

ORDER FOR SUPPLIES OR SERVICES										PAGE 1 OF 13	
1. CONTRACT/PURCH. ORDER/ AGREEMENT NO. N68936-17-D-0005			2. DELIVERY ORDER/ CALL NO. N6893620F0011		3. DATE OF ORDER/ CALL (YYYYMMDD) 2019 Oct 07		4. REQ./ PURCH. REQUEST NO. 1300815127		5. PRIORITY DO-C9		
6. ISSUED BY CDR NAWCWD CODE 254300D (b) (6) (b) (6) 1 ADMINISTRATION CIRCLE, STOP 1303 CHINA LAKE CA 93555			CODE N68936		7. ADMINISTERED BY (if other than 6) DCMA SAN DIEGO 7675 DAGGET STREET SUITE 200 SAN DIEGO CA 92111-2241			CODE S0514A		8. DELIVERY FOB ☒ DESTINATION ☐ OTHER (See Schedule if other)	
9. CONTRACTOR ANALYSIS MODELING AND PROGRAMMING SCIENC NAME (b) (6) AND 13935 BERNADOTTE LN ADDRESS POWAY CA 92064-4816			CODE 1PZC3		FACILITY		10. DELIVER TO FOB POINT BY (Date) (YYYYMMDD) SEE SCHEDULE		11. MARK IF BUSINESS IS ☐ SMALL ☐ SMALL DISADVANTAGED ☐ WOMEN-OWNED		
							12. DISCOUNT TERMS		13. MAIL INVOICES TO THE ADDRESS IN BLOCK See Item 15		
14. SHIP TO SEE SCHEDULE			CODE		15. PAYMENT WILL BE MADE BY DFAS - COLUMBUS CENTER WEST ENTITLEMENT OPERATIONS PO BOX 182317 COLUMBUS OH 43218-2317		CODE HQ0339		MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.		
16. TYPE OF ORDER		DELIVERY/ CALL		☒		This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.					
		PURCHASE		☐		Reference your quote dated Furnish the following on terms specified herein. REF:					
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.											
NAME OF CONTRACTOR			SIGNATURE			TYPED NAME AND TITLE			DATE SIGNED (YYYYMMDD)		
☒ If this box is marked, supplier must sign Acceptance and return the following number of copies: 1											
17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE See Schedule											
18. ITEM NO.		19. SCHEDULE OF SUPPLIES/ SERVICES				20. QUANTITY ORDERED/ ACCEPTED*		21. UNIT	22. UNIT PRICE	23. AMOUNT	
		SEE SCHEDULE									
* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.					24. UNITED STATES OF AMERICA TEL: (760) 939-9658 EMAIL: debra.zamarron@navy.mil BY: DEBRA ZAMARRON			25. TOTAL \$1,699,968.68		26. DIFFERENCES	
27a. QUANTITY IN COLUMN 20 HAS BEEN ☐ INSPECTED ☐ RECEIVED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED											
b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE						c. DATE (YYYYMMDD)		d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE			
e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE						28. SHIP NO.		29. DO VOUCHER NO.		30. INITIALS	
f. TELEPHONE NUMBER		g. E-MAIL ADDRESS				☐ PARTIAL ☐ FINAL		32. PAID BY		33. AMOUNT VERIFIED CORRECT FOR	
36. I certify this account is correct and proper for payment.						31. PAYMENT ☐ COMPLETE ☐ PARTIAL ☐ FINAL				34. CHECK NUMBER	
a. DATE (YYYYMMDD)		b. SIGNATURE AND TITLE OF CERTIFYING OFFICER								35. BILL OF LADING NO.	
37. RECEIVED AT		38. RECEIVED BY		39. DATE RECEIVED (YYYYMMDD)		40. TOTAL CONTAINERS		41. S/R ACCOUNT NO.		42. S/R VOUCHER NO.	

