



STATEMENT OF WORK

FOR

**A-10 THUNDERBOLT ADVANCED-WING
CONTINUATION KITTING
(ATTACK)**

Prepared by:

AFLCMC/WWAE
Fighter/Bomber Directorate
Hill AFB, Utah 84056

REVISION CONTROL

Note: The portion of the text affected by the current revision is indicated by vertical black lines in the outer left hand margin.

Rev	Date	Description	Sections
Initial	22 DEC 2017	Initial Release	
Rev A	8 FEB 2018	Added need for kits Additional PM language Clarified presentation media Confirmed incentive fee Approval on all revisions Small clarification Disposition prep responsibility IRRL maintained for contract life FA FCA Clarification FA PCA Clarification OCONUS shipping reqs Independent kit clarification Email update	1.1 3.2. 3.2.5.1 – 3.2.5.3 3.2.7 3.3.2.1 3.4.2.1 3.4.3.2.2.1 3.3.3.1.3 3.4.1.4.1 3.4.1.5.1 3.4.2.3 3.4.2.4 5.4.1 5.4.2 5.4.3
Rev B	26 APR 2018	PLM meeting changed to optional Added Paragraph 3.1.2.1 Added Small Business Participation Added Gov't Part Procurement Para Added [A043 CDRL] Reference Added [A043 CDRL] Reference Section 3.4.2.2 change to 3.4.2.1.1 Section 3.4.2.2.1 change to 3.4.2.1.2 Added a draft delivery for Serial # Cntl Plan Shipping Plan Clarification Part Number Update	3.1.2 3.1.2.1 3.2.2.1 3.2.9 3.4.1.5.1.1 3.4.1.5.2 3.4.2.1.1 3.4.2.2.1 3.4.3.8 5.4.1 5.4.2
Rev C (RFP)	22 MAY 2018	Revised language to enable incentive plan Added marking per MIL-STD-129	3.4.3.6.2 3.4.3.7 5.4.2

Table of Contents

1.	PURPOSE	1
1.1.	Purpose	1
2.	REFERENCES AND APPLICABLE DOCUMENTS	2
2.1.	Referenced Documents	2
2.2.	Applicable Documents	3
3.	REQUIREMENTS	4
3.1.	Data, 2-D Drawing, and 3-D Computer Aided Drafting (CAD) Modeling Delivery	4
3.1.1.	Contract Data Requirements List (CDRLs).....	4
3.1.2.	Technical Data.....	4
3.2.	Program Management.....	5
3.2.1.	Single Manager	5
3.2.2.	Subcontractor Management.....	5
3.2.3.	Program Management Plan.....	5
3.2.4.	Monthly Status Report.....	5
3.2.5.	Meetings	5
3.2.6.	System Engineering Management Plan	7
3.2.7.	Incentive	7
3.2.8.	Engineering Services	7
3.2.9.	Government Part Procurement	7
3.3.	Engineering and Quality Requirements	8
3.3.1.	General CAD/PLM Requirements	8
3.3.2.	Quality Assurance	8
3.3.3.	Design Changes	9
3.4.	General Productions Tasks.....	14
3.4.1.	Manufacturing Process Development and Special Tooling	14
3.4.2.	Production Preparation and Planning.....	17
3.4.3.	ATTACK Wing Assembly Production	19
4.	PERSONNEL QUALIFICATIONS.....	24
5.	SPECIAL CONSIDERATIONS	25
5.1.	Security	25
5.1.1.	Safeguarding Information	25

5.1.2.	Release/Removal of Documentation.....	25
5.2.	Supply/Support Requirements	25
5.2.1.	Governmental Rights	25
5.3.	Travel Requirements.....	26
5.4.	Preservation, Packaging & Marking Requirements	26
5.4.1.	Packaging Requirements.....	26
5.4.2.	Kitting Requirements	26
5.4.3.	Hazardous Materials (When Applicable)	27
5.4.4.	Unique Identification (UID) Requirements	28
6.	ACRONYMS	29

The following attachments will be delivered with the Technical Data Package (TDP) upon contractor’s request.

ATTACHMENT A	Engineering Data Requirements
ATTACHMENT B	Critical Safety Item (CSI) List
ATTACHMENT C	Contract Data Requirements List (CDRL) and Distribution
ATTACHMENT D	Operational and Flight Check Requirements
ATTACHMENT E	Delivery Kitting List
ATTACHMENT F	Government Furnished Information List
ATTACHMENT G	Government Furnished Property List

1. PURPOSE

1.1. Purpose

This Statement of Work (SOW) describes requirements (exclusive of those contained in the technical data package) to produce A-10 Thunderbolt Advanced Continuation Kit (ATTACK) Wing Assemblies. This effort will also produce individual kits if needed.

The ATTACK technical data package (162D610010-1001) supplied at contract award shall serve as the engineering baseline for this acquisition. The geometry of the baseline TDP is defined by Three Dimensional (3-D) Models in Model Based Definition (MBD). This includes 3-D models and other data mastered in a Product Lifecycle Management (PLM) system. The PLM data fields needed for manufacturing are also output in a Human Readable Format that the Government will provide as a "Part Report." The TDP is an input to the ATTACK, and it shall be provided by the Government.

For bidding purposes the 162D610010-1001 Enhanced Wing Assembly (EWA) TDP will be provided with Engineering Data Requirements (Attachment A) detailing the changes that will constitute the final 162D610010-1001 ATTACK TDP supplied at contract award.

2. REFERENCES AND APPLICABLE DOCUMENTS

The following list of Government and industry specifications, standards, and other documents below are for reference. Although reference documents are specifically stated in the sections where they apply, relationships with the applicable documents are implied throughout the requirements specified below. Versions are not defined and are expected to be the most current release.

2.1. Referenced Documents

*The contractor should anticipate updates to documents and specifications as marked:

1A-10C-520	Replacement of Thin and Thick-Skinned Wing Assembly P/N 160D610001 with Enhanced Wing Assembly P/N 162D610001-1001 on A-10C Aircraft
*08-A10DOC-001	A-10 Drawing Practice
*08-A10DOC-010	A10 Aircraft Integrated Configuration Management and Data Management Plan
*11-A10DOC-004	A-10 3-D Modeling Specification
*11-A10DOC-005	A-10 NX Drafting Specification
*12-A10DOC-002	A-10 Product Lifecycle Management (PLM) Data Exchange Specification
*12-A10DOC-009	A-10 3-D Model Validation Specification
*13-A10DOC-001	A-10 2D Drawing to 3D Model Migration Specification
49 CFR	Department of Transportation Final Rule, HM – 181 of The Federal Register, 21 December 1990
AFI 20-106	Management of Aviation Critical Safety Items
AFMCI 24-201	HQ AFMC Packaging and Materials, Handling Policies and Procedures
ANSI/EIA-632	Process for Engineering a System
AS9100	Quality Management Systems – Aerospace – Requirements
AS9102	Aerospace, First Article Inspection Requirements
AS9132	Data Matrix Quality Requirements for Parts Marking
DOD 5220.22-M	National Industrial Security Program Operating Manual (NISPOM)
ICAO	International Civil Aviation Organization (IMDG), Annex 1 International Maritime Dangerous Goods Code
EIA-649-1	Configuration Management Requirements for Defense Contracts
EIA-649-B	National Consensus Standard for Configuration Management
FED-STD-313	Material Safety Data, Transportation Data, and Disposal Data for Hazardous Materials Furnished to Government Activities
JSSG-2006	Joint Service Specification Guide, Aircraft Structures
MIL-HDBK-505	Handbook for Definitions of Item Levels, Item Exchangeability, Models, and Terms
MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-130	Identification Marking of Military Property
MIL-STD-1530	Aircraft Structural Integrity Program (ASIP)
MIL-STD-1916	Department of Defense (DoD) Test Method Standard (DoD Preferred Methods for Acceptance of Product)
MIL-STD-2073-1	Standard Practice for Military Packaging
MIL-I-8500	Interchangeability and Replaceability of Component Parts for Aerospace Vehicles
MIL-STD-961	Defense and Program-Unique Specifications Format and Content
*SA220R0207	A-10 Aircraft Structural Integrity Program (ASIP Legacy V) Damage

	Tolerance Re-Assessment: Reconfigured Post Desert Storm Severe Spectrum
TO 00-35D-54	USAF Deficiency Reporting, Investigation, and Resolution
TM-86-01	Air Force Technical Manual Contract Requirements (TMCR)

2.2. Applicable Documents

00-5-1	Air Force Technical Order System
00-5-3	AF Technical Manual Acquisition Procedures
1-1-3	Preparation, Inspection, and Repair of Aircraft Fuel, Oil and Water, Alcohol Cells and Integral Tanks
1-1-8	Application of Organic Coatings, Aerospace Equipment
1-1-689	Prevention and Control of Corrosion and Fungus in Communications, Electronic, Meteorological and Avionic Equipment
1-1-691	Aircraft Weapons Systems-Cleaning and Corrosion Control
1A-10C-2-1-1	General Aircraft/Equipment
1A-10C-2-27	Flight Controls, JG Series
1A-10C-2-28	Fuel System, JG Series
1A-10C-2-32	Landing Gear System, JG Series
1A-10C-2-94	Armament, JG Series
1A-10C-3-1	Structural Repair Manual
1A-10C-36	Nondestructive Inspection Manual
1A-10C-6	Inspection and Maintenance Requirements
16-A10DOC-004	CSI List for A-10 Non-Propulsion
29 CFR	Occupational Safety And Health Administration, Labor
33B-1-1	Nondestructive Inspection Methods
42A-1-1	Safety, Fire Precaution and Health Promotion Aspects of Painting, Doping, and Paint Removal
42A1-1-3	Solvents Approved for Air Force Use
AS 9132	Data Matrix Quality Requirements for Parts Marking
H4-1 (and H4-2)	Federal Supply Code for Manufacturers Cataloging Handbook
MIL-HDBK-61A	Configuration Management Guidance
MIL-HDBK-512	Parts Management
MIL-HDBK-516	Airworthiness Certification Criteria
MIL-HDBK-729	Corrosion and Corrosion Prevention, Metals
MIL-HDBK-1568	Material and Processes for Corrosion Prevention and Control in Aerospace Weapon Systems
MIL-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment (Excluding Electrically Initiated Explosive Devices)

3. REQUIREMENTS

The TDP will be delivered to the contractor as documented in the Government Furnished Information (GFI) List (Attachment F). The prime contractor shall be responsible for verifying the TDP is complete prior to start of first article production. The prime contractor shall produce ATTACK Wing Assemblies, complete and ready, for installation on the A-10 aircraft. The prime contractor shall have a working knowledge and demonstrated capability in the application of the government Technical Order (TO) system as well as applicable MIL HDBKs and MIL STDs specified in SOW Section “2. *REFERENCES AND APPLICABLE DOCUMENTS*.”

