MILITARY STANDARD

SYMBOLS FOR ARMY AIR DEFENSE SYSTEM DISPLAYS (METRIC)

AMSC N/A

AREA HFAC

FORWARD

1. This military standard is approved for use by the U.S. Army Missile Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) at the end of this document or by letter.

MIL-STD-1477A(MI)

CONTENTS

MIL-STD-1477A(MI)

iv

MIL-STD-1477A (MI)

1. SCOPE

1.1 Scope. This standard prescribes the physical characteristics of air track symbols, and associated alphanumeric information, for US Army air defense displays which are generated by electronic, optic or infrared technology.

1.2 Purpose. Requirements are specified herein for the selection and depiction of symbols which provide U.S. Army air defense personnel with air track, mission, and status information.

1.3 Application. This standard applies to the design of all U.S. Army air defense system displays and shall be tailored as required to meet individual system requirements. The symbols presented herein, are intended for application to high quality, calligraphically written cathode-ray tube displays. This standard may be applied to other flat-panel type displays if the provisions are modified to insure that image quality provides legible symbols, modifiers and alphanumerics. The symbology specified in this standard will not be applied retroactively to existing systems; however, any system product improvement program (PIP) shall implement the requirements of this standard.

MIL-STD-1477A (MI)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issues of the Department of Defense Index of Specifications and Standards (DODISS) and supplements thereto, cited in the solicitation (see 6.2).

STANDARDS

MILITARY

MIL-STD-1472 Human Engineering Design Criteria for Military Systems, Equipment and Facilities

(unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, ATTN: NPODS, 5801 Tabor Avenue, Philadelphia, PA 19120-5099)

2.1.2 Other government documents, drawings and publications. The following other government documents, drawings and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

FM 101-5-1 Operational Terms and Symbols

(Application for copies should be addressed to Commander, TRADOC, Fort Monroe, VA 23651-5000.)

2.2 Order of precedent. In the event of a conflict between the text of this document and the reference cited herein, the text of this document takes precedence. Nothing in this document, however, supercedes applicable laws and regulations unless a specific exemption has been obtained.

2

MIL-STD-1477A (MI)

3. DEFINITIONS

3.1 Local Tracks. Tracks generated by the co-located sensor(s) upon which the air defense system relies to acquire targets, e.g., tracks obtained from the system's own radar.

3.2 Luminance. The amount of light emitted from a display as viewed by an observer, measured in candelas per square meter (cd/m2).

3.3 Luminance Contrast. The contrast between the background and a symbol equals the absolute difference between the higher luminance (L1) and the lower luminance (L2) divided by the higher luminance; i.e.,

$$C = \frac{|L1 - L2|}{L1}$$

3.4 Luminance Ratio (LR). The ratio of symbol luminance and the background luminance, i.e.,

LR = L1 / L2 , where L1 = symbol luminance
L2 = background luminance

3.5 Pointer. A transmittable symbol under the direct control of the operator, used to point to displayed information, for highlighting or identifying areas of interest. Solid line structure. Length of pointer shall subtend 35 minutes of visual arc at the operator's eye. Optionally used as a graphic display cursor.

3.6 Remote Tracks. Tracks generated by other than the co-located sensors upon which the air defense system relies to acquire targets, e.g., tracks received from interfacing systems.

3.7 Hooking. A task performed by a human operator using a display interactive device (joystick, mouse, etc.) to select/designate specific display information; e.g., symbols; for further action or modification.

3

MIL-STD-1477A (MI)

4. GENERAL REQUIREMENTS

4.1 Standardization. Symbols used in U.S. Army air defense systems, to include the air defense displays used at the division air management element, shall be uniform for common functions where symbols are used to display functions for the soldier-machine interface.

4.2 Basic Symbol Design. Generally, track symbol shapes shall use open rather than filled structures (e.g., O rather than ●) to provide space for effective integration of modifiers.

4

MIL-STD-1477A (MI)

5. DETAIL REQUIREMENTS

5.1 Symbol Coding. Where visual discrimination between signals may be critical to system performance, symbols shall be appropriately coded. Coding techniques shall include shape, line structure, modifiers, blinking, reverse video, and color. A symbol luminance of at least .35 cd/m2 and a luminance contrast ratio of at least .88 should be maintained unless otherwise specified. The recommended viewing distance of 20 inches should be followed.

5.1.1 Symbol Shapes. The basic air track and landmark symbol shapes shall be as shown in Table 1. Table 3 depicts ground and map symbols. Those symbols not depicted shall conform to the requirements of FM-101-5-1. Special symbols associated with the display of air defense symbols and tabular data are shown in Table 4. The symbols illustrated in all Tables are not drawn to scale.

