

**BY ORDER OF THE COMMANDER  
AIR FORCE MATERIEL COMMAND**

**AIR FORCE MATERIEL COMMAND  
INSTRUCTION 21-401**



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**Maintenance**

**ENGINEERING DRAWING, DATA  
STORAGE, DISTRIBUTION AND  
CONTROL SYSTEM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements AFI63-101/20-101, *Integrated Life Cycle Management*, and AFPAM63-128, *Integrated Life Cycle Management*, guidance pertaining to Air Force engineering data storage, distribution, control processes, and identifies Air Force Drawing Formats. It provides policy and procedures for managing engineering data stored, distributed, and controlled by authorized AFMC Engineering Data Service Centers (EDSCs) and repositories in AFMC's Air Force Life Cycle Management Center (AFLCMC), Air Force Sustainment Center (AFSC), Air Force Nuclear Weapons Center (AFNWC), Air Force Test Center (AFTC), and Air Force Research Laboratory (AFRL). This instruction applies to all AFMC aforementioned offices and centers that use, analyze, evaluate, maintain, modify, purchase, or store engineering data elements. This instruction does not apply to the Air National Guard (ANG) or US Air Force Reserve units and members. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, and T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities

associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility (OPR) listed above for coordination prior to certification and approval.

### ***SUMMARY OF CHANGES***

This revision updates publication AFMCI 21-401, aligning it with AFI 63-101/20-101 and AFPAM 63-128. It is limited to policy necessary to accomplish engineering drawing, data storage, distribution, and control across AFMC. The entire document AFMCI21-401 was revised when AFI63-101 was published and cancelled AFI21-401, *Engineering Data Storage, Distribution and Control*, AFI21-402, *Engineering Drawing System*, and AFI21-403, *Acquiring Engineering Data*, which included all AF Drawing Forms. All pertinent information from AFI21-401, AFI21-402, and AFI21-403 was combined and incorporate into this AFMCI21-401 and also changed all AF Drawing Forms to AFMC Drawing Forms. All non-policy processes and procedures supporting this policy are contained in AFMCMAN 21-2, *Engineering Data Storage, Distribution, and Control*. Added Section 8 – Exclusions. This section identifies those functions, units, and sections that are not required and are excluded from the following drawing requirements. AFMC199A & AFMC1658A have been prescribed and added in Attachment 1.

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**1. AFMC Engineering Drawing Process.** Ensure EDSCs and EDSC users have adequate guidance, training, and instructions for creating, modifying, storing, distributing, and controlling the release of engineering data.

1.1. Objectives: Provide reasonable assurance that engineering drawing, creation, modification, data storage, distribution, and control:

1.1.1. Obligations and costs are in compliance with applicable policy.

1.1.2. Funds, property, and other assets are safeguarded against waste, loss, unauthorized use, or misappropriation.

1.1.3. Establish internal management control procedures to prevent waste, fraud, and mismanagement effectively, and to encourage timely correction of specific problems.

1.2. **Precepts** . The following precepts apply to effective storage, distribution, and control of engineering data:

1.2.1. Engineering data requires specific policies and practices to ensure adequate safeguarding of costly and valuable resources.

1.2.2. Storage, distribution, and control of engineering data in a variety of digital or paper forms will be a continuing requirement.

1.2.3. Engineering data and drawings will be maintained per AFRIMS Table T37-19 & Rule 39.00 authority N1-AFU-90-03.

1.2.4. Destroy when superseded, obsolete, inactive, or when no longer needed, whichever is sooner.

## 2. HQ AFMC Responsibilities:

2.1. Establish and designate a policy point of contact to:

2.1.1. Develop and issue applicable policy. **(T-2)**.

2.1.1.1. Validate and process requests to establish Category V EDSCs. **(T-2)**.

2.1.1.2. Approve or disapprove requests for Category I through IV EDSCs. **(T-2)**.

2.1.1.3. Approve or disapprove requests for complete data sets by coordination with appropriate program office. **(T-2)**.

2.1.1.4. Interact with the Continuous Acquisition and Life Cycle Support (CALC) program and other technical data enhancement programs for the development of effective and efficient systems for the management, storage, and control of engineering data. **(T-2)**.

