SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP4102-7
Appendix B

Issued 1993-06
Reaffirmed 2007-07

Appendix B
Electronic Display Symbology for EHSI/ND

RATIONALE

This document has been reaffirmed to comply with the SAE 5-Year Review policy.

FOREWORD

Changes in this reaffirm are format/editorial only.

This document is an Appendix to ARP4102-7 - Electronic Displays issued July 1988.

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APPENDIX B
ELECTRONIC DISPLAY SYMBOLOGY FOR EHSI/ND

B.1 SCOPE:

This appendix recommends symbols for Electronic Horizontal Situation Indicators (EHSI) or Navigation Displays (ND) used in the flight deck of transport aircraft. An attachment recommends location of these symbols on the displays.

B.2 GENERAL:

B.2.1 EHSIs or NDs should incorporate only those symbols appropriate for the design function. It is not intended that these displays should use all of the named symbols.

B.2.2 Symbols shall be displayed during appropriate phases of flight, e.g., Vertical Deviation scale should only be displayed on the Map Format during FMC computed descents. They should be removed from the display at other times to reduce clutter. For general arrangement (e.g., MAP, PLAN, COMPASS) the display should be basically stable.

B.2.3 The total symbology content of a display shall not result in clutter, close proximity of unrelated data, or use of alphanumeric and other symbols that are not easily distinguished by a pilot whose eye is at the Design Eye Position. Thus, small display formats should not be designed to contain all the symbology that can be satisfactorily included in larger displays.

B.2.4 Symbols shall be grouped so that pertinent information is presented clearly and unambiguously, e.g., the heading arc, selected heading, and actual heading symbols shall be presented so that they interact properly.

B.2.5 Displays shall be evaluated in a dynamic environment to ensure they perform their intended function throughout the entire operating envelope, that there is proper integration between individual symbols, and do not contain human factor deficiencies.

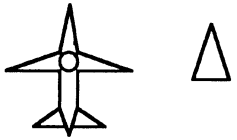
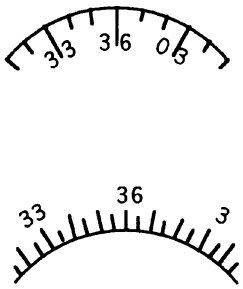
B.2.6 Recommended symbols shall be used wherever possible, however, symbols may be refined as a result of dynamic testing or developed to display new functions.

B.2.7 Symbols representing the same functions on more than one display on the same flight deck should be the same shape and color. Symbols of the same size, shape, and color may be used for more than one function, the distinction between functions shall be obvious, and there shall be no risk of misinterpretation.

B.2.8 Pilot selection capability shall be provided for symbology which is not continuously used, e.g., bearing pointers, background waypoints, Navaids, airports, altitude/airspeed constraints, etc.

PREPARED BY SAE COMMITTEE S-7,
FLIGHT DECK AND HANDLING QUALITIES STANDARDS FOR TRANSPORT AIRCRAFT

EHSI/ND

NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
1. AIRCRAFT SYMBOL			• THE PRESENT AIRCRAFT POSITION SHOULD BE THE INTERSECTION OF THE WING/FUSELAGE OR THE APEX OF THE TRIANGLE. • THE AIRCRAFT SYMBOL SHOULD BE POSITIONED ON THE DISPLAY SUCH THAT THERE IS SOME "LOOK BEHIND" CAPABILITY. • SYMBOL SHALL BE ALIGNED WITH AIRCRAFT HEADING
2.NAVIGATION SOURCE ANNUNCIATION (VOR, ILS,ETC.)	ALPHA NUMERIC		• DIFFERENT COLORS MAY BE USED FOR DIFFERENT SOURCES
3. HEADING/TRACK & MAG/TRU ANNUNCIATION	HDG MAG TRK TRU		• ANNUNCIATION OF HEADING OR TRACK IS REQUIRED IF SELECTION CAPABILITY EXISTS • ANNUNCIATION OF TRUE REFERENCE IS REQUIRED • EITHER HDG or TRK • EITHER MAG or M, TRU or T
4. HEADING/TRACK SCALE (MAP & ARC FORMAT)			• TIC MARKS EVERY 5° WITH MAJOR TICS EVERY 10° • MINIMUM ARC SHOULD BE 90° • RECOMMENDED HEADING LABELS EVERY 30°. LABELS EVERY 10° IS OPTIONAL • LABELING SHALL BE SUFFICIENT TO PROVIDE PILOT ADEQUATE HEADING DATA • DIGITS MAY BE ORIENTED NORMAL TO THE TANGENT OF THE HDG/TRK SCALE OR VERTICALLY. • N, E, S, W MAY BE USED FOR CARDINAL HEADINGS • LEADINGS ZEROS ARE NOT REQUIRED • "36" IS RECOMMENDED FOR A NORTH HEADING

