

FA2391-23-S-2403
Pioneering Aerospace Capabilities, Engineering and Research (PACER)

CALL for:
***Digital System-Level Mission-Driven Integrated Design Methods for
Aerospace Systems (Volare)***

OVERVIEW INFORMATION

NAICS Code: The NAICS Code for this acquisition is 541715 (Research and Development in the Physical, Engineering, and Life Sciences (Except Biotechnology) with Aircraft, Aircraft Engine, and Engine Parts exception), and the small business size standard is 1,500 employees.

Federal Agency Name: Air Force Research Laboratory, Aerospace Systems Directorate, AFRL/RQ

Broad Agency Announcement Type: This is the CALL for VOLARE against the PACER BAA FA2391-23-S-2403. This is a two-step call. The first step is a Call for White Papers only. Offerors should monitor SAM.gov for any additional notices or modifications to this Call Announcement.

Moratorium on White Papers: Beginning from the date of publication of this call and continuing until three months after the due date for proposals, no white papers submitted covering the topics specified in this call,

- a. RQS-25-1: Science of Modeling, Simulation, and Analysis (MS&A)
- b. RQV-25-3: Multidisciplinary Design, Analysis, and Optimization (MDAO)

will be reviewed.

Broad Agency Announcement Number: FA2391-23-S-2403

Related Announcement Numbers: RFI-AFRL-RQKP-2025-0002 - "Digital System-Level Mission-Driven Integrated Design Methods for Aerospace Systems"

DUE DATE AND TIME:

FIRST STEP: White Paper Due Date and Time: 28 August 2025 local time 4:00 P.M. Wright-Patterson AFB, OH. NOTE: Proposal receipt after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3). Early proposal submission is encouraged.

Submission: White Paper Proposals must be submitted to the Primary Contracting Point of Contact (POC): Peter Seiley, Contracting Officer, AFRL/RQKPB.

Submission will be electronic. Proposals can be submitted by email to Peter.Seiley@us.af.mil or offerors may request a DOD Safe Drop Off Request by

email to Peter.Seiley@us.af.mil at least 4 calendar days prior to White Paper due date.

Second Step:

PROPOSAL DUE DATE AND TIME: Estimated Period of 30 Days after RFP. To be provided in the Request for Proposal (RFP) sent to offerors that submit White Papers considered to meet the needs of the Air Force and selected for RFP. **Only White Papers are due at this time.**

Type of Contract/Instrument: The Air Force reserves the right to award the instrument best suited to the nature of research proposed. Accordingly, the Government may award any appropriate contract type under the FAR. The Air Force may also consider award of an appropriate technology transfer mechanism if applicable. It is anticipated that awards under this Call will be an IDIQ type contract with Cost Plus Fixed Fee (CPFF) Task Orders and CLINs anticipated. The IDIQ structure is anticipated to be a multiple award IDIQ arrangement subject to fair opportunity (where future task orders will be competed). To receive a cost-type contract, performers must have an approved accounting system. If performers do not have an approved accounting system or anticipate proposing a contract type other than cost-reimbursement, please indicate this information in white paper responses.

Estimated Program Cost: The estimated total program cost is not being provided. Potential offeror's should provide their best estimate of costs in their Proposal based on the provided SOW/SOOs.

Anticipated Number of Awards: The Air Force anticipates two or more for this announcement. However, the Air Force reserves the right to award zero, one, or more contracts for all, some or none of the solicited efforts based on the offeror's ability to perform desired work and funding fluctuations.

Brief Program Summary:

The objective of this effort is to conduct research to enable a vehicle system design product integrating military utility assessment with airframe, propulsion, P/TMS design methodologies.

Communication Between Prospective Offerors and Government

Representatives: All communication prior to the proposal deadline shall be directed to the Contracting POCs listed below.

Contracting POCs:

Peter Seiley, AFRL/RQKPB
2130 8th Street, Bldg 45
Wright-Patterson AFB OH 45433
E-mail address: Peter.Seiley@us.af.mil

FULL TEXT ANNOUNCEMENT

- I. Program Description:** Air Force Research Laboratory, AFRL/RQ, is soliciting white papers on the following research effort:

a. Statement of Work/ Statement Objectives:

See Attch 1 for the VOLARE Statement of Objectives Overview dated 25 June 2025. The summary describes the overall scope and objective of the IDIQ and contains separate overviews for each task order. More detailed objectives are included in the CUI versions of the IDIQ SOW and Task Order SOOs, which must be requested from the Contracting Officer, Peter Seiley, as stated in this Call.

This effort falls within the Statement of Objectives on the PACER BAA (FA2391-23-S-2403),

RQS-25-1 "Science of Modeling, Simulation, and Analysis (MS&A)"

Advances MS&A tools and techniques for technology R&D applications with an emphasis on constructive operational simulations, virtual and immersive visual environments, and advanced computing techniques. Development includes, but is not limited to, agile software development and delivery processes, simulation framework development, support toolset development, model creation, and scenario development.

RQV-25-3 "Multidisciplinary Design, Analysis and Optimization (MDAO)"

Discover, develop and demonstrate MDAO methods and technologies to enable next-generation aerospace vehicles and provide Air Force decision makers risk-quantified effectiveness assessments of concepts and technologies. Areas of interest include but are not limited to multidisciplinary, multi-fidelity system level effectiveness based design optimization, risk-quantified multi-fidelity coupled analyses and sensitivities, goal oriented adaptive analyses, risk-quantified gradient and non-gradient based design space exploration including machine learning, physics- and statistics-based Reduced Order Models (ROMs), optimization methods, uncertainty quantification methods, model based systems engineering, robust model construction methods, data assimilation methods, digital engineering design methods, multidisciplinary technologies (such as active aeroelastic wing, active flutter suppression, multifunctional structures, etc.), additive

manufacturing for design and testing, and experimental validation via ground or flight testing.

Attch 1 Contains a SOO Summary. The full text SOO is Controlled Unclassified Information (CUI) and is not attached to this call. The full text SOO must be requested from the Contracting POC Peter Seiley. SOOs/SOWs will be disseminated by request once a valid Military Critical Technical Data Agreement DD2345 is provided and the SPRS score of 110 is confirmed. (if the score is less than 110, please provide a plan to get it to 110) The contractor must then be properly vetted by AFRL/RQOS. Once vetting has been approved the full text SOO will be sent via DoD Safe.

b. Within Scope Modification:

Potential offerors are advised that due to the inherent uncertainty of research and development efforts, awards resulting from this announcement may be modified during performance to make within scope changes, to include but not limited to, modifications which increase overall contract ceiling amount and modifications under authority of DFARS 235.006-71

c. Deliverable Items:

1) Data Items:

CDRL Requirements:

A001: Scientific & Technical Reports (Final Report)	(End of Tech Effort)
A002: Funds & Man-Hour Expenditure Report	(Monthly)
A003: Contractor Spend and Expenditure Plan	(Monthly)
A004: Contract Funds Status Report (CFSR)	(Quarterly)
A005: Status Report	(Monthly)
A006: Presentation Material	(As Req)
A007: Computer Software Product	(As Gen)
A008: Contract Work Breakdown Structure	(As Req)
A009: Cost Data Summary Report (DD Form 1921)	(As Req)
A010: Data Accession List (DAL)	(As Req)
A011: Scientific and Technical Report (R&R Annual Update)	(Annual)
A012: Scientific and Technical Report (Security Plan)	(Initial, Updates As Req)

*Task Orders are anticipated to utilize the IDIQ CDRLs above

2) Software: Software Deliverables are anticipated. Software may be proposed per White Paper Proposal. Specific deliverables anticipated should be addressed.