2.2. AFMC Authorized EDSCs:

2.2.1. Comply with policy set forth in AFI63-101/20-101 *Integrated Life Cycle Management*, AFPAM63-128 *Life Cycle Management*, AFMCMAN 21-2 *Maintenance Engineering Data Storage, Distribution, and Control* and this instruction to establish policy and procedures with appropriate controls in accordance with the following:

2.2.1.1. All official unclassified engineering data shall be stored in a Category V repository and serve as an official repository of record. AFMCMAN 21-2 spells out the categories of repositories and what is to be stored in each. The Joint Engineering Data Management Information and Control Systems (JEDMICS) is the primary storage site in use being used as of the publication of this document. A Category V EDSC repository is established to receive new data from contractors, subcontractors, vendors, and government design activities; process requests for copies of individual items and sets of data from government and nongovernment activities; provide automatic updates to Category III and IV EDSCs, and to other individuals or

activities, as necessary. These EDSCs are primary DoD repositories maintaining the official Air Force record copies of data and sets of data (reserve files), and have complete reproduction capabilities for that data. These EDSCs also perform the local base-level EDSC operations for their respective bases. Use of the DoD Standardization and Specification Program (DoDSSP) Acquisition Streamlining and Standardization Information System (ASSIST) <https://assist.dla.mil/> documents library is permitted. **(T-2)**.

2.2.1.2. Budget for materials and supplies for EDSC functions and to meet customer needs. **(T-3)**.

2.2.1.3. Ensure only authorized individuals trained in the proper handling and safeguarding of engineering data are allowed access to, and receive, EDSC maintained engineering data. **(T-3)**.

2.2.1.4. Develop and maintain accountability and tracking records for digital and non-digital engineering data. **(T-3)**.

2.2.1.5. Control all data released to, or accessed by, contractors or other government customers as required by the limitation statements affixed to the data. **(T-3)**.

2.2.1.6. Protect and control access to classified data. Technical Data Packages, drawings, and DoDM5200.01-V3, *DoD Information Security Program: Protection of Classified Information*, and marked in accordance with DoDM5200.01-V2, *DoD Information Security Program Marking of Classified*. **(T-2)**.

2.2.1.7. Support Freedom of Information Act (FOIA) and non-FOIA requests for data. **(T-3)**.

2.2.1.8. Process Foreign Military Sales (FMS) data requests. **(T-3)**.

2.2.1.9. Support customer requirements for DoDSSP ASSIST Database listed publications. **(T-3)**.

2.2.1.10. Designate a focal point for DoDSSP policies and procedures. **(T-3)**.

2.2.1.11. Develop and monitor response times for customer requests. **(T-3)**.

2.2.1.12. Account for removal or transfer of engineering data files when authorized by the appropriate configuration management authority. **(T-3)**.

2.2.1.13. Ensure only authorized personnel are allowed access to digital data storage platforms. **(T-3)**.

2.2.1.14. Develop and implement a coordinated procedure to generate and manage bid sets. **(T-3)**.

2.2.1.15. Track the status of delivered data. **(T-3)**.

2.2.1.16. Acquire missing, illegible, or overlooked data. **(T-3)**.

2.2.1.17. Advocate and support digital media delivery of engineering data. **(T-3)**.

2.2.1.18. Inactivate, reactivate, or destroy engineering data. **(T-3)**.

2.2.1.19. Ensure adequacy of facilities to provide proper data storage environment. **(T-3)**.

- 2.2.1.20. Add, revise or delete distribution statements as directed by the controlling DoD office that sponsored the work that generated the technical document IAW DoDI 5230.24, *Distribution Statements on Technical Documents* and AFI 61-204, *Disseminating Scientific and Technical Information*. **(T-3)**.
  - 2.2.1.21. Provide backup files for digital data on a regular basis. **(T-3)**.
  - 2.2.1.22. Provide capability to reproduce engineering data in digital or paper form. **(T-3)**.
  - 2.2.1.23. Control access by foreign government representatives. **(T-3)**.
- 2.3. EDSC Customers and Users will:
- 2.3.1. Initiate requests for authorization to access, request, and receive engineering data from an EDSC. **(T-3)**.
  - 2.3.2. Inform the servicing EDSC of data to be deactivated, reactivated, or destroyed. **(T-3)**.
  - 2.3.3. Identify missing, illegible, or overlooked data requirements to the designated acquiring activity. **(T-3)**.
  - 2.3.4. Initiate challenge requests against delivered data with distribution limitations when the intended use of the data requires reduced limitations within 90 days of receipt per Mil-Std-31000A, *DoD Standard Practice: Technical Data Packages*, para C.5.2. **(T-3)**.
  - 2.3.5. Use prescribed forms and procedures when requesting data. **(T-3)**.
  - 2.3.6. Protect all data from improper release or access to unauthorized persons or agencies as determined by limitations stated on the data. **(T-3)**.
  - 2.3.7. Destroy all data after its intended use to prevent disclosure or use by unauthorized personnel. **(T-3)**.
- 2.4. Air Force Materiel Command Engineering Data Group (AFMCEDG)
- 2.4.1. Establish and implement the procedures required by this instruction. **(T-2)**.
  - 2.4.2. Reviews and recommends beneficial changes to AF PAM 63-128, Chapter 17; and this document. **(T-2)**.
  - 2.4.3. Develop, recommends adoption of, and maintains a baseline for approved AFMC Drawing Requirements. **(T-2)**.
  - 2.4.4. Develops and recommends changes to AFMC formats for generating AFMC engineering drawings and drawings developed by the Air Force or contractors. **(T-2)**.
  - 2.4.5. Reviews and recommends future actions on requests for waivers, deviations, or variances from this instruction. **(T-2)**.
  - 2.4.6. Requests representatives from AFMC activities directly involved in:
    - 2.4.6.1. Preparing or revising engineering data. **(T-3)**
    - 2.4.6.2. Processing and archiving master original engineering drawings and Engineering Orders (EO). **(T-3)**.

