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Dictionary

### 2.1.4 Head-Up Display (HUD)

The Head-Up Display (HUD) is an electro-optical device that projects attack and flight information in symbolic form into the pilot's forward field of view. See Fig. 2.1.4-a. All azimuth and elevation angles of HUD symbols are defined with respect to the HUD Optical Reference Axis (ORA). The HUD is mounted so that the pilot sees the ORA as parallel to A/C boresight. The HUD displays all symbols so that they appear to be at infinite distance from the A/C. The position of the center of each symbol is described in terms of a line from a point on the ORA to the apparent location of the symbol. The azimuth is the angle between the projection of this line on the  $X_a-Y_a$  plane and the ORA. The elevation is the angle between the projection of this line on the  $X_a-Z_a$  plane and the ORA. Because the points are apparently at infinite distance, the angles are not sensitive to the exact location of the reference point on the ORA and one may assume that it coincides with the pilot's eyes.

The HUD refreshes display symbols at the rate of 50 times/sec. and does not display symbols that are out of the display range.

The figures on the following pages show the HUD symbols.

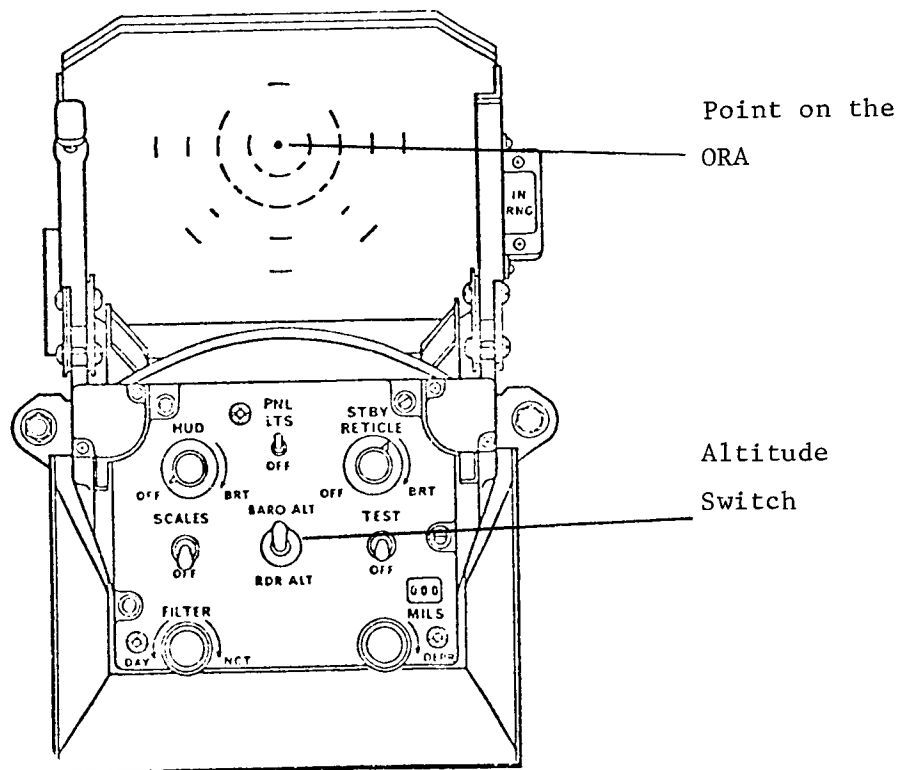


Figure 2.1.4-a

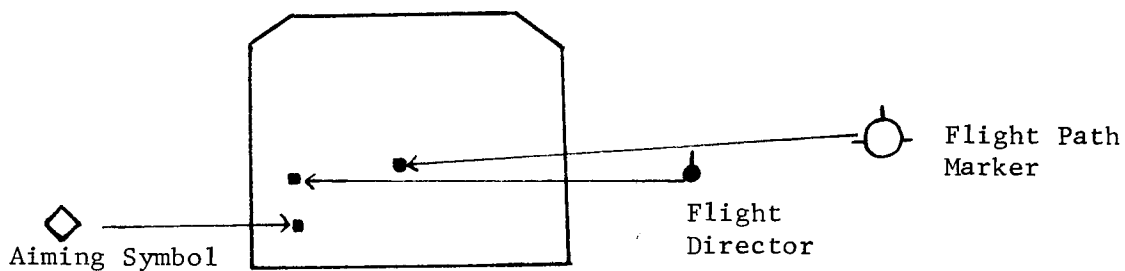


Figure 2.1.4-b

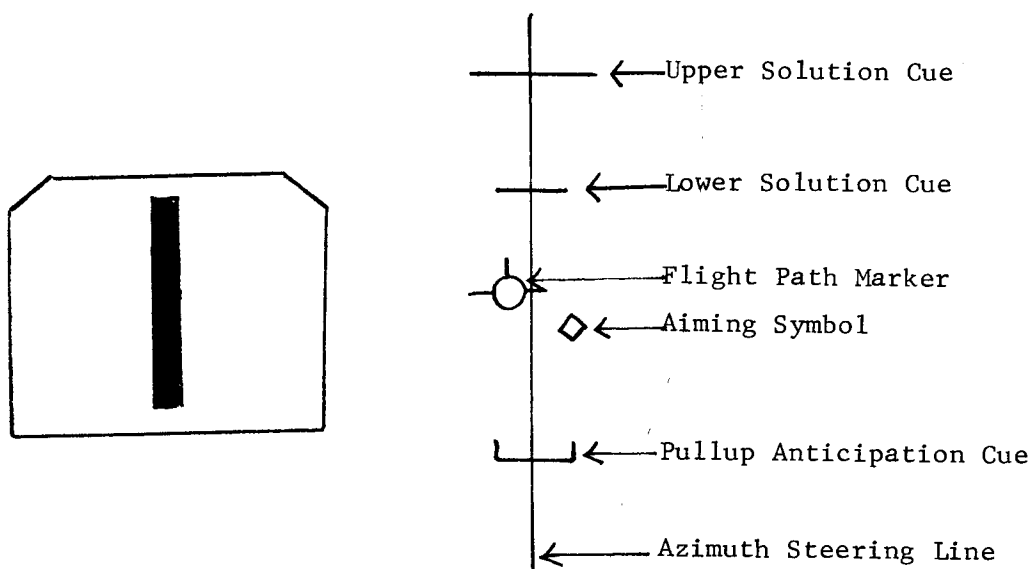
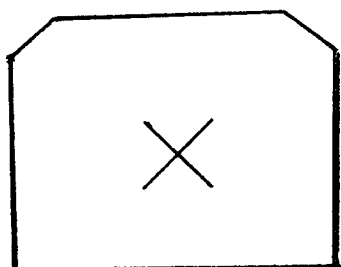


Figure 2.1.4-c



Flashing Pullup Cue

Figure 2.1.4-d

2.1.4.4

Output Data Item: Barometric Altitude - HUD

Acronym: //BAROHUD//

Hardware: Head Up Display

Description: When the HUD Altitude switch is set to BARO ALT, //BAROHUD// determines the two digits and a bar position for the altitude display on the HUD. (The TC-2 can not sense the altitude switch). The switch is shown in Fig. 4.1.4-a, and the altitude symbology is shown in Fig. 4.1.4-f.

The digits displayed are the (//BAROHUD// MOD 1000).

The bar height indicates //BAROHUD// - (//BAROHUD// MOD 1000) on a scale from 0 to 1000.

Characteristics of Values

Unit: None

Range: -1,000 to +50,000

Resolution: 12.207

Maximum Derivative: + 10,000/min.

Instruction Sequence: Cycle Steal Channel A, Word Identity Code: 18

Data Representation: 13-bit two's complement number  
scale = 4095/50000 ::= .08192  
offset = 0