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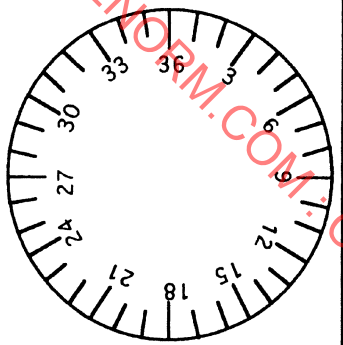
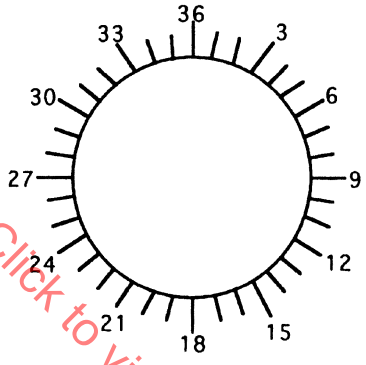
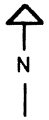
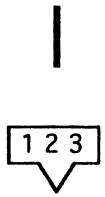
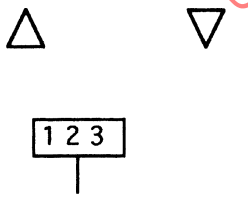
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
5. HEADING SCALE (ROSE FORMAT)			• A RING IS OPTIONAL • FIXED REFERENCE MARKS (MORE PROMINENT LINES OR SMALL TRIANGLES) MAY BE DISPLAYED AT 45° INTERVALS FROM THE TOP POSITION • DIGITS MAY BE ORIENTED NORMAL TO THE TANGENT OF THE HDG/TRK SCALE OR VERTICALLY OR AS SHOWN IN THE ACCEPTABLE ALTERNATIVE. ▪ N, S, E, & W MAYBE USED
6. NORTH ARROW			• INDICATING TRUE NORTH IN PLAN FORMAT
7. PRESENT HEADING POINTER WITHOUT DIGITAL READOUT 8. PRESENT HEADING/TRACK POINTER WITH DIGITAL READOUT			• LEADING ZEROS SHALL BE DISPLAYED • ANNUNCIATION OF HDG OR TRK IS REQUIRED IF SELECTION CAPABILITY EXISTS
9. GRID HEADING	GRID 237	237 G	

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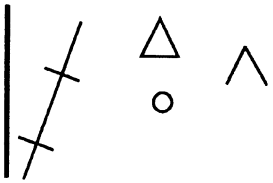
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
10. SELECTED HEADING/TRACK WITHOUT DIGITAL READOUT OF PRESENT HDG/TRACK			• SYMBOL SHALL BE COORDINATED WITH PRESENT HEADING SYMBOL • SHOULD BE DISPLAYED DIGITALLY CLOSE TO HDG/TRACK SCALE WHEN SELECTED HEADING IS OFFSCALE • A DOTTED LINE SHOULD BE DRAWN FROM THE SYMBOL TO THE AIRCRAFT SYMBOL. THIS LINE SHOULD BE REMOVED 10 SECONDS AFTER THE HEADING IS SELECTED • IF A PRESELECTION CAPABILITY EXISTS, SYMBOL IS NOT FILLED-IN WHEN PRESELECTED, SYMBOL IS SHADED OR FILLED-IN WHEN SELECTED
11. SELECTED HEADING/TRACK WITH DIGITAL READOUT OF PRESENT HDG/TRACK			• SEE REMARKS FOR NO. 10
12. SELECTED HEADING/TRACK READOUT	DIGITAL : ---		• RECOMMEND USING "360" FOR NORTH • WHEN SELECTED HDG/TRACK READOUT IS NOT LOCATED ADJACENT TO SELECTED HDG/TRACK SYMBOL, "HDG" SHOULD PRECEDE THE DIGITS
13. DIRECTION OF TURN ARC			• DOTTED/DASHED ARC ON OUTER RANGE RING/ARC FROM PRESENT HEADING TO HEADING SELECT SYMBOL SHOWING THE DIRECTION OF TURN IF THE AP/FD IS USED FOR TURNING.
14. PRESENT TRACK			• COLOR SHALL BE DIFFERENT THAN TCAS TRAFFIC PROXIMATE SYMBOL • A LINE (SOLID OR DASHED) MAY BE SHOWN FROM THE AIRCRAFT SYMBOL TO THE TRACK SYMBOL.

