

wvl_i2ga

wvl_i2ga

SOLUTION WITHOUT REFRACTION & VELOCITY CORRECTIONS

eph_start_time =
21.17196
first_line_time =
36.622625
avg_line_rate =
11895.97
dtl =
8.40620815284504e-005
dte =
0.02
do for point 1014 / s14
h =
154.932
vec0 =
0.05372
140.711895
7949.165
vec_img =
0
-92.99084368
0
vSensor =
0.05372
47.72105132
7949.165
vSensor =
6.75782072807943e-006
0.00600317032345566
0.999981980787854
vSat =
6.75782072807943e-006
0.00600317032345566
0.999981980787854
tline =
38.0711827888983
num_intvl =
844.961139444913
nintvl =
844
frac =
0.961139444912874
idx1 =
845
idx2 =
846
idx1 =
845

line (1014) = 17232
sample (1014) = 11524

wv1_i2ga

```
idx2 =  
  846  
intx =  
    211894.779180449  
inty =  
   -5276491.93458519  
intz =  
    4391315.84327945  
intvx =  
   -1477.92085005203  
intvy =  
   -4872.88529264325  
intvz =  
   -5767.31357582196  
intqi =  
  -0.619453010544771  
intqj =  
    0.624386422655903  
intqk =  
    0.29370581546993  
intqs =  
    0.374374754516316  
m =  
    0.0477569782575812  
0.103635124202792  
   -0.55364401342056  
0.830586984441313  
   -0.831382930683136  
-0.547160874248295  
after rotation into ecf  
vEcf =  
    0.0976696207948096  
    0.830928645144723  
   -0.547739200579758  
no corrections for now  
vEcfCorr =  
    0.0976696207948096  
    0.830928645144723  
   -0.547739200579758  
iterate for the height  
k =  
    506573.849749824  
XG =  
    261371.654990081  
   -4855565.21194682  
    4113845.48778287  
dh =  
   -0.000212754093098511  
k =  
    506573.849533353  
XG =
```

wvl_i2ga

```
261371.654968939
-4855565.21212669
4113845.48790144
dh =
2.98143731924938e-011
k =
506573.849533353
XG =
261371.654968939
-4855565.21212669
4113845.48790144
dh =
2.98143731924938e-011
phid =
40.4217059412936
lamd =
-86.9187822918815
computed
xy_comp =
506889.88415342
4474567.32937631
control
xy =
506890.327901243
4474579.62475315
discrepancy E,N UTM-16
dx =
-0.443747822951991
dy =
-12.2953768372536
do for point 1025 / s25
vec0 =
0.05372
140.711895
7949.165
vec_img =
0
-97.89699024
0
vSensor =
0.05372
42.81490476
7949.165
vSensor =
6.7578444790792e-006
0.00538601019647557
0.999985495319055
vSat =
6.7578444790792e-006
0.00538601019647557
0.999985495319055
```

line (1025) = 15794
sample (1025) = 12132

wvl_i2ga

```
tline =
    37.9503015156603
num_intvl =
    838.917075783017
nintvl =
    838
frac =
    0.91707578301714
idx1 =
    839
idx2 =
    840
idx1 =
    839
idx2 =
    840
intx =
    212073.425033151
inty =
    -5275902.84527827
intz =
    4392012.96389863
intvx =
    -1477.80364415857
intvy =
    -4873.6909671725
intvz =
    -5766.65999523153
intqi =
    -0.619566132816245
intqj =
    0.624396129809172
intqk =
    0.293743133612322
intqs =
    0.374142020440836
m =
    0.0476888889341646          -0.99351269012486
0.103239064472174
    -0.553906092060864          0.0597055569114696
0.830435601146623
    -0.831212253909966          -0.096787297899859
-0.547465439927633
after rotation into ecf
vEcf =
    0.0978868198172371
    0.830741387470268
    -0.547984413692618
no corrections for now
vEcfCorr =
    0.0978868198172371
```

```
0.830741387470268
-0.547984413692618
iterate for the height
k =
    506580.361981109
XG =
    261660.965649346
    -4855065.5725009
    4114414.82125022
dh =
    -0.000214458130301409
k =
    506580.361762901
XG =
    261660.965627987
    -4855065.57268217
    4114414.82136979
dh =
    3.12923020828748e-010
k =
    506580.361762901
XG =
    261660.965627987
    -4855065.57268217
    4114414.82136979
dh =
    3.12923020828748e-010
phid =
    40.4284314839636
lamd =
    -86.9150614656215
computed
xy_comp =
    507204.81276413
    4475314.15071624
control
xy =
    507205.922191737
    4475325.69710722
discrepancy in E,N utm-16
dx =
    -1.1094276062795
dy =
    -11.5463909814134
diary off
```