5.1.2 Line Structures. Not more than six different line structures shall be used to display battlefield geometry symbols. Those selected shall allow for maximum contrast and discrimination. The line structures shall conform to Figure 1. The guidelines in FM-101-5-1 should be followed as permitted.

LINE CODING	EXAMPLE AND APPROXIMATE SPACINGS
SOLID	
LONG DASHES AND DOTS	
LONG DASH AND SHORT SPACE	
SHORT DASH AND DOT	
SHORT DASH AND SHORT SPACE	
SHORT DASH AND LONG SPACE	

Figure 1. Line Structure Coding

5.1.3 Symbol Modifiers. The standard modifiers to air track symbols shall be as shown in Table 2. Modifiers to air track symbols include multiple tracks, engageable/unengageable, and speed and heading vectors. Table 2 provides further explanation as to the shape and application of the various modifiers.

5

MIL-STD-1477A (MI)

5.1.3.1 Consistency. A common meaning and location discipline shall be used across display modes and symbol modifier applications.

5.1.3.2 Operation. No more than two sequential key actions shall activate symbol modifier categories.

5.1.4 Blinking.

5.1.4.1 Symbols and Modifiers. A capability for symbols and associated modifiers to blink in response to certain conditions and to discontinue blinking when the conditions no longer exist, or when appropriate operator action is taken, shall be provided. Only the symbol and associated modifiers shall blink. The alphanumeric data associated with the symbol shall not blink.

5.1.4.2 Rate. No more than two blink rates shall be used. Where only one rate is used, the rate shall be between 4 and 5 Hz. Where two rates are used, the second rate shall be between 1 and 2 Hz.

5.1.4.3 Application. The higher blink rate shall normally be used as a highest priority track indicator on tracks which require urgent operator attention (e.g., track recommended for engagement by the system, identification conflict, pop-up engageable hostiles). Only one symbol at a time shall be blinked at the higher rate. The lower blink rate, if required, shall be used to draw the operator's attention to a single class of less urgent targets (e.g., new tracks and tracks entering the operator's area of interest). Only one symbol at a time shall be blinked at the lower rate.

5.1.5 Hooking. There are two ways to indicate that a hooking action has been taken - reverse video or brackets. For either hooking method, only one symbol at a time shall be hooked.

5.1.5.1 Reverse Video. If the capability exists, then the abaility for symbols and their associated modifiers to interchange luminance values between the background display and the symbology depicted (reverse video) shall be provided.

5.1.5.1.1 Symbols and Modifiers. A symbol that is normally depicted as a light shape on a dark background would be changed to a dark shape on a light background (or vice versa). A symbol shall be depicted in reverse video in response to certain conditions. The symbol shall return to the normal contrast values when the conditions no longer exist or upon termination of the action.

6

5.1.5.1.2 Shape. When reverse video is used, the display area affected shall be in the shape of a square surrounding the basic symbol and associated modifiers on all sides by at least one stroke width of a line.

5.1.5.1.3 Application. Reverse video shall be used to indicate that a symbol has been selected by the operator to receive further action (e.g., selected /hooked to access more information on an air track).

5.1.5.2 Brackets. If a capability to depict symbology in reverse video is not provided, brackets ([ ]) shall be used as an alternative to indicate that a symbol has been selected.

5.1.6 Color.

5.1.6.1 Use. In order to maintain monochrome CRT compatibility, color shall be used as a redundant coding scheme to enhance the primary shape coding. Color symbol luminance should be at least 3 cd/m2 to maintain good color perception. A luminance ratio of between 5:1 and 10:1 should be maintained for color displays. White ambient illumination of the crew workspace should be used to enhance the integrity of the display symbology color coding and to minimize adverse visual effects and eye fatigue that might result from red (dark-adapted state) or blue-green lighting.

5.1.6.2 Coding Scheme. The color specified refers to a class of hues, not to a specific wavelength. The exact hues used should maximize the color contrast. The display should have a dark background to maximize the visibility and discrimination of the colors. Application of color to air defense symbology should conform to the following:

a. **RED** - used to depict hostile ground units and air track symbols, battlefield geometry representing danger zones, and friendly troop objectives.

b. **YELLOW** - used to depict unknown air track symbology and friendly and/or hostile induced nuclear, biological, or chemical contamination areas.

c. **GREEN** - used to depict friendly ground units, air track symbols and safe zones.

d. **WHITE** - used to depict alphanumeric data, status information, and battlefield geometry.