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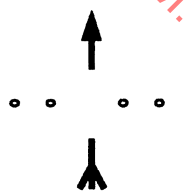
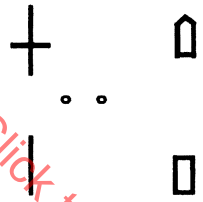
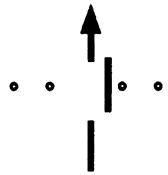
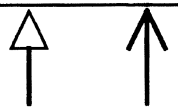
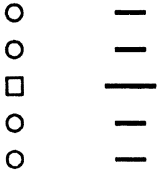
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
15. SELECTED COURSE READOUT	DIGITAL: CRS ---		• RECOMMEND USING 360 FOR NORTH • NOT REQUIRED IF SELECTED COURSE SYMBOL PROVIDES ADEQUATE ANALOG INFORMATION
16. SELECTED COURSE			• IN THE ARC FORMAT, A LINE FROM THE HEAD OF THE ARROW TO THE HEADING SCALE PROVIDES ANALOG INFORMATION OF SELECTED COURSE • USED IN BOTH ROSE AND ARC FORMATS • RIGHT HAND OPTIONAL SYMBOL MAY BE OPEN OR FILLED ◎ COLOR CODING MAY BE USED TO EMPHASIZE NAV SOURCE
17. LATERAL DEVIATION VOR/ILS			• NAV SOURCE SHALL BE DISPLAYED IF THIS SYMBOL HAS MULTIPLE USES • ILS FOR LOCALIZER • MLS FOR AZIMUTH • COLOR CODING MAY BE USED TO EMPHASIZE NAV SOURCE • SYMBOL MAY TURN AMBER AND/OR FLASH AT DEVIATION LIMITS
18. TO/FROM INDICATION		 OR ALPHA: "TO" OR "FROM"	• SYMBOL MAY BE FILLED-IN TO PROVIDE CONTRAST. • "FR" MAY BE USED IN LIEU OF "FROM"
19. VERTICAL DEVIATION SCALE			• NAV SOURCE SHALL BE DISPLAYED IF THIS SCALE HAS MULTIPLE USES • ILS FOR GLIDESLOPE • MLS FOR ELEVATION • FMS FOR VERTICAL NAVIGATION • COLOR CODING MAY BE USED TO EMPHASIZE NAV SOURCE • SCALE MAY TURN AMBER AND/OR FLASH AT DEVIATION LIMITS