2.4.7. Drawing Requirements Manual (DRM). Air Force drafting activities may purchase and use the latest version of this manual to prepare or revise original drawings or to make changes to original engineering documents acquired through a design activity transfer. **(T-2)**.

2.4.7.1. Requests for DRM: Global – IHS, IHS (Information Handling Services), 15 Inverness Way, Englewood, CO 80112-5704, (800) 854-7179 / FAX (303) 397-7935, Web-Site: <http://global.ihs.com> **(T-2)**.

2.4.7.2. Requests for DRM, Modern Drafting Practices and Standards Manual: Genium Publishing Corp, 1174 Riverfront Center, Amsterdam, NY 12010, (800) 243-6486, FAX (518) 842-1843, Site: <http://www.draftingzone.com> **(T-2)**.

2.5. Drawing and Engineering Order Authorization: All Air Force drawings, EOs and associated lists shall be in accordance with guidance American Society of Mechanical Engineers (ASME) (<https://www.asme.org>) ASME Y14.100, *General Drawing Practices*, including appendices B through E (evokes the complete Y.14 drafting standard series). Air Force drawing activities must control signatures or electronic name entries on the drawings they produce and those they acquire through contracts. The drawing activity must specify the individuals or functions authorized to make entries under these blocks:

2.5.1. Drafter (mandatory): Verifies that the drafter has developed and examined the completed work based on the required instructions and directions and that the drawing accurately depicts the required information. **(T-3)**.

2.5.2. Checker (mandatory): Indicates that the checker has thoroughly checked the drawing for conformance to ASME Y14.100 *Engineering Drawing Practices* and Y14 Series Engineering Drawing and related Document Practices to ensure that the drawing is correct, complete, and technically adequate. **NOTE:** Drafter and Checker shall not be the same. **(T-3)**.

2.5.3. Project Engineer (mandatory): Indicates that the responsible engineer has reviewed the checked drawing and/or Engineering Order and approves its technical content in conformance with the applicable engineering design criteria and denotes that all necessary coordination signatures have been entered on the Engineering Order and/or AFMC Form 2602 Engineering Document Release Record for organic drawings, ref **para: 2.5.5 (T-3)**.

2.5.4. Engineering Approval (mandatory): Signifies cognizance and technical approval of the project by the design engineer's supervisor. **(T-3)**.

2.5.5. Coordinating Signatures (optional): Signifies additional professional approval as determined by the project engineer. (Most signing engineers represent a specialized engineering activity such as corrosion, environmental, safety, reliability, nuclear, and so on.) **(T-3)**.

2.5.5.1. Configuration Management (optional): Program office configuration manager. Verifies that the drawing is under formal configuration management control. **(T-3)**.

2.5.6. Air Force Authentication (mandatory): Indicates that the drawing satisfies all requirements and is technically ready for final release. The authority to authenticate drawings rests with:

2.5.6.1. A cognizant Air Force program/system engineer (Chief Engineer or Lead) or other designated agent with delegated authority for Air Force drawings generated in-house. A contractor preparing Air Force drawings by contract, who has been delegated this authority. **(T-3)**.

2.5.6.2. Authorized contractors must deliver drawings that include their release control authority signatures. Contractors are not required to utilize AFMC Form 2602. **(T-3)**.

2.5.7. Air Force Release (mandatory): Designated EDSC personnel, Engineering Data Management Specialist (EDMS) designated release personnel must sign the Air Force release verifying that drawing activities have accomplished administrative control functions:

2.5.7.1. All necessary signatures have been collected on the EOs and/or the AFMC Form 2602 for organic in-house drawings. **(T-3)**.

2.5.7.2. A review of the data against existing repository data did not result in a conflict, the new design, or changes to existing data being described are in accordance with this document. **(T-3)**.

2.5.7.3. All Developmental/Preliminary, "X"/experimental, or "not for production drawings" markings shall be removed for Production Level documents. **(T-3)**.

2.5.7.4. The complete engineering drawing (defined by the design or design change) has been released. **(T-3)**.

2.5.8. Drawing Verification, Approval, and Authorization (mandatory): Air Force design activities must have an effective verification approval and authorization system (including electronic verification if applicable). Authorized individuals enter their names in the appropriate blocks to indicate that engineering drawings, associated lists or digital databases conform to all applicable requirements as the AFMC Form 2602, Engineering Document Release Record, is used to enter these required signatures. **(T-3)**.

