6.4 Symbol Guide

6.4.1 The Graphical Representation on the PPI

This subparagraph describes all the symbols, which can be displayed, on the PPI and their colours. The graphical representation on the PPI will be limited to primary (symbol), and secondary (label) information. Tertiary information (tote) is provided in extra windows, which are independent of the PPI.

Note: the function "Select Colour" does not work for MIL-STD-2525 symbols.

The following entity classes are displayed on the PPI:

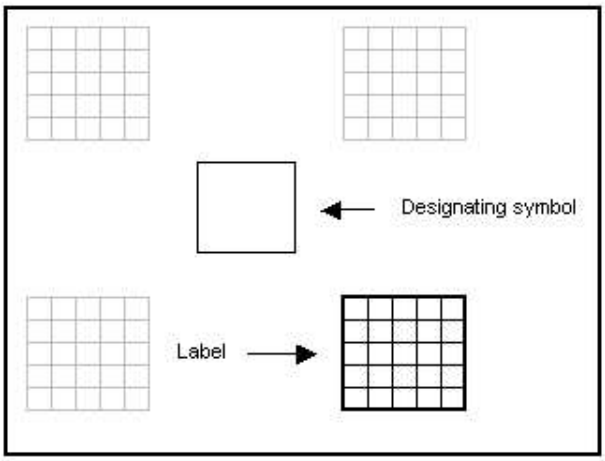
- Air Track
- Surface Track
- Special Point I (ECM Fix, Radar, Hazard, Reference Point, Station (Air), Emergency, Enemy Point)
- Special Point II (Site)
- Special Point III (Support Unit)
- Bearing
- Areas
- Geographic Data
- Commands and Status
- Pointer
- Plots
- Flightplan
- ICM
- Interceptor geometries

Table 33 - Entity Class Representation on the PPI

Entity Class	Representation
1. Air Tracks	**symbol**, velocity leader, **label**
2. Surface Tracks	**symbol**, velocity leader, **label**
3. Special Point I	**symbol**, **label** (velocity leader)
4. Special Point II	**symbol**, **label** (velocity leader)
5. Special Point III	**symbol**, **label** (velocity leader)
6. Bearing	line, **label**
7. Areas	polyline area, **label**
8. Geographic Data	part of the MASE console
9. Commands and Status	Line, **label**
10. Pointer	symbol, **label**
11. Plor	**symbol**, **label**

12. Flightplan	**symbol**, **label** (velocity leader)
12. ICM	symbol, **label**
13. Interceptor geometrics	line,symbole, **label**

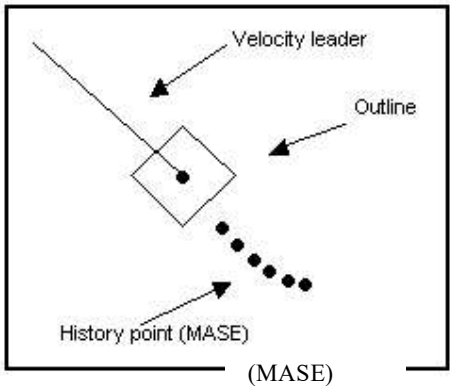
Figure 63- PPI Symbol Composition for Tracks and Special Points



Display of symbolism is subject to category selection by operators. If a particular track category is selected for display, at minimum the associated symbol will be displayed. In addition, a label will be displayed at the operator's discretion. For display of a label, four positions relative to the track symbol will be selectable as shown in Figure 63. Labels will never be displayed without their associated symbols.

Designating symbols basically consist of a symbol outline, a velocity leader, plot history points (which are displayed by the MASE system) and a label. Figure 64 shows an example with the labels switched off.

Figure 64 - Symbol Composition



(MASE)