- 3) Hardware: Hardware deliverables are not anticipated for this effort.

d. **Schedule**

Contract: The IDIQ contract period of performance will be 120 months, with 60 month ordering period. Task orders will vary with range estimates from 24 months to 48 months with additional 3 months for delivery of the final report.

e. **Other Requirements:**

- 1) Program Security Classification: Up to Secret (per award) - Applies to IDIQ and all Task Orders - DD254 must be requested from Peter.Seiley@us.af.mil
- 2) OPSEC: Operations Security (OPSEC) requirements, per the PACER BAA, FA2391-23-S-2403, I. (Page 9), will be incorporated into the Statements of Work. Applies to IDIQ and all Task Orders
- 3) Export Control: Information involved in this research effort is subject to Export Control (International Traffic in Arms Regulation (ITAR) 22 CFR 120-131, or Export Administration Regulations (EAR) 15 CFR 710-774). A Certified DD Form 2345, Militarily Critical Technical Data Agreement, is required to be submitted with the white paper.
- 4) Export-Controlled Items: As prescribed by DFARS 225.7901-4, DFARS 252.225-7048, "Export-Controlled Items (JUN 2013)" shall be contained in ALL resulting contracts.

f. **Other Information**

- 1) **Government Furnished Property (GFP):** None anticipated. If required must be identified in white paper.
- 2) **Base Support/Network Access:** Base Support is anticipated. Office Space for contractor employees in RQ facilities is planned. Planned usage should be identified in white paper.
- 3) **Government Furnished Information (GFI) and/or Software:** None anticipated. If required must be identified in white paper.
- 4) **Data Rights:** Unlimited desired. Other than unlimited rights must be identified in the white paper and any subsequent proposal.
- 5) **Science and Technology (S&T) Protection:** In accordance with Air Force Research Laboratory Instruction (AFRLI) 61-113, "Science and Technology (S&T) Protection for the Air Force Research Laboratory," S&T requirements apply. Reference PACER BAA instructions. Specific Instructions will be included in Second-Step RFP if contractor is selected.

II. Award Information

- c. **Anticipated Award Date:** Anticipated contract award date is approximately April - June 2026.
- d. **Anticipated Funding:** Anticipated award is IDIQ Contract type, with Cost type Task Orders with Cost Reimbursement CLINs. Anticipated funding is R&D funding with incremental funding.
- e. **Eligibility Information:** See PACER BAA Paragraph III for Eligibility information. Foreign participation is not permitted at the prime contractor level. Foreign Nationals employed by the prime will be limited to public domain information only.

III. White Paper and Proposal Submission Information

c. White Paper Instructions

- 1) First Step: To be considered for potential IDIQ arrangement, the offeror shall submit a white paper against the BASIC IDIQ SOW and at least 1 Task Order. Offerors may elect to propose to all Task Orders or to any combination of select task orders.
- 2) **Page Limitations:** The White Paper shall be limited to:

5 total Pages for an IDIQ and 1 Task Order
7 total Pages for an IDIQ and 2 Task Orders
9 total Pages for an IDIQ and 3 Task Orders
11 total Pages for an IDIQ and all 4 Task Orders

White Papers shall be prepared and submitted in Word format. Font shall be standard 10-point business font Arial. Character spacing must be "normal," not condensed in any manner. Pages shall be double-spaced (must use standard double-space function in Microsoft Word), 8.5 by 11 inches, with at least one-inch margins on both sides, top and bottom. All text, including text in tables and charts, must adhere to all font size and line spacing requirements listed herein. Font and line spacing requirements do not have to be followed for illustrations, flowcharts, drawings, diagrams, cover page, table of contents, and restrictive/proprietary markings (in header or footer). These exceptions shall not be used to circumvent formatting requirements and page count limitations by including lengthy narratives in such items. Pages shall be numbered starting with the cover page being Page 1, and the last page being no greater than the page limits described above. The page limitation covers all information including indices, photographs, foldouts (counted as 1 page for each 8.5 by 11 portion) tables, charts, appendices, attachments, resumes, etc. The Government will not consider pages in excess of these limitations. Form 2345 does not count against White Paper page count.

- 3) Format: The white paper will be formatted as follows:
- 1) Section A: BAA Number, Title of Program, Topic Number, Name of Company, Business Size, Company's Commercial and Government Entity (CAGE) number, Dun & Bradstreet (D&B) Data Universal Numbering System (DUNS) number, Unique Entity Identifier (UEI) number, Contracting POC and Technical POCs with appropriate telephone numbers, and email addresses for the POCs. For submissions that will result in classified work, add the following information: Classified level at which company is cleared, contractor address for forwarding classified material (name, address, zip code), cognizant security office (name, address, zip code), and offeror's security officer's name and telephone number).
 - 2) Section B: Period of Performance and Task Objectives;
 - 3) Section C: Technical Summary and Proposed Deliverables; and
 - 4) Section D: Cost of Task (Rough Order of Magnitude (ROM)) – This area is only applicable to each proposed Task Order (not the BASIC IDIQ).
- 4) Technical Portion: The technical portion of the white paper shall include a discussion of the nature and scope of the research and the offeror's proposed technical approach/solution. White Papers may detail offeror's experience in this technical area. The White Paper may also include any proposed deliverables. Resumes, descriptions of facilities and equipment, and a proposed Statement of Work are not required at this point.
- 5) Cost Portion: The cost portion of the white paper shall include a ROM cost estimate. No detailed price or cost support information should be included; only a time-phased bottom line figure should be provided. This portion is only applicable to each proposed Task Order (not to the BASIC IDIQ).
- 6) Other Information: Multiple white papers within the purview of this announcement may be submitted by each offeror. White Papers should be clearly marked to designate which task order the white paper references. If the offeror wishes to restrict its white papers, they must be marked with the restrictive language stated in FAR 52.215-1(e).
- 7) White Paper/Proposal Content Summary: You may be ineligible for award if all requirements of this solicitation are not met on the proposal due date.
- 8) SECOND STEP: The Second Step consists of offerors submitting Technical and Cost/Business Proposals within 30 calendar days (or other time period as communicated in the RFP). After Receipt, Proposals will be evaluated in accordance with the award criteria as outlined below.

d. Review and Selection Process:

1) White Paper Review Criteria (First Step):

The Government will review White Papers to determine which of them have the potential to best meet the Air Force's needs based on the following criteria, which are of descending order of importance:

- 1) Unique and innovative approach proposed to accomplish the technical objectives. New and creative solutions and/or advances in knowledge, understanding, technology, and the state of the art.
 - 2) The offeror's understanding of the scope of the technical effort.
 - 3) Soundness of the offeror's technical approach.
 - 4) Affordability (Proposed ROM Cost Estimate).
- 2) The criteria above will be used to evaluate both IDIQ and proposed Task Orders. Overall review of the IDIQ is of equal importance as the review of proposed Task Orders and Task Order evaluations are of equal importance to each other.
- 3) Note: The portion of the white paper submitted for the basic IDIQ will not be reviewed for affordability since a ROM will not be proposed for it.
- 4) Those offerors submitting white papers assessed as meeting Air Force needs will be asked to submit a technical proposal (second step).
- 5) Offerors not selected to proceed to the second step will be notified of the disposition of their white paper.

e. Second Step – Proposal Submission:

- 1) The SECOND STEP consists of offerors submitting a technical and business/cost proposal within 30 calendar days of an RFP (or longer period as specified in the RFP). Proposal instructions will be included in the RFP. Adequate Price Competition is anticipated. After receipt, proposals will be evaluated in accordance with the award criteria below. Proposals will be categorized and subsequently selected for negotiations.
- 2) SECOND STEP - Proposal Peer or Scientific Review Criteria: Proposals will be reviewed against the criteria listed below. The IDIQ and Task Orders will be evaluated against the same criteria. The IDIQ evaluation will be of equal importance as the Task Orders and the Task Order Evaluations will be of equal importance to each other. The technical aspect, which is

ranked as the first order of priority, shall be reviewed based on the following criteria that are of descending order of importance:

a) Technical:

(1) Unique and innovative approach proposed to accomplish the technical objectives. New and creative solutions and/or advances in knowledge, understanding, technology, and the state of the art.