2.6. Air Force Materiel Command Drawing Formats:

2.6.1. PDF formats of prescribed forms are found in E-Pubs - AFMC Form Number and Title. Refer to **Attachment 1**, Prescribed Forms. **(T-2)**.

2.6.2. Computer Aided Design (CAD). The prescribed CAD forms may also be found at <https://org.eis.afmc.af.mil/sites/HQAFMCA4/A4U/A4UE/AFMC%20Drawing%20Forms/Forms/AllItems.aspx> in the DWG file format. The above forms may also be generated in additional a CAD type systems with the exception approval notice appearing on the face page of the form, below or near the form number. An exception notice should include name of software, version, and vendor. When completing the forms, record the name and version of the software used as well as the site where it is maintained. Include more system information as necessary. **(T-2)**.

2.7. Commercial and Government Entity (CAGE) Digital Delivery Requirements: The following documents describe the format required for Air Force CAGE coded 2D drawings and 3D models (drawings 9626025 and 9579776, CAGE 98752). **(T-2)**.

### 3. Air Force Drawing and Dash Numbers

3.1. Assigning Drawing Numbers. Assign all Air Force drawings a drawing number. Each agency annually acquires blocks of official Air Force drawing numbers from HQ AFMC/A4FI. **(T-2)**.

3.1.1. HQ AFMC/A4FI distributes blocks of Air Force drawing numbers to authorized activities upon their request. Engineering activities must submit yearly distribution requests no later than December 1<sup>st</sup>. Submit requests for additional drawing numbers at any time. **(T-2)**.

3.1.2. Drawing number requests shall include:

3.1.2.1. Quantity of drawing numbers required **(T-2)**.

3.1.2.2. Full office postal address **(T-2)**.

3.1.2.3. Commercial and Government Entity (CAGE) Code **(T-2)**.

3.1.2.4. Point of contact name and alternate, phone numbers (voice and FAX), & Email addresses **(T-2)**.

3.1.2.5. Submit request via E-mail, letter, or FAX to: HQ AFMC/A4FI, 4375 Chidlaw Rd., Rm S008, Wright-Patterson AFB OH 45433-5006, E-mail: [AFEDG.JEDMICS@WPAFB.AF.MIL](mailto:AFEDG.JEDMICS@WPAFB.AF.MIL) FAX: DSN 787-5881, Commercial (937) 656-0534. **(T-2)**.

3.1.3. Air Force drawing numbers will be applied as assigned. Modification of Air Force drawing numbers by inserting the drawing size indicator or by adding a prefix or suffix to identify the drawing function is not authorized except for associated lists identification as provided in ASME Y14.34 *Associated Lists*. **(T-2)**.

3.2. Managing Drawing Numbers. Designated focal points assigned blocks of Air Force drawing numbers manage, control, and distribute those drawing numbers within their local activity. **(T-3)**.

3.3. Dash Numbering System. Use a standard Air Force dash numbering system for items and assemblies when generating Air Force drawings. Adapt the drawing requirements manuals to the Air Force dash numbering system. (ASME Y14.100) **(T-2)**.

3.3.1. Detailed Item Dash Numbers. Use odd dash numbers on all defined detail items. Use even numbers for the opposite or mirror-image items. Do not use dash numbers ending in "9" or "0" (**Figure 1**). **(T-2)**.

3.3.2. Assembly Dash Numbers. Use dash numbers beginning with an odd number and ending with "0" for all defined assemblies. Use dash numbers beginning with an even number and ending with "0" for opposite or mirror-image assemblies (**Figure 1**). **(T-2)**.

3.3.3. Tabulated Alignment. Use corresponding dash numbers for tabulated Air Force drawings that relate to other tabulated drawings or standards when necessary for clear cross-referencing and identification. **(T-2)**.



3.3.4. Variations. Submit requests for variations of Air Force dash numbering system to the cognizant EDSC. Fully describe the variations that are being requested, explain why the need for variations, and assess the impact on the project if the variation is not approved. (T-2).

**Figure 1. Dash Numbers**

<u>Part</u>		<u>Assemblies</u>	
<u>Shown</u>	<u>Opposite</u>	<u>Shown</u>	<u>Opposite</u>
-01	-02	-10	-20
-03	-04	-30	-40
-05	-06	-50	-60
-07	-08	-70	-80
(Do not use dash numbers ending in 9 or 0.)		-90	-100
-11	-12	-110	-120
-13	-14	-130	-140
-15	-16	-150	-160
<u>etc.</u>		<u>etc.</u>	

**4. Control Drawings.** Prepare control drawings for commercial or vendor items in accordance with ASME Y14.24 *Types and Applications of Engineering Drawings*. (T-3).

