshed and legacy real-time systems</p> <p>21. Load delayed mode data into MYSQL database for both TAO and PIRATA (if data available)</p>
<p>Assumptions/ Constraints (Security, Safety, Accessibility, etc...)</p>	
<p>Deliverables:</p>	<ol style="list-style-type: none"> 1. Field service plans for GOM services two weeks before each field service mission. 2. Field service reports GOM services two weeks after each field service. 3. Performance and data comparison reports for GOM deployed test buoys – six weeks after deployment. 4. Updated Test & Calibration Procedures, drawings, and test reports for the refreshed TAO engineering systems – December 2007. 5. Complete Functional Audit, Complete Physical Audit. Present a configuration Management plan for the TAO refreshed system included in the plans are: <ol style="list-style-type: none"> a. Level A package for the TAO refreshed system to establish TAO Refreshed Base-line, b. System test procedures (Blue Tag) c. Shipboard operating procedures for refreshed TAO buoys d. System block diagrams e. Firmware requirements, payload and sensors. 6. Mechanical Hardening of Refreshed Buoy to include the following items: Tube Package Modifications, IM Coupler Final Design Determination, External Battery Pack capable of 18 month deployments,. 7. Document and conduct TAO Legacy/ Refresh Ocean Sensor Comparison evaluations at sites in the Pacific array used for In-Situ Inter-comparisons Assessment: In-situ comparisons of at least one equatorial site and one non-equatorial site.

	<ol style="list-style-type: none"> 8. Review Gulf of Mexico TAO Refreshed buoy data from 42A70 & 42B70 for both performance and accuracy. 9. Conduct TAO Refresh system endurance test- Prototype at SSC and Gulf of Mexico 10. DAC support to handle the increased volume of Real-Time data of TAO refreshed system and to meet NWS requirements for Max Delay and Quality Flags inclusions, and generate the necessary metadata to support research and climate record continuity, data verification, QA and storage, and provide improved data distribution methods 11. IT support for WEB based data display of 55+ refresh sites for real-time and delayed mode data display and storage. 12. Develop approved Data Management Procedures to support a 55 buoy array of TAO refresh that covers: delayed mode data recovery procedures for field operations, delayed mode QA and storage requirements. 13. Develop approved Administrative Procedure for Refresh Buoy Build, Test, and Deployment. 14. Update as required the "Refreshed Buoy at Sea Handbook" to support any and all changes in Refreshed TAO buoy system 15. Refresh Buoy Builds/Deployments (8 per year) <ul style="list-style-type: none"> o Pacific Deployments- Deploy 6 buoy in FY2009 in the Pacific array o Gulf of Mexico – Deploy 1 Engineering test platform in Gulf of Mexico FY09. o Maintain TSTF1 for comparison testing of TAO Refresh Systems at SSC. o Establish and maintain one TAO Refresh system at SSC for long term engineering testing. o Deploy and Continue to maintain the TAO refresh test buoy in the Gulf of Mexico and plan on quarterly service visits.
GFE/GFI:	GFE/GFI is available to support this effort. GFE/GFI lists can be found by referring to Section J of the contract. The Government requests your technical proposal state whether you intend to utilize the available GFE/GFI. Your cost proposal shall reference whether you will use GFE/GFI and the cost impact of that decision.
Program Objectives/ Possible Performance Measures:	The Government requires this task order have performance-based measures that align with the Statement of Objectives and Program Goals contained in this solicitation. The contractor is required to provide a list of proposed measures for this task order with goals for level of service and the outcomes for achieving/not achieving those goals.

Inspection/Acceptance:	Final inspection and acceptance of all work performed, reports generated, and other deliverables will be conducted by the COTR or other designee.
Travel:	Travel is required for the GOM services to support this task order. The contractor shall provide cost estimates for all travel in the cost proposal and the travel expenses must comply with the Federal Travel Regulations.
Required information and/or submittals to be included in the required Task Management Plan (TMP):	<ol style="list-style-type: none"> 1. An Approach and Management Plan for technology development and refresh for NDBC ocean measurements identified in this task order. 2. Implementation Plan (IP) <ol style="list-style-type: none"> a. Work Breakdown Structure (WBS) b. Performance Specifications and metrics c. Cost, Schedule and Performance Metrics 3. Task Order Cost Proposal. It is requested that the contractor provide cost and resource breakdown for each individual task in this task order.

PROGRAM ADDENDUM

**Task Objective Statement
For
TO-34 CLIN 0303BE
Yellow Buoy/C-MAN – Technical Refresh
April 14, 2009**

Period of Performance: July 1, 2009 to June 30, 2010

BACKGROUND:

The NDBC wishes to maintain the cost structure of the Weather and Ocean Platform (WxOP) Technology Refresh CLIN as CPFF. The level of effort on this CLIN is expected to be based on contract years three and four previous performance. Along with this change in cost structure the technology refresh tasks now will be submitted and managed to SAIC via Engineering Support Requests. With this change in task management some basic ground rules should be established:

- Only NDBC personnel will submit technology refresh project via the Engineering Support Requests (ESRs).
- Any NTSC project proposals for technology refresh must be submitted through the NDBC engineering staff.
- The NDBC Engineering Technical Coordinator will review and approve/reject all submitted technology refresh ESRs.
- The NDBC Engineering Technical Coordinator and the NTSC Engineering Manager will coordinate the release and management of technology refresh ESRs as NDBC and NTSC resources and priorities change.
- Technology refresh projects will follow a basic engineering process as described in NDBC Procedure NDBC-7007. The engineering process defined NDBC-7007 will be scaled to the size of the project.
- The individual tasks will be estimated for approval by labor hours and materials cost.
- The individual tasks will be tracked by labor hours and materials cost.
- A method will be defined in coordination with the NTSC to track technology refresh task deliverable due dates.

SCOPE:

Table 2 presents a representative sample of the task currently proposed by the NDBC for NTSC Contract Year 5 for estimation purposes. Detailed task descriptions with deliverables follow in latter sections. Actual tasking to the NTSC will be given via Engineering Support Requests. Technology refresh tasking will be categorized into eight general topics listed in Table 1 and individual tasks will be assigned numbers in keeping with the numbering system we started this contract year.

Table 1. WxOP Technology Refresh Categories

Task 1 Mechanical/Architectural Projects
Task 2 Communications Projects
Task 3 Payload Projects
Task 4 Ocean Sensor Projects
Task 5 Power System Projects
Task 6 Waves Projects
Task 7 Meteorological (Met) Sensor Projects
Task 8 Laboratory/Process Improvements

The NDBC is continuing to develop ideas for technology refresh in conjunction with the NTSC hence not all projects listed will be assigned and others may be substituted. The larger technology refresh projects may be broken down into smaller multiple ESRs to effectively manage the design and development process. Further, as technology, priorities, and resources change new tasks maybe added, individual tasks may be halted or suspended, or deliverable due dates may be modified. These efforts will be coordinated with the NTSC Engineering Manager through the NDBC Engineering Technical Coordinator. As the new contract year approaches the current tasks will be prioritized by the NDBC and released to the NTSC as resources (both NDBC and NTSC) become available.