3.1. Data, 2-D Drawing, and 3-D Computer Aided Drafting (CAD) Modeling Delivery

The contractor shall meet the minimum requirements specified below in regards to digital data, Two Dimensional (2-D) drawings, and 3-D CAD modeling delivery.

3.1.1. Contract Data Requirements List (CDRLs)

All data deliverables in this SOW shall be formatted for import into the A-10 Teamcenter environment using the “A-10 Product Lifecycle Management (PLM) Data Exchange Specification” 12-A10DOC-002. In addition, drawing deliverables shall also be formatted for import into Joint Engineering Data Management Information and Control System (JEDMICS) using the Ogden Air Logistics Complex, Engineering, “Digital Delivery Requirements and Metadata Instructions.” Data delivery schedule/frequency requirements are found in the CDRL for each specific task while specific delivery instructions and SOW references are found in the Contract Data Requirements List (CDRL) and Distribution (Attachment C).

3.1.2. Technical Data

Specifications (as denoted in SOW Section “2. *REFERENCES AND APPLICABLE DOCUMENTS*”) may need to be updated in support of either A-10 SPO PLM requirements or supplier enhancement requests. In these cases, the prime contractor may participate in the development, review, and implementation of these changes. To facilitate this process, the prime contractor may participate, in the weekly A-10 PLM Architecture Deconfliction Meeting to ensure potentially conflicting schema changes are reviewed and resolved among all A-10 SPO contracts/deliverables.

All tasks requiring the updating or creating of 2-D drawings, 3D models, or Part Reports shall be accomplished using one of the methodologies listed in “A-10 2-D Drawing to 3-D Model Migration Specification” 13-A10DOC-001. Each task shall identify the specific methodology to be used along with any other requirements pertinent to the task. For updating, creating, and/or migrating 2-D drawings into MBDs, one or more of the specifications listed below will be required by each methodology to ensure a complete and accurate engineering TDP:

- A-10 3-D Modeling Specification 11-A10DOC-004
- A-10 3-D Model Validation Specification 12-A10DOC-009
- A-10 NX Drafting Specification 11-A10DOC-005 (for CAD generated drawings/sheets)
- A-10 Drawing Practice 08-A10DOC-001

|| 3.1.2.1. **Government Requested Specification or Teamcenter/NX Version Update**
Specifications, Software (Teamcenter/NX) may need to be updated to ensure Government and Contractor are in sync for data transfer.

3.2. Program Management

The prime contractor shall provide materials and services required to efficiently and effectively manage the contract. All communications pertinent for the execution of this contract shall be flowed to both the Contracting Officer and Program Manager.

3.2.1. Single Manager

The prime contractor shall establish a single point of contact for the overall management effort.

3.2.2. Subcontractor Management

The prime contractor may subcontract with other companies to establish a strong technical capability to meet diverse contract requirements. The prime contractor shall be responsible for all aspects of contract performance, oversight, and the flowing of requirements to all subcontractors.

|| 3.2.2.1. **Small Business Participation**

The prime contractor shall meet a 13% small business participation under this effort.

3.2.3. Program Management Plan

The prime contractor shall produce a comprehensive Integrated Master Plan (IMP) [CDRL A002] and Integrated Master Schedule (IMS) [CDRL A001].

3.2.4. Monthly Status Report

The prime contractor shall provide a Monthly Status Report [CDRL A003] that covers all program activities for the period. It shall provide a forecast of work to be accomplished during the upcoming month. This report shall include status and progress towards open milestones that are active, or scheduled to become active, according to the delivery schedule. The prime contractor shall identify actions being taken to correct schedule deficiencies. Changes from previous reports shall be highlighted and explained. Approved IMP and/or IMS updates shall be reflected in this report. The contractor shall report any situation requiring immediate action by the Government using the most expedient means (teleconference, e-mail, or letter) and document the situation in the Monthly Status Report. In addition, the following shall be addressed:

- Manufacturing Status
- Deliveries
- Non-conformance Summary by Serial Number
- Non-conformance Trend Analyses
- Corrective Action Plans
- Personnel changes and/or staffing levels
- Risk assessment of production issues (to include mitigation)

3.2.5. Meetings

The Government encourages meetings with the prime contractor, and their significant

subcontractors if existent, to exchange information and ideas. Whenever feasible, meetings shall be held in conjunction with other events to minimize costs (e.g. Kick-Off Meetings, Reviews, Technical Interchange Meetings, Audits, etc.). Additionally, online meetings, teleconferences or video teleconferences may be used on a more frequent basis to ensure effective communication. When used, the contractor shall use government approved online meeting, teleconference and video teleconference services, i.e., Defense Collaboration Services (DCS). All appropriate stakeholders should be in attendance: Government personnel, prime contractor, subcontractors, etc.

3.2.5.1. Program Management Reviews (PMR)

PMRs shall alternate between Government and contractor facilities unless otherwise approved by the Contracting Officer. PMRs shall be reflected in the IMS [CDRL A001], detailed in the IMP [CDRL A002], and updated in the Monthly Status Reports [CDRL A003]. PMRs shall be scheduled quarterly. The prime contractor, with concurrence from the Government, may schedule PMRs more or less frequently as tasks warrant. The prime contractor shall prepare an agenda for each PMR [CDRL A005]. The prime contractor shall consult the Program Manager during development of the PMR agenda to ensure Government concerns are addressed. The prime contractor shall provide electronic copies of presentation materials no later than 48 hours prior to the PMR. The prime contractor shall provide the minutes after each PMR [CDRL A004].

3.2.5.2. Technical Interchange Meetings

The prime contractor shall conduct and support Technical Interchange Meetings (TIM) at their request or at the request of the Contracting Officer. The intent of the TIM is to foster the exchange of technical information impacting the ATTACK program. The TIM shall not replace the PMR process. The prime contractor shall prepare an agenda for each TIM [CDRL A005]. The Program Manager shall be consulted during development of the TIM agenda to ensure Government items are addressed. The prime contractor shall provide electronic copies of presentation materials no later than 48 hours prior to the TIM. The prime contractor shall provide minutes after each TIM [CDRL A004]. TIMs shall be held alternately at Hill AFB and a contractor facility unless otherwise approved by the Contracting Officer.

3.2.5.3. Kick-Off Meeting

The prime contractor shall hold a Kick-Off Meeting at agreed upon location within 30 calendar days of contract award. The purpose of the meeting shall be to review and gather available technical information applicable to the ATTACK program and discuss the expected course of the program. The prime contractor shall submit an agenda for the Kick-Off Meeting [CDRL A005]. The prime contractor shall consult the Contracting Officer and PM during development of the Kick-Off Meeting agenda to ensure Government concerns are addressed. The prime contractor shall provide electronic copies of presentation materials no later than 48 hours prior to the Kick-Off Meeting. The prime contractor shall provide the minutes of the Kick-Off Meeting [CDRL A004].

3.2.5.4. Technical Order Guidance Conference (TOGC)

The contractor shall conduct a TOGC within 60 calendar days after contract award at Hill AFB. The contractor shall host two technical order in-process reviews (IPR) to be held at a time and place mutually agreed upon by the contractor and the Government within this conference.

3.2.6. System Engineering Management Plan

The prime contractor shall develop a comprehensive System Engineering Management Plan (SEMP) [CDRL A022]. The SEMP shall include specific entrance and exit criteria for all critical events listed on the IMS. The SEMP shall be reflected in the IMP [CDRL A002]. The prime contractor shall employ a disciplined and rigorous system engineering process conforming to ANSI/EIA-632 during development and throughout production of the ATTACK Wing Assembly.

3.2.6.1. Technical Reviews and Audits

The following technical reviews and audits shall be conducted as specified by the SEMP and IMP:

- Technical Interchange Meeting (TIM)
- Functional Configuration Audit (FCA)
- Physical Configuration Audit (PCA)
- Production Readiness Reviews (PRR)

The prime contractor shall incorporate technical reviews and audits into the IMP [CDRL A002] and IMS [CDRL A001]. Non-conformances identified by the Government during technical reviews and audits shall be corrected by the prime contractor before proceeding. The Contracting Officer may direct the contractor to schedule technical reviews and audits more or less frequently as conditions warrant. The prime contractor shall develop agendas [CDRL A005] and report the meeting minutes [CDRL A004] for each technical review and audit.