(2) The offeror's understanding of the scope of the technical effort.

(3) Soundness of the offeror's technical approach including whether the proposal identifies major technical risks, clearly defines feasible mitigation efforts, and demonstrates related experience and qualifications of technical personnel.

(4) The potential to transition the research and development deliverables to future Government needs. Any proposed restriction on technical data or computer software will be considered.

b) Cost/Price: The cost evaluation includes the realism of the proposed cost. Cost/Price is a substantial factor, but ranked as the second order of priority. (If an offeror proposes the use of GFP other than any GFP identified in this BAA, and that proposed GFP provides the offeror an unfair competitive advantage, then FAR 45.202 requires rental equivalent be applied to the Cost Factor for evaluation purposes only).

c) Note – Cost/Price criteria will not be reviewed for the IDIQ.

3) Second Step Selection Categories: Based on the Peer or Scientific Review, proposals will be categorized as Selectable or Not Selectable (see definitions below). The selection of one or more sources for award will be based on the Peer or Scientific Review, as well as importance to agency programs and funding availability.

(1) Selectable: Proposals are recommended for acceptance if sufficient funding is available.

(2) Not Selectable: Even if sufficient funding existed, the proposal should not be funded.

4) Note: The Government reserves the right to award some, all, or none of the proposals. When the Government elects to award only a part of a

proposal, the selected part may be categorized Selectable, though the proposal as a whole may not merit such a categorization.

- 5) No other criteria will be used.
- 6) Prior to award of a potentially successful offer, the Contracting Officer will make a determination regarding price reasonableness.
- 7) Additional terms, conditions, and instructions applicable to the Second Step RFP will be sent with the Second Step RFP.
- 8) **Section K:** A completed Section K will be required to be completed with the proposal requested in the second step.
- 9) **Model Contract:** The BAA contains a model contract as an example only. Applicable Clauses, terms, and conditions may vary per contractor and per proposal and will be addressed during potential negotiations. Although the model contract is not an IDIQ type and is an example only, similar format, terms, and conditions will be applicable to this effort.

IV. Other Information

- a. **BAA terms, conditions, and instructions:** All BAA terms, conditions, and instructions contained in BAA FA2391-23-S-2403 shall be considered applicable to this Call and white papers/second step proposals shall be in accordance with the BAA, unless deviations are authorized in this call.
- b. **Availability of Funds:** Funds are not presently available for this contract. The Government's obligation under this contract is contingent upon the availability of appropriated funds from which payment for contract purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Contracting Officer for this contract and until the Contractor receives notice of such availability, to be confirmed in writing by the Contracting Officer.
- c. **Call White Paper/Proposal Reminders:** You may be ineligible for award if all requirements of this solicitation are not met on the proposal due date.
 - 1) Call White Papers/Proposals are due no later than the due date and time specified in the call.
 - 2) Page limitations are strictly enforced.
 - 3) Call White Papers/Proposals must be submitted in the format specified.

Attachments:

1. Volare Statement of Objectives (SOO) Overview – note Full CUI Version of IDIQ SOW and Task Order SOOs are not included and must be requested.
2. Solicitation DD254- must be requested from Peter.Seiley@us.af.mil
3. CDRLs

VOLARE Statement of Objectives Overview

25 June 2025

The Aerospace Systems Directorate seeks to develop a vehicle design and technology assessment process that combines operations analysis, multidisciplinary analysis and optimization and model-based systems engineering within a deployable computational framework. In pursuit of this goal the Airframe Propulsion Power Thermal Integration (APPI) program is focused on developing an effectiveness-based vehicle design process that integrates military utility assessment with technology development for airframe, propulsion, and power & thermal management systems (PTMS). This process utilizes multi-fidelity physics-based analyses to predict vehicle performance which in turn is used in mission level simulations to assess the impact of a given configuration or technology on the combat effectiveness of a system. This enables AFRL technology developers to have a quantifiable and traceable trail of the impact of their technologies leading to well-informed decisions concerning technology investment and achievable capabilities.

Task Order 1 – Volare Military Utility Assessment (MUA)

The Military Utility Assessment (MUA) task shall develop tools, models, and processes to enable effectiveness-based design incorporating MUA of multi-disciplinary, multi-fidelity physics-based vehicle system designs. These development activities will focus on integrating medium fidelity representations of air platform characteristics, systems, and sub-systems into the platform models used to execute MUA. Development activities will also include efforts to integrate MUA with model-based systems engineering (MBSE) architectures as well as into a physics-based multidisciplinary analysis and optimization (MDAO) design process.

Task Order 2 – Volare Model-Based Systems Engineering (MBSE)

This task addresses the development and demonstration of reference architectures and systems models in SysML and related modeling languages (e.g. SysML 1.x, SysML 2.0, UAF) to support MUA-driven, integrated system analysis and design. It addresses management of system requirements and configurations, with an emphasis on tracing effectiveness requirements from MUA studies to system designs. The task also addresses approaches for linking design studies with their constituent analyses and data management across the problem space.

Task Order 3 – Volare Multi-Disciplinary Analysis & Optimization (MDAO)

The scope of this task is to establish the computational framework, discipline models, tools, and numerical analysis techniques to support multi-fidelity, multidisciplinary design optimization of integrated aircraft systems and to enable the integration of effects-based military utility assessment into the multidisciplinary design optimization process.

Task Order 4 – Volare - Digital Architecture and Supporting Technologies: Development Security & Operations, Research Computing, and Data Management (DigInt)

The scope of this task covers the development and implementation of processes, infrastructure, and architectures related to software development, research computing, and data that enable an aerospace vehicle design process.

ATTACH 2

SOLICITATION DD254 is marked CUI and must be requested from Peter Seiley at Peter.Seiley@us.af.mil. Contractors must have a valid Form 2345 and a SPRS score of 110 to receive CUI data in accordance with the instructions of this Call.