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	Routine Structures Engineering Analysis CPFF The contractor shall perform and provide routine structural engineering analysis, structures design and solid modeling and advanced composites design analysis, in accordance with the Statement of Work (SOW) Para. 3.2. FOB: Destination PURCHASE REQUEST NUMBER: 1300815127 PSC CD: R425	9,142	Hours		\$ (b) (4)
ESTIMATED COST					\$ (b) (4)
FIXED FEE					\$ (b) (4)
TOTAL EST COST + FEE					\$ (b) (4)

ITEM NO	SUPPLIES/SERVICES	AMOUNT
000101	For Navy Accounting Purposes Only	
CIN: 130081512700001	ACRN AA	\$ (b) (4)
PURCHASE REQUEST NUMBER: 1300815127		

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	Other Direct Costs (ODCs) Travel COST FOB: Destination PSC CD: R425	1	Lot		\$ (b) (4)
ESTIMATED COST					

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000201					\$0.00 NTE

For Navy Accounting Purposes Only

COST

PURCHASE REQUEST NUMBER: 1300815127

ESTIMATED COST

ACRN AA

CIN: 130081512700002

\$ (b) (4)

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003		1	Lot		\$ (b) (4)

Other Direct Costs (ODCs) Material

COST

FOB: Destination

PSC CD: R425

ESTIMATED COST

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000301					\$0.00 NTE

For Navy Accounting Purposes Only

COST

PURCHASE REQUEST NUMBER: 1300815127

ESTIMATED COST

ACRN AA

CIN: 130081512700003

\$ (b) (4)

ITEM NO	SUPPLIES/SERVICES	AMOUNT
0004	Contract Data Requirements List (CDRLs)	NSP

CDRLS in support of SOW

Section C - Descriptions and Specifications

STATEMENT OF WORK

**STATEMENT OF WORK
F/A-18 AND EA-18G FLEET SUPPORT TEAM
ENGINEERING STRESS ANALYSIS AND DESIGN SERVICES
October 2019**

SECTION C DESCRIPTIONS AND SPECIFICATIONS**1.0 INTRODUCTION**

1.1 BACKGROUND. The Naval Air Systems Command (NAVAIR) mission is to provide full life-cycle support for naval aviation aircraft, weapons and systems operated by Sailors and Marines. The F/A-18 & EA-18G Fleet Support Team (FST) at Fleet Readiness Center South West (FRCSW) provides engineering and logistics support to the F/A-18 program.

1.2 OBJECTIVE. The objective of this Task Order (TO) is to perform engineering stress analysis and design on aircraft repairs and modification in support of the Service Life Extension Program (SLEP) of the F/A-18 weapon system.

1.3 SCOPE. The Contractor shall provide engineering stress analysis and design services as defined in Section 3.

2.0 APPLICABLE DOCUMENTS

2.1 INSTRUCTIONS/STANDARDS/PUBLICATIONS. The Government will provide all necessary reference documents not generally available to the Contractor as required. The documents prefaced with an asterisk (*) are proprietary documents that contain proprietary information. Guidance is provided in the SOW.

- a. COMNAVAIRFORINST 4790.2B CH-1, The Naval Aviation Maintenance Program (NAMP), 15 June 2013.
- b. NAVAIRINST 13120.1D CH-1, Fixed Wing Aircraft Structural Life Limits, 02 July 2013.
- c. SOP NI F/A-18 AG-002-11 plus Amendment 1 & 2, F/A-18 Stress Analysis Submittal Standard Operating Procedure, Rev. A.
- d. NAVAIR SWP4330-001, Standard Work Package, Strength Analysis and Documentation for Repairs and Modifications.
- e. F18A-D Structural Areas Affected by Dynamic Loads, Jim Elgie, NAVAIR, North Island, 22 October 2012.
- f. F18A-D High Flight Hour Aircraft Disposition Guidance, Jim Elgie, NAVAIR North Island, 02 July 2013.
- g. Engineering Drawing Practices, American Society of Mechanical Engineers (ASME), ASME Y14.100-2013, 30 July 2013.
- h. NAVAIR 01-1A-21, General Composite Repair, 1 August 2011.
- i. NAVAIR 01-1A-08, Structural Hardware Manual, Change 3, 15 January 2013.
- j. * MAC 339, McDonnell Aircraft Company Structures Handbook, Rev B, 01 June 1973.
- k. * MDC A3960, F/A-18 A/B Structural Description Report, Rev A, 29 September 1978.
- l. * MDC A4241, F/A-18 A/B/C/D/E/F Thermal Design and Evaluation, Rev B, 19 February 1993.
- m. * MDC A5253: F/A-18 A-D Material Substantiating Data Analysis Report, 01 August 1978.
- n. * MDC A7052, F/A-18A/B/C/D Composite Development Tests, January 1981.
- o. * MDC 91B0330, McDonnell Douglas Composites Manual, Rev B, 23 December 1992.
- p. * MDC 91B0615, F/A-18E/F Fastener Usage Policy, Rev A, 15 January 1994.
- q. * MDC 92B0355, F/A-18 E/F Structural Description, CDRL Seq. No. A00N, Rev D, 18 October 1995.