Table 2. WxOP Technology Refresh Task Listing

Task #	Title	NDBC POC
2.4	ARGOS II Evaluation	Pete Lessing
2.5	Test and Evaluation of Data Collection Platform Interrogate (DCPI) System	Pete Lessing
3.3	Real Time Operating System Feasibility and Proof-of-Concept for NDBC Payloads	Pete Lessing
3.4	1.8-Meter Buoy Enhancements	Bill Hansen
3.5	Combine AMPS/GPS Systems	Ralph Cambre
4.1	Add ADCP, CT, and SCM to Buoy Level A Drawings	Rodney Riley
4.2	Improve/Elevate CT and SCM ETPs to NDBC Instructions	Rodney Riley
4.3	Develop CT, ADCP, and SCM Lifecycle Documentation	Rodney Riley
4.4	Improve Cabling on 3-m CT, SCM and ADCP Fixed Mount Installations	Rodney Riley
4.5	Deploying Standard Buoy with SCM and AWAC on a Sled Near 42007 for Comparison	Rodney Riley
4.6	Support Service & Installation of Waves & Currents Test on 42007	Rodney Riley
5.1	Investigate a Lithium Secondary Battery Power System for NOOS Optimization and TAO Buoy	Ralph Cambre
5.2	Investigate a Rechargeable Power System For Standard Buoy	Ralph Cambre
6.3	DDWM Documentation: Document Implementation of Wave Algorithm	Rodney Riley
6.4	Develop Method to Eliminate Gyrocompass	Bill Hansen
6.5	Improve DDWM (3DM-GX1) Green-Tag Procedure Thoroughness	Rodney Riley
6.6	Develop & Document Uniform Cable Layout for 3-Meter AMPS/DDWM Buoy	Bill Hansen
6.7	Implement/Support Modifications to Standard Buoy for Improvement	Rodney Riley

	on Swell in Directional Waves Measurement	
7.1	Integrate RM Young Ultrasonic Anemometer into AMPS & ARES and Field Test	Regina Moore
7.3	Smart Sensor Module Enhancements & Wireless Communications	Rodney Riley
8.1	Incorporate GPS Compass Into NDBC CMAN Anemometer Alignment Procedure	Rodney Riley
8.2	Complete Setup of Ocean Cal Lab	Regina Moore
8.3	Develop Automated AMPS Green Tag Tester	Regina Moore

TASKS:

1. Mechanical/Architectural Projects

None at this time.

2. Communications Projects

2.4 ARGOS II Evaluation

BACKGROUND: This task is intended to provide an evaluation of an ARGOS II transmitter (PMT) this is to be provided by North American CLS (NACLS) gratis for the purpose of evaluating ARGOS II two-way communications, bandwidth, data rates and other aspects of ARGOS II communications. In addition to the PMT, NACLS will provide no-cost ARGOS telecommunications services for the period of the evaluation. This estimate is for engineering services required to evaluate the ARGOS II transceiver capabilities.

SCOPE: For the purposes of this task estimate, the ARGOS II PMT is assumed to include an RS-232 serial interface and serial software command interface to execute basic functions of an ARGOS II PMT for two-way communications. The evaluation will require action on the part of NDBC IT to setup an email account or other means of receiving data from NACLS transmitted by the PMT, as well as a means of interfacing with NACLS for transmissions of commands to NACLS for uplink to the NOAA NPOESS satellite NOAA N³ and final receipt by the ARGOS PMT.

TASKS:

1. Review documentation associated with the ARGOS II PMT, and determine the best method for interfacing a laptop to the device for evaluation of power consumption, data throughput, bandwidth limitations, system latencies, and other recommended evaluation factors.
2. Perform an analysis of the ARGOS II PMT power consumption under a programmed data transmission of a pseudo-position message, receipt, acknowledgement and response to received commands, and any other recommended scenario.
3. Develop either a simplified software interface or command scripts to:
 - a. Execute basic commands to transmit data from the transmitter, such as period pseudo data messages or positions

- b. Receive pseudo-commands transmitted by the NPOESS N' satellite to the PMT, process these commands and provide command response or acknowledgement to the NDBC sender.
 - c. Evaluate and characterize command latency for two-way communications between NDBC and a PMT.
 - d. Evaluate and determine data rates for two-way communications between NDBC and a PMT.
 - e. Evaluate and determine data bandwidth limitations such as message sizes, transmit repetition rate limitations, and any other bandwidth limitations observed.
4. Write a report on the results and findings of the above tests, including an evaluation of hardware, power consumption, estimated costs to operate, system latencies, data rates, and bandwidth limitations, if any.

DELIVERABLES:

- Report/whitepaper on the results and findings of the above tests

SCHEDULE:

- Procurement of loaner ARGOS II PMT

NDBC POC: Pete Lessing

2.5 Test and Evaluation of Data Collection Platform Interrogate (DCPI) System

BACKGROUND: At present, there exists no method for two-way communication with NDBC payloads operating exclusively on the Geosynchronous Operating Environmental Satellite (GOES) system. Sutron, Corp. was awarded a Small Business Innovative Research (SBIR) Phase I grant to determine the feasibility of designing a two-way communications capability using spread spectrum techniques. Sutron Corp. was subsequently awarded a Phase II SBIR to develop prototype hardware for a GOES DCPI that provides for two-way communications using this spread spectrum technique. The use of spread spectrum techniques for outbound communications (user to payload), resulted in a dramatic increase in the bandwidth and lengths of messages that can be transmitted to a remote Data Collection Platform (DCP) since the outbound communications path uses the entire GOES band on a non-interfering basis. As a result, it is now possible to transmit an entire payload configuration file for dynamic payload configuration changes and adaptive sampling in response to environmental events, request re-transmission of data that may have been missed in a self-timed transmission from a DCP, or request and retrieve extended diagnostic information from remote DCPs. The purpose of this task is to determine NDBC requirements for a DCPI command interface and evaluate the suitability of a Sutron DCPI for use with NDBC GOES payloads.

