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Maintenance

ACQUIRING ENGINEERING DATA

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(Mr Thomas Stewart)
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This instruction implements AFR 21-4, *Engineering Data*. It provides guidance and assigns responsibilities for acquiring engineering data. It applies to all Air Force activities that acquire, accept, receive, and manage engineering data. This instruction supports the *Competition in Contracts Act of 1984 (CICA)*, Title VII of Public Law 98-369, July 18, 1984. See **Attachment 1** for list of references, abbreviations, acronyms, and terms used in this instruction.

SUMMARY OF REVISIONS

This is the first publication of AFI 21-403, substantially revising AFR 800-34.

Section A—Responsibilities

1. Office of the Secretary of the Air Force:

1.1. SAF/AQ. The Assistant Secretary of the Air Force for Acquisition establishes policy for obtaining engineering data necessary to support life-cycle logistics for Air Force acquired and maintained weapon systems.

1.2. SAF/AQZ. The Competition Advocate advises major commands (MAJCOM) on competition policy related to engineering data.

1.3. SAF/AQC. The Air Force Contracting Office establishes Air Force policy concerning rights in technical data. It also advises MAJCOMs on contracting policy and procedures to support development of quality engineering data and resolve data rights issues.

2. Headquarters US Air Force (HQ USAF):

2.1. HQ USAF/LGM establishes and distributes information on engineering-data policy and requires that personnel who are developing acquisition program strategies address engineering data.

2.2. HQ USAF/LGMM establishes engineering-data acquisition policy, chairs the Air Force Engineering Data Group (AFEDG), and provides guidance in developing and implementing engineering-data management strategies, as described in **Section B**.

2.3. HQ USAF/DP establishes policy for engineering-data-acquisition training for military and civilian employees.

2.4. The Computer-Aided Acquisition and Logistics Support (CALS) Program Office makes sure that tools necessary for acquiring digital data are developed or provided in support of Air Force policy.

3. MAJCOMs and Field Operating Agencies (FOA):

3.1. Identify Technical Data Package (TDP) requirements for acquisition agencies.

3.2. Help acquisition agencies review TDPs.

3.3. Provide defined maintenance concepts for the acquisition agencies so they can develop detailed TDP contract requirements.

3.4. Designate a central office or person of primary responsibility for engineering data policy and procedures.

3.5. Select and provide representatives familiar with acquisitions to participate on the AFEDG.

4. HQ Air Force Materiel Command (AFMC):

4.1. Establishes policy and procedures for acquiring engineering data.

4.2. Effectively uses resources by:

- Applying appropriate resources to acquire and manage engineering data.
- Designating an Engineering Data Management Officer (EDMO).
- Integrating Air Force and MAJCOM data acquisition policy into program management strategy.

4.3. Develops strategies by:

- Ensuring that programs define engineering-data acquisition strategies in Program Management Plans (PMP).
- Using selected program team members to review and then identify data quality conditions to the designated EDMO.
- Making sure program acquisition strategies for acquiring engineering data satisfy Air Force requirements.
- Making sure program strategies incorporate methods to measure the quality of acquired TDPs.

4.4. Develops acquisition and data claims documentation by:

- Working out Memorandums of Agreement (MOA) and letters of instructions (LOI) to ensure appropriate actions are completed to acquire, inspect, and receive engineering data.
- Challenging invalid restrictions to engineering data rights or other restricted data claims (patents, commercial proprietary, and so on) when it is in the best interest of the government to ensure compliance with FAR and DFARS policy.

4.5. Manages and delivers data by:

- Ensuring quality of engineering data for delivery to Air Force repositories.
- Using internal controls and tools to make sure the engineering-data acquisition effort complies with Department of Defense (DoD) directives, policies, instructions, and process flow.
- Establishing and maintaining an Engineering Data Management Plan (EDMP). This plan outlines all tasks, schedules, and responsibilities (whether contractor or Air Force) for engineering data preparation, review, inspection, acceptance, and delivery. The EDMP may be a separate plan or part of the PMP.
- Establishing and maintaining an Engineering Data Activity Record File (EDARF). This file contains all records related to engineering-data requirements, including changes, deviations, and waivers; minutes of engineering-data reviews, including findings, follow-up actions, persons responsible for follow-up actions, and completion dates; records of data rights challenges and results; and any other information relevant to engineering-data acquisition.