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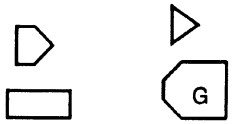
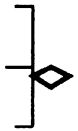
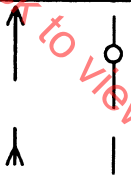
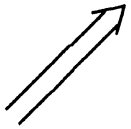
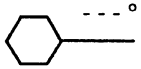
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
20. VERTICAL DEVIATION INDICATOR			• COLOR CODING MAY BE USED TO EMPHASIZE NAV SOURCE • DIFFERENT SYMBOLS MAY BE USED FOR DIFFERENT NAV SOURCES • SYMBOL MAY FLASH AT DEVIATION LIMITS
21. VNAV VERTICAL DEVIATION SCALE AND INDICATOR			• SIZE OR LENGTH OF SCALE MAY CHANGE WHEN USED TO INDICATE PROFILE DESCENT DATA ON A MAP FORMAT • VERTICAL DEVIATION BEYOND SCALE LIMITS SHOULD BE SHOWN DIGITALLY
22. BEARING POINTER NO.1			• WHEN SYMBOL IS DISPLAYED, ITEM #27 SHOULD BE DISPLAYED FOR EITHER VOR OR ADF DATA • VOR AND ADF NEEDLES SHOULD HAVE DIFFERENT SHAPES AND/OR COLORS
23. BEARING POINTER NO.2			• WHEN SYMBOL IS DISPLAYED, ITEM #27 SHOULD BE DISPLAYED FOR EITHER VOR OR ADF DATA • VOR AND ADF NEEDLES SHOULD HAVE DIFFERENT SHAPES AND/OR COLORS • ARROW HEADS OF POINTER 1 AND 2 SHOULD BE DESIGNED SO THEY DO NOT COINCIDE WHEN BOTH POINTERS ARE ALIGNED
24. SELECTED RADIAL			• USED IN MAP FORMAT • MORE THAN ONE RADIAL MAY BE DISPLAYED FROM REFERENCE POINT • REFERENCE POINT MAY BE ANY DEFINED WAYPOINT, NAVAID, AIRPORT, ETC.
25. TUNED NAVAID WITH SELECTED RADIAL			

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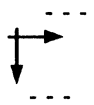
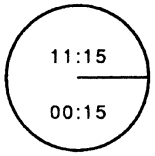
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
26. WIND INDICATION			• LEADING ZEROS SHALL BE USED IN THE DIRECTION VALUE BUT NOT IN THE SPEED VALUE • WIND ARROW SHALL HAVE THE SAME GEOGRAPHICAL ORIENTATION AS THE MAP DISPLAY • WIND DIRECTION SHALL BE THE SAME AS MAP ORIENTATION • VERY LIGHT WINDS MAY BE REPRESENTED BY A FIXED ARROW WITH ZERO SPEED VALUE • FOR ALTERNATIVE SYMBOL, THE COMPONENTS SHALL BE ALONG TRACK AND CROSS TRACK
27. RADIO DATA	VOR NUMBER IDENT - TUNING (OR FREQ) *BRG/DISTANCE e.g. VOR 1 AMA - M 330°/23.5 DME		• * INDICATES OPTIONAL • M-MANUAL, A-AUTO, R-REMOTE (A-AUTO MAY BE OMITTED WHEN AUTO IS THE NORMAL MODE OF OPERATION) • VOR NUMBER MAY BE OMITTED IF LOCATION OR COLOR IS USED TO DIFFERENTIATE BETWEEN NO 1 OR NO 2 NAV RECEIVER • "L" OR "R" MAY BE USED IN LIEU OF "1" OR "2" • "NM" MAY BE USED INSTEAD OF "DME" • ILS DME SHOULD ALSO BE ON THE EADI/PFD
28. AIR DATA & SPEED INFORMATION	DIGITAL: GS --- TAS --- SAT --- TAT ---		• LEADING ZEROS SHOULD BE DELETED • SAT AND TAT MAY BE LOCATED ON SYSTEMS DISPLAY AND/OR EHSI/ND
29. TIMER	DIGITAL:--:--	DIGITAL: _ ' _ _ " 	• DIGITAL READOUT SHALL BE LABELED "ET" FOR ELAPSED TIME OR "TTG" FOR TIME TO GO IF MORE THAN ONE TYPE OF TIMING IS AVAILABLE • SHOULD ONLY BE DISPLAYED WHILE TIMING IS IN PROGRESS • ALTERNATE SYMBOL DISPLAYS UTC IN UPPER PORTION AND EITHER TTG OR ELAPSED TIME IN LOWER PORTION. SWEEP HAND ROTATES 360° IN ONE MINUTE
30. ACTIVE (NEXT) WAYPOINT & DATA	IDENT - BRG eg. PERSAN - 006° DIST 30.5 NM ETA 12:00		