3.2.6.2. Configuration Management Plan

The prime contractor shall develop and maintain a Configuration Management Plan (CMP) [CDRL A027] to control the configuration of the wing, including the existence and disposition of non-conformances, throughout this effort. The prime contractor shall demonstrate consistent supplier oversight with this requirement. The plan shall follow the requirements EIA-649-1. The plan shall also meet the requirements of 08-A10DOC-010 A10 Aircraft Integrated Configuration Management and Data Management Plan. The CMP shall demonstrate how compatibility will be achieved with the 12-A10DOC-002 A-10 Product Lifecycle Management (PLM) Data Exchange Specification (ADES). The Government shall approve the CMP, including all revisions, prior to use.

3.2.7. Incentive

An incentive fee CLIN is included in the contract to incentivize early delivery and approval of a First Article and Low Rate Initial Production articles.

3.2.8. Engineering Services

The contractor shall provide engineering support services if requested.

3.2.9. Government Part Procurement

The government may have contracts in place, or in the process of being in place, with subcontractor(s) that may overlap with the ATTACK WRP contract. The prime or subcontractor(s) shall not have agreements in place that do not allow the government to procure the same parts from the same or alternate suppliers.

3.3. Engineering and Quality Requirements

3.3.1. General CAD/PLM Requirements

3.3.1.1. Model Based Definition (MBD)

All 3-D models, modified or created, for this contract (excluding tooling models) shall be accomplished and delivered in Siemens NX format with complete history and parametric data [CDRL A023, CDRL A024]. All tooling models, modified or created for this contract, shall be delivered in Siemens NX format with complete history and parametric data unless otherwise approved by the Government. All CAD models shall be modeled according to the A10 3-D Modeling Specification #11-A10DOC-004, existing 2-D drawings, loft data (AF released loft surfaces), and other controlling documentation. Models shall be required for all temporary and permanent fasteners; models shall be developed in coordination with the A-10 SPO. The version of Siemens NX used by the contractor shall be the same as the version used by the A-10 SPO and shall be concurrently updated to match the version used by the A-10 SPO when the A-10 SPO moves to a new version.

The prime contractor may use a translator to convert between NX and IGES/STEP in support of their subcontractors, however, the prime contractor shall demonstrate the translation process to the Government and obtain Government authorization to proceed before manufacturing to the converted 3-D Model. For a translator to be authorized, the contractor must show that the delivered 3-D Model contains all of the necessary information required to accurately produce parts as defined in the original NX model. The translator will be demonstrated, but it is not required to be delivered to the Government. The 3-D models shall define product configuration per ASME Y14.41 Model only (aka “Model Based Definition”) in lieu of drawings.

3.3.1.1.1. 3-D Model Validation Plan

The prime contractor shall validate 3-D models, modified or created, for this contract (excluding tooling models) per the A-10 3-D Model Validation Specification # 12-A10DOC-009. All validation check lists, work flow audit logs, and Check-Mate logs/reports shall be delivered as part of the TDP with the Government having unlimited rights to use, duplicate, modify, and distribute the validation check lists, work flow audit logs, Check-Mate logs/reports IAW SOW Section “5.2.1. Governmental Rights.”

3.3.1.2. PLM Data Linking and Submittal

The prime contractor shall acquire, maintain, and administer a PLM server with necessary hardware and software to load and manage the GFI provided TDP. Original TDP supplied using Siemens Teamcenter/NX.

The prime contractor shall provide a PLM data linking plan [CDRL A008] defining how the PLM database will maintain links from the TDP to the serialized components of the newly manufactured wing components. In addition, the plan shall define the process to transfer the applicable CDRL data to the Government during the physical delivery of each wing.

3.3.2. Quality Assurance

Quality control processes are critical to providing consistent, conforming product, to minimizing non-conforming product, and to meeting delivery schedule requirements. Full scale durability testing of the ATTACK Wing Assembly is not a requirement, because the prime contractor will

be producing a derivative wing assembly that has already demonstrated fleet performance. Therefore, it is critical that the prime contractor demonstrate their ability to practice exceptional quality control processes. The ATTACK Wing Assembly manufacturer shall be AS9100 certified. Subcontractors and vendors supporting production of the Wing Assembly shall also be AS9100 certified (or equivalent as approved by the Government) with quality control processes compatible with the prime contractor. The prime contractor shall demonstrate consistent supplier oversight, detection of non-conformances, communication of findings from subcontractor to prime contractor engineering and program management personnel, and communication of findings (along with the scope of the finding, proposed disposition, and any other justifications) to the Government for disposition.

3.3.2.1. Quality Assurance Plan

The prime contractor shall provide the Government a Quality Assurance Plan (QAP) [CDRL A017]. The QAP shall define the quality control processes used by the prime contractor and their suppliers to ensure the ATTACK wing assembly meets TDP requirements including dimensional accuracy, material selection, and process compliance. The QAP shall address how production escapes, non-conformances, root cause and corrective actions, and product quality defect reports are to be handled. The Government shall review and approve the QAP prior to the prime contractor producing first article detail parts. The Government shall approve the QAP, including all revisions, prior to use.

3.3.2.1.1. Subcontractor/Partner Quality Requirements

The prime contractor is responsible for ensuring that all subcontractors, partners, and sub-tier subcontractors/partners meet the prime contractor's quality system requirements. This includes the ability to provide transparency of non-conformances from the point of discovery to the point of delivery to the Government. The prime contractor shall demonstrate subcontractor/partners compliance with the prime contractor's quality system requirements to the Government. The means of verification shall include audits of the quality system compliance as well as physical on-site audits of the subcontractor/partner's processes, procedures, records, facilities, etc., as needed.

3.3.2.1.2. Independent Government Audit

The prime contractor, subcontractors, and partners are subject to independent Government or Government directed audits at any time to assure procedures and processes are followed.

3.3.2.2. Critical Safety Item (CSI) Requirements

Subcontractors and prime contractor shall adhere to AFI 20-106 "Management of Aviation Critical Safety Items."

3.3.3. Design Changes

The prime contractor may choose to request changes to the TDP, or in certain circumstances, find that changes to the TDP are necessary. All changes to the TDP shall be approved by the Government prior to incorporation according to the Prime contractors CM Plan [CDRL A027].

This is not applicable for production tooling TDP changes. The prime contractor shall have design authority over the production tooling with data (as required per paragraph 3.4.1.2 and its subparagraphs) and design rights transferring to the Government upon program completion.

3.3.3.1. Reasons for TDP Changes

3.3.3.1.1. Materials, Processes, and Manufacturing

While many updates to the Legacy configuration have already been incorporated (e.g. process specification updates, sheet metal consolidations, substituting machining for forgings where appropriate, etc.), the prime contractor may identify materials, processes, or manufacturing methods within the TDP that are not cost effective due to improvements in technology or are non-preferred. In these cases, the prime contractor may propose alternative design and/or process specification changes for approval as referenced in SOW Section “3.3.3.3. *TDP Change Process*”.

3.3.3.1.2. Diminishing Manufacturing Sources and Material Shortages (DMSMS)

Because sources of supply for all material and parts have recently been established, it is not expected that obsolete materials will present a challenge to the contractor. If an obsolescence condition is discovered, the contractor shall document the specific case and provide an alternative solution to the Government as referenced in SOW Section “3.3.3.3. *TDP Change Process*”.

3.3.3.1.3. Proprietary Requirements

If the prime contractor identifies any proprietary requirements (e.g. process specifications, material specifications, etc.) within the TDP where a non-proprietary alternative doesn't exist, they shall document the specific case with the exception of MMS5039 and PS14295 noted below. They then shall provide a non-proprietary alternative solution (e.g. redesign, alternate non-proprietary process specification, etc.) with a technical justification to include analysis or test data, if applicable, to the Government as referenced in SOW Section “3.3.3.3. *TDP Change Process*”.

The following specifications will not be provided with the Technical Data Package due to proprietary rights (list may not be all inclusive):

- MMS5039 Nylon Powder
- PS14295 Fabrication and Assembly of Selective Laser Sintered Nylon Materials

3.3.3.1.4. Errors, Inconsistencies, Problems within the TDP

If errors, inconsistencies, or problems within the TDP are encountered, the prime contractor shall document the specific case and provide a solution to the Government in the form of TDP change request as referenced in SOW Section “3.3.3.3. *TDP Change Process*”.

3.3.3.2. TDP Change Requirements

Any changes to the TDP proposed by the prime contractor shall meet the following requirements:

- Design changes shall not adversely affect other areas of the structure or require additional structural inspections.
- Design changes shall not adversely affect wing/aircraft reliability, maintainability, supportability, or increase overall life cycle cost.
- The ATTACK Wing Assembly shall be capable of flying 10,000 flight hours prior to the first

Scheduled Structural Inspection based on the current usage severity (known as Reconfigured Post-Desert Storm Severe Spectrum).

- Durability of Fatigue and Fracture Critical (F&FC) and CSI parts shall not be adversely affected.
- All Interchangeability and Replaceability features, as defined in the TDP, shall be maintained forwards and backwards with any proposed changes.
- Stiffness variations shall be held to less than 5% incrementally across the wing span. This shall require analytical justification.
- Design changes are limited in scope such that the ATTACK Wing Assembly remains a derivative wing assembly (e.g. material alloys, product forms, and production technologies consistent with original production) thereby requiring no additional full-scale durability testing.
- Design changes and their analyses shall include no proprietary information, or shall include a non-proprietary alternative if proprietary information is included.

3.3.3.2.1. Analysis Requirements

When desired changes to the TDP require a stress analysis, the contractor shall perform a detailed stress analysis for each design change incorporated into the ATTACK Wing Assembly. The contractor shall perform the stress analysis using critical design loads and conditions provided in engineering reports furnished by the government. The stress analysis shall demonstrate a positive margin of safety for the design. The contractor shall provide results of the stress analysis to the Government as part of the change request package. The Government has final approval authority for the engineering methods and material data used in the stress analysis.

