

## Section 4 - "Sight Reduction"

$$\text{AP: LatAP} = \pm \text{ }^\circ \text{ } \text{ (N/S)} \qquad \text{GP: Dec} = \pm \text{ }^\circ \text{ } \text{ (N/S)} \quad (0)$$

$$\text{LonAP} = \pm \text{ }^\circ \text{ } \text{ (E/W)} \qquad \text{GHA} = \text{ }^\circ \text{ }$$

$$1. \quad \text{LHA} = \text{GHA} + \text{LonAP} = \text{ }^\circ \text{ } \pm \text{ }^\circ \text{ } = \text{ }^\circ \text{ } \\ t = \text{ } - \text{LHA} = \pm \text{ }^\circ \text{ } \quad \text{if ( LHA < 180}^\circ \text{)} \quad (1)$$

$$t = 360^\circ - \text{LHA} = \pm \text{ }^\circ \text{ } \quad \text{if ( LHA > 180}^\circ \text{)}$$

$$A(t) = \text{ }^\circ \text{ }$$

$$2. \quad A(\text{Dec}) = \text{ }^\circ \text{ } \qquad B(\text{Dec}) = \text{ }^\circ \text{ }$$

$$3. \quad A(R) = A(t) + B(\text{Dec}) = \text{ }^\circ \text{ } + \text{ }^\circ \text{ } = \text{ }^\circ \text{ } \\ R = \text{ }^\circ \text{ } \qquad B(R) = \text{ }^\circ \text{ }$$

$$4. \quad A(\text{LatQ}) = A(\text{Dec}) - B(R) = \text{ }^\circ \text{ } - \text{ }^\circ \text{ } = \text{ }^\circ \text{ } \\ \text{LatQ} = \pm \text{ }^\circ \text{ } \text{ (N/S)} \quad (4)$$

$$5. \quad \text{dLat} = \text{LatAP} - \text{LatQ} = \pm \text{ }^\circ \text{ } - \pm \text{ }^\circ \text{ } = \pm \text{ }^\circ \text{ } \quad (5)$$

$$B(\text{dLat}) = \text{ }^\circ \text{ }$$

$$6. \quad A(\text{Hc}) = B(R) + B(\text{dLat}) = \text{ }^\circ \text{ } + \text{ }^\circ \text{ } = \text{ }^\circ \text{ } \\ \text{Hc} = \text{ }^\circ \text{ } \qquad B(\text{Hc}) = \text{ }^\circ \text{ }$$

$$7. \quad A(Z) = A(R) - B(\text{Hc}) = \text{ }^\circ \text{ } - \text{ }^\circ \text{ } = \text{ }^\circ \text{ } \\ Z = \text{ }^\circ \text{ } \quad (7)$$

$$8. \quad Zc = \text{ }^\circ \text{ } \quad (8)$$

### Remarks and Instructions

(0) Use the appropriate signs for Latitude, Longitude and Declination: positive for N and E, negative for S and W.

(1) The meridian angle "t" is calculated from "LHA" according to the following rule:  
 if  $\text{LHA} < 180^\circ$   $t = \text{ } - \text{LHA}$  (GP is WEST of AP)  
 if  $\text{LHA} > 180^\circ$   $t = 360^\circ - \text{LHA}$  (GP is EAST of AP)

(4) The sign of the Latitude of "Q" (N/S) depends on the values of "t" and "Dec":  
 if  $|t| < 90^\circ$  LatQ has the same sign as Dec  
 if  $|t| > 90^\circ$  LatQ has the contrary sign of Dec  
 Where  $|t|$  is the absolute value of "t"

(5) The value of "dLat" must be calculated taking the correct signs for "LatAP" and "LatQ" into account. The resulting sign of "dLat" should be recorded correctly (see remark 7).

(7) Select one out of four cases, depending on the value of " $|t|$ " and the sign of "dLat" to determine how to select the value of "Z" from the Tables:

$ t $	$ t  < 90^\circ$	$ t  > 90^\circ$
dLat	-	+
Z	$< 90^\circ$	$> 90^\circ$

if  $Z < 90^\circ$  select Z from the top line - left column of the Table

if  $Z > 90^\circ$  select Z from the bottom line - right column of the Table

(8) The true Azimuth "Zc" is obtained from "Z" depending on the sign of "t":  
 if  $t > 0$   $Zc = Z$  (GP is East of AP)  
 if  $t < 0$   $Zc = 360^\circ - Z$  (GP is West of AP)