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.									
A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM SCIENTIFIC AND TECHNICAL REPORTS				3. SUBTITLE Final Report				
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80711A/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ XX	9. DIST STATEMENT REQUIRED C	10. FREQUENCY ONE/R		12. DATE OF FIRST SUBMISSION See Block 16*		14. DISTRIBUTION			
8. APP CODE A		11. AS OF DATE End of Tech Effort		13. DATE OF SUBSEQUENT SUBMISSION See Block 16*		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Block 4: Document format shall minimally conform to guidance described in the attached ANSI-based AFRL Format Guidelines. Include a completed Standard Form (SF) 298. If the Final Report contains data that is being delivered with less-than-unlimited rights, the data shall be appropriately marked within the Final Report. NOTE: When the sensitivity of STINFO in draft and final deliverable documents meets the requirements of Controlled Unclassified Information (CUI) as dictated by EO 13556, "Controlled Unclassified Information," contractors must properly mark pages of their submitted documents with the acronym "CUI" at the top and bottom of each page and include the CUI designation indicator on the title page. BLOCK 9: C: Distribution authorized to US Government agencies and their contractors. (Critical Technolgy) (20 May 2025). Other requests for this document shall be referred to AFRL/RQ. WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., sec 2778 et seq., as amended) or the Export Administration Act of 1979, as amended, Title 50, U.S.C. App 2401 et seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive... (continued on next page)						AFRL/RQ	1	1	0
						AFRL/RQON	1	1	0
15. TOTAL						2	2	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST

(1 Data Item)

A. CONTRACT LINE ITEM NO. 0001	B. EXHIBIT A	C. CATEGORY: TDP _____ TM _____ OTHER _____		N/A REF: DOD 5010.12-I AMSDL
D. SYSTEM/ITEM		E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR

16. REMARKS (Continued)

5230.25.

DESTRUCTION NOTE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

NOTE: All digital files shall be encrypted or password protected in transmission; passwords shall be provided in a separate communication.

Block 10: The contractor shall deliver the Scientific and Technical Report, in final format, no later than the date specified in the Schedule. USAF will review and, if necessary, return the report with comments no later than the date specified in the Schedule. If the report is returned to the contractor with comments, the contractor shall deliver the publication-ready copy of the report no later than the date specified in the Schedule.

Block 11: End of Technical Effort.

Block 12. 30 days from Block 11. Approval/disapproval by letter from the Air Force Program Manager within 30 days after receipt. Disapproval requires correction/resubmission within 30 days after receipt of Air Force comments.

The contractor shall deliver a draft of the final report IAW the ANSI-based AFRL Format Guidelines (attached), in editable MS Word format and editable PDF on appropriately labeled CD-ROM or DVD (label to include report title, contract number, CUI markings as required, distribution statement, and any data rights and/or export control notices) via approved postal delivery service, or as an attachment on a secure e-mail or sharing through other secure network systems such as DoD SAFE within 30 calendar days after completion of the technical effort. The AFRL Program Manager will take no more than 30 calendar days after delivery to review the draft final report and return technical and STINFO comments to the contractor. The contractor shall incorporate the combined STINFO and technical comments.

Block 13: End of Contract, 90 days from Block 11. The contractor shall deliver the final version of the report in publication-ready condition within 60 calendar days after the date of the draft submission (date in Block 12). The final report shall be delivered as described in the instruction in Block 12 above.

NOTE: Submittal of DD Form 250Z, Final Receiving Report or WAWF prior to acceptance notification will result in rejection of the Final Receiving Report. Hard date indicating when final tech report is due can be found in Section F in the contract.

The report will be published with the Defense Technical Information center (DTIC) by the AFRL STINFO officer.

Under no circumstances shall the contractor submit any version of the scientific and technical report to DTIC.

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.									
A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A002	2. TITLE OF DATA ITEM FUNDS AND MAN-HOUR EXPENDITURE REPORT				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.) DI-FNCL-80331A/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED B	10. FREQUENCY MTHLY		12. DATE OF FIRST SUBMISSION **		14. DISTRIBUTION			
8. APP CODE N/A		11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION **		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored to allow contractor's format. * At the close of the contractor's monthly accounting period. ** 25 days after Block 11 time. Submit electronically. Electronic submittals shall be encrypted or password protected. BLOCK 9: B: Distribution authorized to US Government agencies only.						DCMA/ACO	0	1	0
						AFRL/RQ	0	1	0
						AFRL/RQF	0	1	0
						AFRL/RQKPB	0	1	0
15. TOTAL						0	4	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.									
A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A003	2. TITLE OF DATA ITEM CONTRACTOR SPEND AND EXPENDITURE PLAN				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.) DI-MGMT-82355/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED B	10. FREQUENCY MTHLY		12. DATE OF FIRST SUBMISSION **		14. DISTRIBUTION			
8. APP CODE N/A		11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION **		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored to allow contractor's format. * At the close of the contractor's monthly accounting period. ** 25 days after Block 11 time. Submit electronically. Electronic submittals shall be encrypted or password protected. BLOCK 9: B: Distribution authorized to US Government agencies only.						AFRL/RQ	0	1	0
						DCMA/ACO	0	1	0
						AFRL/RQF	0	1	0
						AFRL/RQKPB	0	1	0
15. TOTAL						0	4	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
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A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A005	2. TITLE OF DATA ITEM STATUS REPORT				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.) DI-MGMT-80368A/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY MTHLY		12. DATE OF FIRST SUBMISSION **		14. DISTRIBUTION			
8. APP CODE N/A	C	11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION **		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored to allow contractor's format and to delete para 3.2.3. Submit electronically, except when final report is due to be submitted, then omit this item. * At the close of the contractor's monthly accounting period. ** 25 days after Block 11 time. Submit electronically. Electronic submittals shall be encrypted or password protected. BLOCK 9: C: Distribution authorized to US Government agencies and their contractors.						AFRL/RQ	0	1	0
						DCMA/ACO	0	1	0
						AFRL/RQKPB	0	1	0
15. TOTAL						0	3	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
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A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A006	2. TITLE OF DATA ITEM PRESENTATION MATERIAL				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.) DI-ADMN-81373/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED C	10. FREQUENCY ASREQ		12. DATE OF FIRST SUBMISSION *		14. DISTRIBUTION			
8. APP CODE N/A		11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored to require only view graphs and hard copy. Submittal of the actual viewgraph is not required if the presentation is computer generated. ASREQ means as required to document topics under discussion at briefings and reviews. * Submit at each briefing or review as appropriate. Maximum # of view graphs shall not exceed 800 for this contract. Submit electronically. Electronic submittals shall be encrypted or password protected. BLOCK 9: C: Distribution authorized to US Government agencies and their contractors.						AFRL/RQ	0	1	1
15. TOTAL						0	1	1	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188			
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A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ N/A REF: DOD 5010.12-I AMSDL					
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A008	2. TITLE OF DATA ITEM CONTRACT WORK BREAKDOWN STRUCTURE				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.) DI-MGMT-81334D/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ		12. DATE OF FIRST SUBMISSION ASREQ		14. DISTRIBUTION			
8. APP CODE A	B	11. AS OF DATE N/A		13. DATE OF SUBSEQUENT SUBMISSION R/ASR		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored so that the CWBS shall be in accordance with the Statement of Work and completion of the integrated baseline review to ensure that the Government agrees with the scope of the work packages, that every task is addressed and has adequate oversight, and that every task has adequate resources allocated. Approval/disapproval by letter from the Air Force Program Manager within 30 days after receipt. Disapproval requires correction/resubmission within 30 days after receipt of Air Force comments. R/ASR means revisions as required to document Air Force required changes or changes requested by the contractor to keep the CWBS up to date; changes and revisions to the CWBS shall be accompanied by appropriate changes and/or revisions to the index and the dictionary. The contractor shall incorporate Air Force required changes within 30 days after receipt. BLOCK 9: B: Distribution authorized to US Government agencies only. Submit electronically. Electronic submittals shall be encrypted or password protected.						AFRL/RQ	1	1	0
						AFRL/RQF	0	1	0
						AFRL/RQKPB	0	1	0
						DCMA/ACO	0	1	0
15. TOTAL						1	4	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