- r. * MDC 92B0523, F/A-18E/F Supplemental Design Criteria and Analysis Guidelines, 01 November 1992.
- s. * MDC 93B0068, F/A-18E/F and EA-18G Material Substantiating Data Analysis Report, Rev T. 24 December 2008.
- t. * MDC 94B0043, F/A-18E/F Advanced Material Repair Development Program, Repair Guidance Document, Rev D, 23 December 1998.
- u. * MDC 97A0107, F/A-18A/B/C/D Bonded Joint Analysis Methodology (BJAM) Manual, Rev E, 01 November 2013.
- v. * BOE-STL 98A0089, F/A-18E/F and EA-18G Bonded Joint Analysis Methodology (BJAM) Manual, Rev B, 15 July 2014.
- w. * BOE-STL 2005A0112, F/A-18E/F Depot Repair Guidance Document, 21 December 2005.
- x. F/A-18E/F-352C-3963, F/A-18E/F Composite Structure Disposition Manual, Rev B, 15 June 1995.
- y. EC-433-000-002, F/A-18A/B/C/D High Flight Hour (HFH) Wing Skin Analysis Description and Guidelines, Rev A, 04 August 2014.
- z. FRCSWINST 13600.2, Translating 2-D Structural Drawings to 3-D Solid Models
- aa. FRCSWINST 4790.4, Local Manufacturing of Aviation Parts, 12 April 2012
- bb. * MDC 92B0273, F/A-18 Hornet Fatigue Analysis Procedure Manual (FAPM), Rev D, 21 February 2014.
- cc. * MDC A8500, NARF Fatigue Information Report, 14 July 1986.
- dd. * Applicable SLEP Decision Memo (SDM) and Contract Data Requirements List (CDRL), Technical Direction Letter (TDL), CTRD and ALL-METH to be provided by AIR 4.3.3.1 Strength Branch Lead or the designated Lead Stress Analyst as required.

3.0 REQUIREMENTS

3.1 GENERAL SUPPORT REQUIREMENTS.

3.1.1 Task Assignments. All structural analysis task assignment shall be established by a Government POC. No task assignment shall be initiated by the Contractor.

3.1.2 Status Tracker. The Contractor shall provide a secure web portal as a means of tracking all Man Hours (MH) expended in support of this TO. The Contractor shall track cumulative MHs expended on the F/A-18 A-D variant and the F/A-18 EF&G variant separately. Any additional items to be tracked shall be added as required by the Government. (CDRL A00A).

3.1.3 Task Man Hours (MH). Tasks shall have a MH estimate provided by the Contractor and approved by a Government POC, as required. All MH estimates requested shall include a master schedule (and key dates) along with a MH breakdown. Any MH expended for preliminary research or preparatory work needed to establish a task baseline shall be identified as such in the final estimate. All requests for additional MH in addition to what has already been approved shall be submitted to the Government POC for review and annotated in the Structural Analysis Tracker. (CDRL A009)

3.1.4 Analysis Approach (AA) / Analysis Plan (AP). An AA or AP shall require concurrence from Government POC for all tasks assigned. The Contractor shall draft an AP, as determined by a Government POC. (CDRL A008).

3.1.5 Estimated Completion Date (ECD). An ECD provided by the Contractor shall assume that all Government provided data would be available upon task commencement. Delays by the government will result in allowable changes to the initial ECD. The Contractor shall notify the Government POC via email of any ECD changes. All ECD changes require Government approval.

3.1.6 Task Prioritization. The Government POC shall establish all task prioritizations. For instances when a new task assigned has a higher priority over tasks already in-work, the Contractor shall identify all

tasks affected and propose new ECDs for approval. It is the responsibility of the Contractor to ensure that changes to ECDs are at a minimum.

3.1.7 Structural Analysis Deliverables. The Contractor shall provide all deliverables to the Government as required. This is accomplished by either uploading a copy of the required files using the system for which the task was assigned or via any other system that the Government may have transitioned into. All final deliverables including associated FEM models and results files shall meet the requirements established in Section 3.2. All supplemental data files applicable to the analyses shall be included as an attachment to the final deliverable. (CDRL A004, A005).

3.1.8 Travel. The Contractor shall travel as required in support of this effort. All travel shall require approval from the Contracting Officer Representative (COR) prior to commencement of travel. The Contractor shall adhere to the Joint Travel Regulations (JTR) travel requirements. The Contractor shall submit a travel report to the COR and cognizant Government Project Lead as required. (CDRL A003).