When desired changes to the TDP require a Damage Tolerance Analysis (DTA), the contractor shall perform a DTA for any design change incorporated into the ATTACK Wing Assembly that affects F&FC or CSI parts. The DTA shall be performed using AFGROW DTA software version current within A-10 SPO (software not Government provided). This requires compliance to the requirements of MIL-STD-1530, JSSG 2006 and the use of specific material models, retardation parameters and other technical details provided by the government as referenced in SA220R0207. If new materials are used for which the Government does not have current material models, the contractor shall develop these models consistent with AF material models and will only be used with the approval of the A-10 SPO. The contractor shall provide the DTA with all supporting AFGROW data as part of the change request package. The DTA shall include, as a minimum, all input and output data used in the analysis.

3.3.3.2.2. Human Factors Engineering

The prime contractor shall apply human factors engineering design criteria, principles, practices, and standards to the design process to achieve effectiveness, simplicity, efficiency, reliability, and safety of system operation, training, and maintenance when considering all changes to the TDP.

3.3.3.2.3. Standard Items

The contractor shall use standard parts, materials, and processes consistent with the 162D610010-1001 design when considering TDP changes. The requirements for installation, operation, maintenance, removal, and repair shall be satisfied by the use of common hand tools.

The use of special tools shall be reviewed by A-10 SPO engineering to ensure field or depot supportability.

3.3.3.2.4. Corrosion Prevention and Control

The prime contractor shall comply with requirements of the aircraft TDP for any changes proposed. The prime contractor shall comply with industry or military standards for corrosion prevention and control measures in the testing, handling, storage, and transportation of chemical and material products unless otherwise specified per tech data or applicable Government TO.

3.3.3.2.5. Weight and Balance

The contractor shall consider weight and balance when developing TDP changes. Maximum weight growth is limited to 50 pounds, and the weight distribution shall be maintained.

3.3.3.2.6. Process and Material Specifications

Process or material specifications developed or revised with the approval of A-10 SPO engineering shall conform to the requirements of MIL-STD-961.

3.3.3.2.7. Systems Approach

The prime contractor shall use a systems approach in consideration of any changes associated with manufacture of the ATTACK Wing Assembly. A systems approach ensures mission objectives are not degraded and the weapon system requirements are met.

3.3.3.3. TDP Change Process

Before initiating the TDP Change Process, the contractor shall submit an information request to proceed with Engineering Change Proposal (ECP) process or alternate process directed by the Government. This information request system is not defined by this SOW; it shall be proposed in the Configuration Management Plan [CDRL A027].

For all changes to the TDP, the contractor shall first propose the change to the Government via an ECP. If the ECP is approved, the contractor shall then deliver change documentation to the Government. These change documents shall be consistent with A-10 SPO engineering's MBD and PLM data linking requirements. The Government will review and approve any changes. The Government will then provide TDP updates back to the contractor that incorporate the proposed changes.

3.3.3.3.1. Change Proposal

The prime contractor shall submit an ECP [CDRL A013], as well as any supporting information (e.g. new or updated stress analysis, Damage Tolerance Analysis, test reports, etc.), to the Contracting Officer if changes are desired or required to the ATTACK Wing Assembly. The Contracting Officer will coordinate with A-10 SPO Engineering and will provide written authorization prior to the contractor initiating the changes.

3.3.3.3.2. Change Documentation

3.3.3.3.2.1. Draft TDP for Parts/Assemblies

The prime contractor shall deliver a draft TDP [CDRL A024] to the Government. The draft TDP

shall include a draft Engineering Order (EO) as referenced in SOW Section “3.3.3.3.2.3. *Engineering Order (E.O.)*,” draft 3-D models (if applicable), draft 2-D drawings (if applicable), and draft Part Reports (if applicable) used to produce the ATTACK Wing Assembly. The draft TDP shall be capable of supporting competitive procurement, sustainment, and maintenance of the ATTACK Wing Assembly; it shall be consistent with the format of the TDP provided; part reports will be provided back to the government with recommended changes. Data developed and delivered under this effort shall designate the A-10 SPO as the Cognizant Engineering Authority. The Government shall have unlimited rights to use, duplicate, modify, and distribute the drawings, specifications, engineering analyses, MBDs, and any other supporting data IAW SOW Section “5.2.1. *Governmental Rights*.”

3.3.3.3.2.2. Draft TDP for Specifications/Program Documents

The prime contractor shall deliver a draft TDP [CDRL A024] to the Government. The draft TDP shall include a draft EO as referenced in SOW Section “3.3.3.3.2.3. *Engineering Order (E.O.)*,” and draft specification (if required by ECP approval) used to produce the ATTACK Wing Assembly. The draft TDP shall be capable of supporting competitive procurement, sustainment, and maintenance of the ATTACK Wing Assembly. The draft TDP shall be consistent with the format of the TDP provided. Data developed and delivered under this effort shall designate the A-10 SPO as the Cognizant Engineering Authority. The Government shall have unlimited rights to use, duplicate, modify, and distribute the drawings, specifications, engineering analyses, MBDs, and any other supporting data IAW SOW Section “5.2.1. *Governmental Rights*.”

3.3.3.3.2.3. Engineering Order (EO)

For each Government approved change to the TDP, the prime contractor shall submit an AF Engineering Order [CDRL A014] to incorporate the change: IMT Form 3925.

3.3.3.3.3. Technical Order Updates

The contractor shall identify Technical Orders (TOs) impacted by TDP changes and provide source data documentation to the Government IAW TM-86-01 [CDRL A029] and the A-10 Data Exchange Specification.

The contractor shall perform clean-up of TCTO 1A-10C-520. This involves incorporating all supplements and adding all TDP changes prior to first article install. After all updated information/changes have been incorporated after first article install, the contractor shall deliver a finalized version of TCTO 1A-10C-520.

If a final purchase is made to complete the A-10 fleet with new wings the contractor shall deliver clean-up TO source data to address removal of TCTO 1A-10C-520 from affected TOs. This completed TO source data shall be delivered 6 months prior to the last wings being delivered from the contractor to the government.

3.3.3.3.4. Weight and Balance Report

If TDP changes result in a weight change greater than five lbs., or affect balanced components (e.g. deceleron assembly, trim tab assembly, etc.), the contractor shall generate an updated Weight and Balance Report for the ATTACK Wing Assembly [CDRL A021]. The contractor shall deliver the Weight and Balance Report after the construction of the First Article Exhibit

Assembly of Government accepted change. The contractor shall generate an updated Weight and Balance Report if changes during production alter the weight and balance.

3.4. General Productions Tasks

3.4.1. Manufacturing Process Development and Special Tooling

The TDP provided by the Government will be adequate to support the production of ATTACK wings. The specific production processes to include raw material procurement, production process development, tooling, planning, quality assurance, etc., are the responsibility of the prime contractor. Controlled processes are critical to meeting required delivery dates and to ensure structural integrity is maintained throughout the manufacturing process. The requirements stipulated in MIL-STD-1530 shall be used in developing production capability.

3.4.1.1. Manufacturing Processes

The prime contractor shall prepare a list of proposed manufacturing methods with justification for evaluation and approval by A-10 SPO engineering prior to use [CDRL A035].

3.4.1.1.1. Prohibited Processes

Laser, plasma, Electrical Discharge Machining (EDM), torch, and other thermal processes (e.g. cutting, trimming, or coating removal) are not currently approved for production/procurement of A-10 parts. Likewise, non-thermal cutting processes involving high pressure fluids and slurries (e.g., water jet) are also not currently approved for use in production/procurement of A-10 parts. Additionally, plastic media blasting and similar coating removal processes are approved for use at A-10 USAF Depots only. These processes may not be used in the production/procurement of A-10 parts unless qualified and approved by A-10 SPO Engineering. For any questions regarding qualification of any of the aforementioned processes, contact A-10 SPO engineering through the Contracting Officer.

3.4.1.1.2. Concentric Bushings

To preserve maintainability, all manufacturing processes and associated tooling shall ensure all bushings in the final deliverable product are concentric unless approved by A-10 SPO Engineering or specifically approved in the TDP.

3.4.1.2. Special Tooling

Government Furnished Property (Attachment G) contains available tooling from the last wing procurement effort. While considerable effort has been placed in identifying this tooling, the list may not be final or all-inclusive. The contractor may utilize this tooling or develop their own. The tooling is located and packaged at AMARG (Davis Monthan AFB, AZ).

The prime contractor shall design (if not using GFI special tooling TDP for production) and produce required special tooling for production pursuant to the chosen manufacturing/process methods to fabricate ATTACK Wing Assemblies at a rate consistent with contract requirements. Special tooling which is specifically designed and produced to manufacture the ATTACK Wing Assembly shall become Government property immediately upon production of the tool. Final disposition of the specialized tooling shall be as directed by the Contracting Officer. Any duplication and/or production of master tooling shall be approved by A-10 SPO Engineering. The special tooling developed under the ATTACK contract shall be controlled per FAR 52.245-

1.

3.4.1.2.1. Special Tooling Definition

The prime contractor shall prepare a list of tooling used, and its purpose, for Government evaluation and disposition [CDRL A034].