4.6. Develops and controls processes and models to use in the engineering-data acquisition process.

4.7. Requires each agency acquiring data to:

- Develop, establish, and modify (through continuous evaluation) procedures, processes, and models for effectively acquiring engineering data.
- Continuously assess directives, instructions, standards, and specifications for structuring acquisition documents to see if they need to be changed.

4.8. Ensures, as necessary, that personnel report on what they have learned from engineering data and submit best practices reports.

4.9. HQ AFMC/ENI serves as vice-chair of the Air Force Engineering Data Group (AFEDG) and as coordinator for meeting logistics (scheduling and site) and agenda.

- Selects knowledgeable personnel from each Product Center and Air Logistics Center for membership in AFEDG.
- Ensures, as necessary, engineering data lessons learned and best practices submissions are accomplished.

4.10. HQ AFMC/XRL, with HQ AFMC/ENI coordination, incorporates approved AFEDG modules into the Air Force Acquisition Model (AFAM).

5. Air Force Engineering Data Group (AFEDG):

- In conjunction with AFI 21-401, *Engineering Data Distribution and Control* (formerly AFR 67-28) and AFI 21-402, *Engineering Drawing System* (formerly AFRs 81-10 and 81-11) reviews and recommends improvements to Air Force acquisition policy and procedures.
- Reviews and recommends changes to specifications and standards used in the acquisition process.
- Includes as members representatives of Air Force organizations that acquire engineering data.
- Appoints, as directed by the chair, special ad hoc subgroups to address specific engineering-data acquisition issues or concerns.

Section B—Data Management Strategies

6. CALS. Plan for acquiring engineering data according to the CALS strategy. The planner must consider the transition from current aperture card media and must provide undimensioned drawings on stable-base media to meet continuing immediate needs.

7. AFEDG. Use the AFEDG to develop long-range goals and improvements in the engineering-data acquisition process.

8. Functional and Outside Resources. Make maximum use of these resources to evaluate engineering data (for example, Defense Logistics Agency [DLA], General Services Administration [GSA], Federal Aviation Administration [FAA], and so on).

9. Government and Industry Meetings. Participate in government and industry face-to-face meetings and seminars to stay abreast of current trends and opportunities in the engineering data field.

Section C—Standard Procedures and Engineering Data Acquisition Measurements

10. Engineering Data Acquisition Documents. The Air Force complies with DoD Directive 5000.1, *Defense Acquisition*, February 23, 1991; DoD Instruction 5000.2/Air Force Supplement 1, *Defense Acquisition Management Policies and Procedures*, February 23, 1991, with Change 1; and other related AFPDs while developing engineering data. Use these acquisition documents to get the engineering data necessary for maintenance, modification, and procurement efforts for the life-cycle support of the end item.

11. MAJCOMs. MAJCOMs develop and control processes and models used in the engineering-data acquisition process.

11.1. Acquiring agencies develop, establish, and modify (through continuous evaluation) their procedures, processes and models used to structure engineering-data acquisition documents.

11.2. Organizations acquiring or using engineering data continually assess directives, instructions, standards, and specifications used to structure acquisition documents to see if they need to be modified.

11.3. Organizations that acquire engineering data continuously evaluate processes and models and submit recommendations for improvements to MAJCOMs and the AFEDG.

11.4. Organizations apply the data-call process to promote interchange between users and TDP managers and maximum participation in the development of TDP acquisition documents.

12. Acquisition Program Offices and Assigned Engineering Data Management Officers (EDMOs).

These personnel evaluate and, if applicable, incorporate conditions and process functions into acquisition documents that are needed to develop and deliver high-quality engineering data. This engineering data is necessary for life-cycle support of the acquired product.

13. Program Management Organizations and EDMOs. These personnel evaluate engineering-data requirements against overall program strategies. They then structure related acquisition documents to reflect minimum requirements for each acquisition or modification program. These personnel:

13.1. For nondevelopmental items, only acquire commercial data adequate to support maintenance, repair, or modification of acquired items. Prior to acquisition, evaluate commercial data for its ability to logistically support the end item. Consider whether existing data is adequate, in conjunction with estimated costs of upgrading existing data, to establish or sustain organic support. Other considerations include restrictions on the unlimited use of engineering data and the cost effectiveness of purchasing unlimited rights to limited rights data.

13.2. Incorporate government or contractor-release validation controls in acquisition documents that require a contractor to develop government drawings. Contractors prepare government drawings only when control of government design activity is essential to control configuration baselines.