3.1.9 Technical Meetings. The Contractor shall participate in meetings, program reviews, in-process reviews, Maintenance Requirements Review (MRR) meetings, Technical Coordination Meetings (TCM), Preliminary Design Review (PDR) meetings, Critical Design Review (CDR) meetings, or other technical coordination meetings as required. The Contractor shall provide support in technical reviews, briefings, presentations and provide technical recommendations as required.

3.1.10 Other Direct Costs (ODC) and Travel is based on a per annum not-to-exceed amount. Approval shall be obtained from the COR prior to the purchase of any material or travel expenses. All materials purchased by the Contractor under this item are the property of the Federal Government. Costs associated with travel and lodging shall be reimbursed in accordance with the JTR. The number and types of trips, including the number of personnel traveling, shall be limited to the minimum required to accomplish work requirements and shall be coordinated with the Government Project Manager for each individual task and the COR. Other Direct Costs necessary for the performance of this contract shall be reimbursed in accordance with NAVAIR clauses 5252.232-9509, Reimbursement of Travel, Per Diem, and Special Material Costs, and 5252.242-9515, Restriction on the Direct Charging of Material. ODC may include General and Administrative (G&A) expenses, but shall not include profit/fee. Any material remaining after completion of the contract, the cost of which has been reimbursed by the Government, shall remain Government property and disposition instructions shall be sought from the Procuring Contracting Officer (PCO).

3.1.11 The Contractor shall submit a Task Order Cost Summary Report concurrently with each voucher/invoice submitted. (CDRL A00C).

3.1.12 Contract Expense Status Report. The Contractor shall prepare and submit a monthly Contract Expense Status Report reflecting the contract status relative to expense of dollars and labor hours. The Contractor shall submit a proposed format for the Contract Expense Status Report to the Government for approval no later than 7 days after the effective date of the TO. (CDRL A00B).

3.1.13 Written Acceptance/Rejections. The Government will provide written notification of acceptance or rejection of all deliverables, both draft and final as required. All rejections will include the specific reason(s) for rejection. Upon receipt of Government comments, the Contractor shall revise and re-submit the deliverable(s).

3.2 SPECIFIC REQUIREMENTS

3.2.1 In-Service Repair / Special Rework Analysis. The Contractor shall provide engineering analysis for damage repairs, and provide design modifications and structural certifications for ECPs. The Contractor shall model structural and system components for strength analysis applications to determine service life, crack growth life, repair or modification, and compliance intervals. All analyses

shall demonstrate that the repair or rework maintains or enhances the ultimate strength and fatigue life requirements as dictated by the Government Air Worthiness Authority.

3.2.1.1 The Contractor shall perform research and identify required technical data, review, and assess aircraft maintenance records, and system configurations. This include a listing of applicable drawings, previous analysis, repair limits, material limits, applicable loads used, structural test results, references, and any other applicable structural data as required. (CDRL A008).

3.2.1.2 The Contractor shall perform strength and fatigue analysis for structural or system component locations designated for repair or rework. The Contractor shall perform FEA using Government approved FEA codes. The Contractor shall document repair and material limits for damaged structures or structural deficiencies as required. (CDRL A002).

3.2.1.3 The Contractor shall perform BJAM analysis for composite structural locations designated for repair or rework. The Composites Section Head shall approve the composite analysis policies, processes and analysis methodology used. Reports shall include engineering technical documents, repair procedures, technical feasibility, risk analysis, advanced methods produced, detailed analyses and structural repair recommendations. (CDRL A002, A007).

3.2.1.4 The Contractor shall provide detailed technical documentation of engineering repair dispositions, modification, design, and certification analysis. Technical analysis reports shall include a listing of all applicable drawings, reference previous repairs or modifications, blue print configuration, local dimensional sketches, applicable loads, engineering drawing references, material requirements and installation instructions. (CDRL A002, A004, A005).

3.2.1.5 The Contractor shall review existing repairs and all supporting strength analyses. The Contractor shall determine the extent of repair compliance with given specifications and requirements for applicability to the requested NRE tasking.

3.2.2 Structures Design and Solid Modeling

3.2.2.1 The Contractor shall provide drafting, design, solid modeling and manufacturing services. This includes translating Two Dimensional (2D) blueprint drawings to Three Dimensional (3D) solid models of structural components including bulkheads, longerons, webs, wing spars, ribs, and skins in preparation for structural strength analysis applications or in support of manufacturing. (CDRL A006).