7

5.1.7 Symbol Overlap. When symbols used to depict zones or areas overlap, the underlying, lower priority areas which are covered by the highest priority area shall use a dashed-line structure. For air track symbols, that portion of the underlying lower priority symbols shall be blanked by the highest priority symbol. A capability should be provided to permit either operator selection of symbology priorities or a default priority selection during system initialization.

5.2 Size.

5.2.1 Symbol Height.. The following equation shall be used to calculate symbol height:

Symbol Height = TANGENT (viewing angle subtended) x (viewing distance)

5.2.2 Aspect Ratio.

5.2.2.1 General. Unless otherwise specified, the symbol aspect ratio (width to height) should be at least 2:3. The stroke width to height ratio should be between 1:6 and 1:10. When reverse video is used, a stroke width to height ratio closer to 1:6 should be utilized.

5.2.2.2 Air Track Symbology. The width to height ratio of the basic air track symbols depicted in Table I shall be 1:1.

5.2.2.3 Ground Unit Symbology. The width to height ratio of ground unit symbols should be approximately 3:2.

5.2.3 Visual Angle.

5.2.3.1 Local Air Tracks and Ground Unit Symbology. The major dimension of a single local air track symbol shall subtend a visual angle of not less than 25 minutes of arc when measured from the operator's eye in its normal viewing location. For example, at the minimum recommended viewing distance of 20 inches, a single friendly air track should have a diameter of .15 inches (see Figure 2). The horizontal bar denoting rotary wing aircraft shall have the same length as the width of a single air track symbol. The values, stated for local and remote (paragraph 5.2.3.2) tracks, are for symbol luminances which are above .35 cd/m (1 foot-lambert) and symbol-to-background luminance contrast of not less than 88 percent (see paragraph 3.3).

8

MIL-STD-1477A (MI)
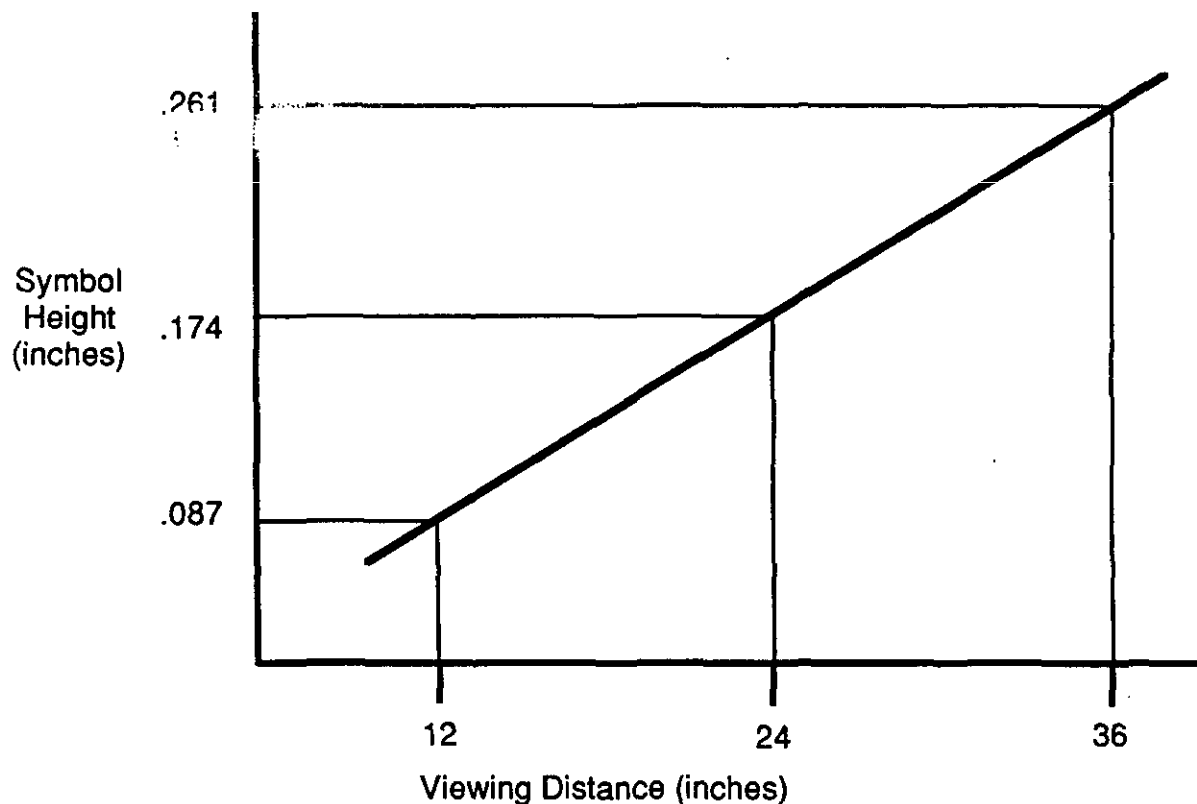
Figure 2. Single local track symbol height required for various
viewing distances