SCOPE: Procure two DCPI units, acceptance test the units, and perform extended evaluation testing for use with NDBC payloads including: power consumption analysis; two-way command transfer capabilities; analysis and characterization of command and command response latencies; determination of the Wallops Island Command and Data

Acquisition System (CDAS) interface requirements for issuance of outbound commands and GOES channel/band requirements for command response; determination of command functions of use in NDBC payload operations and engineering diagnostics; compile a written report detailing results of all testing performed. As these units are the first production run of prototypes, liaison with the DCPI manufacturer and Wallops CDAS engineering will be required to work out requirements and procedures for the CDAS command interface.

TASKS:

1. Determine two-way command and response requirements for payload operations and engineering diagnostics by consultation with DAC personnel and payload engineers. Provide written documentation of these requirements.
2. Coordinate with NDBC for procurement of two DCPI units.
3. Design and Develop software/scripts to simulate the issuance, execution, and response to the commands determined useful in the requirements document. The scripts/software should be developed with the view to porting the software for simulating payload command responses to both ARES and AMPS payloads, that is, the command response simulation software should be compatible with these payloads' software language and software interfaces for command responses. Some payload command responses will require the use of a GOES transmitter dynamically reconfigured from a self-timed mode to use a random channel for response, and as a result the simulation software shall include interface to and initialization of a GOES high data rate transmitter to send a simulated, self-timed message in order to determine timing for command responses that utilize random channels such that command responses do not interfere with self-timed transmissions. Scripts developed to issue commands through Wallops CDAS should be developed with a view toward operational usage of these scripts by DAC personnel. Provide draft design documentation detailing the commands and command responses implemented including data formats of commands and responses.
4. Perform power consumption analysis of the DCPIs, including minimum and maximum input voltage, minimum and maximum current draw, average current consumption, ampere hrs/day of usage, and other relevant power analysis information and provide a written report documenting the results.
5. Perform an analysis and evaluation of command to command-response latencies, including any latencies introduced by the Wallops CDAS interface. Perform an analysis and evaluation of command and command response success rates and provide a written report of the results.

DELIVERABLES:

- Requirements document listing DCPI commands and command responses that can be used for two-way payload communications by NDBC payload operations and for engineering diagnostics.
- Draft design document detailing implemented commands and responses including data formats of commands and responses.

- Payload compatible software simulating command responses and scripts for issuing commands through the Wallops CDAS DCPI command interface.
- Report detailing: System power consumption and power consumption analysis; command and command response success evaluation and results; overall observations and evaluation of the DCPI and Wallops CDAS interface; and recommendations for operational implementation.

SCHEDULE:

- Procurement of DCPI units

NDBC POC: Pete Lessing

3. Payload Projects

3.3 Real Time Operating System Feasibility and Proof-of-Concept for NDBC Payloads

BACKGROUND: NDBC environmental measurement embedded systems, or payloads, are custom-designed embedded systems that implement custom hardware and custom software to implement a variety of real time measurement and communications tasks. Present engineering methods of implementing the operating system software of the payload embedded systems consist of a custom-designed, pseudo real-time operating system kernel that control system tasks, task timing, and implement system hardware drivers. The nature of a custom-designed, pseudo real-time system is such that it is non-deterministic, that is, when adding new software tasks or modifying existing software tasks, particularly those that affect system timing, the effect of these additions and modifications on the system timing of other tasks are usually incapable of being precisely determined as a result of the pseudo real-time kernel not precisely characterized or its complexity. This can result in software that, although presented as being modular, is not always completely modular in the sense that a modification to one modular task can have unpredictable effects on other system tasks. This is often manifested by unpredictable system behavior when system configurations change that may affect task timing, and new timing scenarios are encountered that may not have been fully tested in previous software configurations, thus resulting in additional code modifications and testing to take into account these unforeseen timing relationships.

The solution to addressing these issues is use of a certified, real-time operating system, or RTOS. An RTOS is a multi-tasking operating system that is intended for real-time applications. NDBC environmental measurement systems are examples of real-time applications, as these systems require environmental measurements to occur in real-time at precise, synoptic intervals, require environmental sampling to occur at precise, real-time rates, require data transmission to occur during precise, assigned real-time windows (or GOES time slots), and require certain inter-sensor communications to occur at precise moments in time relative to other sensor communications or internal processes to avoid system or processor conflicts.

An RTOS facilitates the creation of a real-time system, or in other words, if used properly, guarantees real-time deadlines (such as transmissions during assigned GOES time slots, issuance and servicing of communications and other system interrupts, sampling, or other real-time deadlines) can be met either generally (soft real-time) or deterministically (hard real-time). It provides a developer with the tools necessary to produce deterministic behavior in a final system design. In addition, it guarantees true modularity of code implementation as "tasks" (or subroutines that perform specific functions such as MET sampling, MET averaging, GOES transmission, and other functions) are completely separate from the RTOS and communicate with the RTOS via semaphores or global variables thus truly separating the implementation of a task from the operating system functions of scheduling, timing, and task or context switching. Use of an RTOS can not only result in more reliable software, but dramatically reduce software development and testing time and costs since adding new functions do not require any modification of the underlying operating system kernel which is an independent entity from tasks.

SCOPE: This task is intended to survey commercial RTOSes available on the market, as well as open-source, royalty-free, no-cost RTOSes for applicability to NDBC payload systems and recommend a possible solution. In addition, this task is intended to either procure a commercial RTOS or obtain a copy of an open source, royalty-free, no-cost RTOS and implement the RTOS on existing AMPS hardware with a reduced set of measurements to determine feasibility and proof-of-concept of the use of an RTOS on NDBC payloads. Both commercial and open source RTOSes support a number of processor families, which include the processor used on the AMPS payload and thus it is believed that an RTOS can be ported to AMPS.

TASKS:

1. Review the available commercial and open source RTOSes available for use with the AMPS Advanced RISC Machine (ARM) processor. Provide a recommendation for a RTOS to use for proof-of-concept.
2. Purchase or obtain a copy of either a commercial or open source RTOS best suited for implementation on the AMPS ARM processor. Port the RTOS to the AMPS payload. Select and recommend a reduced set of tasks, such as one each of every primary meteorological measurement and GOES transmission of a meteorological message, port the existing code for these tasks from the AMPS payload into the required modular interface to the RTOS, and implement these tasks in the selected RTOS.
3. Provide documented evidence of the deterministic implementation of these tasks in the RTOS demonstrating hard real-time determinism using either Rate Monotonic Analysis or other industry accepted methods.
4. Test the implementation in a laboratory environment, and provide a report on the results.

DELIVERABLES:

- Written recommendation for selection of an RTOS for use on AMPS ARM processor.

- Written recommendation of a selected set of environmental measurements and communications tasks to be implemented on the AMPS RTOS.
- Source code implementing both the AMPS RTOS and task implementation.
- Documented evidence of deterministic nature of task execution using Rate Monotonic Analysis or other industry accepted method.
- Report detailing the results of the proof-of-concept implementation of the AMPS RTOS and environmental measurement and communications tasks.