**5. Engineering Order.** Use AFMC Forms 3925, 3926, and 3927 Engineering Order. Document information that affects the content or status of Air Force or contractor drawings. Anyone may initiate and Engineering Order request but it must be approved by the cognizant engineer(s) authorized by the responsible Configuration Control Authority/Board to change the product baseline. **NOTE:** An Engineering Order can be supplemented by a new or additional Engineering Orders however an Engineering Order cannot be revised. To affect a change it must be cancelled and superseded in its entirety with a new EO. (T-3).

5.1. Engineering Order (EO) and Number Assignment. EOs document information that affect the content or status of an Air Force drawing or the products defined on contractor drawings. EOs shall be approved only by the cognizant engineer(s) authorized by the responsible Configuration Control Authority Board. Assignment of EO numbers shall be in consecutive order beginning with number 001, prefixed by the year and letter identification "A" (Air Force owned) owned drawing or "C"(Contractor owned) owned drawing; for example, 2014A0001, 2015A0002, 2014C0001, or 2015C0002. The basic EO number shall be a computer generated number that is unique; a separate EO number is needed for each drawing that requires an EO application. **EXCEPTION:** An information EO describing administrative changes, i.g. Distribution Statement changes, may use a single EO, providing

the EO is indexed to all of the drawings and all of the drawings affected are listed on the EO. **(T-2).**

5.2. The Joint Engineering Data Management Information and Control System (JEDMICS) repository consolidation requires an additional location letter be placed on each EO to alleviate EO duplication. Each EO shall have a location designator attached to the end (suffix) of the local engineering assigned number (See Example): Hill -"H", Robins - "R", and Tinker - "T". Example: 2014A0001-H and 2014C0001-H, 2014A0001-R and 2014C0001-R, 2014A0001-T and 2014C0001-T. **(T-2).**

5.3. Engineering Order Forms. AFMC Forms 3925, 3926, and 3927, respectively provide an initial or first sheet textual/graphical content continuation sheet and continuation sheet for parts lists for the generation of EOs. These forms are available digitally through AF E-Publications Distribution Systems. When inclusion of graphical data is required on either the first sheet or textual/graphical content continuation sheet or both, these forms may be generated by a graphics-capable data base for application of graphical and textual data providing the final form output does not vary from the published form. **Note:** The drafter who incorporates the changes and the responsible engineer complete the appropriate signature blocks on the EO. The draftsmen update the revision block on the drawing. **(T-3).**

5.4. Change Notice Engineering Order (CNEO). CNEOs inform drawing users that a revision has been made. It describes and records changes incorporated during the revision action and precludes extensive revision descriptions in the drawing revision block. **(T-3).**

5.4.1. The cognizant engineer uses CNEOs to direct a revision and describe changes incorporated into drawings. When using CNEOs cite the change authorization document number in the drawing revision block. **(T-3).**

5.4.2. Maintain all CNEOs with the affected drawing to provide a history of drawing changes. **NOTE:** The drafter who incorporates the changes and the responsible engineer complete the appropriate signature blocks on the drawing and the Engineering Order. **(T-3).**

5.5. Advance Engineering Change Orders (AECO). Use AECOs to authorize drawing changes before revising the affected drawing master originals. Released AECOs are considered an integral part of the drawing and represent changes that will be incorporated on Air Force and design activity transfer drawings controlled by the Air Force at the next drawing revision. **(T-3).**

5.5.1. AECOs Against Air Force Drawings. Do not use AECOs against Air Force drawings except where the schedule for revising, releasing, and distributing the affected drawing doesn't leave you enough time to incorporate the change. **(T-3).**

5.6. Advance Engineering Supplemental Orders (AESO). AESOs are used to supplement drawings of another design activity, government, or contractor, to document and control limited Air Force required changes to the product baseline. However, AESOs are limited to Class II changes (non-configuration changes) and should be avoided to prevent configuration management and data conflicts between drawing originals and local Air Force "supplemented" copies. The AESO must accompany the affected drawing to implement the supplemental requirements correctly until incorporated through formal revision action. **(T-3).**

5.6.1. AESO Incorporation. The Current Design Activity (CDA) of the affected drawing is the only activity authorized to incorporate an AESO on that drawing. If incorporation of an AESO is required, the CDA of the affected drawing must be tasked to incorporate the AESO through contract action for contractor activities and other appropriate methods for Government activities. No AESO shall be used to create new configurations requiring new dash numbers or re-identification. **(T-3)**.

5.6.2. New AF Baseline. New AF Baseline configurations that supplement vendor drawings can be accomplished by creating an Air Force Altered Item Drawing per ASME Y14.24. The Altered Item Drawing must accompany the affected drawing to correctly implement the supplemental requirements until incorporated through formal revision action. The specific revision of the contractor's drawing shall be identified on the Altered Item Drawing. If the vendor drawing is revised the Altered Item drawing needs to be reevaluated for possible conflicts. **(T-3)**.