5.2.3.2 Remote Air Tracks and Alphanumeric Data. The major
dimension of the basic air track symbol for a single remote track and the height
of alphanumeric characters shall subtend a visual angle of not less than 16
minutes of arc when measured from the operator's eye in its normal viewing
location. When a system is receiving only remote track information, an
optional capability should be provided to automatically increase the size of the
remote track symbols to the size of the local track symbols.

5.2.3.3 Multiple Targets. The symbol formed by the inner line shall
be the same size as the single target symbol. The outer line shall be separated
from the inner line by no less than one stroke width of the line.

5.2.3.4 Landmark Symbology. The major dimension of landmark
symbols shall subtend a visual angle of not less than 20 minutes of arc when
measured from the operator's eye in its normal viewing location.

9

MIL-STD-1477A (MI)

5.2.3.5 Lines. The basic line used to compose battlefield geometry symbols shall subtend a visual angle of not less than 4 minutes of arc when measured from the operator's eye in its normal viewing location. The equation shown in 5.2.1 may also be used to determine the appropriate line width, substituting line width for symbol height.

5.2.3.5.1 Line Brightness.

5.2.3.5.1.1 Levels. No more than two brightness levels shall be used.

5.2.3.5.1.2 Brightness Categories. Track symbols with their modifiers and tag data shall be displayed at a higher brightness level than map and ground unit symbols when simultaneously displayed.

5.2.3.5.1.3 Illuminance Compatibility. Symbol brightness shall be compatible with the operator's visual tasks and illuminance environment.

5.2.3.5.1.4 Brightness Control. Operator control of symbol brightness should be provided. Where such a control is provided, it shall differentially dim the two brightness levels so that the brightness ratio between them is relatively constant. If the display is to be used in an area with controlled ambient lighting, the minimum adjustment of the lower level shall be capable of providing display legibility under the highest ambient lighting anticipated. A continuously variable rather than discrete control shall be provided.

5.2.3.5.2 Line Structure. Not more than six kinds of line structure coding shall be used to display air defense symbols. Those selected shall allow for maximum contrast and discrimination and shall conform to Figure 1.

5.2.4 Intercharacter Spacing. The horizontal separation between alphanumeric characters shall be between 25 and 50 percent of the character width.

5.3 Air Track/Ground Unit Identifiers.

5.3.1 Air Track Identifier Location. The first character of the track identifier shall be located in the second data space to the right of a target symbol as shown in Figure 3.

MIL-STD-1477A (MI)
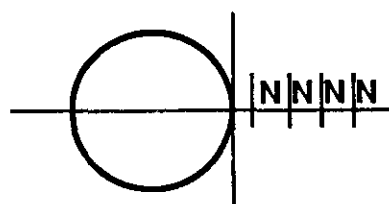
Figure 3.   Air Track Identifier Location

5.3.2 Ground Unit Identifier Location. The ground unit identifiers should be located as outlined in FM-101-5-1. Figure 4 illustrates an example of the specified format. Further explanation of the nomenclature is in Table 1.
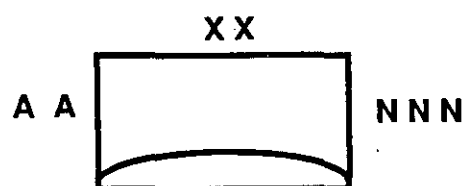
Figure 4.   Ground Unit Identifier Location

5.3.3 Content. Integration of air track, map and ground unit symbology should be displayed as shown by example given in Figure 5.

11

6. NOTES.

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard is intended for use by air defense personnel for selection and depiction of symbols for displays.

6.2 Acquisition requirements. Acquisition documents should specify the following:

6.2.1 Issue of DODISS. The issue of the DODISS to be applicable to this solicitation must be cited in this solicitation (see 2.1.1).

6.2.2 Verification. Verification of the symbols and the overall integration in the display shall be performed during human factors test and evaluation of the full scale system development effort. Progress shall be monitored by Human Factors Engineering from initial design to final development to insure compliance with applicable requirements of this standard and user acceptance.