SCHEDULE:

- NDBC approval of selected RTOS for testing
- Procurement of RTOS
- NDBC approval of set of environmental measurements and communications tasks to be implemented

NDBC POC: Pete Lessing

3.4 1.8-Meter Buoy Enhancements

BACKGROUND: NDBC plans to retire the WAMIDAS from service. The AMPS with a DDWM will be used in its place. This will further reduce the number of equipment types and configurations in NDBC systems. NDBC has deployed several 1.8 m buoys and gained performance information. The tasks below identify modifications that need to be made to the 1.8 m buoy design.

SCOPE: All of the tasks below shall be implemented together. Modify drawings and test procedures to implement the tasks outlined below. Conduct lab and buoy tests at SSC to demonstrate operational capability.

TASKS:

1. Implement AMPS DDWM in the 1.8 m buoy. Integrate the AMPS payload and DDWM into the 1.8 m buoy. This will require an analysis of what AMPS boards are required, power budget and re-use of any existing AMPS configuration and packaging. A PDR and CDR shall be conducted. At the conclusion of the design, implement one system for testing. Conduct the test at SSC and write a test report.
2. Modify internal connections to prevent corrosion. In previous deployments water intrusion occurred, internal molex type connections corroded. These and potential other types need to be replaced with a more water resistant connector. After engineering analysis, brief NDBC on the analysis and recommendations. Modify and test one buoy with new design.
3. Add/Modify to Implement a Power Shut-off or Deep Sleep Mode. Investigate ways to save battery life in the event a 1.8 m buoy is fully integrated and tested but is not deployed for some time. In this case, the non-rechargeable battery system needs to be conserved. After engineering analysis, brief NDBC on the analysis and recommendations. Modify and test one buoy with new design.

DELIVERABLES:

- Requirements Document

- Preliminary Design Review (PDR)
 - Critical Design Review (CDR)
- Above must include design analysis and recommendations on corrosion resistant internal connections and power shut-off/deep sleep mode.*
- Updated Level B drawing package approved in CMO
 - Updated test procedures
 - Test report

SCHEDULE:

- NDBC approval at PDR
- NDBC approval at CDR
- Availability of AMPS payload and 1.8-meter hull

NDBC POC: Bill Hansen

3.5 Combine AMPS GPS Systems

BACKGROUND: The present version of AMPS software uses its internal GPS unit for time and positioning. The Sutron HDR transmitter also has an internal GPS unit. Thus, buoys with an AMPS payload and HDR transmitter require two GPS antennas (& cables) be installed. The NDBC has already addressed the same issue in the ARES and MARS software to make use of the HDR GPS so that a second GPS system is not required. This AMPS firmware revision should be coordinated with other AMPS revisions (including revisions from other programs) to reduce the cost of laboratory and field certifications.

SCOPE: AMPS software should be modified to include the ability to use the HDR transmitter's internal GPS unit for time and positioning data. It is expected that this firmware revision will be incorporated with other AMPS revisions and, as such, will be included in combined Software Version Descriptions, Users Manuals, etc., and in laboratory and STF testing efforts. Further, it is assumed that the certification testing of the new AMPS firmware version is not included in the scope of this individual project.

TASKS:

1. Modify AMPS firmware to use the HDR GOES internal GPS for system time and positioning data.
2. Include firmware revision in a Software Version Description and other documents (i.e., Users Manual, System Design Document) as necessary.
3. Perform laboratory and STF testing to ensure new AMPS firmware version functions as required.

DELIVERABLES:

- Preliminary Design Review (if other processes are revised in this AMPS version)
- Critical Design Review (CDR)
- New firmware version of AMPS
- Test plan for regression testing of the AMPS firmware

- Data Analysis and Report describing results of regression testing
- Software Version Description
- Revised Users Manual and other documents as necessary

SCHEDULE:

- NDBC approval at PDR (if required)
- NDBC approval at CDR

NDBC POC: Ralph Cambre

4. Ocean Sensor Projects

4.1 Add ADCP, CT, and SCM to Buoy Level A Drawings

BACKGROUND: NDBC is in the process of finalizing the buoy configurations shown in yellow in the table below (other configurations are shown for reference only). Drawings and functional test procedures for these configurations need to be finalized and elevated to NDBC production documentation (i.e., level A drawings and NDBC procedures).

Measurement	Configuration	1.8m	2.3m	3m	6m
Surface Currents	Sontek (thru hull)				
	Sontek (bride)				
	Aanderaa (bride)				
Surface Salinity	Seabird (thru hull)				
	Seabird (bride)				
OSM	OSM				
Current Profile	RDI (Bride)				
	RDI (window)				

Legend for above table

	Level B package in CMO no modification needed
	Configurations that need work
	Work addressed in other funding
	Not an applicable configuration

SCOPE: Incorporate any redlines and modifications to drawings required to produce the five configurations shown in the table above in yellow. Then modify existing NDBC 3-m level A drawings to include these drawings. Complete ECP approval process for drawings. Conduct briefings as required to coordinate all (NDBC and Operations) drawing reviews and resolve conflicting inputs/edits.

TASKS:

1. Incorporate redlines and modifications to drawings for the following configurations:

- ADCP in bridle of 1.8-meter buoy
 - Sontek SCM (thru hull) in 3-meter buoy
 - CT in bridle of 3-meter buoy
 - ADCP in bridle of 3-meter buoy
 - CT (thru hull) of 6-meter buoy
2. Modify existing level A drawings to include these drawings.
 3. Complete ECP approval process for drawings.
 4. Conduct briefings to coordinate drawing reviews.

DELIVERABLES:

- Design Review(s) (if new configuration)
- Level A drawings
- Submitted ECPs

SCHEDULE:

- NDBC approval at design review (if required)

NDBC POC: Rodney Riley

4.2 Improve/Elevate CT and SCM ETPs to NDBC Instructions

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. Functional test procedures for these configurations need to be finalized and elevated to NDBC production documentation (NDBC procedures).

SCOPE: Incorporate any redlines and modifications to the ETPs for functional verification. Then convert the ETPs to NDBC instructions through the ECP process. Develop and incorporate changes to NDBC 1002 and 1001 which are used in the blue tag process. The changes will provide more specific guidance for the DAC in evaluating the ocean systems. Conduct briefings as required to coordinate all (NDBC and Operations) reviews and resolve conflicting inputs/edits.