18. ESTIMATED
TOTAL PRICE

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A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____				N/A REF: DOD 5010.12-I AMSDL							
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403			F. CONTRACTOR									
1. DATA ITEM NO. A009		2. TITLE OF DATA ITEM COST DATA SUMMARY REPORT (DD FORM 1921)				3. SUBTITLE									
4. AUTHORITY (Data Acquisition Document No.) DI-FNCL-81565C/T			5. CONTRACT REFERENCE CSOW			6. REQUIRING OFFICE AFRL/RQ									
7. DD 250 REQ LT		9. DIST STATEMENT REQUIRED B		10. FREQUENCY ASREQ		12. DATE OF FIRST SUBMISSION *		14. DISTRIBUTION							
8. APP CODE N/A				11. AS OF DATE N/A		13. DATE OF SUBSEQUENT SUBMISSION *		a. ADDRESSEE							
16. REMARKS Tailored so that reporting levels shall be in accordance with the Air Force approved CCDR Plan, attached to Data Item # _____; and so that critical/major subcontractor summary level data shall be reported as an attachment. Tailored to allow contractor's format. ASREQ means as required to document cost data at the end of each significant event such as, PDR, CDR, TRR, and etc., or at the end of the technical effort if there are no scheduled events such as described. * Submit electronically as generated. BLOCK 9: B: Distribution authorized to US Government agencies only. Submit electronically. Electronic submittals shall be encrypted or password protected.								Draft		b. COPIES					
										Final					
										Reg		Repro			
								AFRL/RQ		0		1		0	
								AFRL/RQF		0		1		0	
								AFRL/RQKPB		0		1		0	
								DCMA/ACO		0		1		0	
								15. TOTAL							
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:				H. DATE 20-MAY-2025		I. APPROVED BY				J. DATE					

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D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A011	2. TITLE OF DATA ITEM SCIENTIFIC AND TECHNICAL REPORTS				3. SUBTITLE R&R ANNUAL UPDATE				
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80711A/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED C	10. FREQUENCY *		12. DATE OF FIRST SUBMISSION *		14. DISTRIBUTION			
8. APP CODE N/A		11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION ** R/ASR		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS R&R Annual Update Complete the AFRL "Research and Related Senior/Key Person Profile" template as provided in Appendix 3 of the solicitation. Include the contract number in the subject line for email delivery. *The contractor shall submit this document within thirty (30) days after the completion of every twelve (12) months of contract performance. **Provide updates and supplements to this document, as appropriate, during the period of performance. Identify changes from previous versions. permanent change pages shall conform to the requirements, quality, style, and format of the basic documentation. R/ASR means revisions as required to keep the R&R Annual Update up to date, make changes or corrections; submit revisions as generated. BLOCK 9: C: Distribution authorized to US Government agencies and their contractors. Submit electronically. Electronic submittals shall be encrypted or password protected.						AFRL/RQ	0	1	0
						AFRL/RQ/Securit	0	1	0
						y			
15. TOTAL						0	2	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP

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A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____			N/A REF: DOD 5010.12-I AMSDL		
D. SYSTEM/ITEM			E. CONTRACT/PR NO. FA2391-23-S-2403		F. CONTRACTOR				
1. DATA ITEM NO. A012	2. TITLE OF DATA ITEM SCIENTIFIC AND TECHNICAL REPORTS				3. SUBTITLE SECURITY PLAN				
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80711A/T			5. CONTRACT REFERENCE CSOW		6. REQUIRING OFFICE AFRL/RQ				
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED C	10. FREQUENCY *		12. DATE OF FIRST SUBMISSION *		14. DISTRIBUTION			
8. APP CODE N/A		11. AS OF DATE *		13. DATE OF SUBSEQUENT SUBMISSION ** R/ASR		a. ADDRESSEE	b. COPIES		
						Draft	Final		
							Reg	Repro	
16. REMARKS Tailored to allow contractor's format. Submit electronically in Microsoft Office Suite compatible format, PDF, or RTF as coordinated with the PM/PE. Include the contract number in the subject line for email delivery. *The contractor shall submit this document fifteen (15) days after award of contract if required by the government. The government will provide comments within fifteen (15) days after receipt of drafts. Final copies due fifteen (15) days after receipt of government comments. **Provide updates and supplements to this document, as appropriate, during the period of performance. Identify changes from previous versions. Permanent change pages shall conform to the requirements, quality, style, and format of the basic documentation. R/ASR means revisions as required to keep the Security Plan up to date, make changes or corrections; submit revisions as generated. Submit classified Data (up to and including SECRET) via the SIPRNET or as coordinated with the requiring office. Submit electronically. Electronic submittals shall be encrypted or password protected. BLOCK 9: C: Distribution authorized to US Government agencies and their contractors.						AFRL/RQ	0	1	0
						AFRL/RQ/Securit	0	1	0
						y			
15. TOTAL						0	2	0	
G. PREPARED BY Ray Kolonay AFRL/RQ (937) 713-7126 Ext:			H. DATE 20-MAY-2025		I. APPROVED BY		J. DATE		

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

INSTRUCTIONS FOR COMPLETING DD FORM 1423

(See DoD 5010.12-M for detailed instructions.)

FOR GOVERNMENT PERSONNEL

Item A. Self-explanatory.

Item B. Self-explanatory.

Item C. Mark (X) appropriate category: TDP - Technical Data Package; TM - Technical Manual; Other - other category of data, such as "Provisioning," "Configuration Management," etc.

Item D. Enter name of system/item being acquired that data will support.

Item E. Self-explanatory (to be filled in after contract award).

Item F. Self-explanatory (to be filled in after contract award).

Item G. Signature of preparer of CDRL.

Item H. Date CDRL was prepared.

Item I. Signature of CDRL approval authority.

Item J. Date CDRL was approved.

Item 1. See DoD FAR Supplement Subpart 4.71 for proper numbering.

Item 2. Enter title as it appears on data acquisition document cited in Item 4.

Item 3. Enter subtitle of data item for further definition of data item (optional entry).

Item 4. Enter Data Item Description (DID) number, military specification number, or military standard number listed in DoD 5010.12-L (AMSDL), or one-time DID number, that defines data content and format requirements.

Item 5. Enter reference to tasking in contract that generates requirement for the data item (e.g., Statement of Work paragraph number).

Item 6. Enter technical office responsible for ensuring adequacy of the data item.

Item 7. Specify requirement for inspection/acceptance of the data item by the Government.

Item 8. Specify requirement for approval of a draft before preparation of the final data item.

Item 9. For technical data, specify requirement for contractor to mark the appropriate distribution statement on the data (ref. DoDD 5230.24).

Item 10. Specify number of times data items are to be delivered.

Item 11. Specify as-of date of data item, when applicable.

Item 12. Specify when first submittal is required.

Item 13. Specify when subsequent submittals are required, when applicable.

Item 14. Enter addressees and number of draft/final copies to be delivered to each addressee. Explain reproducible copies in Item 16.

Item 15. Enter total number of draft/final copies to be delivered.

Item 16. Use for additional/clarifying information for Items 1 through 15. Examples are: Tailoring of documents cited in Item 4; Clarification of submittal dates in Items 12 and 13; Explanation of reproducible copies in Item 14.; Desired medium for delivery of the data item.