6.3 Subject term/key word listing.

Modifiers
Symbol coding
Symbol modifiers
Symbol shape
Symbology

6.4 Changes from previous issues. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.
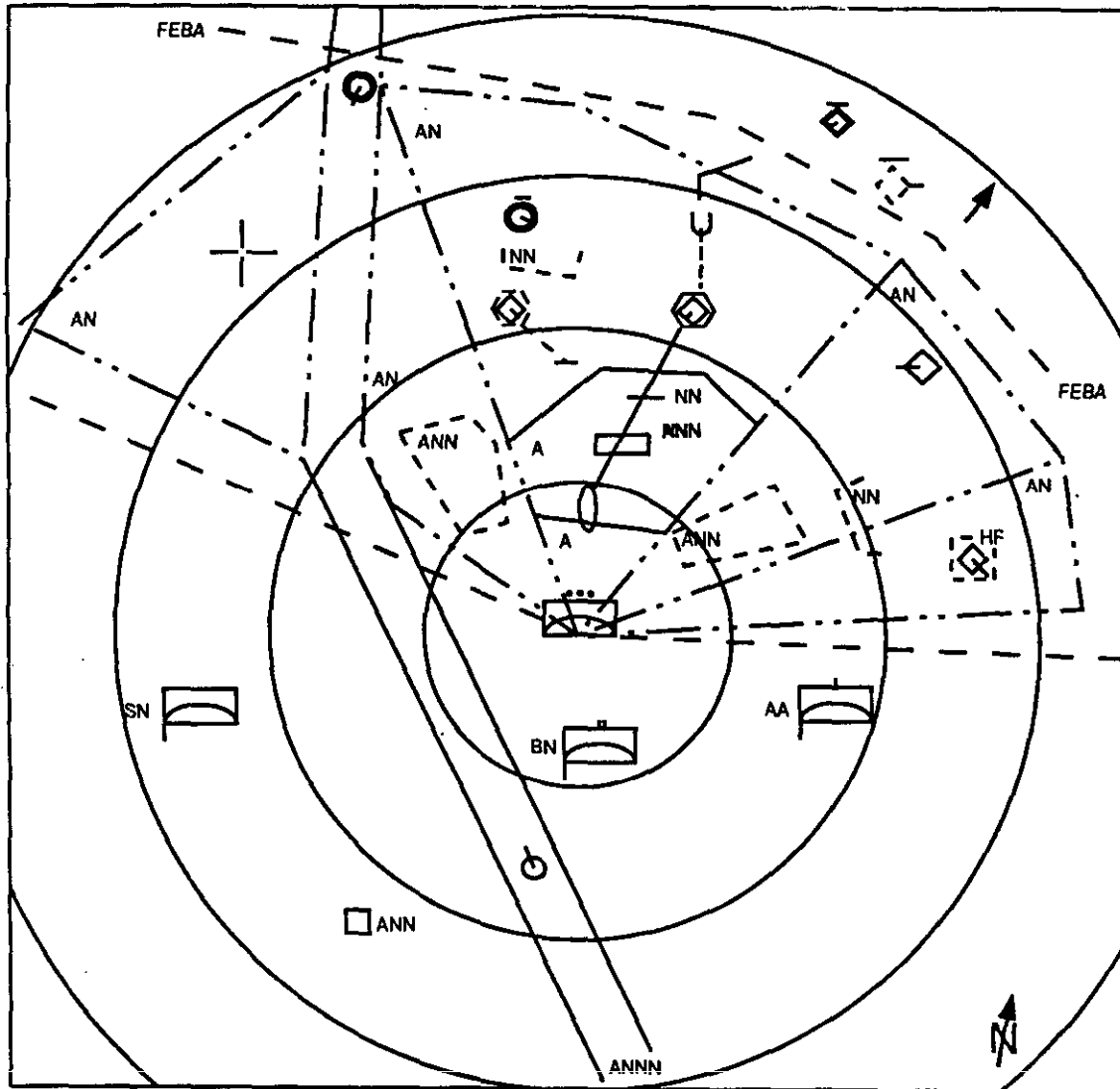
Figure 5. Integration of U.S. Army air defense symbology

used on a representative graphical display.