TASKS:

1. Incorporate redlines and modifications to the ETPs for the functional verification of CTs and SCMs.
2. Incorporate changes into NDBC 1002 (PEST) and 1001 (FIT) for blue tag (burn in) testing
3. Complete ECP approval process for NDBC Instructions.
4. Conduct briefings to coordinate reviews as required.

DELIVERABLES:

- Design Review(s) (if required)
- Finalized updated NDBC procedures:
 - a. CT verification
 - b. SCM verification
 - c. NDBC 1002 Preliminary Electronic Systems Testing (PEST)

d. NDBC 1001 Field Integration Testing (FIT)

- Submitted ECPs

SCHEDULE:

- NDBC approval at design review (if required)

NDBC POC: Rodney Riley

4.3 Develop CT, ADCP, and SCM Lifecycle Documentation

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. The lifecycle of these ocean sensors should be fully documented from verification testing to preparing for deployment and recovering data from the sensors after deployment.

SCOPE: Develop in ETP form documentation that describes the lifecycle processes for the CT, ADCP and SCM sensors. One life cycle document has been started by NDBC for the CT. This format and style should be followed. That document should be evaluated and updated as required. Conduct briefings as required to coordinate all (NDBC and Operations) reviews and resolve conflicting inputs/edits.

TASKS:

1. Create ETP that describes lifecycle processes for CT sensors.
2. Create ETP that describes lifecycle processes for ADCP sensors.
3. Create ETP that describes lifecycle processes for SCM sensors.
4. Conduct briefings to coordinate reviews as required.
5. Submit ETPs for NDBC review

DELIVERABLES:

- ETP that describes lifecycle processes for CT sensors
- ETP that describes lifecycle processes for ADCP sensors
- ETP that describes lifecycle processes for SCM sensors

SCHEDULE:

- NDBC approval of lifecycle ETPs

NDBC POC: Rodney Riley

4.4 Improve Cabling on 3-m CT, SCM and ADCP Fixed Mount Installations

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. Past deployments of ocean sensors on 3-meter buoys in bridle mounts have indicated cable fatigue problems.

SCOPE: Even though these designs are bridle mount type, cable breakage or fatiguing problems are still suspected. In addition, present drawings do not detail cable routing on the bridle which allows each technician to route cables differently. In some drawings,

the cables are too long. This task will access and address the cabling to produce a uniform and documented method for protecting and routing the sensor cables.

TASKS:

1. Develop designs for routing and fixating bridle mounted CT, ADCP, and SCM cables.
2. Submit designs for NDBC review and approval
3. Modify existing level A drawings to include these drawings.
4. Complete ECP approval process for drawings.
5. Conduct briefings to coordinate drawing reviews.

DELIVERABLES:

- ETP that describes lifecycle processes for CT sensors
- ETP that describes lifecycle processes for ADCP sensors
- ETP that describes lifecycle processes for SCM sensors

SCHEDULE:

- NDBC approval of lifecycle ETPs

NDBC POC: Rodney Riley

4.5 Deploying Standard Buoy with SCM and AWAC on a Sled Near 42007 for Comparison

BACKGROUND: NDBC is in the process of finalizing WxOP buoy configurations with ocean sensors. To date the Standard Buoy (SB) has not been deployed with a SCM. Deployment of Standard Buoy to be funded from NOOSS Optimization Certification effort.

SCOPE: This task will coordinate with the tasking to augment 42007 and deploy two oceanographic sleds in the area of 42007. This effort shall be coordinated with the NOOSS optimization project for the purposes of commissioning the SCM measurement on the SB platform.

TASKS:

1. Develop designs for bridle mounted SCM on Standard Buoy.
2. Submit designs for NDBC review and approval
3. Modify existing level A drawings to include these drawings.
4. Complete ECP approval process for drawings.
5. Conduct briefings to coordinate drawing reviews.

DELIVERABLES:

- Level A drawing of Standard Buoy with bridle mount SCM
- Test report on field testing of SB w/ SCM
- Submitted ECP

SCHEDULE:

- NDBC approval of design
- Availability of Standard Buoy
- Ship time for deployment

NDBC POC: Rodney Riley

4.6 Support Service & Installation of Waves & Currents Test on 42007

BACKGROUND: Buoy 42007 is planned to be deployed with an experimental sensor from Nortek in a self record mode.

SCOPE: This task will complete efforts to install two oceanographic sleds and augment 42007 to include acoustic communications. Efforts will include testing support for the acoustic system, current profilers mounted on the sleds, while at SSC and at-sea integration and test. Some shop fabrication is expected.

TASKS:

1. Test the acoustic system.
2. Test the sled mounted current profilers.
3. Update level B package for 42007.
4. Fabricate NDBC designed mounts.
5. Report on installation.

DELIVERABLES:

- Updated Level B package fro 42007
- Trip report for installation

SCHEDULE:

- NDBC approval of design
- Deployment of 42007

NDBC POC: Rodney Riley

5. Power System Projects

5.1 Investigate a Lithium Secondary Battery Power System for NOOS Optimization and TAO Buoy

BACKGROUND: NDBC began using lithium batteries in the TAO program in 2007. Due to the higher cost and hazards of transporting, warehousing and handling lithium primary batteries, and the move of the industry toward rechargeable lithiums it is believed that rechargeable lithium batteries might be more beneficial for NDBC applications.

SCOPE: The purpose of this task is to identify available lithium battery chemistries and formats that would be suitable for use in the TAO program and in the NOOS optimization buoy. A cost / benefit analysis will be provided that evaluates the benefits

of available rechargeable lithium batteries over the primary lithium batteries currently used.

TASKS:

1. Compare areas of safety, handling, and transportation, and warehousing costs.
2. Determine rational/recommendations for procuring at least three alternative prototype rechargeable lithium batteries for evaluations

DELIVERABLES:

- White paper on the benefits of rechargeable lithium batteries recommend for use by NDBC. (Note: If other battery types that might be better suited for NDBC applications have been identified during this task, identify such for NDBC consideration.)

SCHEDULE: None

NDBC POC: Ralph Cambre

5.2 Investigate a Rechargeable Power System For Standard Buoy

BACKGROUND: The Standard Buoy (SB) development is very near completing a baseline design. Early test results show the promise that the buoy will be used in the NDBC network. One of the feedback items during the development was to use a rechargeable power system. This was not completed during the initial development partially because of the potential complexity in the effort.

SCOPE: This task will conduct a white paper type analysis to outline the potential design configurations and evaluate the pros and cons of each, as well as any rationale for not making a change from the non-rechargeable configuration. This task should not be an intensive effort concluded with a large paper report. Instead, a small number (2 to 3) of designs similar to what is used in the 3-m buoy should be reviewed, scaled, and/or repackaged for the SB platform.