3.2.2.2 The Contractor shall perform all solid modeling validations utilizing the Manufacturing Model Management System (3MS) process per FRCSWINST 13600.2 and 4790.4 as required. This shall require the repair designs to be created in solid model format such that all 3D Model Based Definition (3DMBD) parts can be directly programmed for Numerically Controlled (NC) machining. Installation instructions shall be provided in either 2D blueprint format or 3D models at the discretion of the Government and shall include a full Bill of Materials (BOM) and full Product and Manufacturing Information (PMI) as required. (CDRL A006)

3.2.2.3 The Contractor shall comply with the Geometrical Dimensioning & Tolerancing (GD&T) specifications on all solid models provided to the Government as required. The Contractor shall ensure continuous integration of solid models with strength analysts during repair design and modifications efforts.

3.2.3 Break-Out Finite Element Models (FEM). The Contractor shall produce FEM models with the appropriate level of detail of designated areas as applicable IAW Government approved policies and methodologies and document the results. (CDRL A004, A005).

3.2.3.1 The Contractor shall retrieve and catalog all parts data including configuration and materials including available FEM. Parts data is Government Furnished Information (GFI).

3.2.3.2 The Contractor shall perform one of the following two steps:

- a. If no FEM exists for the location of interest within the part under consideration, the Contractor shall construct the geometry, mesh the FEM, perform quality and stiffness checks, run and ensure FEM convergence with consideration given to geometry and fasteners as well as appropriate sizes.
- b. If a FEM exists, the Contractor shall select the appropriate model from the Finite Element Database and modify the FEM as required; e.g. add geometry, re-mesh, perform quality and stiffness checks, run, and ensure FEM convergence.

3.2.3.3 If new loads need to be applied from the target loads FEM, the Contractor shall extract Free Body loads from target loads FEM and prepare load cases for a detailed FEM, e.g. ensure node correspondence, or use known loads to create load cases and apply load cases to the detailed FEM as appropriate.

3.2.3.4 The Contractor shall run the FEM and extract the results. The Contractor shall review the FEM results to ensure adequacy and consistency. The Contractor shall perform iterations to obtain valid FEM results IAW Government criteria. (CDRL A004, A005).

3.2.3.5 The Contractor shall document the model purpose, creation methodology, loads application, limitations, and deliver the FEM model. (CDRL A004, A005).

3.2.4 Static Analysis. The Contractor shall provide detailed static analysis of repair in accordance with Section 2.1 (c and d). (CDRL A002).

3.2.5 Crack Initiation (CI) Analysis. The Contractor shall utilize all failure data and past analyses for the location evaluated including configuration modifications. The Contractor shall utilize analyses techniques and methods contained in Section 2.1 (c and d), McDonnell Aircraft Corporation (MAC) Report 339, McDonnell Douglas Corporation (MDC) Report A8500, MDC 92B0273, MDC 91B0330, MDC 97A0107, BOE-STL 98A0089, SD-565-1/-2/-3, applicable SDM, CDRL, ALL-METH, TDL and CTRD.

3.2.5.1 The Contractor shall generate Finite Element Models (FEM), new fatigue component loads representative of actual fleet usage for both the maneuver only and maneuver plus dynamic usage at selected locations using the latest loads equation and definition available to improve life predictions. (CDRL A004, A005).

3.2.5.2 The Contractor shall produce the test and target spectra (depending on the T/M/S) utilizing the government furnished lifing tools where applicable.

3.2.5.3 The Contractor shall determine all fatigue analysis factors, shallow gradient, and test correlation factors (TCF) utilizing available data to determine all stress concentration factors and relationships between load influences, stresses from available data (FEM or strain gage), and test demonstrated stresses.

3.2.5.4 The Contractor shall generate fatigue curves for the location being evaluated on the part being analyzed utilizing the applicable (T/M/S) lifing tools.

3.2.5.5 The Contractor shall document rationale of differences if in-service data are available to compare to predicted life. (CDRL A002).

3.2.5.6 The Contractor shall document all results, including crack initiation curves, tabulated backup data and Life Works workspace, which is a Government-Furnished tool, for tasks in support of the F/A-18 and E/A-18G (all T/M/S) Tactical and Strategic Engineering Support Services as applicable. (CDRL A002).

3.2.6 Crack Growth (CG) Analysis. The Contractor shall utilize all applicable failure data and past analyses for the location being evaluated including configuration modifications. The Contractor shall utilize analyses techniques and methods contained in Section 2.1 (c and d), McDonnell Aircraft Corporation (MAC) Report 339, McDonnell Douglas Corporation (MDC) Report A8500, MDC 92B0273, MDC 91B0330, MDC 97A0107, BOE-STL 98A0089, SD-565-1/-2/-3, applicable SDM, CDRL, ALL-METH, TDL and CTRD.