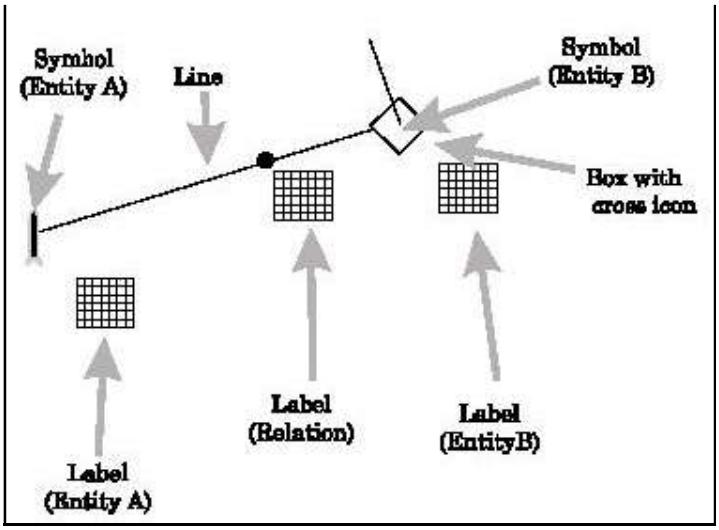
The velocity leader indicates the heading and x/y speed of a track. The symbol outline indicates the identification of a track. History points represent plot history from the

MASE system. The velocity leader, history points and the icon of a symbol are category selectable for display.

The symbol and label size are adaptable by the user within the constraints of the graphical user interface. The symbol's size (excluding the label but including outline) is at least 15x15 dots.

Relations between symbols (for instance an engagement conducted by a SAM fire unit on an air track or a command issued) in conjunction with status information (entity class 9) are indicated with relation symbols as shown Figure 65.

Figure 65 - Entity Relations



On the PPI primary information is represented through symbols, colours or the use of shading. Additional information required by the operator, which does not lend itself to characterization by these methods due to its complexity, is presented on the PPI in text format close to the symbol it is referring to. The information displayed through a label is balanced between being small in size and giving the operator as much information as possible. The amount and kind of information displayed as part of a label is adaptable by the operator (see para. 5.1.3.4).

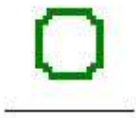
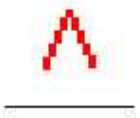
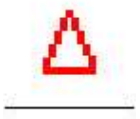
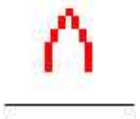
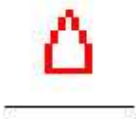
The operator is capable of defining three different sets of label definitions for air tracks, surface tracks and special points (type 1, 2 and 3). Two of the label definition sets are user selectable, whilst one is fixed. The operational user may switch the labels on and off.

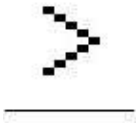
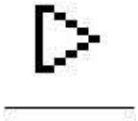
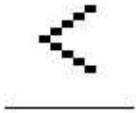
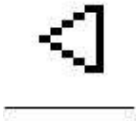
6.4.2 Tracks

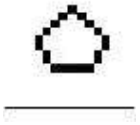
The outline symbol represents the ID information associated with a certain entity. If no ID information is foreseen for certain entity classes (for instance for strobes) no outline is displayed.

6.4.2.1 Air Tracks

Table 34 - Air Track Symbols (AEGIS)

Symbol Type	AEGIS Symbol	2525 Symbol
Faker (red)		
Faker Engaged (red)		
Faker Jammer (red)		
Faker Jammer Engaged (red)		
Friend (green) – (blue)		
Hostile (red)		
Hostile Engaged (red)		
Hostile Jammer (red)		
Hostile Jammer Engaged (red)		

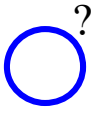
Symbol Type	AEGIS Symbol	2525 Symbol
Interceptor Available (gold) – (green)		
Interceptor Unavailable (gold)		
Kilo (gold) - (purple)		
Kilo – Engaged (gold)		
Pending (white) – (yellow)		
Unknown (gold) – (blue)		
Unknown Engaged (gold)		
Xray (red)		
Xray Engaged (gold)		

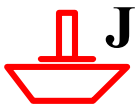
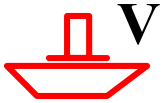
Symbol Type	AEGIS Symbol	2525 Symbol
Zombie (gold) – (purple)		
Zombie Engaged (gold)		

6.4.2.2 Surface tracks

The symbols used for an AEGIS surface track will be inserted under code 0xe0 (to 0xe8) and shall look as follows:

Table 35 - Surface Track Symbols

Symbol Type	AEGIS Symbol	2525 Symbol
Pending (white) – (yellow) UP		
Unknown (yellow) – (blue) EU		
Friend (green) - (blue) FAM, FG, FL		
Neutral (green) – (blue) FG, NEU		
Hostile (red) – (red) HG		
Suspect (red) – (red) SUS		
Assumed Friend (yellow) – (blue) AF		

Symbol Type	AEGIS Symbol	2525 Symbol
Joker (red) – (red) FG, JKR		
Faker (red) – (red) FG, FKR		

The sequence for the symbols is the following: Pending, Unknown, Friend, Neutral, Hostile, Suspect, Assumed Friend, Joker, Faker.