TASKS:

1. Conduct an engineering review and provide a report that addresses the question of a rechargeable power system on the SB for the Weather and Ocean (WxO) program only.
2. Provide a simple brief to NDBC at the conclusion of the effort.

DELIVERABLES:

- White paper with executive summary

SCHEDULE: None

NDBC POC: Ralph Cambre

6. Waves Projects

6.2 DDWM Documentation: Document Implementation of Wave Algorithm

BACKGROUND: NDBC is in the process of refreshing buoy hardware & software including wave systems. NDBC will retire older wave systems and consolidate, where appropriate, to two or three systems. The standard system per platform type is shown below (10/12 -m are not listed since NDBC plans to discontinue use of these hulls). Thus documentation will need updating and buoy drawings modified for integration of these systems. New technology exist that could increase NDBC's production and testing efficiency in terms of costs and schedule. This task will develop the technology integration into the buoy and C-MAN systems including drawings, procedures, and reports.

Standard NDBC Wave Systems

Platform	Wave System
1.8-m	AMPS/DDWM
2.3 or 2.4-m	AMPS/DDWM
3-m	AMPS/DDWM
6-m	AMPS DDWM (Non.dir. Mode)
Fixed Platform	1.8 m buoy

SCOPE: NDBC continues to enhance the DDWM and refine supporting documentation. A thematic outline for a System Design Document will be provided. The implementation of the waves processing algorithm will be documented in the SDD. Other system functions and overall system operation will be documented. The system User's manual and Software Maintenance Manual will be updated as necessary to document enhancements, corrections and updates.

TASKS:

1. Create DDWM System Design Document
2. Update DDWM User's Manual and Software Maintenance Manual as necessary.

DELIVERABLES:

- DDWM System Design Document

SCHEDULE: None

NDBC POC: Rodney Riley

6.3 Develop Method to Eliminate Gyrocompass

BACKGROUND: Presently NDBC uses a Gyro compass to develop and test buoy hull magnetic coefficients (HMCs) for compasses used in Winds observations and magnetometers for Directional Waves observations. The Gyro is bulky, expensive to maintain, and requires extra time to setup and breakdown. A GPS compass or other less expensive method could be used in the verification test and perhaps in the development of the HMCs.

SCOPE: NDBC has previously procured two GPS compasses. These have been used for anemometer alignments (buoy & C-MAN). Some work has been completed to use the GPS compass as a Gyro replacement in development of buoy hull magnetic coefficients (HMCs) for the DDWM. One issue that has not been resolved is the GPS compass latency (time delay from actual heading to serial output of the heading). The issue needs to be resolved, or an alternative method developed that is more efficient and reliable than using the Gyro. This task will complete the engineering analysis and provide a written engineering analysis and recommendation to NDBC.

TASKS:

1. Investigate to resolve latency issue on GPS compass.
2. Investigate other methods of eliminating the Gyrocompass.

DELIVERABLES:

- Technical Analysis Report for eliminating Gyrocompass

SCHEDULE: None

NDBC POC: Bill Hansen

6.4 Improve DDWM (3DM-GX1) Green-Tag Procedure Thoroughness

BACKGROUND: Presently the 3DM-GX1 inertial sensor functional verification test (i.e., green-tag test) checks for gross operation of the individual measurements.

SCOPE: This task will develop testing techniques to improve the thoroughness of the procedure. Examples might include a test to confirm the sensor frequency response to various inputs, proper signal noise levels, etc. Once these techniques are developed and demonstrated in ETPs, the NDBC procedure for functional verification will be updated and approved via the ECP process.

TASKS:

1. Define 3DM-GX1 inertial sensor parameters that are currently not thoroughly tested.
2. Develop test procedures to test the identified parameters and submit in ETP format.
3. Redline ETP during actual engineer and technician testing.
4. Submit ECP to convert ETP to official NDBC Procedure

DELIVERABLES:

- ETP for revised 3DM-GX1 inertial sensor testing
- Updated DDWM NDBC Functional Test Procedure

SCHEDULE:

- NDBC Approval of ETP

NDBC POC: Rodney Riley

6.5 Develop & Document Uniform Cable Layout for 3-Meter AMPS/DDWM Buoy

BACKGROUND: Cable routing could impact performance of compass and magnetometer measurements in 3-m buoy systems. Presently there is no documentation or direction for where cables are to be placed and/or routed inside the 3-m electronics compartment.

SCOPE: The new AMPS enclosure connector layout supports an improved and standard cable routing scheme. This task will build on lessons learned from AMPS 3-m buoy integration and document where appropriate cable routing, bundling, and cable lengths. The effort will follow the standard NDBC engineering development of PDR, CDR, and test and documentation, all scaled to an appropriate level of effort.

TASKS:

1. Design cable routing, bundling, and cable lengths for AMPS/DDWM 3-meter buoy.
2. Modify 3-meter AMPS level A drawings for cable lengths, routing, and bundling.
3. Complete ECP approval process for drawings.
4. Perform testing at SSC to ensure new cableway have not impact on function.

DELIVERABLES:

- Preliminary Design Review
- Critical Design Review
- Submitted ECP
- Modified level A 3-meter AMPS drawings with cable routing defined
- Test report on new cableways

SCHEDULE:

- NDBC approval at PDR
- NDBC approval at CDR

NDBC POC: Rodney Riley

6.6 Implement/Support Modifications to Standard Buoy for Improvement on Swell in Directional Waves Measurement

BACKGROUND: Testing of the Standard Buoy (SB) in the summer of 2009 off Southern California at station 46090 revealed problems in detecting low amplitude long swell waves. The exact cause is not known.

SCOPE: This task will investigate, propose, and document ideas for how to improve the directional wave performance. The task includes all engineering and technical work required to prepare one new system for field testing. Testing should receive engineering attention especially in the area of testing for magnetic effects (e.g., verify 3DM-GX1, mounted in rack, magnetic uniformity on compass rose). Deployment of the system is excluded from this task.

TASKS:

1. Investigate and propose ideas for how to improve the directional wave performance with respect to low amplitude long swell waves on the DDWM Standard Buoy configuration.
2. Upon NDBC approval implement design to improve wave measurements.
3. Test new configuration.
4. Prepare one new configuration for deployment for field testing
5. Prepare report on field testing of optimized configuration.

DELIVERABLES:

- Preliminary Design Review
- Critical Design Review
- Design Document for SB modification recommendations for Directional Waves
- ECPs to document any firmware or hardware changes
- Test report on field testing

SCHEDULE:

- NDBC approval at PDR
- NDBC approval at CDR

NDBC POC: Rodney Riley

7. Met Sensors Projects

7.1 Integrate RM Young Ultrasonic Anemometer into AMPS & ARES and Field Test

BACKGROUND: NDBC is currently developing ARES and AMPS software to integrate the RM Young model 85106 marine ultrasonic anemometer. Laboratory testing at the Sterling Field Support Center indicated that the 85106 was the best suited RM Young for field use in areas that can experience hurricane force winds.