FOR THE CONTRACTOR

Item 17. Specify appropriate price group from one of the following groups of effort in developing estimated prices for each data item listed on the DD Form 1423.

a. Group I. Definition - Data which is not otherwise essential to the contractor's performance of the primary contracted effort (production, development, testing, and administration) but which is required by DD Form 1423.

Estimated Price - Costs to be included under Group I are those applicable to preparing and assembling the data item in conformance with Government requirements, and the administration and other expenses related to reproducing and delivering such data items to the Government.

b. Group II. Definition - Data which is essential to the performance of the primary contracted effort but the contractor is required to perform additional work to conform to Government requirements with regard to depth of content, format, frequency of submittal, preparation, control, or quality of the data item.

Estimated Price - Costs to be included under Group II are those incurred over and above the cost of the essential data item without conforming to Government requirements, and the administrative and other expenses related to reproducing and delivering such data item to the Government.

c. Group III. Definition - Data which the contractor must develop for his internal use in performance of the primary contracted effort and does not require any substantial change to conform to Government requirements with regard to depth of content, format, frequency of submittal, preparation, control, and quality of the data item.

Estimated Price - Costs to be included under Group III are the administrative and other expenses related to reproducing and delivering such data item to the Government.

d. Group IV. Definition - Data which is developed by the contractor as part of his normal operating procedures and his effort in supplying these data to the Government is minimal.

Estimated Price - Group IV items should normally be shown on the DD Form 1423 at no cost.

Item 18. For each data item, enter an amount equal to that portion of the total price which is estimated to be attributable to the production or development for the Government of that item of data.

These estimated data prices shall be developed only from those costs which will be incurred as a direct result of the requirement to supply the data, over and above those costs which would otherwise be incurred in performance of the contract if no data were required. The estimated data prices shall not include any amount for rights in data. The Government's right to use the data shall be governed by the pertinent provisions of the contract.



**AIR FORCE RESEARCH LABORATORY (AFRL) AMERICAN
NATIONAL STANDARDS INSTITUTE (ANSI)/ NATIONAL
INFORMATION STANDARDS ORGANIZATION (NISO)-BASED GUIDE
TO FORMATTING TECHNICAL REPORTS**

February 2018

**HEADQUARTERS AFRL
DIRECTOR OF STAFF
INTEGRATION AND OPERATIONS DIVISION
INFORMATION MANAGEMENT
WRIGHT-PATTERSON AFB, OH 45433**

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1.0 COMPONENTS OF A TECHNICAL REPORT

The United States Air Force uses ANSI/NISO Z39.18 as a formatting guide for technical reports. This guidance highlights fundamental formatting recommendations addressed in the ANSI/NISO standard, as shown in Table 1. Full component descriptions are available in the ANSI/NISO Z39.18 which can be found at the link below:

http://groups.niso.org/apps/group_public/download.php/12038/Z39_18_2005_R2010

Table 1. Components of a Technical Report

COMPONENT	RESPONSIBLE PARTY	INCLUSION STATUS
FRONT MATTER (page numbering sequentially with Roman numerals beginning with Table of Contents)		
Cover or Title	Government Work Unit Manager (WUM)	Required
Notice and Signature Page	Government WUM	Required
Notice to Accompany the Dissemination of Export-Controlled Technical Data (See Appendix B)	Defense Technical information Center (DTIC) will add this to technical report.	
Standard Form (SF) 298, <i>Report Documentation Page</i>	Report Author	Required
Table of Contents	Report Author	Required
List(s) of Figures and Tables	Report Author	Conditional (<i>include when there are more than five figures and/or tables</i>)
Foreword	Report Author	Optional
Preface	Report Author	Optional
Acknowledgements	Report Author	Optional
BODY (page numbering sequentially beginning with the Arabic numeral 1)		
Summary	Report Author	Required
Introduction	Report Author	Required
Methods, Assumptions, and Procedures	Report Author	Required
Results and Discussion	Report Author	Required
Conclusions	Report Author	Required
Recommendations	Report Author	Conditional (<i>include when purpose of report is to suggest a course of action</i>)
References	Report Author	Conditional (use if references are provided)
BACK MATTER (page numbering continues sequentially from body of report)		
Appendices	Report Author	Conditional (<i>Include when needed to supplement Results and Discussion</i>)
Bibliography	Report Author	Conditional
List of Symbols, Abbreviations, and Acronyms	Report Author	Conditional (<i>include if used in any other component of the report</i>)
Glossary of Terminology	Report Author	Conditional (<i>Include if report incorporates terms unfamiliar to the intended audience</i>)
Index	Report Author	Optional
Distribution List	Report Author/Government WUM	Conditional (<i>Some technology directorates control access</i>)
Back Cover	Report Author	Required for classified reports only

2.0 FRONT MATTER

2.1 Cover Page (see Table 2 and Figure 1)

- AFRL Shield, upper left-hand corner
- Technical Report Document Number
- Main Title
- Subtitle (if applicable)
- Author Name(s) (First Name/Last Name)
- Wing/Technical Directorate or Prime Contractor Company Name (address can be added. Just be consistent).
- Subcontractor Company Name (if applicable) (address can be added, just be consistent).
- Report Date (Month followed by four-digit year)
- Type of Report (interim or final)
- Distribution Statement and reasons for the statement's assignment (see Department of Defense Instruction (DoDI) 5230.24).
- Warning Statement for Export Control (if applicable)
- Destruction Notice
- Pointer Text to other limits
- Notice of Copyright (if applicable)
- Sponsoring Directorate

Table 2. Cover Page Elements

Component	Explanation
AFRL Shield	Located in upper left-hand corner.
Technical Report Number	Assigned by the directorate Science & Technical Information (STINFO) Office upon receipt.
Main Title	Accurate and specific to describe the contents of the report.
Subtitle	If applicable; Used for a delivery or task order (DO-TO) or volume title in a series.
Author Name(s)	Full names to include middle initial(s).
Company Name	Primary performing company name.
Report Date	Month and four-digit year.
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AFRL-RH-WP-TR-2017-XXXX

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MAIN TITLE

Subtitle *(if applicable)*

Author(s) First name/Last name

Contractor Company Name *(if applicable)*

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Month/Year

Final Report

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AIRMAN SYSTEMS DIRECTORATE
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433
AIR FORCE MATERIEL COMMAND
UNITED STATES AIR FORCE**

Figure 1. Sample of a Cover Sheet

2.2 Pages Following Coversheet

- The appropriate Notice Page or Pages (see Appendix A).
- Standard Form (SF) 298, *Report Document Page* (see Figure 2).
- Typically, three sections follow the SF 298 in this succession: Table of Contents, List of Figures, and List of Tables.

