CAD/PAD Item Marking Instruction

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References

NOTE: Use latest revision of all reference documents.

1. **MIL-STD-130** Department of Defense Standard Practice Identification Marking of U.S. Military Property

2. **MIL- STD-1168 (current revision)** Ammunition Lot Numbering and Ammunition Data Card
(Note section 3.1 for new lot assignment for "remanufactured CAD/PAD Components")

3. **ISO/IEC 16022** Information technology - Automatic identification and data capture techniques - Data Matrix bar code symbology specification

4. **ISO/IEC 15434** Information technology - Automatic identification and data capture techniques - Syntax for high capacity ADC media

5. **ISO/IEC 15418** Information technology - Automatic identification and data capture techniques - GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance

6. **UNDER SECRETARY OF DEFENSE FOR ACQUISITION POLICY AND TECHNOLOGY** Department of Defense Guide to Uniquely Identifying Items version 1.6 (this document is available on line at http://www.acq.osd.mil/dpap/pdi/uid/index.html or from Defense Procurement & Acquisition Policy, 3060 Defense Pentagon, Room 3E1044, Washington, DC 20301-3060)

7. **DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT** 252.211-7003 Item Identification and Valuation (Copies of this document are available on line at http://farsite.hill.af.mil/ or from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954)

8. **AFSCM 21-556 Vol. 2** Julian Date format

9. **ANS MH10.8.2 - 2006** Data Application Identifier Standard

10. **ISO 28219** Labeling and Direct Product Marking with Linear Bar Code and Two-Dimensional Symbols

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1. Purpose.

The Under Secretary of Defense has implemented policy requiring DoD components meeting the requirements identified in Figure 1 to be marked with **Item Unique Identifiers** (IUID). Cartridge Actuated Devices and Propellant Actuated Devices (CAD/PAD) items, regardless of dollar value, are typically serially managed in aircraft maintenance data systems and therefore are applicable to the IUID requirement.

Additionally, the Air Force Aircrew Escape System Executive Working Group (AESEWG) and the egress system maintenance community has requested that CAD/PAD items be marked with Data Matrix ECC 200 on item data plates or items to enhance accuracy of aircraft maintenance data.

In accordance with MIL-STD-130, this marking instruction identifies marking requirements that meet the above objectives by tailoring Unique Identification (UID) requirements to include aircraft maintenance data requirements for both free text Human Readable Information (HRI) and Machine Readable Information (MRI), which are both mandated requirements for CAD/PAD items.