3.4.1.2.2. Special Tooling Drawings and MBDs

At a minimum, and only for those tools the prime contractor or subcontractors have developed or modified beyond what was provided in the Tooling TDP, the prime contractor shall deliver a Tooling TDP before the first Production Readiness Review, second submission 60 calendar days before the end of production, and at the Government's request [CDRL A023]. If only a detail part is modified or created, the remaining parts in the tooling assembly do not need to be updated to the standard specified in this statement of work. The TDP shall contain all parts in that tooling assembly in order to retain the assembly structure and associated parent child relationships therein. The contractor produced tooling TDP shall be consistent with SOW Section "3.3.1.1. *Model Based Definition (MBD)*." The tooling TDP shall support sustainment and maintenance of the ATTACK Wing Assembly. The Government shall have unlimited rights to use, duplicate, modify, and distribute the drawings, specifications, and MBDs developed under this effort IAW SOW Section "5.2.1. *Governmental Rights*."

3.4.1.2.3. GFI Special Tooling TDP

A special tooling TDP is provided as GFI to be used at prime contractor discretion and risk. The GFI special tooling TDP may or may not be complete, may include unnecessary components, and has not been validated/verified to produce conforming product. The Government is not responsible for any errors or missing data in the GFI special tooling TDP. The contractor is fully responsible to ensure the ATTACK Wing Assembly meets all TDP requirements.

3.4.1.3. Special Tooling Report

The prime contractor shall deliver a Special Tooling Report [CDRL A042] that includes a brief description of tools in the Special Tooling list [CDRL A034], their intended use, associated part and/or assembly numbers, and pictures of the tools in use.

3.4.1.4. Tooling Control

The prime contractor shall define the methods of controlling, maintaining, and tracking master and special tooling used for production. The prime contractor shall control, maintain, and track the tooling in their property management system per FAR 52.245-1. In addition, they shall provide a quarterly government property detail report to the government contracting official. If master tooling or special tooling is in use by another contractor on a different contract, a loan use agreement will need to be in place prior to use. The contractor is responsible for any damage or loss of the tooling, and they shall return or deliver it to the government in serviceable condition.

3.4.1.4.1. Master Tooling Control

All master tooling provided by the government shall not be modified by the contractor per FAR 52.245-1. The government shall retain ownership of all tooling provided to the contractor. The contractor is responsible for all packaging per MIL-STD-2073 and shipping costs for moving master tooling to sub-contractors after the prime contractor has accepted stewardship of master tooling. The contractor shall inspect all master tools for damage upon receipt and prior to

shipping while verifying that the tool is in proper working order. Any damage or non-conformances found on master tooling shall be reported to A-10 SPO engineering with a proposed disposition for government approval or disposition. The contractor is responsible for any damage to master tooling while it is in their possession, and they shall return or deliver it to the government designated location in serviceable condition.

3.4.1.5. Interchangeability and Replaceability (I&R)

The ATTACK Wing Assembly contains I&R items as defined in MIL-HDBK-505. The prime contractor shall provide I&R between ATTACK Wing Assembly components/assemblies for all I&R interfaces as defined in the TDP. All I&R production parts shall be managed per MIL-I-8500. A First Article Demonstration (FAD) is required for all interchangeable items. Dates shall be provided to the Government at least 10 working days prior to event to allow Government participation/witness of the FAD. The results of the FAD shall be presented to the Government for approval prior to acceptance of the item in questions. The prime contractor shall be responsible to define the method of controlling individual I&R features, through the use of tooling and/or other means.

3.4.1.5.1. Interchangeable Replaceable Requirements List

The Interchangeable Replaceable Requirements List (IRRL) shall be created by the prime contractor, approved by A-10 SPO Engineering [CDRL A043], and maintained throughout the life of the contract. The IRRL shall list discrete features to be controlled, the method of compliance, and those parts/assemblies requiring cycle checks for all I&R items in the ATTACK Wing Assembly. The IRRL shall define the method of demonstrating I&R within the assembly process and during the First Article Demonstration (FAD) according to MIL-I-8500 using Control Media and/or other ATTACK Wing Assembly parts. Other methods of demonstrating I&R may be approved by A-10 SPO Engineering and documented in the IRRL. Any duplication and/or production of master tooling shall be documented in the IRRL.

3.4.1.5.1.1. Interchangeable by Nature of Manufacture

|| With prior Government approval, and as documented in the IRRL [CDRL A043], Interchangeable by Nature of Manufacture (INM) is an acceptable method of meeting interchangeable requirements. For INM items, normal inspection procedures and manufacturing controls shall be considered satisfactory control of dimensional accuracy, manufacturing processes, and tooling. INM items do not require cycle checks.

3.4.1.5.2. Backward Interchangeability and Replaceability

|| The prime contractor shall provide backward I&R between ATTACK Wing Assembly components/assemblies and EWA components/assemblies for all interfaces defined in the ATTACK Wing Assembly TDP. The IRRL [CDRL A043] shall define the method of demonstrating I&R between the ATTACK Wing Assembly and the EWA according to MIL-I-8500 using Control Media and/or EWA parts. Other methods of demonstrating backwards I&R may be approved by A-10 SPO Engineering and documented in the IRRL.

3.4.1.5.3. Cycle Checks of Control Media

The interval between cycle checks on all control media, as defined in MIL-I-8500, shall be approved by A-10 SPO Engineering prior to production. Any changes made to cycle check intervals during production shall be approved by A-10 SPO Engineering prior to implementation.

3.4.2. Production Preparation and Planning

The prime contractor shall use the TDP as the basis for all manufactured and assembled parts. The prime contractor shall demonstrate their partners, subcontractors, and suppliers are in place to support production.

3.4.2.1. Production Qualification

The prime contractor shall provide a Production Qualification Plan (PQP) [CDRL A030] prior to producing the ATTACK Wing Assembly first article. The Government will approve the plan (and all revisions) prior to the contractor producing first article detail parts. The plan shall address:

- Partners, subcontractors, and suppliers in place to support production
- Production capacities at all levels to support the expected delivery rates
- The manufacturing, production, final assembly, and inspection processes available to produce the wing and corresponding certifications of the processes and personnel
- Equipment and facilities available and planned to produce the ATTACK Wing Assembly
- Control and certification of materials, parts, assemblies, and services provided by outside vendors in support of this effort
- Verification that all special tooling and tools are qualified to produce the wing to the TDP requirements on a repeatable basis
- Tool validation and verification (to include procedures and frequency)
- Master (GFE) and special tooling control
- List approved sources that will provide Fatigue and Fracture Critical (F&FC) and CSI

3.4.2.1.1. CSI Inspection Plan

The prime contractor shall develop a CSI Inspection Plan, which will be reviewed and approved by the Government, to supplement the PQP for all parts and assemblies identified on the CSI List (Attachment B). This plan shall have specific provisions for demonstrating conformance to CSI requirements and address how vendors will receive Government approval to be a CSI provider.

3.4.2.1.2. Risk Assessment

The prime contractor shall perform a risk assessment of the manufacturing/production processes of the ATTACK Wing Assembly and identify factors that could impact the production schedule or quality of the wing. The contractor shall provide this analysis, as well as risk mitigation, to the Government prior to production. The analysis shall be included in the PQP.

3.4.2.2. Functional Configuration Audit Plan

The prime contractor shall develop a Functional Configuration Audit (FCA) plan [CDRL A025] that describes how the contractor shall ensure the functional characteristics will be demonstrated. The FCA plan shall detail procedures and ground test equipment needed to perform the functional and operational checks on all installed systems and wiring to ensure the systems will perform correctly when delivered. The FCA shall be staged progressively for subsystem components and assemblies. The FCA shall be performed on the first article production configuration of the wing/wing systems, as noted:

- Routed systems shall receive functional testing at the sub-assembly level, i.e. the delivered

hardware level. For example, the electrical and hydraulic systems for the Outer Wing Panel shall be confirmed continuous and leak-free before the prime contractor delivers the Outer Wing Panel.

- The FCA of system component assemblies (Line Replaceable Assemblies (LRAs)) that are the last produced configuration, previously qualified by the supplier, shall be fulfilled at completion of their acceptance tests.
- The FCA of new LRAs, and LRAs acquired from a new source, shall be qualified by specified testing as approved by A-10 SPO engineering
- The FCA of the installed systems will be performed by the Air Force, using the first article exhibit after installation on aircraft, according to the Operational and Flight Check Requirements (Attachment D).

3.4.2.3. Physical Configuration Audit Plan

The prime contractor shall develop a Physical Configuration Audit (PCA) plan [CDRL A019] that details how the prime contractor will ensure the physical configuration of configuration items are to be verified and maintained. The PCA shall be performed on the first article production configuration of the wing. The prime contractor shall submit the plan to the Government for approval prior to use.

3.4.2.3.1. First Part Qualification Plan

The prime contractor shall provide a First Part Qualification (FPQ) Plan [CDRL A009] that will detail how each part and assembly of the ATTACK Wing Assembly will be certified for compliance with technical data requirements. The Government will accept a plan that utilizes an incremental approach, conducting partial First Part inspections, integrated with production to minimize disruption. Although every part must receive a first part inspection, not all of these inspections will involve the Government. The prime contractor shall coordinate an FPQ Plan with the Government that defines Government participation during the inspection of critical and special interest components; this includes CSIs and higher risk suppliers as a minimum. CSI critical processes shall be witnessed by a Government representative i.e. A-10 SPO Engineering and/or Defense Contract Management Agency (DCMA). The first article inspection requirements for the parts shall be IAW AS9102. The requirements contained in AS9102 shall be applicable throughout the duration of the contract.

3.4.2.4. Production Inspection Plans

The prime contractor shall develop inspection plans for all parts and assemblies during production to ensure compliance with all technical data requirements. The plans shall address the criticality of the parts, inspections required, and frequency. Inspection plans shall be MIL-STD-1916 compliant. Inspections of CSI parts and assemblies using sampling methods shall have plans pre-approved by A-10 SPO engineering prior to implementation.