13.3. Use guidelines in MIL-HDBK-245, *Preparation of Statement of Work (SOW)*, MIL-STD-881, *Work Breakdown Structures for Defense Materiel Items*, and DoD 5010.12-M, *Procedures for Acquisition and Management of Technical Data*, May 1993, to incorporate work tasks for engineering data requirements into Requests for Proposal (RFP) or contracts. Acquisition program offices and EDMOs must select or consider statement-of-work tasks for acquisition or modification programs to incorporate into acquisition documents. Those documents must contain at least:

- Identification, selection, and tailoring of applicable specifications, standards, and Data Item Descriptions (DID).
- Specific Technical Data Package (TDP) requirements. The person compiling TDPs must:
- Incorporate test criteria on TDP documents.
- Develop wiring data and schematics per DoD-STD-863 or MIL-STD-275 as appropriate.
- Develop TDP management products.
- Plan for and maintain data and documents to develop an Indentured data List (IDL).
- Plan for and carry out digital conversion of deliverable data and develop predelivery lists.
- Prepare shipping lists.
- Plan for and carry out Contractor Technical Information Coding (CTIC).
- Plan for and develop an engineering drawing tree.
- Plan for and develop technical documentation required for the Parts Control Program.
- Plan for and develop schematic block and functional flow diagrams.
- Requirements for flow-down relationships of contractors with subcontractors and vendors within the statement of work.

13.4. Establish criteria and work requirements for revisions to TDP documents.

13.5. Identify the need for an Engineering Data Guidance Conference (EDGC) or specify Integrated Product Team (IPT) effort criteria. Require contractor participation and support in post-award conferences or IPT meetings. Consider:

- Contractor understanding of Contractor Data Requirements List (CDRL) requirements, applicable DIDs, and tailored specifications and standards.

- Contractor commitment to investigating causes of drawing deficiencies that will lead to a process improvement.
 - Contractor understanding that identification of drawing deficiencies must lead to process changes and improvements that will generate quality TDPs.
 - Requirements, schedules, contractor drafting practices, and TDP document formats.
 - Contractor drawing numbering system for documents and part numbers.
 - Contractor quality-assurance procedures for preparing TDPs and their control relationship with subcontractors.
 - Contractor rights in data marking procedures.
 - Role of subcontractors and vendors who deliver TDP documents.
 - Contractor procedures for TDP revision and change.
 - Contractor understanding of software drawing checks and validation procedures and processes for conforming with engineering documents.
 - Digital data preparation and delivery practices.
 - Contractor certification and warranty procedures.
 - Existing contractor TDP documents.
 - Contractor position concerning unique government-required distribution statements and data-rights statements in accordance with FAR and DFARS clauses.
- 13.6. Establish the roles of participants and conditions for the review of TDP documents. Consider:
- Applicable specifications and standards that govern the process.
 - Provisions for conducting special reviews when TDP deficiencies indicate the need.
 - Whether the contractor is to support a specified number of reviews based on a time or event schedule.
 - Conditions that require contractor correction of TDP document deficiencies.
 - Conditions that require a contractor to establish process change practices that address causes of drawing deficiencies.
 - Specific applicability of a top-down breakdown evaluation of TDPs as a condition of final acceptance.
- 13.7. Prepare CDRLs for each selected DID for defined work tasks and tailor CDRLs to provide minimum requirements for each program. Consider:
- Specific DID tailoring required.
 - Appropriate specifications and standard tailoring or clarification.
 - Specific methods of delivery and the type of data being delivered.
 - Identification and structure of applicable distribution statements and notices.
 - Types of data, specific schedules for delivery, government review conditions, and contractor resubmission criteria.
 - Conditions for provisioning decisions affecting engineering data needs.
 - Delivery addresses for specific types of media delivery and number of data sets required.

13.8. Develop RFPs, Instructions to Offerers (ITO), and Source Selection (SS) inputs when required to support program contract strategies.

13.9. Continuously challenge the contractor's limited rights on engineering data throughout the acquisition phase.

13.10. Conduct post-award conferences and initial IPT meetings within 60 days after contract award. Address, at a minimum, the conditions imposed in contracts, CDRLs, and attached worksheets.

13.11. Perform periodic reviews of engineering data to assess contractor efforts to develop quality data that conforms to contractual conditions.

13.12. Conduct final drawing reviews to determine whether legibility, format, and completeness conform to contract requirements. Address:

- Adequacy for initial Acquisition Method Coding (AMC)
- Approved limited-rights legend application.
- Correct markings in accordance with MIL-STD-1806, *Marking Technical Data Prepared by or for the Department of Defense*.