MIL-STD-1477A (MI)

TABLE 1. AIR DEFENSE BASIC GRAPHIC SYMBOLS

	Symbol Type	
Symbol Name	**Engageable**	**Unengageable**
HOSTILE AIR TRACKS Fixed Wing	◇	⟨ᵔ⟩
Rotary Wing	◇̄	⟨ᵔ⟩̄
Air-to-Surface Missile	∀̄	⟩ᵛ⟨
Tactical Ballistic Missile	▽	⟨ᵛ⟩
UNKNOWN AIR TRACKS Fixed Wing	U	⌐⌐
Rotary Wing	Ū	⌐⌐̄
FRIENDLY AIR TRACKS Fixed Wing	**N/A**	◯
Rotary Wing	**N/A**	◯̄
Missile	**N/A**	⬭
NEUTRAL AIR TRACKS Fixed Wing	**N/A**	⌓
Rotary Wing	**N/A**	⌓̄
Missile	**N/A**	⌂

* Horizontal bar length same as width of symbol for single target.

14

TABLE 1. AIR DEFENSE BASIC GRAPHIC SYMBOLS (continued)

<u>**Symbol Name**</u>   <u>**Symbol Shape**</u>

UNIT SYMBOLS

Command Post[3]
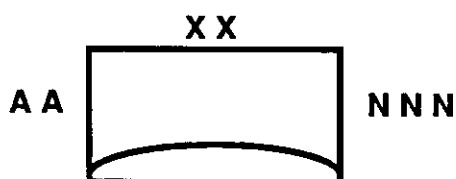
Note 1: Unit Boundary - **AA**
      I - Battery
     II - Battalion
     X - Brigade
    XX - Division

Note 2: Corridor - **ANNN**
     A - Corridor Type
   NNN - Geometry Reference Number

Note 3:

Command Post - <u>**A**</u>		<u>**XX**</u>	<u>**NNN**</u>
Division	**DV**	**XX**	---
Brigade	**BD**	**X**	---
Battalion	**BN**	**II**	---
ABMOC	**AB**	**II**	---
AME LNO	**LO**	**II**	---
Sensor/C2	**SN**	**II**	---
Battery	**A-H**	**I**	---
Platoon	**A-H**	**● ● ●**	**N**
Section	**A-H**	**● ●**	**NN**
Fire Unit	**A-H**	**●**	**NNN**

15

TABLE 1. AIR DEFENSE BASIC GRAPHIC SYMBOLS (continued)

<u>Symbol Name</u>	<u>Symbol Shape</u>
LANDMARKS	
Building	
Church	
Tower	
Tree	
Mountain	
Bridge	
Storage Location	

MIL-STD-1477A (MI)

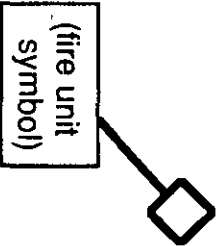## TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS

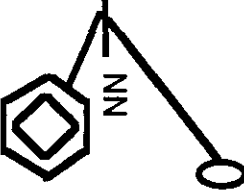| Symbol Name	Symbol Shape	Application
Multiple Engageable Air Track		Used with all air track symbology when more than one track are located in close proximity to each other, travelling in the same general direction and at similar speeds. The symbol formed by the inner line shall be the same size as the single track symbol. The outer line shall be separated from the inner line by one stroke width of the line.
Single Engageable Air Track		All hostile and unknown track symbols shall be displayed by a solid line structure when such tracks are or become engageable.
Single Unengageable Air Track or Not eligible for engagement		All hostile and unknown track symbols shall be displayed by a dashed line structure when such tracks are or become unengageable for any reason.
Multiple Unengageable Air Track or Not eligible for engagement		Same as single, unengageable air tracks.

17

MIL-STD-1477A (MI)

TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS (continued)

Symbol Name	Symbol Shape	Application
Engaged Air Track (Single)*		Indicates that a target is under engagement by an ADA fire unit. The vertical dimension of this modifier shall subtend a visual angle of not less than 41 minutes of arc. The modifier shall be centered on the basic air track symbol.
To-Be-Engaged Air Track*		Indicates that a target has been assigned for engagement either by command or by the fire unit computer. The vertical dimension of this modifier shall be the same as that of the Engaged Hostile modifier.
To-Be-Engaged Air Track Ripple Fire*	R	Same as To-Be-Engaged Air Track except that more than one missile is to be used.
Fire Unit-Target Pairing	(fire unit symbol)	Used in fire distribution systems to designate assignment of a target to a fire unit.

* - Used only with hostile and unknown air track symbols.