3.2.6.1 The Contractor shall identify all applicable elements and run the applicable FEM or utilize results previously documented.

3.2.6.2 The Contractor shall develop the test and target spectra (depending on the T/M/S) utilizing the government furnished lifing tools where applicable and document results.

3.2.6.3 The Contractor shall utilize the appropriate method for obtaining stresses and stress gradients or canned solution, as agreed to jointly by the Government/Contractor team, to be used in the CG analysis. For those locations requiring a FEM, the Contractor shall extract the stress gradients from the FEM.

3.2.6.4 The Contractor shall utilize existing data as appropriate. If a FEM is required and does not already exist, the Contractor shall utilize steps documented in Sections 3.2.2 and 3.2.3 of this TO as authorized by the Government POC. For those locations that do not require a FEM, the Contractor shall utilize handbooks, the CG software, and/or best engineering practices to obtain the data required to complete the analysis.

3.2.6.5 The Contractor shall calculate the reference stress of the critical location to be used as input in the CG run using all applicable factors.

3.2.6.6 The Contractor shall run available and approved CG software utilizing an appropriate initial flaw size to derive CG curve with and without retardation.

3.2.6.7 The Contractor shall calculate the applicable critical stress intensity factor, based on material, grain direction, part thickness and type of analysis to perform.

3.2.6.8 The Contractor shall perform proof load checks/residual strength tests at 1.15 x Design Limit Load (DLL) or maximum spectrum peak load when determining an inspection interval.

3.2.6.9 The Contractor shall use the results to create inspection intervals based on a Detectable Flaw Size (DFS) determined by the Navy. If the DFS has not yet been determined, the Contractor shall provide inspection intervals as a function of DFS over a DFS range set by the Navy.

3.2.6.10 The Contractor shall document the results of the analysis including crack growth curves, the tabulated backup data and Life Works workspace as applicable. (CDRL A002)

4.0 SECURITY

4.1 The security requirements stipulated in the SOW applies to this TO.

5.0 TRAVEL

5.1 Travel is required as technical assistance is needed at various locations other than the Permanent Duty Station (PDS). Cost is based on Federal Travel Regulations, Joint Travel Regulations and Defense Travel Management Office rates and allowances. The Contractor shall only be reimbursed for travel expenses that are allowable, allocable, and reasonable as per <http://www.defensetravel.dod.mil/>

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	Government	Destination	Government
000101	N/A	N/A	N/A	N/A
0002	Destination	Government	Destination	Government
000201	N/A	N/A	N/A	N/A
0003	Destination	Government	Destination	Government
000301	N/A	N/A	N/A	N/A
0004	Destination	Government	Destination	Government

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 07-OCT-2019 TO 07-APR-2020	N/A	N/A FOB: Destination	
000101	N/A	N/A	N/A	N/A
0002	POP 07-OCT-2019 TO 07-APR-2020	N/A	N/A FOB: Destination	
000201	N/A	N/A	N/A	N/A
0003	POP 07-OCT-2019 TO 07-APR-2020	N/A	N/A FOB: Destination	
000301	N/A	N/A	N/A	N/A
0004	POP 07-OCT-2019 TO 07-APR-2020	N/A	N/A FOB: Destination	

Section G - Contract Administration Data

ACCOUNTING AND APPROPRIATION DATA

AA: 1791506 Y5C8 251 00019 0 050120 2D 000000

COST CODE: A00005312665

AMOUNT: \$ (b) (4)

ACRN	CLIN/SLIN	CIN	AMOUNT
AA	000101	130081512700001	\$ (b) (4)
	000201	130081512700002	\$ (b) (4)
	000301	130081512700003	\$ (b) (4)

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.232-20	Limitation Of Cost	APR 1984
52.232-22	Limitation Of Funds	APR 1984
252.204-0002	Line Item Specific: Sequential ACRN Order	SEP 2009

CLAUSES INCORPORATED BY FULL TEXT

5252.232-9516 ALLOTMENT OF FUNDS - INCREMENTALLY FUNDED COST-REIMBURSEMENT CONTRACT OTHER THAN COST-SHARING CONTRACT (NAVAIR)(JUL 1985) - ALT I (OCT 2005)

For the purposes of paragraph (b) of the "Limitation of Funds" clause of this contract-