SCOPE: The purpose of this task is to complete the integration of the RM Young 85106 Ultrasonic Anemometers into the AMPS and ARES payloads and field test these units.

TASKS:

1. Complete the integration of the analog mode of the RM Young 85106 sonic anemometer into the ARES and AMPS payloads. This code should detect and filter out maximum analog output when the sensor detects a "no signal" condition.
2. Fully test interface software in the laboratory and on the STF.
3. Create "green-tag" procedures in the form of ETPs (converted to NDBC procedures upon successful field testing and certification for field use).
4. "Green-tag" four RM Young 85106 for field testing.
5. Create any drawings required for special mounting adapters and interface cables if required
6. Fabricate any mounting brackets required for field deployment.

7. Install these "green-tagged" units on operational stations in the number two position for field performance evaluation.
8. After at minimum of 2-months in the field evaluate sensors performance for recommendation on operational status.

DELIVERABLES:

- Report on firmware development and laboratory and STF testing.
- Completed interface firmware for ARES and AMPS payloads.
- 4 Green-tagged 85106
- Level B drawings for any special mounts or cables required
- Report on in-situ field testing with recommendation on operational status.
- Upon successful field testing Level b drawings should be updated to level A using the ECP process

SCHEDULE:

- Buoy(s) of opportunity required where sonic can be installed in the #2 position.

NDBC POC: Regina Moore

7.3 Smart Sensor Module Enhancements & Wireless Communications

BACKGROUND: A Smart Sensor Module has been developed and was integrated with a Rotronics MP101A sensor. These tasks will improve the analog performance, and implement wireless communications.

SCOPE: As required, conduct development, analysis and lab tests to accomplish the following tasks. All associated documentation for the project will be updated to reflect any changes. Existing units in NDBC inventory will be upgraded with improvements completed in this effort.

TASKS:

1. Implement Wireless Communications. The SSM contains hardware and firmware support for wireless communications. The firmware will be modified, and tested to implement the wireless communications.
2. Conduct lab test and test on the OSTF area or similar outside area to confirm operation of wireless communications.
3. Update power consumption information, all documentation.
4. A design review will be conducted to address the wireless implementation. This review should be conducted prior to full implementation in the code, but after the implementation scheme is developed.
5. Write System Design Document (SDD)
6. In the prior SSM development, it was noted that the analog system did not provide the accuracy that one would expect for a 16 bit A/D system. This issue shall be investigated and documented. The document will include a diagnosis of the problem and recommendations to resolve the issue.

7. A briefing will be provided to NDBC to summarize the document and provide a forum for questions and answers.
8. Conduct end-to-end test with a payload at SSC test stand
9. All associated documentation for the SSM project will be updated to reflect any changes.
10. Write all inclusive test report
11. Exiting units in NDBC inventory will be upgraded with improvements completed in this effort.

DELIVERABLES:

- Wireless Implementation Plan Brief
- Analog performance analysis & brief
- Updated SDD, Level B package, Green tag procedure, Calibration procedure

SCHEDULE: None

NDBC POC: Rodney Riley

8. Laboratory/Process Improvement Projects

8.1 Incorporate GPS Compass Into NDBC CMAN Anemometer Alignment Procedure

BACKGROUND: Modify NDBC CMAN alignment procedures (NDBC-8028) to add use of the GPS compass to align anemometer mounts C-MAN stations. This will benefit NDBC by reducing repair/overhaul costs of \$12k every two years on the Sperry gyrocompass and production costs.

SCOPE: Modify NDBC-8028 procedures via ETP. Conduct at least one dry run. Make any necessary modifications and submit as level A.

TASKS:

1. Modify NDBC-8028 procedures via ETP to incorporate the use of the GPS compass.
2. Conduct at least one dry and make any necessary modifications to the procedures.
3. Submit Level A Procedures via ECP process.

Deliverables:

- ETP for C-MAN installation of anemometers using the GPS compass
- ECP to update NDBC-8028 with ETP
- Approved NDBC-8028 with GPS compass alignment

SCHEDULE:

- None

NDBC POC: Rodney Riley

8.2 Complete Setup of Ocean Cal Lab

BACKGROUND: In 2005 NDBC began developing an Ocean Sensor Calibration Laboratory in Building 3206. While most the large equipment has been installed there remain some issues that need to be completed to get the Ocean Cal Lab fully functional.

SCOPE: The purpose of this task is to complete the setup of the Ocean Cal Lab for use by TAO, reimbursable projects, and NDBC ocean sensor support. NDBC will provide guidance on the layout general concept of the laboratory. A future task(s) will automate the test processes in the lab.

TASKS:

1. Install sink per NDBC sketch.
2. Fabricate and install cabinets around salt baths. Cabinets should have supports for suspending sensors and probes in the baths.
3. Install stirrer motor mounts on cabinets. Will require the shortening of the stirrer rods.
4. Modify salt bath lids with cutouts and hinges to allow for stirrers and sensor removal while reducing evaporation.
5. Install cable trays to run temperature probes to multiplexing bridge.
6. Develop specifications for de-ionized water system and recommend vendor/model
7. Develop specifications for system to test pressure portion of CTD and recommend vendor/model.
8. Prepare procedures for filtering, cleaning, and maintaining temperature and salinity baths.
9. Attend in-house Metrology training provided by NDBC
10. Modify existing ocean sensor calibration or functional tests to make use of facility.

DELIVERABLES:

- Installed and functional sink, cabinetry, stirrers and cable trays
- Specifications and recommendation on de-ionized water system
- Specification and recommendation on pressure testing system
- NDBC procedures for operating and maintaining Ocean Cal Lab
- NDBC procedures for ocean sensor calibrations or functional tests using Ocean Cal Lab

SCHEDULE:

- None

NDBC POC: Regina Moore

8.3 Develop Automated AMPS Green Tag Tester

BACKGROUND: Payloads must be tested and certified with a green tag before they are ready to be used in support of NDBC operations. Green Tagging a payload is one of the most time consuming tests performed by technicians, requiring many

measurements to be manually taken and is prone to human error. This test is one of the most important mission critical tests, as it certifies a payload as operationally ready for installation into a buoy. The repetitive nature of this testing, the length of the test, and frequency of testing, make the payload green tag test an ideal candidate for automation. Lab automation can save technicians time and reduce cost by reducing human error. Additionally, a more detailed and thorough test can be performed in a fraction of the time it takes to test a unit manually, improving quality control for our payloads.