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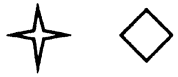
NAME	LIST 1	LIST 2	REMARKS
31. WAYPOINTS			• SYMBOLS SHALL BE SELECTED FROM A SINGLE LIST EITHER LIST 1 OR 2 MAY BE CHOSEN TO PROVIDE A SET OF COMPATIBLE SYMBOLS FOR A MAP DISPLAY • IF THE ROTATED SQUARE SYMBOL IS USED AS A WAYPOINT SYMBOL IN LIST 2, THERE SHALL BE NO CONFUSION WITH TCAS SYMBOLOGY • COLOR MAY BE USED TO DIFFERENTIATE BETWEEN THE "TO" WAYPOINT AND OTHER WAYPOINTS • SELECTED REFERENCE POINTS (NAVAIDS, AIRPORTS, OR WAYPOINTS) MAY BE IDENTIFIED BY A CIRCLE AROUND THE APPROPRIATE SYMBOL
32. VOR			
33. DME			
34. VOR/DME			
35. ADF			
36. ORIGIN & DESTINATION AIRPORTS			
37. RUNWAY CENTERLINE			
38. OTHER AIRPORT			
39. AIRWAY INTERSECTIONS			• THIS SYMBOL SHOULD BE USED IF A WAYPOINT SYMBOL IS NOT USED AT THE INTERSECTION

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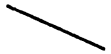
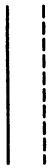
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
40. GROUND REFERENCE POINTS (GRP)			
41. AIRPORT FIXED REFERENCE CIRCLE			
42. MARKER BEACON			
43. TRACK TO NEXT WAYPOINT			• SOLID STRAIGHT LINE BETWEEN WAYPOINTS COMPUTED AND DISPLAYED SUCH THAT THE AIRCRAFT APPEARS ON THE LINE WHEN THE AIRCRAFT IS ON TRACK
44. TEMPORARY/ CHANGED FLIGHT PLAN	- - - - - - - - - -		• DASHED LINE UNTIL ACTIVE THEN SOLID LINE • WHENEVER LINES OF THE SAME APPEARANCE, e.g., DASHED, ARE USED ON THE SAME DISPLAY FORMAT, THEY SHALL BE DIFFERENT COLORS
45. INACTIVE/ SECONDARY FLIGHT PLAN	- - - - - - - - - -	————	• WHENEVER LINES OF THE SAME APPEARANCE, e.g., DASHED, ARE USED ON THE SAME DISPLAY FORMAT, THEY SHALL BE DIFFERENT COLORS
46. DIVERSION (TO ALTERNATE) FLIGHT PLAN	- - - - - - - - - -		• WHENEVER LINES OF THE SAME APPEARANCE, e.g., DASHED, ARE USED ON THE SAME DISPLAY FORMAT, THEY SHALL BE DIFFERENT COLORS
47. OFFSET PATH			• PRE-SELECTED OFFSET PATH SHOULD BE SHOWN AS DASHED LINE (EXAMPLE) OR DOT-DASH. ONCE SELECTED, OFFSET AND ORIGINAL PATH MAY SWAP SYMBOLOGY. • WAYPOINT POSITION IS NOT AFFECTED • OFFSET MAY BE ANNUNCIATED ALPHANUMERICALLY (e.g. OFST 2R)
48. CROSS-TRACK DEVIATION	ALPHANUMERIC e.g., _ . _ R		• AT LEAST TWO SIGNIFICANT DIGITS SHOULD BE USED • A LEADING ZERO SHOULD BE USED WHEN DEVIATION IS LESS THAN 1 NM