(a) The amount available for payment and allotted to this incrementally funded contract is:

CLIN 0001 Cost	\$ (b) (4)
Funded Fee	\$ (b) (4)
CLIN 0002 Cost	\$ (b) (4)
CLIN 0003 Cost	\$ (b) (4)

TOTAL FUNDS \$ (b) (4)

(b) This contract is incrementally funded and the amount currently available for payment is limited to \$ (b) (4) which includes a fixed fee amount of \$ (b) (4). Subject to the provisions of the clause entitled "Limitation of Funds" (FAR 52.232-22) of the General Provisions of the Contract, no legal liability on the part of the Government for payment in excess of the revised total shall arise unless additional funds are made available and incorporated in a contract modification.

(c) the items covered by such amount are Item(s) 0001, 0002, and 0003; and

(d) the period of performance for which it is estimated the allotted amount will cover is 10/07/2019 to 04/07/2020.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE U		PAGE OF PAGES 1 3	
2. AMENDMENT/MODIFICATION NO. P00001		3. EFFECTIVE DATE 31-Jan-2020		4. REQUISITION/PURCHASE REQ. NO. SEE SCHEDULE		5. PROJECT NO.(If applicable)	
6. ISSUED BY CDR NAWCWD CODE 254300D (b) (6) (b) (6) 1 ADMINISTRATION CIRCLE, STOP 1303 CHINA LAKE CA 93555		CODE N68936		7. ADMINISTERED BY (If other than item 6) DCMA SAN DIEGO 7675 DAGGET STREET SUITE 200 SAN DIEGO CA 92111-2241		CODE S0514A	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) ANALYSIS MODELING AND PROGRAMMING SCIENC (b) (6) 13935 BERNADOTTE LN POWAY CA 92064-4816				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				X 10A. MOD. OF CONTRACT/ORDER NO. N6893620F0011			
				X 10B. DATED (SEE ITEM 13) 07-Oct-2019			
CODE 1PZC3		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 Offer ☐ is extended, ☐ is not extended. Offer 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							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACT ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
X D. OTHER (Specify type of modification and authority) FAR 52.232-22 Limitation of Funds and Changes - Cost Reimbursable.							
E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Modification Control Number: (b) (6) The purpose of this modification is to increase ceiling and add incremental funding as shown herein.							
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) DEBRA ZAMARRON / PROCURING CONTRACTING OFFICER TEL: (760) 939-9658 EMAIL: debra.zamarron@navy.mil			
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY <i>Debra Zamarron</i> (Signature of Contracting Officer)		16C. DATE SIGNED 31-Jan-2020	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION A - SOLICITATION/CONTRACT FORM

The total cost of this contract was increased by \$ (b) (4) from \$ (b) (4) to \$ (b) (4)

SECTION B - SUPPLIES OR SERVICES AND PRICES

CLIN 0001

The estimated/max cost has increased by \$ (b) (4) from \$ (b) (4) to \$ (b) (4)

The pricing detail quantity has increased by (b) (4) from (b) (4) to (b) (4)

The fixed fee has increased by \$ (b) (4) from \$ (b) (4) to \$ (b) (4)

The total cost of this line item has increased by \$ (b) (4) from \$ (b) (4) to \$ (b) (4)

SUBCLIN 000102 is added as follows:

ITEM NO	SUPPLIES/SERVICES	AMOUNT
000102	For Navy Accounting Purposes Only	

CIN: 130082908100001	ACRN AB	\$ (b) (4)
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PURCHASE REQUEST NUMBER: 1300829081

SECTION E - INSPECTION AND ACCEPTANCE

The following Acceptance/Inspection Schedule was added for SUBCLIN 000102:

INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
N/A	N/A	N/A	N/A

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by \$ (b) (4) from \$ (b) (4) to \$ (b) (4)

SUBCLIN 000102:

Funding on SUBCLIN 000102 is initiated as follows:

ACRN: AB

CIN: 130082908100001

Acctng Data: 1701506 Y5C8 251 00019 0 050120 2D 000000

Increase: \$ (b) (4)

Total: \$ (b) (4)

Cost Code: A00005441354

SECTION I - CONTRACT CLAUSES

The following have been modified:

5252.232-9516 ALLOTMENT OF FUNDS - INCREMENTALLY FUNDED COST-REIMBURSEMENT CONTRACT OTHER THAN COST-SHARING CONTRACT (NAVAIR)(JUL 1985) - ALT I (OCT 2005)

For the purposes of paragraph (b) of the "Limitation of Funds" clause of this contract-