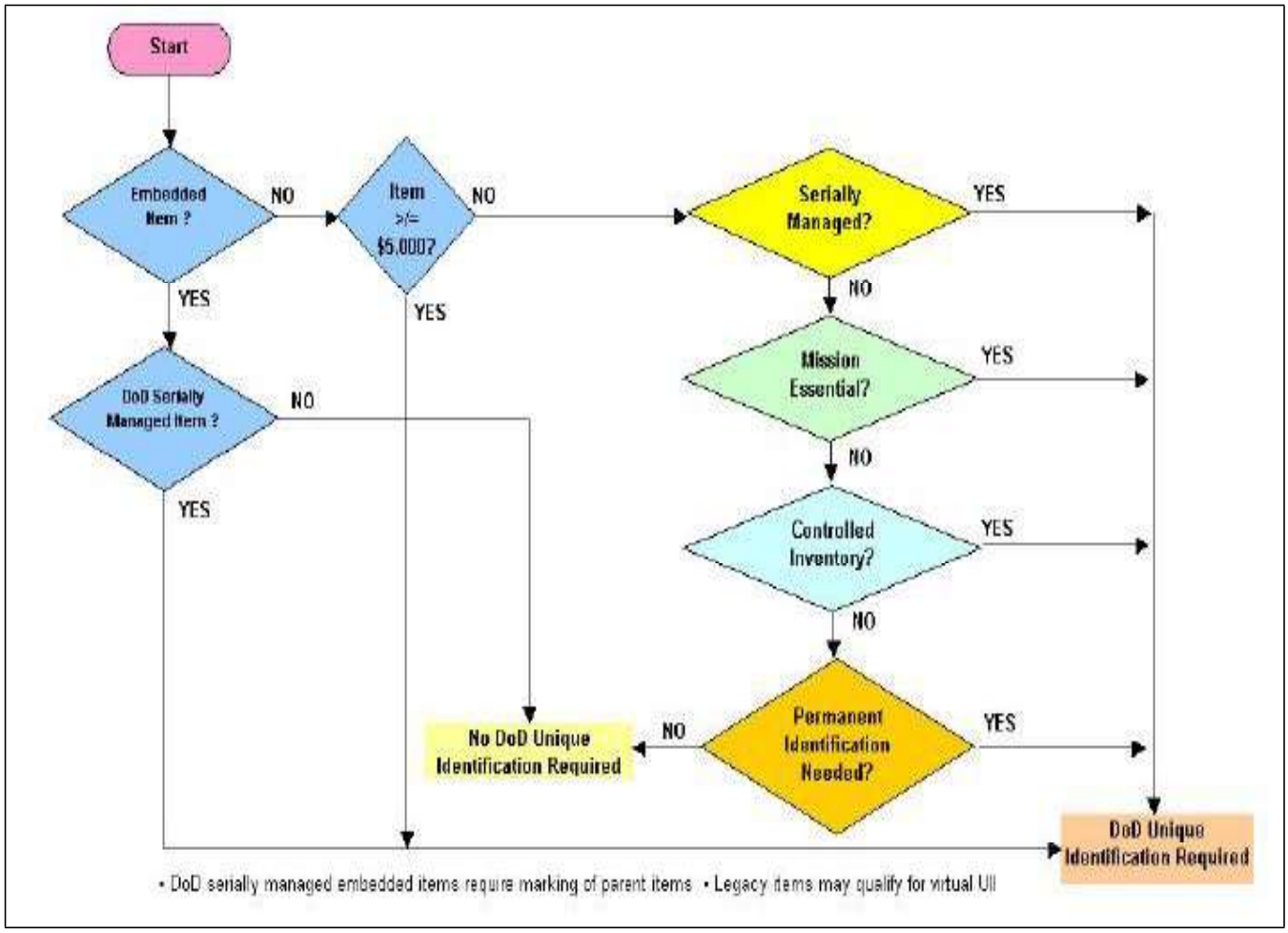

Figure 1. Determining UID Requirement

2. SCOPE.

This instruction identifies marking requirements applicable to suppliers/manufacturers of CAD/PAD components. It is applicable to both production of new CAD/PAD components and remanufacture of service returned, over-aged components. It identifies marking methods applicable to the various sizes and shapes of CAD/PAD components.

As of this writing, guidance regarding mandated transfer of data to the IUID Registry can be found at https://dodprocurementtoolbox.com/site-pages/unique-id.

3. **Marking Requirements**.

Both Human Readable Information (HRI) and Machine Readable Information (MRI) are required (see section 4). In accordance with the Defense Federal Acquisition Regulation Supplement (DFARS), DoD has mandated the use of Data Matrix ECC 200 as the standard format for UID MRI markings. Guidance for the construct and application of Data Matrix markings is contained in MIL-STD-130 and the DoD UID Guide located at https://www.acq.osd.mil/asda/dpc/ce/ds/unique-id.html. Training, guides and others resources are located on the left side under the IUID tab.

3. 1. **HRI Marking Requirements**. The following HRI data is required (as a minimum):

- Item Nomenclature; Per applicable manufacturer drawing

- Manufacturer's Commercial and Government Entity (CAGE); Five (5) alpha/numeric characters.

- Item Lot Number; Lot numbers shall be assigned IAW MIL-STD-1168 (current revision), unless otherwise directed. A new lot number and serial number shall also be assigned for "remanufactured" CAD/PAD components as opposed to adding a suffix to the original lot number for a "rework, overhaul or renovation" effort.

> **NOTE**: The requirement for unique lot number has been deleted.
>
> DOM is NOT required if the lot number contains the DOM as identified in MIL-STD-1168

- Item Serial Number; Serial number shall be up to eight (8) numeric characters. The serial numbers shall be sequentially assigned and shall not be repeated until serial number 99,999,999 has been reached.

- Item manufacturer's Part Number

> **NOTE**: The weapon system Specification Number does not meet this requirement

- Optional markings: Additional markings (such as manufacturer's name, logo, contract number) are acceptable, provided that space is available on the item/data label. Date of Manufacture (DOM); DOM shall be MM/YYYY and be the same date that is coded into the lot number.

> **NOTE**: Markings and/or attachments shall make no reference to item installation requirements/procedures or shelf/service lives

3.2. **MRI Data Construct**.

Data Matrix ECC200 markings shall be developed based on UID Data Construct #2 using Data Identifiers (DIs) in accordance with MIL-STD-130 and the DoD UID Guide (see Figure 2). To facilitate durability throughout the scanning life cycle, the largest symbol size, including quiet zone, shall be fitted within the available marking real estate. The symbol's internal module (cell) sizes shall be no smaller than 0.0075 inch (0.19 mm) and no larger than 0.025 inch (0.64 mm). Marks shall contain **only** the data elements identified below:

> **NOTE**: The actual UII will be comprised of CAGE, Part Number, and Serial Number data. The parenthesis surrounding the Data Identifiers are NOT encoded in the 2D symbol

(17V) Manufacturer's Commercial and Government Entity (CAGE) code, 5 alpha/numeric characters