5.7. Change History. Incorporate all applicable outstanding Engineering Orders when the Government causes an affected drawing to be revised, redrawn, or decides to develop a new drawing. Maintain the incorporated Engineering Orders with the associated drawing to provide drawing change history. **(T-3)**.

5.8. Drawing Status. When there are five (5) or more advance changes or supplemental orders outstanding against a drawing, the release activity alerts the cognizant engineer to the drawing status. The cognizant engineer decides whether to make the revisions and informs the release activity. **(T-2)**.

5.9. Deviation Application. The preferred practice of deviation authorization and documentation is that of MIL-HDBK-61A using DD Form 1694, *Request for Variance (RFV)*. However, Engineering Orders may be used to authorize and document deviations of items or processes defined on previously released engineering drawings and associated lists. This information allows engineers to submit materials and processes for one time deviation from dimensions, tolerances, finishes, processes, etc., for specific applications. **(T-2)**.

5.9.1. Deviation Supplements. Deviation supplements are variations to the drawings against which they are written, but do not document changes to the affected drawing. Deviation supplements give drawing activities specific written authorization to depart from a particular requirement of an item's current approved baseline for a specified number of units or for a specified period of time. When ordering deviation supplements:

5.9.1.1. Clearly and accurately describe on the Engineering Order under "field of deviation" in Description of Changes block how the part is to differ from the part as defined on the drawing. **(T-3)**.

5.9.1.2. Define the "was" condition only to extent necessary to clearly explain the difference. **(T-3)**.

5.9.1.3. Do not write deviation supplements against standard part drawings, Specification Control drawings, Source Control drawings, or Vendor Item Control drawings. **(T-3)**.

5.9.1.4. Do not use deviation supplements to change the affected drawing. **(T-3)**.

5.9.2. Limitations. Limit deviation authorizations to specific quantities, serial numbers of items, or period of time as designated by the cognizant engineer. Do not use the term “and subsequent.” When you require a deviation for more than a single application, convert the order to an AECO or AESO. **(T-3).**

5.10. Informational Application. Information dissemination through EOs notifies users that a contractor’s drawing has supplemental non-technical information text. Using EOs in this way does not instigate changes to a contractor’s drawing. **(T-3).**

**6. Cancellation, Inactivation, Reactivation .** Enter on each page of the affected drawing, in .25 inch (6mm) minimum lettering above the title block if possible, the changes specified in block 32 of the Engineering Order. The engineer provides superseding information on cancellations and inactivation’s. Include on any Air Force drawing of a part, process, or material which has been made “INACTIVE FOR NEW DESIGN” or “INACTIVE FOR NEW DESIGN AND PROCUREMENT”, a cross reference specifying the exact superseding drawing of the part, process, procedure, or material for each condition and the inactivation status. You may use notes or tabulations to cross reference. **(T-3).**

6.1. Canceling Drawings. Do not cancel Air Force drawings unless the drawing was released in error. Use a CNEO to cancel a drawing. In the Engineering Order description of changes (block 32), enter: “Add above title block ‘CANCELED’”. **(T-3).**

6.2. Inactivating Drawings. When the cognizant engineering office determines that an Air Force drawing no longer belongs on active status, designate the drawing “INACTIVE FOR NEW DESIGN,” or “INACTIVE FOR NEW DESIGN AND PROCUREMENT”. These drawings continue to be fully active where prescribed in existing designs. (ASME Y14.100 & Y14.35) **(T-3).**

6.2.1. Inactive For New Design. Use a change notice engineering change order to apply this status to a drawing. The Engineering Order description of changes (block 32) shall read: “Add above title block INACTIVE FOR NEW DESIGN-FOR NEW DESIGN USE”. **(T-3).**

6.2.2. Inactive For New Design and Procurement. Use a change notice engineering change order to apply this status to a drawing. The Engineering Order description of changes (block 32) shall read: “Add above title block INACTIVE FOR NEW DESIGN AND PROCUREMENT. USE \_\_\_\_\_.” **(T-3).**

6.3. Reactivating Drawings. The cognizant engineer uses a change notice engineering change order to reactivate a drawing. The Engineering Order description of changes (block 32), enter “Add REACTIVATED (*Date*) above the inactivation notice on the drawing in the EO description of changes (block 32). **(T-3).**

**7. Design Activity Transfer.** Original engineering drawings transferred to an Air Force design activity are revised to show the current design activity per the guidance of ASME Y14.35M. Variations in placement of the Current Design Activity identification on the drawing may be required due to drawing formats and content. The Original Design Activity CAGE Code is retained without change or alteration and the current design activity legend added as prescribed by ASME Y14.100. **(T-3).**

7.1. Design Activity Transfer Documentation. Transfer of design activity requires documentation of agreement between the losing and gaining activities. This documentation shall be retained permanently by both gaining and losing design activities. Documentation of subsequent transfer to another design activity will also be permanently retained. **(T-3)**.