13.13. Accomplish timely DD Form 250, **Material Inspection and Receiving Report**, acceptance of engineering-data deliveries.

14. Engineering Data Acquisition Measurements. AFPD 21-4 and RCS: HAF-LGM(A)9315, *Engineering Data Report*.

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Attachment 1

GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS

References

DoD Directive 5000.1, *Defense Acquisition*, February 23, 1991

DoD Instruction 5000.2/Air Force Supplement 1, *Defense Acquisition Management Policies and Procedures*, February 23, 1991, with Change 1

DoD 5010.12-M, *Procedures for Acquisition and Management of Technical Data*, May 1993

MIL-T-31000, *Technical Data Packages, General Specification for*

DFAR Sup 6, *DoD Replenishment Parts Breakout Program*

MIL-STD-100, *Engineering Drawing Practices*

MIL-STD-275, *Printed Wiring for Electronic Equipment*

DoD-STD-863, *Wiring Data and System Schematic Diagrams, Preparation of*

MIL-STD-881, *Work Breakdown Structures for Defense Materiel Items*

MIL-STD-1806, *Marking Technical Data Prepared by or for the Department of Defense*

MIL-HDBK-245, *Preparation of Statement of Work (SOW)*

AFI 21-401, *Engineering Data Distribution and Control* (formerly AFR 67-28)

AFI 21-402, *Engineering Drawing System* (formerly AFRs 81-10 and 81-11)

Abbreviations and Acronyms

AFAM—Air Force Acquisition Model

AFEDG—Air Force Engineering Data Group

AFI—Air Force Instruction

AMC—Acquisition Method Coding (formerly PMC - Procurement Method Coding)

CALS—Computer-Aided Acquisition and Logistics Support

CDRL—Contracts Data Requirements List

CICA—Competition in Contracts Act

CTIC—Contractor Technical Item Coding

DCMC—Defense Contract Management Center

DFARS—Defense Federal Acquisition Regulation Supplement

DID—Data Item Description

DLA—Defense Logistics Agency

EDARF—Engineering Data Activity Record File

EDGC—Engineering Data Guidance Conference

EDMO—Engineering Data Management Officer

EDMP—Engineering Data Management Plan

FAA—Federal Aviation Administration

FAR—Federal Acquisition Regulation

FOA—Field Operating Agency

GSA—General Services Administration

HQ USAF—Headquarters US Air Force

IDL—Indentured Data List

IPT—Integrated Product Team

ITO—Instructions to Offerer

LOI—Letter of Instruction

MAJCOM—Major Command

MOA—Memorandum of Agreement

NDI—Nondevelopmental Item

PMP—Program Management Plan

RFP—Request for Proposal

SAF—Secretary of the Air Force

SOW—Statement of Work

SS—Source Selection

TDP—Technical Data Package

WBS—Work Breakdown Structure

Terms

Acquisition Method Code—An assigned code that identifies those items procurable through full and open competition, limited competition, and sole source. These codes are assigned in accordance with Defense Federal Acquisition Regulation Supplement 6. (Formerly Procurement Method Code)

Activities—An indeterminate term used instead of identifying several types of organizations that may be involved with the topic under discussion.

Air Force Acquisition Model—An acquisition tool that describes the acquisition phase, the items considered during each phase, related documents, and the order of tasks in each phase.

Contractor Technical Item Coding—The codes the contractor assigns to items that the contractor recommends be kept in sufficient inventory (spare parts).

Engineering Data—Engineering documents such as drawings; associated lists; accompanying documents; manufacturing specifications and standards; and other information prepared by a design group and related to the design, manufacturing, procurement, test or inspection of items. (MILSTD100)

Engineering data is considered a subset of technical data.

Indented Data List—An indented topdown breakdown list of all documents (deliverable and nondeliverable) required to duplicate the physical and functional characteristics of the item defined. A topdown breakdown of an item includes all documentation needed to build an interchangeable item.

Nondevelopmental Item—Items obtained from a domestic or foreign commercial marketplace; items already developed and used by the Services, other Defense activities, and government agencies; or items already developed by foreign governments that can be supplied in accordance with mutual defense cooperation agreements and Federal and Department of Defense acquisition regulations.

Technical Data Package (TDP)—A technical description of an item for supporting an acquisition strategy, production, engineering, and logistics. The description defines the required design configuration and procedures required to ensure adequacy of item performance. It consists of all applicable technical data, such as drawings and associated lists, specifications, standards, performance requirements, quality assurance provisions, and packaging details. (MILT31000)