2.2.1. SF 298

The accuracy and completeness of the SF 298 are critical to the report so that the document will be more easily retrieved from Defense Technical Information (DTIC) or other databases. The Contractor/Author shall complete Blocks 1 – 5b, 6 – 8, 12 – 15 of SF 298 and submit per Contract Data Requirements List (CDRL) requirements. See Table 3 and Figure 2. Here is the link for SF 298: https://app_gsagov_prod_rdcgwaajp7wr.s3.amazonaws.com/SF%20298.pdf

Table 3. Explanation of SF 298 Components

Block No./Component	Explanation
1 Report Date	Month/year of the report, typically the month of or following the ending period of the performance month. Ensure this date matches the date on the cover.
2 Report Type	Final or Interim
3 Dates Covered (From-To)	The period during which the technical effort was performed.
4 Title/Subtitle	Should match the cover title/subtitle. Use a distinctive title and subtitle that distinguished the report from others that cover the same general topic, as when more than one report is produced that has the same overall title.
5a – 5b Contract and funding information	Information should be in the contract. If not, the AFRL Program Manager (PM) or STINFO Officer/Liaison will provide.
5c – 5f Contract information	AFRL WUM or STINFO Officer/Liaison will provide.
6. Authors	The author or authors' first and last names (initials are acceptable)
7. Performing Organization Name(s) and Address(es)	The organization(s) or company(ies) that performed the work. Most commonly, the name and address of only the prime contractor appears here.
8. Performing Organization Report Number	The number assigned to the document by the contractor or if in-house-authored, the number assigned to the document (see Block 11 description)
9. Sponsoring/Monitoring Agency (Name(s) and Address(es))	The organization providing technical oversight for the contract. Occasionally, an effort is co-sponsored, such as when an effort is co-funded by multiple government agencies, such as a division within the Defense Advanced Research Projects Agency (DARPA)
10. Sponsoring/Monitoring Agency Acronym(s)	Branch-level AFRL symbol or other controlling Department of Defense (DoD) office (CDO) descriptive acronym.
11. Sponsoring/Monitoring Agency Report Number(s)	The complete AFRL document number assigned by the directorate STINFO. Ex: AFRL-RD-PS-TR-2017-0010-TR
12. Distribution/Availability Statement	See Appendix A.
13. Supplementary Notes	Export control notice; SBIR information; references to previous editions or related volumes; copyright notice; special grant numbers; references to related documents, etc.
14. Abstract	The overall purpose of the research and/or its applications, including major results and conclusions
15. Subject Terms	Terms and key words that make the report accessible, making it appear in search retrieval lists.
16. Security Classification	The classification of the whole document.
17. Limitation of Abstract	Same as report (SAR) (Enter SAR)
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SAMPLE REPORT DOCUMENTATION PAGE				<i>Form Approved</i> <i>OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 11/10/2016		2. REPORT TYPE FINAL		3. DATES COVERED (From - To) 03 March 2015 – 11 December 2017	
4. TITLE AND SUBTITLE Comparative Assessment of Torso and Seat Mounted Restraint Systems (Ensure this title matches the cover sheet title)				5a. CONTRACT NUMBER FA8650-15-D-1111	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER 65502F	
6. AUTHOR(S) First Name(s)/Last Name(s)				5d. PROJECT NUMBER 3005	
				5e. TASK NUMBER 0001	
				5f. WORK UNIT NUMBER H07L	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) ABC Research 123 Any Street City, State Zip				8. PERFORMING ORGANIZATION REPORT NUMBER	
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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

Figure 2. Sample SF 298

2.4 Table of Contents

Start pagination of Table of Contents with lower-case Roman numeral “i” as shown in Figure 3. Start listing contents that are in the Front Matter (e.g., List of Figures, List of Tables, Foreword, Preface, the Body of text, then Back Matter). Appendix labels should be in alphabetical order, and page numbers should continue from the previous section. If there is only one Appendix, just call it an Appendix. If a report contains more than five figures or tables, or some combination totaling more than five, a list of figures and/or tables is required. If less than five, it is optional.

TABLE OF CONTENTS	
Section	Page
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3.0 METHODS, ASSUMPTIONS, AND PROCEDURES	4
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3.2.1 N(N ₃) ₃ , HN(N ₃) ₂ , N(N ₃) ₂ ⁻ and N(N ₃) ₄ ⁺	12
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i

Figure 3. Table of Contents Example (border not required)

2.5 List of Figures

Continue pagination with lower-case Roman numerals as shown in Figure 4. List all figures found in text, excluding those that appear in any appendix (list appendix figures at the front of each appendix, if applicable).

LIST OF FIGURES	
	Page
Figure 1	Overall View of Propulsion Vehicle.....19
Figure 2	Motor Configuration.....25
Figure 3	Apparatus Used to Make Nozzle Tubes.....26

Figure 4. List of Figures Example (border provided for figure simulation only)

2.6 List of Tables

Continue pagination with lower-case Roman numerals as shown in Figure 5. List all Tables found in text, excluding those that appear in any appendix (list appendix tables at the front of each appendix, if applicable.)

LIST OF TABLES	
	Page
Table 1	Some of the Upper-Stage Propulsion Options.....19
Table 2	Results of Test Firing #1.....25
Table 3	Results of Test Firing #2.....26

Figure 5. List of Tables Example (border provided for figure simulation only)

3.0 BODY

3.1 Required Headings

Start the body of the text with the **Summary or Executive Summary (1.0)** and begin pagination with Page 1 (Arabic numerals) (see Figure 3).

3.2 References

References should be listed numerically, in the order they appear in the text. The Reference page should be at the end of the report (*not at the end of each section*). For works that are generally referred to throughout the report, without citing specific references from the work, create a Bibliography (in alphabetical order). Personal communications, unpublished speeches, or any other information not available for reference by the reader should not be included in the References – *footnote your citation instead*. References must be available to readers of the report. The examples below are a suggested format.

3.2.1. Papers / Journal Articles / Conference Presentations or Proceedings

Author's last name, then first name, Titles of papers are in quotation marks; Journal names or Conference names are in italics; Volume is bolded; Date follows comma (not within parenthesis); Page numbers (pp.) are last.

Examples:

Chidambaram, N., Dash, S., and Kenzakowski, D., "Scalar Variance Transport in the Turbulence Modeling of Propulsive Jets," *Journal of Propulsion and Power*, **17**, 1, Jan 2001, pp. 79-84.

Author(s), "Title of Article," Paper No. (if AIAA or CPIA paper, etc.), *Name of Conference*, Location, Date.

Chai, A.H., Cao, Z.T., Chen, H. P., "Monte Carlo Method Study of Terahertz Pulse, Propagation in Biological Tissue," *Proceedings of the 2005 IEEE, EMBS 27th Annual Conference*, Shanghai, China (2005).

3.2.2. URLs

The URL or other path information appears instead of the volume and number cited for a conventional journal. It is frequently useful to the reader to know the date when the material was accessed. In such cases, "Accessed [date]" would be appropriate wording.

Virillio, Paul, "Speed and Information: Cyberspace Alarm!" CTHEORY, URL: <http://www.freedonia.com/ctheory/>, last modified 19 September 1995. Accessed 17 November 1999

3.2.3. Technical Reports

Enter Author's last name, then first; Titles of reports are in italics; Next is report number; DTIC Accession Number, Distribution Code and/or PA Clearance/Date, Name and address of performing agency/organization; Date is last.

Example:

Author(s), Title, AFRL-PR-ED-TR-20XX-XXXX, Company, Inc., City, State, Jan 2006

In-House Author Example

Gaitonde, Datta, Advances in High-Fidelity Multiphysics Simulation, AFRL-RB-WP-TR-2008-3019; ADB123456, Distribution B, Wright-Patterson AFB: AFRL Air Vehicles Directorate, 2008

Gaitonde, Datta, Advances in High-Fidelity Multiphysics Simulation, AFRL-RB-330 WP-TR-2008-3019, XXABW Cleared XX/XX/XXXX; XXABW-XXXX-331 XXXX, Wright-Patterson AFB: AFRL Air Vehicles Directorate, 2008

3.2.4. Books

Enter Author's last name, then first name; Title of book can be **Bolded** or Underlined; Publisher's name and location (city and state); Date of publication; Page numbers last.