SCOPE: This proposal is to develop an automated test platform for performing the AMPS green tag test. The test platform would consist of several commercial off-the-shelf (COTS) modules to be integrated into an enclosure/rack. A simple PC application would control the hardware via a single USB interface cable. A cable harness would connect the test platform to the payload.

The test platform would have the following capabilities:

- Test accuracy and function of all analog channels
- Test accuracy and function of all power channels
- Test functionality of all serial channels
- Test functionality of 3 RS485 channels
- Test functionality and voltage levels of 16 DIO channels
- Test GPS for proper functionality
- Validate analog board calibration
- Validate all firmware versions
- Test IMM
- Graphical User Controls
- Print out a data sheet listing all test performed and pass/fail status of each test

The current green tag test involves a technician supplying and measuring signals using standard lab equipment. After each measurement/test in the procedure, the technician must re-wire the test setup to move on to the next channel. Human error is always a risk with highly repetitive task such as this. Due to time constraints, minimal testing is done to each input and output to validate correct operation. Even with the limited testing, the AMPS green tag tests take on average 3.5 hours for a single payload. Multiple tests cannot be run concurrently, limiting the lab to green tagging 2 - 3 units a day. It is always a possibility that the payload may pass the criteria that are used for green tag certification, but still have problems that are not caught by our test cases. An automated tester could test every input and output, using multiple test conditions at relatively high speeds.

Utilizing an automated tester could reduce the testing time for each payload down to about 30 minutes or less, depending on the detail level of the testing criteria. Once started the technician would be free to work on other task until the test is completed. A more detailed and thorough payload test increases the possibility that any faulty equipment is identified before going out the door. In addition, the test results can be saved in a digital format, uniquely identified by serial number, to facilitate the

collection of reliability data and to easily track the performance of particular payloads over time.

Many COTS modules exist for test and measurement automation. All modules must be compatible with National Instruments Test and Measurement development environments, to facilitate a rapid development cycle and prevent any hardware conflicts. To prevent the test platform from having to be tied to a specific computer, it would be advisable to stick to USB based modules. All USB modules can be fed into a USB hub attached to the test platform, allowing a single USB cable to interface between the computer and the test platform. The test software can then be installed on several of the laptops in the Engineering Lab, and used interchangeably with whichever laptop is available at test time.

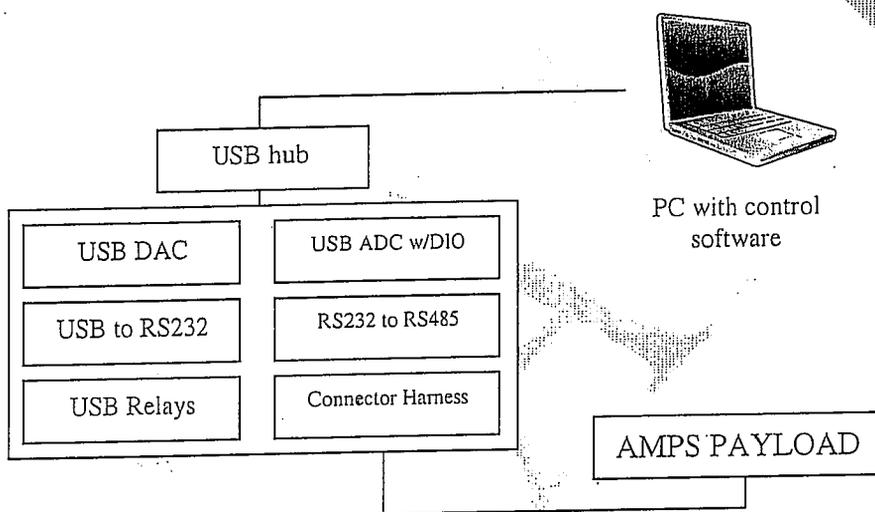


Figure 1 - Diagram of Automated Test Platform

The above diagram illustrates the types of modules needed to assemble an automated test platform for the green tag test. A quick survey of USB modules was made, and there is a large variety of options available on the market. An economical solution that meets the specifications for the green tag test can be assembled for approximately \$3,500.00. This includes all necessary test hardware, but does not include mounting hardware or test harness cables.

Currently National Instruments (NI) is the standard for test and automation software. They make a variety of software development tools that are used industry wide, including LabView. Most Test and Automation software today is developed using either NI Labview or NI Test and Measurement Studio in conjunction with Microsoft's Visual Studio. NI Test and Measurement Studio has been replacing LabView, as the standard, as many companies have realized that their software engineers have more experience with C/C++ and can develop quality code in a shorter time as opposed to using LabView. It is recommended that the software for an automated test platform be developed using NI Test and Measurement Studio, which would require the software be

purchased. A copy of Measurement Studio would cost approximately \$500.00 and would be re-useable for any future automation projects.

The control software should be modular, consisting of generic routines that perform a single measurement task. For example, there would be single software routine that measures a user specified analog input channel testing for user specified pass/fail criteria. The routine would return the results of the test. Another routine would test a user specified serial channel, against a user specified data set, returning the result of the test. Additional routines would exist for each test type. This would allow for new green tag test to be generated for new AMPS configurations, or other payloads, without having to make significant changes to the control software. The software would be structured to be as generic as possible, to support systems other than AMPS, should such requirements arise at a later date.

A simple text file would store all test parameters for the green tag test. The control software would read in the text file, and sequentially execute the test as specified in the file. After completion of all tests, the control software would generate a print out of all results, formatted in a suitable manner for QA records.

To support easy communication between the payload and the automated control software, some changes to the AMPS firmware should be made. This should consist of simple commands that the automated control software can send to the payload to perform testing related task, and get simple responses from the payload. All the required functionality already exists on the AMPS payload, but was coded for a human interface (technician) and is not automation friendly. These automation commands would be added to the AMPS firmware and would not change the operational behavior of the payload.

Design documentation would be to the level NDBC requires. At a minimum, a simple drawing sketch of all hardware should be created as well as some user instructions. More detailed documentation would be prudent, if for no other reason than maintainability.

TASKS:

1. Select and purchase equipment
2. Develop software control application
3. Modify AMPS firmware if required to accept automation commands (AMPS firmware revisions should be minimized as much as possible to accommodate the automated testing)
4. Test, debug and validate automated testing
5. Document automated testing application (may include system design document, user's manual, updated NDBC procedures, etc.)

Deliverables:

- Fully automated AMPS green tag tester
- Hardware necessary for automated testing (e.g., cables, connectors, etc.)
- Documentation per NDBC specification

- Updated AMPS firmware if required

SCHEDULE:

- None

NDBC POC: Regina Moore