(                    INDICATED VALUE                    ) Not Used

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BIT															

4.1 Inertial Measurement Set Functions

4.1.1 Demand Function Name: Switch AUTOCAL light On/Off

Modes in which function required:

Alignment: \*LAutocal\*, \*SAutocal\*

Output data item: //AUTOCAL//

Function Request and Output Description:

Event table 4.1-a: When AUTOCAL Light Switched on/off

MODES	EVENTS	
*Lautocal* *SAutocal*	@T(In mode)	@F(In mode)
ACTION	//AUTOCAL//:=\$On\$      //AUTOCAL//:=\$Off\$	

- !Altitude from slant range!** Above ground altitude can be calculated from /SLRNGE/ and the depression angle of a HUD symbol (//ASEL// or //LSOLCUEL//) since they provide the length of a side and an angle of the right-angle triangle from the A/C to the ground underneath it to the target.
- !angle - Lwindow!** Panel format -- See Table 4.6-a
- !angle - Uwindow!** Panel format -- See Table 4.6-a
- !Any destination entered!** Pilot enters the coordinates for any one of the 9 destinations through the panel. See section 4.6.2 for panel entry rules.
- !ASAZ!, !ASEL!** Values for Aiming Symbol coordinates, before limiting. See section 4.3.1
- !ASLAZ!, !ASLEL!** Values for Azimuth Steering Line Center Point coordinates before limiting. See section 4.3.2
- !azimuth reference heading!** the heading entered by the pilot of a known reference point. See section 4.6.10 for more information
- !Az-reference error!** Defined in section 4.1.6
- !Baro!** One of the values of !Data 24!, indicating the pilot has chosen the baroaltimeter of the ADC as the priority backup ranging sensor. Panel value -- see section 4.6.31
- !Baro altitude above target!** In \*Noffset\* and \*BOCoffset\* modes:  
/BAROADC/ - (!Destaltitude! + !Delta height!)  
All other modes  
/BAROADC/ - !Destaltitude!
- !Before slewing!** the stage in a weapons delivery or update mode after mode entry but before any inputs from /SLEWUD/ or /SLEWRL/
- !blank!** Panel format -- See Table 4.6-a
- !blast pullup point!** The point where the pilot must immediately execute a 4g pullup to keep the A/C out of the blast radius of an exploding weapon. The blast radius is assumed to be 1500 ft around the blast point of the weapon.
- !Bomb fall line!** line along which bomb would fall if released now  
- ballistic drop line of a weapon