(a) The amount available for payment and allotted to this incrementally funded contract is:

CLIN 0001 Cost	\$	(b) (4)
CLIN 0001 Fee	\$	(b) (4)
CLIN 0002 Cost	\$	(b) (4)
CLIN 0003 Cost	\$	(b) (4)

TOTAL FUNDS \$ (b) (4)

(b) This contract is incrementally funded and the amount currently available for payment is limited to \$ (b) (4) which includes a fixed fee amount of \$ (b) (4). Subject to the provisions of the clause entitled "Limitation of Funds" (FAR 52.232-22) of the General Provisions of the Contract, no legal liability on the part of the Government for payment in excess of the revised total shall arise unless additional funds are made available and incorporated in a contract modification.

(c) the items covered by such amount are Item(s) 0001, 0002, and 0003; and

(d) the period of performance for which it is estimated the allotted amount will cover is 10/07/2019 to 04/07/2020.

(End of Summary of Changes)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. P00002		3. EFFECTIVE DATE 07-May-2021		4. REQUISITION/PURCHASE REQ. NO. SEE SCHEDULE		5. PROJECT NO.(If applicable)	
6. ISSUED BY CDR NAWCWD CODE D230000 (b) (6) (b) (6) 1 ADMINISTRATION CIRCLE, STOP 1303 CHINA LAKE CA 93555		CODE N68936		7. ADMINISTERED BY (If other than item 6) DCMA SAN DIEGO 9174 SKY PARK CT, SUITE 100 SAN DIEGO CA 92123-4353		CODE S0514A	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) ANALYSIS MODELING AND PROGRAMMING SCIENC (b) (6) 13935 BERNADOTTE LN POWAY CA 92064-4816				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				X 10A. MOD. OF CONTRACT/ORDER NO. N6893620F0011			
				X 10B. DATED (SEE ITEM 13) 07-Oct-2019			
CODE 1PZC3		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 Offer ☐ is extended, ☐ is not extended. Offer 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							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACT ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
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 FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Modification Control Number: (b) (6) The purpose of this modification is to update the Administrative Office address in Block 7.							
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) DAVID BELASCO / ACQUISITION SPECIALIST TEL: (760) 939-1087 EMAIL: david.belasco@navy.mil			
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)		16C. DATE SIGNED 07-May-2021	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

(End of Summary of Changes)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. P00003		3. EFFECTIVE DATE 15-Sep-2021		4. REQUISITION/PURCHASE REQ. NO. SEE SCHEDULE		5. PROJECT NO.(If applicable)	
6. ISSUED BY CDR NAWCWD CODE D230000 (b) (6) (b) (6) 1 ADMINISTRATION CIRCLE, STOP 1303 CHINA LAKE CA 93555		CODE N68936		7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) ANALYSIS MODELING AND PROGRAMMING SCIENC (b) (6) 13935 BERNADOTTE LN POWAY CA 92064-4816				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				X 10A. MOD. OF CONTRACT/ORDER NO. N6893620F0011			
				X 10B. DATED (SEE ITEM 13) 07-Oct-2019			
CODE 1PZC3		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 Offer ☐ is extended, ☐ is not extended. Offer 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)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACT ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
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 FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Modification Control Number: (b) (6) The purpose of this modification is to change the "administered by" organization from S0514A to N68936. This modification also updates the "issued by" information for J. Capazzi. Both changes are reflected in Section A.							
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) DAVID BELASCO / ACQUISITION SPECIALIST TEL: (760) 793-4567 EMAIL: david.e.belasco.civ@us.navy.mil			
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)		16C. DATE SIGNED 15-Sep-2021	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION A - SOLICITATION/CONTRACT FORM

The 'issued by' organization has changed from

CDR NAWCWD CODE 254300D

ATTN: (b) (6)

(b) (6)

1 ADMINISTRATION CIRCLE, STOP 1303

CHINA LAKE CA 93555

to

CDR NAWCWD CODE D230000

ATTN: (b) (6)

(b) (6)

1 ADMINISTRATION CIRCLE, STOP 1303

CHINA LAKE CA 93555

The 'administered by' organization has changed from

DCMA SAN DIEGO

7675 DAGGET STREET

SUITE 200

SAN DIEGO CA 92111-2241

to

CDR NAWCWD CODE D230000

ATTN: (b) (6)

(b) (6)

1 ADMINISTRATION CIRCLE, STOP 1303

CHINA LAKE CA 93555

(End of Summary of Changes)