MIL-STD-2525 defines nine different symbols for Surface Tracks. These symbols are inserted as bitmap into the font files

6.4.2.3 Special Points

Table 36 - Special Point Symbols (AEGIS)

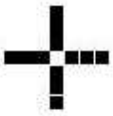
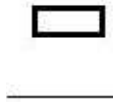
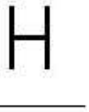
 Air base (sky blue)	 Beacon (white)	 CAP Station (sky blue)	 CRC (Supporting Unit–NS)
 ECM Fix	 Emergency (red) (MASE)	 Ground Zero	 Radar
 Station Air (NS)	 Strike Initial Point	 TACAN	

Table 37 - Special Point Symbols (MIL)

 ADA/BOC/TDS	 AEW	 ASRT	 Corridor Tab

 DASC	 Emergency (NS)	 Emergency (Down A/C/PUDitching)	 Emergency (Man-in-water/PUBailout)
 Enemy	 FACP	 FES (sky blue)	 Kill Point (sky blue)
 Marshal Point	 Mass Raid (orange)	 MHQ	 MRR (orange)
NAI (yellow)	 Picket	 PIM	 Reference Point (sky blue) MASE
 Reference Point NS (CSI)	 SAM Fire Unit (sky blue)	 Sensor (sky blue)	 Site (sky blue)

6.4.3 Pointer

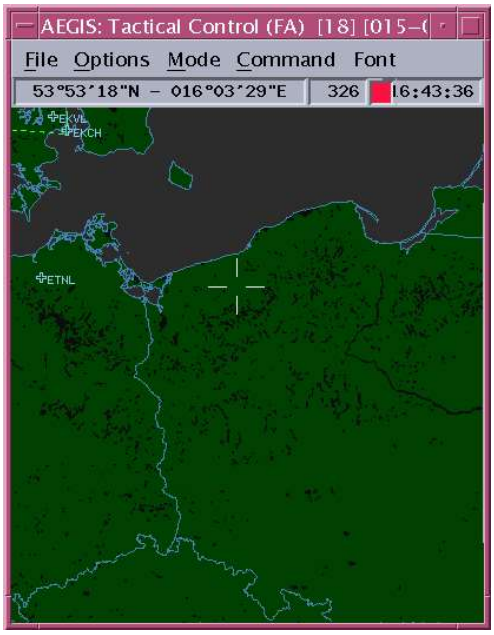
Pointer between CSI and other RU's are exchanged by means of ATDL-1 or Link 11B messages. Pointers are displayed on the PPI as shown in Figure 66. The top line shows the position of the pointer in GEOREF, the middle line shows the source of the pointer by displaying it's DLRN and ATN (if available). The bottom line shows the addressee of the pointer by displaying it's DLRN and ATN (if available). The labels are always displayed in the top right corner of the pointer symbol.

Figure 66 - Pointer

6.4.4 ICM

The ICM is sent to the console. The receiving console gets the blinking ICM and the sending console number. If ICM 00 is selected, the position of the ball-tab is printed on the line printer of the AEGIS emulator.

Figure 67 - ICM



6.4.5 Bearing

The only data reported to CSI in the Bearing category are from the ECM intercept/ECM category. This information is usually referred to as **strobe**. The symbol category (ECM) and the strobe track number (DLRN, ATN) will be displayed in the label and the Strobe List display. The line used to indicate a strobe is non-dashed and in special colour.

The composition of symbols for entity class bearing (strobes) is shown in Figure 68.

Figure 68 - Bearing Symbol

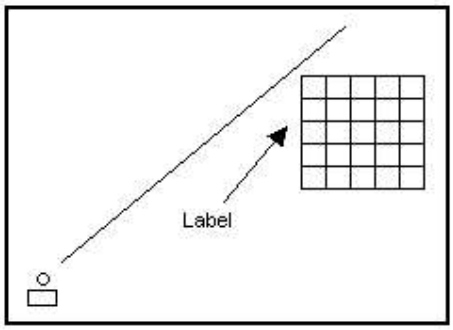


Figure 69 - Example of Strobe Display

6.4.6 SAM Engagements

Engagements will be displayed as lines (pairing lines) between a ground based air defense (GBAD) unit and a target. Either a reporting unit or a fire unit can represent GBAD units. Targets are always air tracks. The colour of the line indicates the status of the engagement. A yellow line indicates an engagement with assigned status (target is not illuminated). A red line indicates an engagement with a status other than assigned (target is illuminated).