3.4.2.5. Outer Mold Line (OML) Verification Plan

The prime contractor shall submit an OML Verification Plan [CDRL A040], to be approved by A-10 SPO engineering, which defines how the contractor will verify that the OML of the ATTACK Wing Assembly meets TDP requirements. The prime contractor shall verify the OML of applicable parts, sub-assemblies, and assemblies on First Article, Low rate initial production (LRIP), and at an interval approved by Government throughout FRP.

3.4.3. ATTACK Wing Assembly Production

The following tasks specify the manufacturing and production requirements to produce the ATTACK Wing Assembly.

3.4.3.1. Manufacture Wing Assemblies

The prime contractor shall produce ATTACK Wing Assemblies (162D610010-1001) using the TDP provided by the Government. The MBD in the TDP shall be used to control the configuration of the manufactured items unless otherwise approved by A-10 SPO engineering.

3.4.3.2. Non-Conforming Product

3.4.3.2.1. Non-Conformance Plan

The prime contractor shall develop a Non-Conformance Plan [CDRL A016] for handling non-conforming product found during manufacture, production, and also installation at the Government facility (for First Article and LRIP only). In general, non-conformance dispositions shall meet the same requirements for TDP changes as referenced in SOW Section “3.3.3.2. *TDP Change Requirements.*” The plan shall address how the prime contractor shall:

- Provide and maintain Material Review Board (MRB) certified staff required to meet production demands
- Interface with Defense Contracts Management Agency (DCMA) /A-10 SPO engineering for all non-conformances including elevation criteria
- Perform root cause and corrective actions
- Organize non-conformance data for trending, data access and delivery
- Format and package non-conformances by serialized items
- Obtain, track, and elevate prime/supplier non-conformances based on part number, defect type, cause code, organization, criticality, severity, and need for Government review
- Manage non-conformances identified during first article and LRIP installation at the Government facility
- Include the non-conformance data base definition as referenced in SOW Section “3.4.3.2.5 *Non-Conformance Data Access and Delivery*”
- Develop non-proprietary Standard Repair Procedures including a list of what procedures will be developed for this program [CDRL A028]
- Manage acceptable non-conforming product that affects installation at next higher assembly e.g. defective detail part manufactured at “supplier A” that is installed at “supplier B” and requires nonstandard work instructions for installation

3.4.3.2.2. Non-Conforming Product Authority

A-10 SPO engineering is the cognizant engineering authority for the disposition of all non-conforming product under this effort. A-10 SPO engineering may delegate limited DCMA oversight and authority for disposition of non-conforming product. DCMA may delegate limited prime contractor authority with A-10 SPO engineering concurrence based on a demonstrated level of expertise during the program.

3.4.3.2.2.1. Standard Repair Procedures

The prime contractor shall develop non-proprietary Standard Repair Procedures [CDRL A028].

Standard Repair Procedures are repairs which are commonly encountered in manufacturing, and have been previously documented and approved for use in an effort to reduce cost and schedule impacts. All Standard Repair Procedures, including revisions, shall be approved by the government prior to use. Standard Repair Procedures with specific damage limits shall be developed and used by liaison engineers following approval from A-10 SPO engineering.

3.4.3.2.3. Non-Conforming Product Quality

The prime contractor shall have adequate quality inspection, MRB liaison/analysis, stress analysis, damage tolerance analysis, materials and processes, and quality engineering assets available to meet production requirements without impacting schedule.

3.4.3.2.3.1. Disposition of Critical Safety Item (CSI) and Fatigue and Fracture Critical Items

If the dispositions involve CSI critical processes, specific corrective actions will be observed by a Government representative (e.g. DCMA, etc.) acting on behalf of A-10 SPO engineering. If the non-conformances involve fatigue and fracture critical items and or CSIs, detailed stress and damage tolerance analysis shall be required to determine the impact to the structure involved. This requires the compliance to the requirements of MIL-STD-1530, JSSG 2006, and the associated A-10 SPO engineering analysis requirements within SOW Section “3.3.3.2.1. *Analysis Requirements.*” If the 10,000 hour life is affected, the part shall either be replaced, or the Government shall be provided consideration using Major “Request for Variance” per EIA-649-B and the instructions for Form DD1694 Request for Variance.

3.4.3.2.3.2. Disposition of non CSI Items

All other dispositions shall have varying levels of analysis required depending on the nature and magnitude of departure from engineering definition.

3.4.3.2.4. Acceptance of MRB Activity Requiring Historical Data Entry

If specified by A-10 SPO Engineering or DCMA as a condition of acceptance of non-conforming product, the contractor shall document the non-conformance in an AFTO Form 95, and deliver it to the Government with the wing assembly.

3.4.3.2.5. Non-Conformance Data Access and Delivery

3.4.3.2.5.1. Prior to Production

Prime contractor shall develop a comprehensive non-conformance delivery plan to be included in the Non-Conformance Plan [CDRL A016] to include database schema definition and content business rules. Upon Government approval, contractor shall implement database schema in their data environment and provide updates to the A-10 Data Exchange Specification for Government implementation in the A-10 Teamcenter environment.

Non-Conformance database schema contents shall be agreed to by prime contractor and Government. At a minimum, the following are required fields: NCR Number, End Item, Failed Part Number, Failed Part Description, Part serial number, CSI/F&FC identifier, Defect Part Quantity, Non-Conformance Quantity, Total Defect Count, Responsible Supplier Name, Water Line Coordinate, Fuselage Station Coordinate, Butt Line Coordinate, NCR Status, NCR Date Created, NCR Date Closed, Non-Conformance Number, Non-Conformance Text, Cause Code,

Cause Code Description, Process Code, Process Description, Corrective Action Number, Defect Code, Defect Description, Disposition, and Supporting Justification Reports and Analyses.

3.4.3.2.5.2. During Production

Prime contractor shall provide a database with read and report access to the Government for review of defects for A-10 ATTACK assembly specific non-conformances. This database shall have the same schema as defined in the Non-Conformance Plan [CDRL A016].

3.4.3.2.5.3. Upon Delivery of Serialized Wing, Sub-Assembly or Item

The prime contractor shall deliver copies of all non-conformance documentation (to include a complete non-conformance package with any pictures, analysis, damage models, finite element analysis models, damage tolerance analysis models, AFTO Form 95 (if required), etc.) for non-conformances written against a serialized item. This shall be delivered with the ATTACK Wing Assembly at the time of delivery to the Government [CDRL A032] and provided in ADES structure/format to facilitate upload into the AF PLM system for in-service tracking. In addition to being linked to the affected serialized component, a non-conformance shall include its final disposition.

3.4.3.2.5.4. Fatigue and Fracture Critical (F&FC) and/or CSI Non-Serialized Items

The prime contractor shall deliver copies of all documentation (to include a complete non-conformance package with any pictures, analysis, damage models, finite element models, damage tolerance analysis models, AFTO Form 95 if required, etc.) for non-serialized non-conformances against F&FC and/or CSI. Any other non-conformance data requested by A-10 SPO engineering shall be included in the non-conformance package. This shall be delivered quarterly per the “Non-Conforming Product Report For Non Serialized Items” [CDRL A037].

3.4.3.2.5.5. Non-Conforming Product Report

The contractor shall submit monthly Non-Conforming Product Reports [CDRL A038]. Non-Conforming Product Report contents shall be agreed to by prime contractor and Government. The following are example fields: NCR Number, End Item, Failed Part Number, Failed Part Description, Part serial number, CSI/F&FC identifier, Defect Part Quantity, Non-Conformance Quantity, Total Defect Count, Responsible Supplier Name, Water Line Coordinate, Fuselage Station Coordinate, Butt Line Coordinate, NCR Status, NCR Date Created, NCR Date Closed, Non-Conformance Number, Non-Conformance Text, Cause Code, Cause Code Description, Process Code, Process Description, Corrective Action Number, Defect Code, Defect Description, and Disposition.

3.4.3.3. Functional Configuration Audit

The prime contractor shall conduct a Functional Configuration Audit (FCA) with the Government IAW FCA plan and provide an FCA Summary Report [CDRL A026]. Corrective action and an implementation plan for non-conformances identified during the FCA shall be agreed upon. The Government will approve, or conditionally approve, the results of the FCA prior to accepting the first ATTACK Wing Assembly (First Article Exhibit). Full approval of the FCA will be required prior to final LRIP acceptance (DD250). Audit dates shall be provided to the Government at least 10 working days prior to event to allow Government participation/witness of the FCA.

3.4.3.4. Physical Configuration Audit

The prime contractor shall conduct Physical Configuration Audits (PCA) with the Government IAW PCA plan prior to delivery of the first ATTACK Wing Assembly and provide a PCA Summary Report [CDRL A020]. The prime contractor shall demonstrate to the Government the configuration of the ATTACK Wing Assembly, as built, matches the TDP. Corrective action and an implementation plan for non-conformances identified during the PCA shall be agreed upon and approved by the Government. The Government will approve, or conditionally approve, the results of the PCA prior to accepting the ATTACK Wing Assembly (First Article Exhibit). Full approval of the PCA will be required prior to final LRIP acceptance (DD250). Audit dates shall be provided to the Government at least 10 working days prior to event to allow Government participation/witness of the PCA.

3.4.3.5. Production Readiness Review (PRR)

The prime contractor shall conduct two PRR's with the Government. The first shall be prior to any First Article assembly work, and the second shall be within 15 calendar days of the final LRIP delivery.