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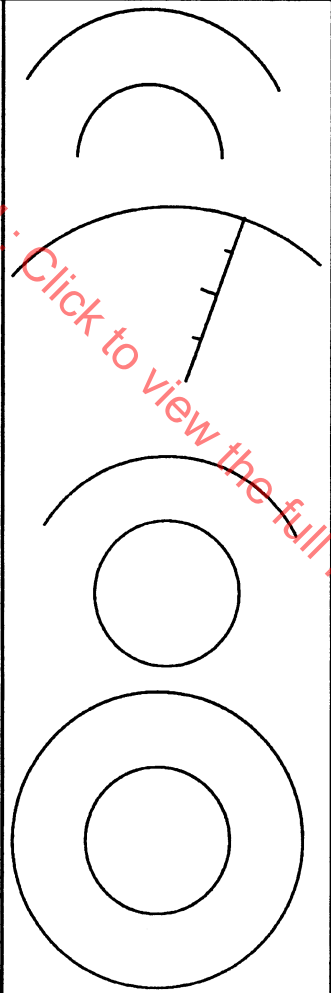
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
49. RANGE SCALE			• AT LEAST 2 RANGE RINGS (INNER AND OUTER) SHOULD BE USED. 3 OR 4 RINGS ARE OPTIONAL. THE NUMBER OF RINGS USED MAY VARY AS A FUNCTION OF RANGE • RANGE SHOULD BE INDICATED ON INNER RINGS AT ONE OR BOTH ENDS OF ARCS. RANGE SHOULD BE INDICATED BEHIND THE "WING LINE" IF COMPLETE CIRCLES ARE USED. • THE DOMINANCE OF THE INNER RANGE RINGS SHOULD BE REDUCED BY COLOR SELECTION OR BY DASHING • SEE ITEM 77 FOR TCAS RANGE RING REQUIREMENTS

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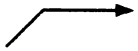
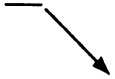
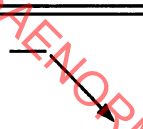
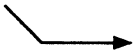
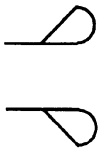
NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
50. SELECTED RANGE READOUT	DIGITAL: ---	RNG: ---	• REQUIRED IF INNER RANGE RINGS ARE NOT LABELED • LEADING ZEROS SHOULD NOT BE USED • ALTERNATE SYMBOL MAY BE USED WHEN VALUE IS NOT DISPLAYED ADJACENT TO EXISTING RANGE RING
51. ALTITUDE CAPTURE PREDICTOR		◘ SYMBOL SHOULD NOT BE USED WHEN FMS PROFILE OR VNAV IS ENGAGED	• ARC WHICH IS NORMAL TO EXISTING TRACK OR EXISTING HEADING • REPRESENTS SELECTED ALTITUDE CAPTURE POINT AT PRESENT CLIMB OR DESCENT RATE. • ARC SHOULD SUBTEND A CONSTANT ANGLE
52.DECELERATION POINT			• FMS COMPUTED DECELERATION POINT • COLOR SHOULD BE DIFFERENT THAN THE DME SYMBOL COLOR
53. BOTTOM OF CLIMB POINT		○ B/C	• FMS COMPUTED BOTTOM OF CLIMB POINT TO SATISFY ALTITUDE CONSTRAINT OR INITIATE STEP CLIMB
54. TOP OF CLIMB POINT		○ T/C ○ LVL	• FMS COMPUTED INTERCEPT OF SELECTED ALTITUDE
55. STEP CLIMB		○ S/C	• FMS COMPUTED STEP CLIMB POINT TO SATISFY OPTIMUM ALTITUDE FOR PREDICTED GROSS WEIGHT AT THE POINT
56. STEP DESCENT		○ S/D	• FMS COMPUTED STEP DESCENT POINT TO SATISFY ALTITUDE CONSTRAINT

EHSI/ND

NAME	RECOMMENDED SYMBOL	ACCEPTABLE ALTERNATIVES	REMARKS
57. TOP OF DESCENT POINT		 T/D	• FMS COMPUTED TOP OF DESCENT POINT TO SATISFY END OF DESCENT POINT CONSTRAINTS.
58. BOTTOM OF DESCENT POINT		 B/D LVL	• FMS COMPUTED INTERCEPT OF SELECTED ALTITUDE
59. INTERMEDIATE LEVEL OFF POINT		 LVL	• FMS COMPUTED INTERCEPT OF INTERMEDIATE LEVEL OFF ALTITUDE
60. INTERCEPT POINT	 I/P		● REPESENTS THE LATERAL PATH POINT WHERE THE FMS PREDICTS RETURN TO FMS PROFILE
61. HOLDING PATTERN			● ALTERNATE SYMBOLS MAY BE USED WHEN RANGES ABOVE 50 NM ARE USED • WHEN RANGES LESS THAN 50NM ARE SELECTED, THE SIZE OF THE PATTERN SHOULD ACCURATELY DEPICT THE COMPUTED FLIGHT PATH • "T","D", or "P" MAY BE DRAWN IN THE CENTER OF THE SYMBOL TO REPRESENT THE TYPE OF ENTRY
62. PROCEDURE TURNS			• ALTERNATE SYMBOLS MAY BE USED WHEN RANGES ABOVE 50NM ARE SELECTED • WHEN RANGES LESS THAN 50NM ARE SELECTED, THE SIZE OF THE PATTERN SHOULD ACCURATELY DEPICT THE COMPUTED FLIGHT PATH • "T","D", or "P" MAY BE DRAWN IN THE CENTER OF THE SYMBOL TO REPRESENT THE TYPE OF ENTRY