wvl_i2g

SOLUTION WITH REFRACTION & VELOCITY CORRECTIONS

eph_start_time =
21.171959999999999
first_line_time =
36.622624999999999
avg_line_rate =
1.1895970000000000e+004
dtl =
8.406208152845040e-005
dte =
0.0200000000000000
do for point 1014 / s14
h =
1.5493200000000000e+002
vec0 =
1.0e+003 *
0.000053720000000
0.140711895000000
7.949165000000000
vec_img =
0
-92.990843679999998
0
vSensor =
1.0e+003 *
0.000053720000000
0.047721051320000
7.949165000000000
vSensor =
0.000006757820728
0.006003170323456
0.999981980787854
vSat =
0.000006757820728
0.006003170323456
0.999981980787854
tline =
38.071182788898255
num_intvl =
8.449611394449129e+002
nintvl =
844
frac =
0.961139444912874
idx1 =
845
idx2 =
846

```

idx1 =
  845
idx2 =
  846
intx =
  2.118947791804491e+005
inty =
  -5.276491934585190e+006
intz =
  4.391315843279450e+006
intvx =
  -1.477920850052032e+003
intvy =
  -4.872885292643246e+003
intvz =
  -5.767313575821963e+003
intqi =
  -0.619453010544771
intqj =
  0.624386422655903
intqk =
  0.293705815469930
intqs =
  0.374374754516316
m =
  0.047756978257581  -0.993468183717615  0.103635124202792
  -0.553644013420560  0.060029723306553  0.830586984441313
  -0.831382930683136  -0.097043290651966  -0.547160874248295
after rotation into ecf
vEcf =
  0.097669620794810
  0.830928645144723
  -0.547739200579758
vNad =
  1.0e+006 *
  -0.211894779180449
  5.276491934585191
  -4.391315843279450
vNad =
  -0.030852309558543
  0.768267926083945
  -0.639384492105946
theta =
  0.170037368545836
HH =
  4.970362090355642e+002
hh =
  0.154932000000000
K =
  4.613582089934288e-006
dtheta =

```

s14_s25

```
7.921303244051944e-007
vNorm =
  0.652836344315358
 -0.468903470716270
 -0.594923728465419
atm. refr. rotation matrix for - dtheta
ans =
  0.999999999999820 -0.000000471257222 0.000000371432537
  0.000000471257030 0.999999999999755 0.000000517131553
 -0.000000371432780 -0.000000517131378 0.999999999999797
theta_prime =
  0.170036576415512
atm. refr. rotation matrix for + theta_prime
ans =
  0.991724920262441 0.096257394658995 -0.084948198944517
 -0.105086686000211 0.988749422888741 -0.106448894605226
  0.073745989422801 0.114494946223159 0.990682813181600
vEcfCor =
  0.097669025765506
  0.830928407918792
 -0.547739666556621
new_theta =
  0.170036576415512
satPos =
  1.0e+006 *
  0.211894779180449
 -5.276491934585191
  4.391315843279450
satVel =
  1.0e+003 *
 -1.477920850052032
 -4.872885292643246
 -5.767313575821963
corrected for velocity aberration
vEcfCorr =
  0.097673516512589
  0.830941806872991
 -0.547718538815982
iterate for the height
k =
  5.065756801636558e+005
XG =
  1.0e+006 *
  0.261373807241790
 -4.855557023592088
  4.113854951940501
dh =
 -2.127540930985106e-004
k =
  5.065756799471847e+005
XG =
```