Example:

Author(s), **Book Title**, Harper & Rowe, New York, NY, 1993, pp. 36-38, 77, 98-101

Wylie, C.R., **Advanced Engineering Mathematics**, 7th ed, McGraw-Hill, New York, NY, 2005, pp 15-18

4.0 BACK MATTER

Pagination continues from the body. Include conditional and optional Back Matter in the order listed in the components table on page 1: Appendices, Bibliography, List of Symbols, Abbreviations, and Acronyms, Glossary, Index, Distribution List, and Back Cover.

4.1 Appendices

If there is only one appendix, the title Appendix would be without an alphabet letter (i.e., Appendix A, Appendix B). All tables and figures in that appendix are prefixed with A-, the “A” representing the word, Appendix. Each appendix should be referred to in the body text. Any references cited in an appendix must be listed as the last page of the appendix. Appendix page numbering is a sequential continuation of the Arabic text page numbering. Number figures, tables, equations, and references in an appendix with the letter of the appendix, followed by a hyphen and a sequential number, starting at 1, e.g., Figure A-1, A-2, B-1, B-2 for appendix figures, Table A-1, A-2, B-1, B-2 for appendix tables and A-1, B-1 for reference citations.

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When first introduced in the report (title or text), completely write out abbreviations and acronyms, followed by the abbreviation or acronym in parentheses, e.i., Small Business Innovation Research (SBIR). Thereafter, use only the acronym/ abbreviation in the body text; i.e., SBIR only if they are proper names (e.g., Department of Defense). See Figure 6. Create an acronym list that lists and defines all acronyms and symbols that appear in your report. List all terms alphabetically, beginning with those starting with capital letters, followed by lower case (e.g., H₂, HEDM, hcp). Follow alphabetical entries with Greek or special symbols. Capitalize definitions only if they are proper names (e.g. Department of Defense).

LIST OF SYMBOLS, ABBREVIATIONS AND ACRONYMS	
CAT	Computerized Axial Tomography
COMSAT	Communication Satellites
DMP-128	a Polaroid™ photopolymer
DoD	Department of Defense
Dcg	dichromated gelatin
H ²	hydrogen
HEDM	High Energy Density Matter
∇	Angle of Attack

Figure 6. Example of Lists of Symbols, Abbreviations and Acronyms

5.0 FORMAT REQUIREMENTS.

5.1 Type (Font) and Headings (Section Titles)

The recommended font is 12-point Times New Roman or Arial throughout the report. Figure 7 shows an example (format and spacing) of headings:

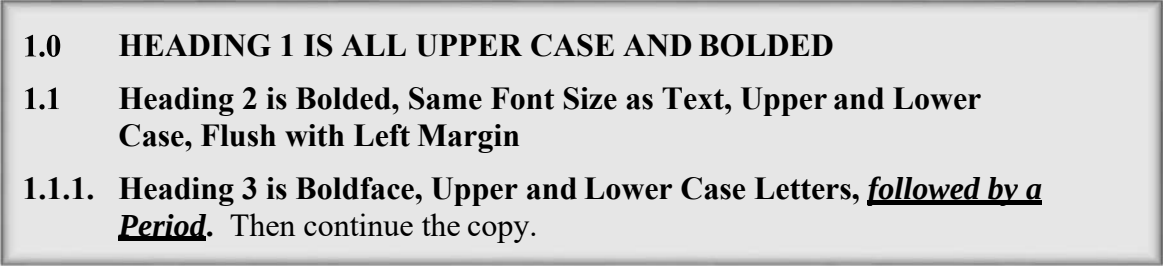
- 
- 1.0 HEADING 1 IS ALL UPPER CASE AND BOLDED**
 - 1.1 Heading 2 is Bolded, Same Font Size as Text, Upper and Lower Case, Flush with Left Margin**
 - 1.1.1. Heading 3 is Boldface, Upper and Lower Case Letters, followed by a Period. Then continue the copy.**

Figure 7. Heading Formats

5.2 Spacing

Final reports should be single spaced. It isn't necessary to double-space between paragraphs if the first line of each paragraph is indented.

5.3 Margins

Leave 1-inch left, right, and top margins. Leave enough room at the bottom of each page to include page numbers and notices (applicable restrictive statements (i.e., Public Affairs (PA) Clearance, additional control markings, distribution statement, export control warning, etc., as applicable).

5.4 Numbering

Page numbers are centered at the bottom of the page, above the footer. Figure numbers and their captions are on the same line below figures, while table numbers and their captions are on the same line above the tables. (See Figure 4 and Figure 5).

6.0 PRESENTATION STYLES

6.1 Style for Equations, Figures, and Tables

All equations, figures and tables shall be crisp and easy to read as shown in Equation 1. Figure and Table Captions should be in at least an 8-point type (handwriting on figures and tables is not). List of figures and tables are numbered, worded, spelled and punctuated exactly as they are in the report.

6.1.1. Style for Equations

$$(1 + x)^n = 1 + \frac{nx}{1!} + \frac{n(n-1)x^2}{2!} + \dots \quad (1)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad (2)$$

Equation 1. Sample Equations

6.1.2. Style for Figure Captions

Figure captions should be in title case letters using a consistent font, as shown in Figure 8 below. The Figure Caption describes the content without giving background information, results, or comments about the figure. Reference to figures and tables must appear in the text before the actual figure or table appears in the report. Where possible, integrate figures and tables into text and place figure/table as soon after the first mention of it as possible, before beginning a new subject. There should be two blank lines between Figures or Tables and text.

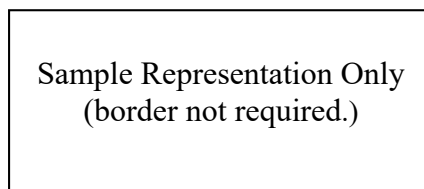


Figure 8. Figure Caption is on Same Line as Figure Number

6.1.3. Style for Table Captions

Authors should use the style listed in section 4.1.2. As shown in Table 4, the caption line and caption number should be centered, bolded, with no period at the end of the caption.

Table 4. Table Caption is on Same Line as Table Number

NAME	ADDRESS	CITY, STATE

7.0 REFERENCES

ANSI/NISO Z39.18-2005 (R2010), Scientific and Technical Reports – Preparation, Presentation and Preservation, 13 May 2010.

[*Defense Federal Acquisition Regulation Supplement \(DFARS\) and Procedures, Guidance, and Information \(PGI\).*](#)

DoDI 5230.24, *Distribution Statements on Technical Documents*, 01 November 2017.

8.0 LIST OF ACRONYMS & GLOSSARY

AFRL – Air Force Research Laboratory

ANSI – American National Standards Institute

BAA – Broad Agency Announcement

CDO – Controlling DoD Office

CDRL – Contract Data Requirements List

DARPA – Defense Advanced Research Projects Agency

DoD – Department of Defense

DoDI – Department of Defense Instruction

DO-TO – Delivery – Task Order

DTIC – Defense Technical Information Center

NISO – National Information Standards Organization

PA – Public Affairs

PM – Program Manager

SAR – Same as Report

SBIR – Small Business Innovative Research

STINFO – Science & Technical Information

STTR – Small Business Technology Transfer

WUM – Work Unit Manager

APPENDIX A – Notice and Signature Pages

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