The purpose of the PRR is to determine whether the prime contractor and their supplier base have accomplished adequate production planning for entering First Article, LRIP, and FRP. Production readiness increases over time with incremental assessments accomplished at various points in the life cycle of a program. In the early stages, production readiness assessments should focus on high-level manufacturing concerns such as the need for identifying high-risk/low-yield manufacturing processes/materials or manufacturing development efforts to satisfy TDP requirements. As the program matures, the assessments should focus on adequate production planning, facilities allocation, producibility changes, identification/fabrication of tools/test equipment, and long-lead items. The PRR held prior to FRP, should provide evidence that the ATTACK wing assembly can be produced with low risk, no breaches in schedule, and no major on-going technical or manufacturing risks.

The prime contractor shall notify the Program Manager and the Contracting Officer a minimum of 30 calendar days prior to the PRR to schedule the event. LRIP and FRP PRRs shall be held at the location of the primary wing manufacture unless otherwise approved by the Contracting Officer. Non-conformances identified by the Government during the PRR shall be documented and corrected by the prime contractor according to a mutually agreed upon plan.

3.4.3.6. First Article Exhibit

The first ATTACK Wing Assembly manufactured on the production line shall be considered the First Article Exhibit. The prime contractor shall plan to inspect this wing at the production facilities with Government witnesses per the requirements of the Solicitation and SOW. Upon delivery of the First Article Exhibit, Government personnel will install the wing on an operational A-10 aircraft. Fit checks, rigging checks, operational ground checks (Ops Checks), and Functional Check Flights (FCF) will be performed by Government personnel as outlined in Operational and Flight Check Requirements (Attachment D). Prime contractor personnel shall be present throughout installation of the wing to correct non-conformances identified by the Government.

3.4.3.6.1. First Article Exhibit Non-Conformances

If non-conformances are discovered at Government facility, the contractor shall correct them at the Government facility, if possible, IAW Government approved dispositions. If corrections are not possible at the Government facility, the contractor shall notify the Government of the non-conformances, the source of the non-conformances, and the proposed corrective action prior to acceptance of the wing. For all non-conformances found (corrected on-site or not), the contractor shall record the non-conformance found, the source of the non-conformance, and the actions necessary to correct the non-conformance in a First Article Exhibit Non-Conformance Report [CDRL A036]. The purpose of this First Article Exhibit Non-Conformance Report is to provide a report of non-conformances found on the First Article (FA) Wing after delivery to the USAF at Hill Air Force Base (HAFB). The prime contractor shall track these non-conformances as referenced in SOW Section “3.4.3.2. *Non-Conforming Product.*”

3.4.3.6.2. First Article Exhibit Acceptance

Final acceptance of the First Article Exhibit shall be based on successful FCA, PCA, fit checks, rigging checks, Ops Checks, and FCF. Additionally, non-conformances identified during installation should be dispositioned with an agreed upon corrective action before final acceptance of First Article Exhibit. Upon approval, the First Article Exhibit will remain installed on the operational A-10 aircraft. Contractor will submit a First Article Exhibit Report [CDRL A012]. The purpose of this First Article Exhibit Report is to outline the execution of First Article Inspection (FAI) on the A-10 ATTACK Wing Assembly. The First Article Exhibit Report provides an overview of the manufacturing and quality documentation used to fabricate the first unit of the ATTACK Wing Assembly.

3.4.3.7. Low Rate Initial Production

Three LRIP wings (not including First Article) shall be delivered to the Government to prove consistency of the prime contractor’s production capability. Prime contractor personnel shall be present at Government facility throughout installation of these wings to correct non-conformances identified by the Government. Final acceptance of LRIP articles shall be based on successful FCA, PCA, fit checks, rigging checks, Ops Checks, and FCF. Additionally, non-conformances identified during installation should be dispositioned with an agreed upon corrective action before final acceptance of individual LRIP articles. Upon approval, LRIP Wing Assemblies will remain installed on operational A-10C aircraft.

3.4.3.8. Serial Number Control

The prime contractor shall use serial numbers to control and provide traceability to the major wing and flight control assemblies. The prime contractor shall present the serialization method to the Government in the form of a revision to the Serial Number Control Plan, 162S900706, for draft approval at PRR and a final version approval after FA FCF but prior to use [CDRL A033]. This plan will define the serialization assignment, control, and documentation. Additionally, the prime contractor shall review the existing nameplates delivered under the TDP for continued use under this contract. If changes are required, the prime contractor shall provide the necessary design changes IAW SOW Section “3.3.3. *Design Changes.*” All other serial number controlled parts or assemblies shall be controlled per drawing requirements. The major wing structural and flight control assemblies are defined as:

- Center Wing Assembly

162D611001-1001

- MLG Fairings 162D611521-1001/-1013
- Outer Wing Panel Assemblies 162D612001-1001/162D612002-1001
- Wing Tips 162D612550-1001/-1002
- Inboard Flap Assembly 162D711110-1013/-1015
- Outboard Flap Assembly 162D711150-1009/-1011
- Deceleron, Leading Edges 162D712110-1001/-1005
- Deceleron, Trim Tabs 162D712140-1001/-1002
- Speed Brakes, Upper 162D712150-1003/-1004
- Speed Brakes, Lower 162D712170-1001/-1002
- Slat Assembly 162D713100-1001/-1003

The labeling used by the prime contractor shall meet all drawing requirements and MIL-STD-130. Additionally, the requirements of SOW Section “5.4.4. *Unique Identification (UID) Requirements*” per DFAR 252.211-7003 shall apply.

3.4.3.9. Product Quality Deficiency Reporting (PQDR)

The prime contractor shall develop and maintain a PQDR review process to address any deficiencies found in delivered and accepted wings. The PQDR review process shall be conducted using TO 00-35D-54 as a guideline and include, as a minimum, prime contractor root cause analyses of the deficiencies. The prime contractor will be responsible for required corrective action on delivered and undelivered hardware. The prime contractor shall document these procedures in the QAP [CDRL A017].

3.4.3.10. Trunnion Shim Data

The prime contractor shall document and submit a Trunnion Shim Report [CDRL A041] of the final thicknesses, including any taper, of all shims at the trunnion to wing interface (i.e. 162D611109-2011/-2013 shims). The data shall be presented such that replacement shims can be manufactured, for each wing serial number, from the data without any additional tooling being necessary.

3.4.3.11. Balance Data Sheets

For all assemblies that require balancing (e.g. deceleron, trim tab), the prime contractor shall submit Balance Data Sheets [CDRL A011] completed IAW TO requirements.

3.4.3.12. Contractor Controlled Specifications or Processes

If proprietary material or process specifications (or contractor controlled specifications) are used during production as specified by the TDP or in a repair disposition, the prime contractor shall provide copies of the specifications (to include all revisions that may be used) to the government for review and approval prior to use [CDRL A039].

4. PERSONNEL QUALIFICATIONS

The prime contractor shall employ a sufficient quantity of qualified program managers, project technical managers, lead engineers and engineers within each discipline, engineering technicians, manufacturing and assembly staff, professional support staff, etc. to perform the specific tasks delineated in this SOW as well as any additional resultant support tasks (e.g. investigation and analysis of product escapes). Through program management reviews and monthly status reports,

the prime contractor shall notify the Government of any change of assignment or employment status of the Program Manager, Project Technical Manager(s), or other key personnel such as lead engineers. Engineering degrees shall be from Accreditation Board for Engineering and Technology (ABET) accredited engineering programs.

5. SPECIAL CONSIDERATIONS

5.1. Security

5.1.1. Safeguarding Information

The prime contractor shall safeguard information in accordance with DOD 5220.22-M and ensure subcontractors are compliant. The prime contractor shall obtain and maintain working level personnel, management, and facilities with the appropriate security clearance necessary to perform tasks.

5.1.2. Release/Removal of Documentation

The prime contractor is responsible for obtaining approval from the Contracting Officer prior to releasing any information received or generated under the contract. Subcontractors must request release from the Contracting Officer through the prime contractor.

5.2. Supply/Support Requirements

5.2.1. Governmental Rights

Products developed under this contract shall be considered Government work and shall have no licensing claims. The contractor shall utilize Government Furnished Equipment (GFE), Government Furnished Software (GFS), and Government Furnished Material (GFM) as specified in the SOW or as approved by the Contracting Officer: subsequent to contractor request. All GFE, GFS, and GFM listed within the Government Furnished Property List (Attachment G) shall be packaged and returned to the Government, in serviceable condition, upon completion of the contract unless otherwise dispositioned by the Contracting Officer.

5.2.1.1. Unlimited Government Rights

The Government shall have unlimited rights to items, components, systems, processes, computer software and technical data developed, or previously developed if it is delivered as a part of this contract, by the prime contractor or its subcontractors. Software procured by the prime contractor shall have the licensing agreement(s) passed through to the Government. Unless as specified by SOW Section "5.2.1.2. *Other than Unlimited Government Rights Items*" all such documents/software shall be marked "unlimited rights" as follows:

UNLIMITED RIGHTS

Contract No.
Contractor Name
Contractor Address

The Government's rights to use, modify, reproduce, release, perform, display, or disclose these technical data are unlimited. No restrictions apply.

5.2.1.2. Other than Unlimited Government Rights Items

The prime contractor shall identify and receive written Government approval from the Contracting Officer prior to committing to the use of commercially procured or contractor developed items, components, processes, computer software, or technical data which they:

- Intend to deliver with Limited Rights
- Intend to deliver with Government Purpose License Rights
- Intend to deliver with Restricted Rights
- Have not yet determined if such rights should apply

Data being delivered with less than unlimited rights shall be marked in accordance with the DFARS 252.227-7013(f) and DFARS 252.227-7014(f).

5.3. Travel Requirements

The contractor may be required to travel to Government installations or other locations to observe tests, conduct tests, ensure compatibility of configuration changes, and perform integration activities. In addition, as required in this SOW, the prime contractor shall attend program meetings, technical interchange meetings, technical reviews, and audits.