18

MIL-STD-1477A (MI)

TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS (continued)

Symbol Name	Symbol Shape	Application
Speed/Heading Vectors*		Speed shall be indicated by three possible values: high, medium, low. As a minimum, heading should be indicated as one of sixteen directions in 22.5 degree increments. A track having zero speed will not display a vector.
Low-speed Track with heading vector		One end of the vector shall be at the symbol center and the other end touching the interior of the symbol perimeter line.
Medium-speed Track with heading vector		One end of the vector shall be at the exterior of the symbol perimeter line, and extend outward to a length equal to the length of the low-speed vector line.
High-speed Track with heading vector		Vector extends from the symbol center to the outside of the symbol (combination of the low and medium vector lines).
Predicted Intercept Point	NN	Used only with missile/target pairing lines which are solid. Numerics give time to intercept in seconds.

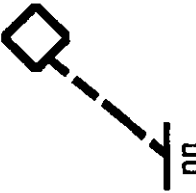* - These vectors apply to all Table 1 symbols.

19

TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS (continued)

Symbol Name	Symbol Shape	Application
Cover	CV	Indicates that a cover command is imposed on the track by either automatic or operator action. Modifier size shall be the same as for the high threat engageable modifier.
Cease Engage	CE	Indicates that a cease engage status is imposed on the track by either automatic or operator action. Modifier size shall be the same as for the high threat engageable modifier.
Engage Hold	EH	Indicates that an automatic engagement is on-hold; used with ADA fire units which have an automatic engagement capability. Modifier size shall be the same as for the high threat engageable modifier.
Hold Fire	HF	Indicates that a hold fire status is imposed on the track by either automatic or operator action. Modifier size shall be the same as for the high threat engagement modifier.
Cease Fire	CF	Indicates that a cease fire status is imposed on the track by either automatic or operator action. Modifier size shall be the same as for the high threat engagement modifier.

MIL-STD-1477A (MI)

TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS (continued)

Symbol Name	Symbol Shape	Application
Launch-Now-Intercept Point		Depicted by an intercept point and connected to track symbol with a dashed (short dashes and spaces) line. Numerics show time to last launch in seconds. MSK (masked) shall be displayed when terrain masking affects the intercept.
Trails		Solid line used to show up to 15 seconds of past track positions; a dashed (short dashes and spaces) straight line extending from position of the target 32 seconds maximum from last position update should be displayed. Trails shall not be displayed when launch-now-intercept point is displayed.
Faker		Depicted by an "F" modifier added to the center of the basic hostile, unknown, and friend symbols to designate a particular track as a "Faker" in a training environment (i.e. simulated track).
Normal Mode 4 IFF Response		Depicted by an "A" modifier added to the center of a basic friend symbol to show that identification was by other IFF modes. Use is optional.
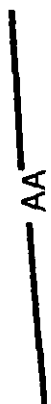
21

MIL-STD-1477A (MI)

TABLE 2. AIR TRACK GRAPHIC SYMBOL MODIFIERS (continued)

Symbol Name	Symbol Shape	Application
Predicted Impact Point	K_nnn	Used only with air-to-surface missile (shown in example) and tactical ballistic missile tracks. Numerics give time to impact in seconds.
Probable Kill	#	This symbol appears at predicted intercept point and alternates at a 1 Hz rate with the engaged track symbol for 3 seconds after predicted intercept has occured.

MIL-STD-1477A (MI)

TABLE 3. MAP SYMBOLS

Symbol Name	Symbol Shape	Application
North Reference	(north arrow symbol)	North shall be indicated relative to the primary target line. The N is vertical, the arrow points north.
Forward Edge of the Battle Area	FEBA - - - - - - - - FEBA	Line structure shall be short dashes and spaces.
Forward Line of Own Troops	FLOT — — — FLOT	Line structure shall be long dashes and short spaces.
Fire Support Coordination Line	FSCL — · — · — · — FSCL	Line structure shall be short dashes and dots. Alpha designators are optional.
Masked Area Boundaries	(nn symbol)	Short dash, short space line structure. Numerics show average height of masked terrain above radar in km.
Geographic Boundaries	(solid line)	Solid line structure of the required length.
Unit Boundaries	(solid line AA)	Solid line structure of the required length with open space for required alphanumerics.
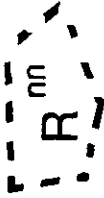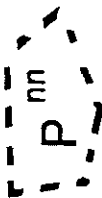
MIL-STD-1477A (MI)

TABLE 3. MAP SYMBOLS (continued)

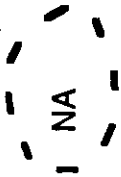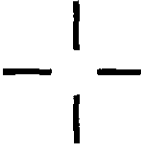| Symbol Name	Symbol Shape	Application
Radar Search Sector Boundaries	(chevron symbol)	Two solid lines, extending from radar location to maximum range.
Radar Track/Weapon Search Sector	(dashed chevron symbol)	Dashed (short dashes and spaces) line. Used only if track sector is different than the search sector. Extends from radar location to maximum range.
Primary Target Line (PTL)	(arrow symbol)	Solid line should terminate on the maximum range at the assigned PTL azimuth. Length of line is variable.
Defended Point/Asset	ANN NN (rectangle symbol)	Alphanumerica show status and identification information for these units. All map symbols and alphanumerics shall be displayed at low brightness.
Range Rings		Solid circular lines of required scaling.
Point	□	Open square of minimum size.