7.2. Design Transfer. Design Transfer documentation shall be provided to the EDSC. **(T-3)**.

**8. Exclusions.** These activities are excluded from the requirements of this instruction:

8.1. Units and other activities subject to the requirements of developing and maintaining communications and computer systems installation records. **(T-3)**.

8.2. Base civil engineering organizations that prepare engineering data for real property related items or that function according to other established civil engineering procedures. **(T-3)**.

8.3. Aircraft instrumentation and modification organizations which support activities associated with temporary modifications for use in DT&E, IOT&E, or OT&E testing programs. Although these programs' unique test procedures and modifications are temporary, their drawings shall be maintained for traceability within their designated repository(s). AFI63-131, Acquisition Modification Management, establishes a standardized process for reviewing, validating, certifying, prioritizing, and implementing modifications from initial planning through the installation and removal process. **(T-3)**.

8.3.1. Accountability and Traceability for test modification drawings is essential for configuration control and Operational Safety, Suitability and Effectiveness (OSS&E). **(T-3)**.

THERESA B. HUMPHREY, Colonel, USAF  
HQ AFMC/A4, Deputy Director of Logistics

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 61-204, *Disseminating Scientific and Technical Information*, 30 August 2002

AFI63-101/20-101, *Integrated Life Cycle Management*, 7 March 2013

AFI63-131, *Modification Management*, 19 March 2013

AFMCMAN21-2, *Engineering Data Storage, Distribution, and Control*, 25 June 1997

AFPAM63-128, *Life Cycle Management*, 10 July 2014

AFRIMS, *Air Force Records Information Management System*, 16 December 2014

DoDM5200.01-V2, *DoD Information Security Program: Marking of Classified Information*, 24 February 2012

DoDM5200.01-V3, *DoD Information Security Program: Protection of Classified Information*, 24 February 2012

MIL-HDBK-61A, *Configuration Management Guidance*, 7 February 2001

MIL-STD-31000A, *DoD Standard Practice Technical Data Packages*, 26 February 2013

DWG 9626025, CAGE 98752, *Air Force Drawing Requirement*, Revision F, 27 August 2013

***Prescribed Forms***

AFMC Form 199, *Drafting Service Request*

AFMC Form 199A, *Design/Drafting Service Request (Continuation Sheet)*

AFMC Form 1651, *Engineering Drawing Layout - A Horizontal (8-1/2 x 11)*

AFMC Form 1651A, *Engineering Drawing Layout - A Horizontal (Continuation Sheet) (8-1/2 x 11)*

AFMC Form 1652, *Engineering Drawing Layout - A Vertical (8-1/2 x 11)*

AFMC Form 1652A, *Engineering Drawing Layout - A Vertical (Continuation Sheet) (8-1/2 x 11)*

AFMC Form 1653, *Engineering Drawing Layout - B (11 x 17)*

AFMC Form 1653A, *Engineering Drawing Layout - B (Continuation Sheet) (11 x 17)*

AFMC Form 1654, *Engineering Drawing Layout - C (17 x 22)*

AFMC Form 1654A, *Engineering Drawing Layout - C (Continuation Sheet) (17 x 22)*

AFMC Form 1655, *Engineering Drawing Layout - D (22 x 34)*

AFMC Form 1655A, *Engineering Drawing Layout - D (Continuation Sheet) (22 x 34)*

AFMC Form 1656, *Engineering Drawing Layout - E (34 x 44)*

AFMC Form 1656A, *Engineering Drawing Layout - E (Continuation Sheet) (34 x 44)*

AFMC Form 1658, *Parts List*

AFMC Form 1658A, *Parts List (Continuation Sheet)*

AFMC Form 1659, *Data List*

AFMC Form 1659A, *Data List (Continuation Sheet)*

AFMC Form 1660, *Index List*

AFMC Form 1661, *Tube Bend Drawing (8-1/2 x 11)*

AFMC Form 2602, *Engineering Document Release Record*

AFMC Form 3925, *Engineering Order (8-1/2 x 11) (hor)*

AFMC Form 3926, *Engineering Order (Continuation Sheet) (8-1/2 x 11) (hor)*

AFMC Form 3927, *Engineering Order Parts List Changes (8-1/2 x 11) (hor)*

MIL-STD-31000, *TDP Worksheet*

### ***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

DD Form 1423, *Contract Data Requirements List (CDRL)*

DD Form 1694, *Request for Variance*

DD Form 2554-1, *TDP Option Selection Worksheet*

DD Form 2875, *System Authorization Access Request (SAAR)*

DD Form 250, *Material Inspection and Receiving Report*

<http://www.dtic.mil/whs/directives/informgt/forms/formsprogram.htm> )