5.4. Preservation, Packaging & Marking Requirements

The prime contractor shall be responsible for the preservation, packaging, and packing of all items to be delivered under the terms of this contract. Packaging procedures will be established in accordance with AFMCI 24-201 (specifically paragraph 3.7) and MIL-STD-2073-1.

5.4.1. Packaging Requirements

The contractor shall develop a Packaging Plan [CDRL A007] to be approved by the Government. The packaging plan shall address the following: kit and container contents, number of shipping containers, DOT Title 49 compliance, CSI requirements, weather-proofing for outdoor storage up to a year (wrapping/coating), re-usable shipping fixtures/containers, labeling, and transportation requirements. Every effort shall be made to keep the number of shipping containers to a minimum. Kit D's and Kit E's shall be marked "For Indoor Storage Only" at the Government's request.

Contractor may design alternate SPI for items that currently have a SPI that meet level A packaging per MIL-STD-2073-1. Alternate SPIs [CDRL A006] must be approved by government prior to use.

Other than CONUS shipping shall mandate level A SPI redesign approved and to be directed by the government.

5.4.2. Kitting Requirements

ATTACK Wing Assemblies shall be delivered to the Government in five kits as defined in the Delivery Kitting List (Attachment E) and installed per TCTO 1A-10C-520 (unless ordered as an independent kit). Kits shall be shipped in the same serial number order, unless coordinated with

and approved by Contracting Officer. Contractor shall submit a packaging kit contents list with the shipment of each shipset [CDRL A010]. Kits shall be marked IAW MIL-STD-129 and shall also be labeled externally to indicate the shipset number, kit or sub-kit number(s), serial number (if applicable) and container number (e.g. “Container <XX> of <XX>”).

Specific kitting details are as follows:

- Kits A and C: Outer Wing Panel’s shall use the alternate package in SPI F01-492-6056.
- Kit B: Center Wing Panel will use the primary package (P/N 160D997900-5) in SPI F01-492-6056.
- Kits D&E: For items not packaged IAW Special Packaging Instructions, the outer containers will meet Level A packaging (per MIL-STD-2073-1) or better. Items defined in Table 1 shall be packaged in accordance with the indicated SPI: Level A. Contractor shall gain A-10 SPO engineering approval for any deviations from the SPIs.
- All kits will match both the Delivery Kitting List (Attachment E) and TCTO 1A-10C-520 part listings unless otherwise approved by the Government.

Part Number	Nomenclature	SPI
162D612550-1001	Wing tip Assy LH	F01-029-7331
162D612550-1002	Wing tip Assy RH	F01-029-7331
162D645101-1001	Pitot Static Assy	F01-136-9308
162D713100-1003	Slat Assy, RH	F01-046-1644
162D713100-1001	Slat Assy, LH	F01-046-1644
162D711110-1013	Flap Assy, INBD, LH	F01-041-0179
162D711110-1015	Flap Assy, INBD, RH	F01-041-0179
162D711150-1009	Flap Assy, OTBD, LH	F01-049-3807
162D711150-1011	Flap Assy, OTBD, RH	F01-049-3807
162D712100-1001	Deceleron Assy, LH	F01-074-9286
162D712100-1005	Deceleron Assy, RH	F01-080-1020
162D610103-9005	Door, Wing Assy, LH	F01-213-9211
162D610103-9007	Door, Wing Assy, RH	F01-213-9211
160C622001-5	Actuator, Aileron	F01-012-9154
162D611521-1001	MLG Pod, LH	F01-492-6056
162D611521-1013	MLG Pod, RH	F01-492-6056

Table 1: Kit D SPI Requirements

5.4.3. Hazardous Materials (When Applicable)

The contractor shall ensure Hazardous shipments comply with International Civil Aviation Organization (ICAO), U.S. Code of Federal Regulations (CFR) Title 49, International Air Transport Association (IATA) Dangerous Goods Regulation, International Maritime Dangerous Goods Code (IMDG, Annex 1), and Preparing Hazardous Materials for Military Air Shipments (AFMAN24-204_IP). Packaging shall meet a DOT specification or a United Nation (UN) specification, be manufactured in accordance with 49 CFR Part 178, and the final packages assembled IAW 49 CFR Parts 100-185 as applicable. A Competent Authority Approval (CAA)

shall be acquired from the responsible Associate Administrator or other designated Department official to perform a function requiring prior consent under the Hazardous Material Regulation (HMR). Packages(s) shall be marked IAW MIL-STD-129 (DoD Standard Practice, Military Marking for Shipment and Storage). If a symbol is used to represent the manufacturer or the approval agency certifying compliance with 49 CFR 17, subparts L and M, the symbol must be registered with the U.S. Department of Transportation. A copy of the Contractor's Test Report and signed certification that the package configuration meets both CFR and UN requirements shall be made available to the procuring contract office, as required, prior to acceptance or shipment of any portion of the product. Safety Data Sheets (SDS) are required for known hazardous items and applicable items shown in FED-STD-313, Tables I and II. The SDS shall have any applicable identification number, such as National Stock Number or Special Item Number. A copy of the SDS shall be mailed or e-mailed no later than "FIVE" days prior to contractual delivery of items:

AFLCMC/WWAK

Attn: Benjamin Peterson

Contracting Officer

E-mail: benjamin.peterson.8@us.af.mil

5.4.4. Unique Identification (UID) Requirements

Unique Identification (UID) per DFAR 252.211-7003 shall be applied to assemblies and parts listed in SOW Section "3.4.3.8. *Serial Number Control*" and those listed below, per MIL-STD-130. LRU suppliers will incorporate the 2-D UID marking on their individual ID plates.

Additionally, all special tools created under SOW Section "3.4.1.2. *Special Tooling*" shall be controlled in accordance with DFAR 252.211-7003 Unique Identifier. A physical mark shall be applied to the special tooling when the item is transferred to another follow-on contract, or the item is delivered or shipped from the contractor's plant under Government instructions (except when shipped to a subcontractor or another location of the contractor). The height of each alphanumeric character in the Human Readable Format shall be a maximum of 0.125 inch.

Markings for both the Machine Readable Format and Human Readable Format shall be to SAE AS9132 with an allowable depth of 0.0005 to 0.0030 inch. The location of the UID marking is not required on the engineering drawings i.e. an Engineering Change Order to update the drawings is not required. The markings shall only be placed in areas that will not be detrimental to the part. Intrusive markings shall not be used to mark F&FC or CSI Parts. The contractor shall identify these locations and gain A-10 SPO engineering approval prior to implementing. All UID markings placed in external locations on parts, tools, or packaging that may be subject to external weather conditions shall be proposed and approved through the Configuration Management Plan [CDRL A027].

- 160C950909-1 Shutoff Valve
- 160C950915-1 Shutoff Valve
- 160C950906-33 Tank Unit
- 160C950906-35 Tank Unit
- 160C950909-5 Pilot Valve
- 160C950933-1 Vent Valve
- 160C624202-3 Position Control Assy
- 160C622002-1 Actuator

- 160C622001-5 Actuator
- 160C624201-5 Cylinder Assy
- 160C627001-7 Cylinder Assy
- 160C633002-13 Speed Brake Control Package
- 160C633003-1 Control Valve, Landing Gear
- 160C633009-5 Control Package, Wing Flap Hydraulic
- 160C633010-7 Valve
- 160C725001-3 Cylinder
- 160C920003-17 Actuator
- 160C145940-9 Lift Transducer
- 160C725002-3 Switch Assy
- 160C928001-1 LVDT

6. ACRONYMS

2-D	Two Dimensional
3-D	Three Dimensional
ABET	Accreditation Board for Engineering and Technology
ADES	A-10 Data Exchange Specification
AFI	Air Force Instruction
AFMC	Air Force Material Command
ATTACK	A-10 Thunderbolt Advanced Continuation Kit
CAD	Computer Aided Drafting
CDRL	Contract Data Requirements List
CFR	U.S. Code of Federal Regulations
CMP	Configuration Management Plan
CSI	Critical Safety Item
DCMA	Defense Contracts Management Agency
DCS	Defense Collaboration Services
DFARS	Defense Federal Acquisition Regulation Supplement
DOD	Department of Defense
DOT	Department of Transportation
ECP	Engineering Change Proposals
EO	Engineering Order
EWA	Enhanced Wing Assembly
FAD	First Article Demonstration
F&FC	Fatigue and Fracture Critical
FCA	Functional Configuration Audit
FCF	Functional Check Flight
FPQ	First Part Qualification Plan
FRP	Full Rate Production
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFM	Government Furnished Material
GFS	Government Furnished Software
I&R	Interchangeability and Replaceability

IAW	In Accordance With
IMDG	International Maritime Dangerous Goods
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
INM	Interchangeable by Nature of Manufacture
IRRL	Interchangeable Replaceable Requirements List
LRIP	Low Rate Initial Production
LRA	Line Replaceable Assembly
MRB	Material Review Board
ODS	Ozone Depleting Substances
OML	Outer Mold Line
OSHA	Occupational, Safety, and Health Administration
PCA	Physical Configuration Audit
PLM	Product Lifecycle Management
PMR	Program Management Reviews
PQP	Production Qualification Plan
PRR	Production Readiness Review
QAP	Quality Assurance Plan
SEMP	System Engineering Management Plan
SDS	Safety Data Sheet
SOW	Statement of Work
SPI	Special Packaging Instruction
SPO	System Program Office
TDP	Technical Data Package
TIM	Technical Interchange Meeting
TO	Technical Order
TOGC	Technical Order Guidance Conference
UID	Unique Identification
UN	United Nations
USAF	United States Air Force