s14_s25

```
1.0e+006 *
  0.261373807220646
 -4.855557023771963
  4.113854952059065
dh =
 -1.832830776038463e-009
k =
  5.065756799471828e+005
XG =
  1.0e+006 *
  0.261373807220646
 -4.855557023771964
  4.113854952059066
dh =
 -9.015082014229847e-010
phid =
  40.421817892781952
lamd =
 -86.918751782479958
computed
xy_comp =
  1.0e+006 *
  0.506892460910282
  4.474579758186055
control
xy =
  1.0e+006 *
  0.506890327901243
  4.474579624753150
discrepancy E,N UTM-16
dx =
  2.133009039098397
dy =
  0.133432904258370
```

```
do for point 1025 / s25
vec0 =
  1.0e+003 *
  0.000053720000000
  0.140711895000000
  7.949165000000000
vec_img =
  0
 -97.896990239999994
  0
vSensor =
  1.0e+003 *
```

```
0.000053720000000
0.042814904760000
7.949165000000000
vSensor =
0.000006757844479
0.005386010196476
0.999985495319055
vSat =
0.000006757844479
0.005386010196476
0.999985495319055
tline =
37.950301515660342
num_intvl =
8.389170757830171e+002
nintvl =
838
frac =
0.917075783017140
idx1 =
839
idx2 =
840
idx1 =
839
idx2 =
840
intx =
2.120734250331509e+005
inty =
-5.275902845278272e+006
intz =
4.392012963898627e+006
intvx =
-1.477803644158569e+003
intvy =
-4.873690967172503e+003
intvz =
-5.766659995231527e+003
intqi =
-0.619566132816245
intqj =
0.624396129809172
intqk =
0.293743133612322
intqs =
0.374142020440836
m =
0.047688888934165 -0.993512690124860 0.103239064472174
-0.553906092060864 0.059705556911470 0.830435601146623
-0.831212253909966 -0.096787297899859 -0.547465439927633
```

after rotation into ecf

vEcf =

0.097886819817237
0.830741387470268
-0.547984413692618

vNad =

1.0e+006 *
-0.212073425033151
5.275902845278273
-4.392012963898627

vNad =

-0.030878326492473
0.768182296172215
-0.639486113063144

theta =

0.170106944793486

HH =

4.970349333324060e+002

hh =

0.156161000000000

K =

4.612930391411377e-006

dtheta =

7.923488465561084e-007

vNorm =

0.651527678978583
-0.469721542005257
-0.595712478047073

atm. refr. rotation matrix for - dtheta

ans =

0.999999999999819	-0.000000472012191	0.000000372183200
0.000000472011999	0.999999999999755	0.000000516237293
-0.000000372183444	-0.000000516237117	0.999999999999798

theta_prime =

0.170106152444640

atm. refr. rotation matrix for + theta_prime

ans =

0.991693526056596	0.096429274036938	-0.085119595194904
-0.105263447174861	0.988751318844797	-0.106256464140025
0.073915878309742	0.114333829601672	0.990688759572004

vEcfCor =

0.097886223746564
0.830741150783828
-0.547984878983899

new_theta =

0.170106152444639

satPos =

1.0e+006 *
0.212073425033151
-5.275902845278273
4.392012963898627

```
satVel =
  1.0e+003 *
  -1.477803644158569
  -4.873690967172503
  -5.766659995231527
corrected for velocity aberration
vEcfCorr =
  0.097890713698312
  0.830754555840958
  -0.547963754386299
iterate for the height
k =
  5.065821905563496e+005
XG =
  1.0e+006 *
  0.261663117213566
  -4.855057382565693
  4.114424284856134
dh =
  -2.144599929465585e-004
k =
  5.065821903381388e+005
XG =
  1.0e+006 *
  0.261663117192205
  -4.855057382746972
  4.114424284975706
dh =
  1.244245595444227e-009
k =
  5.065821903381387e+005
XG =
  1.0e+006 *
  0.261663117192205
  -4.855057382746972
  4.114424284975706
dh =
  1.244245595444227e-009
phid =
  40.428543439967413
lamd =
  -86.915030954105745
computed
xy_comp =
  1.0e+006 *
  0.507207388917201
  4.475326580151126
control
xy =
  1.0e+006 *
  0.507205922191737
```

s14_s25

4.475325697107221
discrepancy in E,N utm-16
dx =
1.466725463920739
dy =
0.883043904788792
diary off