### ***Abbreviations and Acronyms***

**AECO**—Advance Engineering Change Order

**AFI**—Air Force Instruction

**AFLCMC**—Air Force Life Cycle Management Center

**AFMAN**—Air Force Manual

**AFMCEDG**—Air Force Material Command Engineering Data Group

**AFMCI**—Air Force Material Command Instruction

**AFMCMAN**—Air Force Material Command Manual

**AFNWC**—Air Force Nuclear Weapons Center

**AFPAM**—Air Force Pamphlet

**AFRIMS**—Air Force Records Information Management system

**AFRL**—Air Force Research Laboratory

**AFSC**—Air Force Sustainment Center

**AFTC**—Air Force Test Center

**ANG**—Air National Guard

**ASME**—American Society of Mechanical Engineers  
**ASSIST**—Acquisition Streamlining and Standardization Information System  
**CAD**—Computer Aided Design  
**CAGE**—Commercial and Government Entity  
**CALS**—Continuous Acquisition and Life Cycle Support  
**CDA**—Current Design Authority  
**CNEO**—Change Notice Engineering Order  
**DoD**—Department of Defense  
**DoDI**—Department of Defense Instruction  
**DoDISS**—Department of Defense Index of Specifications and Standards  
**DoDSSP**—Department of Defense Standardization and Specification Program  
**DRM**—Drawing Requirements Manual  
**DT&E**—Developmental Test and Evaluation  
**EDSC**—Engineering Data Service Centers  
**EO**—Engineering Order  
**FMS**—Foreign Military Sales  
**FOIA**—Freedom of Information Act  
**HIS**—Information Handling Services  
**IAW**—In Accordance With  
**IOT&E**—Initial Operational Test & Evaluation  
**JEDMICS**—Joint Engineering Data Management Information and Control System  
**OPR**—Office of Prime Responsibility  
**OSS&E**—Operational Safety, Sustainability and Effectiveness  
**OT&E**—Operational Test and Evaluation  
**RDS**—Records Disposition Schedule

### *Terms*

**DoD Index of Specifications and Standards (DoDISS) Document**—Those publications listed in the DoDISS that are stocked and issued by the Department of Defense Single Stock Point (DoDSSP).

**EDSC Activities**—Activities that store and distribute engineering data. For the purposes of this instruction, these activities are generically referred to as an official repository. Within the Air Force there are five categories. Categories I through IV are assigned to local base-level engineering data service centers. The principal objective of a local base-level EDSC is to support maintenance activities. Category V is designated as a primary DoD repository and is the only



facility authorized to accept data deliveries for retention as official engineering data. Functional description follows:

**Category I EDSC**—This EDSC is established to support a base or installation whose mission requires minimal engineering data. These EDSCs do not maintain data files nor are they authorized to have any equipment for viewing and reproduction. A DoDISS documents library is permitted.

**Category II EDSC**—This EDSC is established to support a base or installation whose mission requires small amounts of engineering data. These EDSCs do not maintain data files but may have equipment for viewing and printing copies of engineering data. These EDSCs may requisition engineering data on a one-time basis. A DoDISS documents library is permitted.

**Category III EDSC**—This EDSC is established to support a base or installation whose mission requires individual items of data, some partial or complete sets of data, and the maintenance of data files. These EDSCs requisition data on a one-time basis. They are authorized to have equipment for viewing and printing copies of engineering data. A DoDISS documents library is permitted.

**Category IIIA EDSC**—This EDSC is established to support a base or number of bases geographically located whose mission requires a tailored set of engineering data. These EDSCs maintain data copy files and have equipment for viewing and printing. This EDSC Category is established primarily for receipt of digital engineering data through digital transmission from the Category V EDSC in response to remote digital requests.

**Category IV EDSC**—This EDSC is established to support a base or installation whose mission requires complete sets of data. These EDSCs must maintain data files. They are authorized to have equipment for viewing and printing copies of engineering data. A DoDISS documents library is permitted.

**Category V EDSC**—This EDSC is established to receive new data from contractors, subcontractors, vendors, and government design activities; process requests for copies of individual items and sets of data from government and nongovernment activities and provide automatic updates to Category III and Category IV EDSCs and to other individuals or activities as necessary. These EDSCs are primary DoD repositories maintaining the official Air Force record copies of data and sets of data (reserve files), and have complete reproduction capabilities for that data. These EDSCs also perform the local base-level EDSC operations for their respective bases. A DoDISS documents library is permitted.

**Engineering Data**—Data, regardless of form or characteristic, is required to define a design or process that can be used to produce, support, operate, test, and inspect a product or service. The term engineering data is generically used when referring to engineering drawings, data sets, technical data packages, production data, product definition data, and other similar expressions.

**Note**—Generating larger sizes in accordance with ASME Y14.1, using current Air Force criteria as defined for (AFMC Form 1656) E size drawings.