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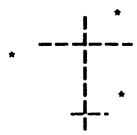
63. WAYPOINT CONSTRAINTS	 IDENT ALT/AS/TIME CONSTRAINTS		⊙ ONLY APPLICABLE CONSTRAINTS SHOULD BE DISPLAYED • ALTITUDE CONSTRAINTS HAVE A LINE ABOVE THE ALTITUDE TO REPRESENT "AT OR BELOW"; A LINE BELOW THE ALTITUDE TO REPRESENT "AT OR ABOVE" AND A LINE BOTH ABOVE AND BELOW THE ALTITUDE TO REPRESENT "AT" • AN ALTERNATIVE DISPLAY OF ALTITUDE CONSTRAINT IS A PRECEDING PLUS OR MINUS SIGN TO INDICATE "AT OR ABOVE" OR "AT OR BELOW" THE LISTED ALTITUDE. ABSENCE OF A PLUS OR MINUS SIGN INDICATES THE "AT" CONSTRAINT • A MINUS SIGN PRECEDING THE AIRSPEED CONSTRAINT REPRESENTS "AT OR BELOW", A PLUS SIGN REPRESENTS "AT OR ABOVE". ABSENCE OF PLUS OR MINUS INDICATES THE "AT" CONSTRAINT.
64. MINIMUM ALTITUDES	ALPHANUMERIC e.g., 14300MRA	e.g., 143 MRA	• MSA, MEA, MOCA, MRA, AMA, ETC.
65. RADAR INFORMATION (TILT,RANGE,..)	ALPHANUMERIC		
66. IRS POSITION INDICATORS			• RELATIVE TO AIRCRAFT SYMBOL

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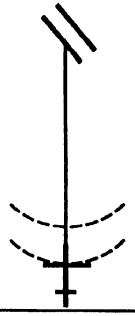
67. OBSTRUCTIONS			• DOT AT TOWER BOTTOM INDICATES OBSTRUCTION CENTER
68. LIGHTNING			• THE SIZE OF ARROWS MAY BE USED TO DEPICT THE AMOUNT OF LIGHTNING ACTIVITY
69. TREND VECTOR			• PREDICTS AIRCRAFT DIRECTIONAL TREND AT INTERVALS OF TIME (eg., 30,60,90 SEC) ORIGINATING FROM THE AIRCRAFT SYMBOL
70. DESCENT ENERGY CURVES			• OUTER CURVE REPRESENTS HORIZONTAL POSITION WHERE A CLEAN IDLE DESCENT CAN BE MADE TO ACHIEVE END OF DESCENT CONSTRAINTS • INNER CURVE REPRESENTS HORIZONTAL POSITION WHERE A FULL SPEED BRAKE, IDLE DESCENT CAN BE MADE TO ACHIEVE END OF DESCENT CONSTRAINTS • ALTERNATE SYMBOL LOGIC OF CURVES IS OPPOSITE OF RECOMMENDED SYMBOL
71. FAILURE ANNUNCIATION	ALPHA NUMERIC	"X"	• RED OR AMBER AS APPROPRIATE • FAILED SYMBOLOGY SHALL BE REMOVED FROM DISPLAY (i.e., FAILED HEADING WOULD RESULT IN "HDG" DISPLAYED ON EHSI/ND). • ALPHANUMERIC MAY BE BOXED • AN "X" MAY BE DRAWN ACROSS THE FAILED INFORMATION (eg., "X" ACROSS VERTICAL DEVIATION SCALE WITH THE FAILURE OF GLIDE SLOPE).