100920 HP25C Celestial Triangle Reduction

Angles in R1 → R5 stored in ° ' "

Azimuth in R6 stored in decimal degrees

Registers Allocation :

REG 1 : D , Body declination ( ° ' " )

REG 2 : T , Local Hour angle ( ° ' " )

REG 3 : Hv, Observed Geocentric Height ( ° ' " )

REG 4 : Lat , Observer's Latitude ( ° ' " )

REG 5 : Ho, Computed Geocentric Height ( ° ' " )

REG 6 : He, Computed Azimuth ( ° )

This is the program :

 **1 - f FIX 1**

 **2 - RCL 1**

 **3 - g→H**

 **4 - 1**

 **5 - f→R**

 **6 - RCL 2**

 **7 - g→H**

 **8 - 9**

 **9 - 0**

**10 - +**

**11 - x<>y**

**12 - f→R**

**13 - ENTER**

**14 - RDN (roll the stack down, shows as "R with down arrow" on the HP25C calculator)**

**15 - RDN**

**16 - g→P**

**17 - x<>y**

**18 - RCL 4**

**19 - g→H**

**20 - - ("minus" sign)**

**21 - x<>y**

**22 - f→R**

**23 - RDN**

**24 - x<>y**

**25 - RDN**

**26 - g→P**

**27 - x<>y**

**28 - gx>=0**

**29 - GTO34**

**30 - 3**

**31 - 6**

**32 - 0**

**33 - +**

**34 - STO 6**

**35 - RDN**

**36 - g→P**

**37 - x<>y**

**38 - f→HMS**

**39 - STO 5**

**40 - f LASTx**

**41 - RCL 3**

**42 - g→H**

**43 - x<>y**

**44 - - (minus sign)**

**45 - 6**

**46 - 0**

**47 - \***

**48 - R/S (displays the Intercept in NM)**

**49 - RCL 6 (displays the Azimut in °)**

To run the Program :

Calculator must be set in Degrees (g DEG), then enter the following :

Declination D ( ° ' " ) STO 1,

Hour Angle T ( ° ' " ) STO 2,

Observed geocentric height Hv ( ° ' " ) STO 3

Observer's Latitude Lat ( ° ' " ) STO 4

GTO 00 R/S

Step 48 : The program will first halt displaying the intercept value in NM ( "Observed – Computed" geocentric heights, i.e. the value of "Hv-He" in arc minutes),

then R/S :

Step 49 : The program will end and show the computed Azimuth reckoned from true north ( 0° - 360° range)

**EXAMPLE 1 :**

R 1 : D = S -13°25'48"

R 2 : T = 40°53'18"

R 3 : Hv = 50°14'18"

R 4 : Lat = S -14°02'54", get :

Intercept = -5.3 NM (i.e. AWAY from body),

R 5 : He = 50°19'39" , and

R 6 : Z = 265°8

**EXAMPLE 2 :**

R 1 : D= N +34°31'12"

R 2 : T=36°18'00

R 3 : Hv=60°35'14"

R 4 : Lat=N37°35'24", get :

Intercept = -5.3 NM (i.e. AWAY from body),

R 5 : He=60°40'22" , and

R 6 : Z = 275°2

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