- (1P) Manufacturer's Item Part Number, 18 alpha/numeric characters maximum

> **NOTE**: The weapon system specification numbers do not meet this requirement

- (S) Item Serial Number, IAW HRI requirement, up to eight (8) numeric characters

- (30T) Item production Lot Number, IAW HRI requirement, 15 alpha/numeric characters maximum

> **NOTE**: The data identifier for Lot Number has been changed from 1T to 30T

- (4D) Date of Manufacture (DOM), in Julian Date format, five (5) numeric characters:

Example: 08151 = 31 May 2008

> The first two positions are the last two digits of the year, the last three positions are the Julian Date (001 through 366)

[)> $^{R}_{S}$ 06 $^{G}_{S}$ 17V 12345 $^{G}_{S}$ 1P 123456789-ABCDEFGH $^{G}_{S}$ S 12345678 $^{G}_{S}$ 30T ABC06D123-001 $^{G}_{S}$ 4D 08151 $^{R}_{S}$ $^{E}_{O_T}$

Figure 2. Sample UID Data Stream

4. **Placement of UID Marking**. CAD/PAD items vary considerably in size and shape. A large percentage of these items are currently marked with HRI printed on data plates or labels permanently affixed to the item. The preferred method for incorporating the UID required MRI is to include it on the current data plate/label and, wherever possible, the supplier is to incorporate this concept. The following identifies known variations in marking and preferred MRI incorporation methods.

> **Note:** Unless specifically identified as a requirement in the procurement contract, subcomponents of the End Item Assembly shall not be UID marked.

4.1. **CAD/PAD Items Currently Marked with Data Plates, Labels, or Flag-Tags**. The data plates/labels for these items shall be modified/arranged to allow space for the MRI per paragraph 3.2. Marking shall comply with MIL-STD-130 and the DoD UID Guide (see figure 3).

Figure 3. Sample Data Plate/Label

4.2. **CAD/PAD Items Currently Marked With Ink or Laser Etching Directly on the Item**. Item marking shall be modified/arranged to allow space for the incorporation of ink or laser etched MRI per paragraph 3.2. Marking shall comply with MIL-STD-130 and the DoD UID Guide (see figure 4).

CAD/PAD Builder Inc.
Acft Explosive Component Noun

CAGE: 12345
P/N: 123456789-1234
Ser No: 0001
Lot No: ABC08D001-001
DOM: 04/2008

Figure 4. Sample of Etched Data

4.3. **CAD/PAD Items Considered to be Too Small for HRI and MRI**. These items shall be physically marked using currently approved methods for HRI. A self-adhesive label shall be supplied in the item inner packaging that includes the minimum HRI (per paragraph 3.1) and the MRI Data Matrix marking (per paragraph 3.2). The label shall be as small as possible (meeting MIL-STD-130 requirements for HRI) and will include only the minimum required data (see figure 5).

Acft Explosive Item Noun
CAGE: 12345
P/N: 123456789-1234
Ser No: 0001
Lot No: ABC08D001-001
DOM: 04/2008

Figure 5. Sample Small Item Data Plate/Label

Note: This will allow the maintainer to scan the MRI from the label and the ability to affix it to the next higher assembly.

5. **Kit Marking Requirements**. Individual components procured and delivered in a "kit" or "ship-set" format shall each be marked with HRI and MRI as identified in sections 3 and 4. The kit containers shall also be marked with HRI and MRI per sections 3 and 4.

Note: Individual components supplied in kits or ship-sets require unique item identifiers. Their markings shall not reflect those identifying the kit or ship-set.

5.1 Only the "kit "or "ship-set" will require data submission into the UID Registry. Data submission for individual components in a kit is not required, as these components were not individually priced as line items when placed on contract.

Note: To meet UID requirements, each kit will be assigned an individual serial number. Kits that are comprised of multiple containers will all be marked with the same serial number.

5.2 "Kits" or "ship sets" will typically be assigned lot numbers coinciding with the oldest individual component in the kit.

6. **JSF F-35 Instructions**. The marking instructions for F-35 components, labels, and packaging, shall be as outlined in this document. Additionally, contractors are required to submit an Electronic Equipment Logbook (EEL) for all serial numbers delivered to the Government. When submitting EELs, the lot number is limited to 10 characters and shall only include the year of production, month of production, interfix number, and sequence number with no dashes. Use of these nine characters will allow for an optional lot suffix as

deemed necessary by procuring agency. The lot number identified on the Ammo Data Card (ADC) shall match the lot number used on the components and shall be generated IAW MIL-STD-1168.

7. **Waivers**. Waivers to the UID requirement are not allowed. Requests for waivers to marking methods outlined in this instruction may be considered. Submit requests through appropriate contracting channels.