MIL-STD-1477A (MI)

TABLE 3. MAP SYMBOLS (continued)

Symbol Name	Symbol Shape	Application
Weapon Control Volume		Long dash and dot segments. Up to n sides. Alpha character shall be either H (hold), F (free), or T (tight). The numeric shall be used when more than one volume exists with the same weapon control status, e.g., H1, H2, and H3. The bottom letter shall designate fixed-wing, "F", rotary-wing, "R", or both if there is no letter present.
Track Origin Volume		Short dash and long space segments. Up to n sides. Alpha character shall be either H or F for hostile and friendly origins. The numeric shall be used when more than one origin exists.
Safe Corridors		To show parallel solid line segments. For one-way corridors, an arrow shall be used to show direction.
Restricted Volumes		Short dashes and spaces. Up to n sides. "R" shall always be present and numerics to be used if more than one exists.
Prohibited Volumes		Short dashes and spaces. Up to n sides. "R" shall always be present and numerics to be used if more than one exists.

25

MIL-STD-1477A (MI)

TABLE 4. SPECIAL SYMBOLS

Symbol Name	Symbol Shape	Application
Graphic Display Cursor	—┼—	Operator controlled. Can move in two dimensions simultaneously. Cursor shall not blink. The major dimension of the cursor shall subtend between 44 and 48 minutes of visual arc at the operator's eye.
Pointer	◥	A transmittable symbol under the direct control of the operator, used to point to displayed information, for highlighting or identifying areas of interest. Solid line structure. Length of pointer shall subtend 35 minutes of visual arc at the operator's eye. Optionally used as a graphic display cursor.
Tabular Display Cursor	UNDERLINE	Operator controlled cursor. Can move horizontally left and right, vertically up and down. Can not move diagonally. Solid line structure. Length shall subtend 24 minutes of visual arc at the operator's eye. Blinking is optional (2 Hz, if used). Used to denote present cursor position for entering text.
Special Status	S	Displayed within the hostile, unengageable unknown, or friend air track symbol.

26

MIL-STD-1477A (MI)

TABLE 4. SPECIAL SYMBOLS (continued)

Symbol Name	Symbol Shape	Application
Jammer (ECM)	$\wedge\!\!\vee$	Solid line structure. Symbol shall blink at a 1 Hz rate with the hostile symbol when range is known.
True Friend	T	Displayed within the friend symbol. Indicates an IFF Mode 4 response.
Jam Strobe	/	Solid line structure. Length to be either initializable or fixed by design. Display to indicate bearing of a jammer when range is unknown. The one end should extend to limits of the display to facilitate triangulation process.

27

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

| NO POSTAGE |
| NECESSARY |
| IF MAILED |
| IN THE |
| UNITED STATES |

BUSINESS REPLY MAIL
'FIRST CLASS   PERMIT NO. 12062   WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE ARMY

COMMANDER
U.S. ARMY MISSILE COMMAND
ATTN: AMSMI-RD-SE-TD
Redstone Arsenal, AL   35898-5270
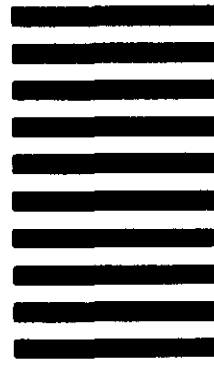
STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL
(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-STD-1477A(MI)	SYMBOLS FOR U.S. ARMY AIR DEFENSE SYSTEM DISPLAYS (METRIC)

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION *(Mark one)*

☐ VENDOR

☐ USER

☐ MANUFACTURER

☐ OTHER *(Specify):* _____

b. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) — Optional	b. WORK TELEPHONE NUMBER (Include Area Code) — Optional
c. MAILING ADDRESS (Street, City, State, ZIP Code) — Optional	8. DATE OF SUBMISSION (YYMMDD)

DD FORM 1426 82 MAR   PREVIOUS EDITION IS OBSOLETE.