Sometimes pairing lines jump from RU/target to FU/target. This is the case when the CSI SA gave a command to a GBAD RU (paring line between RU and target) and subsequently received an engagement status showing a fire units as source (pairing line between RU and target).

Please note that some GBAD units (i. e. PATRIOT) do not forward information about the actual fire unit performing an engagement to the CRC. For those type of GBAD units the pairing line will always be shown between RU and target.

Commands will be displayed in conjunction with the engagement status as labels for an engagement line. The label will be displayed 2/3 of the way between the RU/FU and the target track. The top line of the label shows the last command and whether this command is in effect. The lower line shows the last engagement status received or is blank in case no status was received. Figure 70 shows a example for an engagement with the label framing switched on.

Figure 70 - Engagement Lines

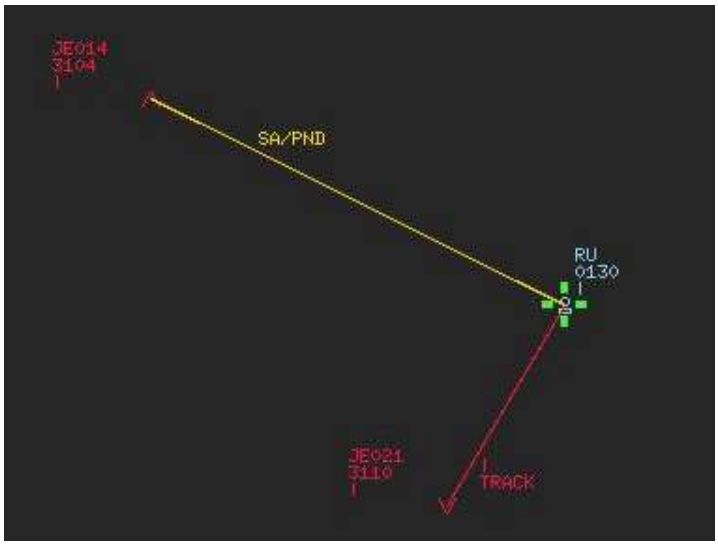


Table 38 - Engagement Line Label Description

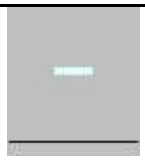
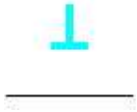
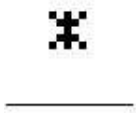
Item	Description
xxxx/yyy zzzz	Engagement label (line 1 and 2)
xxxx	The last command issued to the SAMCCE. Possible values are: CE Cease Engage CF Cease Fire CV Cover EN Engage IA Assign HF Hold Fire NA NASAMS Allocate RI Ripple SA Salvo blank no command has been issued (BIE)
yyy	The command in effect indicator. Possible values are PND The command has not yet been acknowledged EFF The command has been acknowledged or does not require an acknowledge (broadcast command).

Item	Description
zzzz	The last engagement status received. Possible values are blank — No previous status or response WEAPS — Weapon Assigned TRACK — Tracking FIRE — Firing (Launch) EFFEC — Effective P.EFF — Partially Effective N.EFF — Not Effective E.INT — Engagement Interrupted E.BKN — Engagement Broken TMOUT — Time-out (engagement will be deleted due to time-out of engagement status receipt in 'n' Seconds) Q.TRK — Quiet Tracking (only ATDL-1)

6.4.7 Plots

The symbols used for an AEGIS plots will be inserted under code 0xe0 (to 0xe8) and shall look as follows:

Table 39 - Plot Symbols

 Plot History (white)	 SR Plot (cyan)	 SR Plot Uncorrelated (light cyan)	 SR Plot Correlated (cyan)
	 SSR Plot (cyan)	 SSR Plot Uncorrelated (light cyan)	 SSR Plot Correlated (cyan)
	 SRR Plot (cyan)	 SRR Plot Uncorrelated (light cyan)	 SRR Plot Correlated (cyan)

6.4.8 Flightplan

The symbols used for flightplan will be inserted under code 0xe0 (to 0xe8) and shall look as follows:

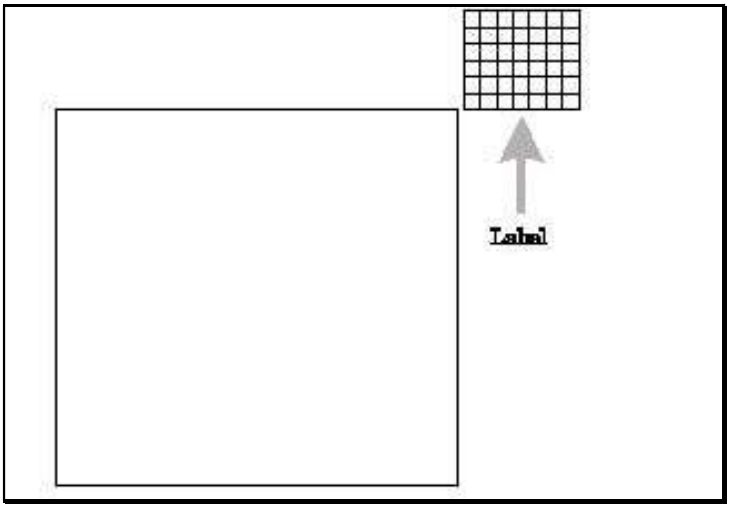
Table 40 - Flightplan Symbols

Flightplan (yellow)	 Flightplan Uncorrelated (pending) (white)	 Flightplan OAT (Friend) (pale green)	 Flightplan GAT (interceptor) (aquamarine3)

6.4.9 Areas

The composition of symbols for the entity class area is shown in Figure 71.

Figure 71 - Tactical Areas



The CSI filter areas for ATDL-1, Link 1, Link 11B and NASAMS-CRC can be displayed at the PPI as shown in Figure (to be done). The label is always shown in the top right corner of the area. The label format is shown in Table 41.

Table 41 - Format of Filter Area Label

Item	Description
nn-aa-m	CSI filter area label
nn	Link type in the format AT ATDL-1 L1 Link 1 LB Link 11B NA NASAMS-CRC
aa	Logical link number (01-16)

m	Filter sim/live status in the format
S	The filter is applied to sim data only
L	The filter is applied to live data only.
M	The filter is applied to sim and live data.

The display of the CSI filter areas can be controlled from the (NU) Filter Status Summary allowing to the detect the display of individual areas. Other areas (i.e. tactical areas) can be displayed at the CSI console using the MASE area functionality.

Figure 72 - Link Filters/AOI

All MASE areas (AOI, TPA, TCA, VOI, RVOI) can be displayed the same way.

6.4.10 Maps

All maps displayed on the PPI will be defined at the *area_cat_n.da* . For all displayed maps the following conventions are valid:

Table 42 - Map Symbol Colour Guide

Symbol Group	Symbol Item	Colour
map	border	steel blue
	land	rgb(0,16384,0)
	sea	steel blue
	city and its label	orange
	river	aquamarine
	road	violet red
	rail	salmon
	airfield and its label	sky blue
	power	golden red
	site	aquamarine
	sensor	aquamarine3
	grid	light blue
	azimuth	steel blue
	range	white

6.4.11 Interceptor Geometries

A Interceptor line will be displayed between an allocated interceptor and a allocated target.

Table 43 -Interceptor Geometries Symbol Colour Guide

Symbol Item	Symbol Group	Colour
intercept geometry	Line	tomato
	Turning point	tomato
	Kill Point	steel blue

6.5 MASE Static Symbols

Table 44 - MASE Static Symbols Colour Guide

Symbol Group	Symbol Item	Colour
	background	gray15
	text	white
line	SAM	lawn green
	intercept geometry	tomato
	strobe	cyan
	tell areas	gold
	TPA	hot pink
circle	circle (azimuth and range circles)	steel blue
route	route (IFR routes)	white
mask	nai	gray30
	sr	gray45
	sr_nai	orange
	ssr	gold
	ssr_nai	green
	ssr_sr	gray60
	ssr_sr_nai	cyan
coverage	500	steel blue
	3,000	light sky blue
	10,000	sky blue
	30,000	deep sky blue