ISIS Planetary Geodesy Software

(formerly RAND/USGS Planetary Geodesy (RUPG) Software)

Evpest Program Primary Output

File: ISIS-PG-FMT611.doc, .pdf, or .asc

Version: 2006.08.10

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Description: This document describes the primary output of *evpest* program (note 1), giving statistics for each point in a control network, including number of measures, number of pairs of measures, minimum and maximum range to the point in km, minimum and maximum resolution at the point in m/pixel, minimum and maximum stereo angle in degrees, minimum and maximum expected vertical precision of the point in m.

The *ranges* (range1 and range2) and *stereo angles* (strang) are computed from the solution output spacecraft positions and control point positions.

The *resolutions* (res1 and res2) are computed from:

res1 = 2 * range1 * tan (ifov/2)

where range1 is as noted above and ifov is the number of degrees/pixel for the camera (e.g. this is 5.6 degrees/384 pixels for Clementine).

The *expected vertical precisions* (evp) are computed from

res = maximum {res1, res2}
evp = 0.2 res / tan(strang)

where the 0.2 reflects that pixel measurements can normally be made at the 1/5 pixel level of precision.

The "n/a" ("not applicable") flags indicated below are used when there is insufficient data to compute the given values, e.g. if there is only one measure on a point (e.g. some ULCN (1994) points in the ULCN 2005 solution), or in 4 cases where there inadvertently are 2 measures on the same point on the same image.

File output (note 2):

Group 1 (1 record):

"Point meas meas pairs rng-mn km rng-mx km res-mn m res-mx m sta-mn sta-mx evp-mn m evp-mx m"

Group 2 (npoi records, where npoi is the number of control points):

Name	Columns	Format	Description (units) (note 3)
(lptc)	1-7	A7	Control point name.
imea	8-12	I5	Number of measurements.
ipairs	13-22	I10	Number of measurement pairs.
slmin	23-34	F12.4	Minimum range to point (km). "999999.0000" is n/a flag.
slmax	25-46	F12.4	Maximum range to point (km). "999999.0000" is n/a flag.
resmin	47-56	F10.1	Minimum resolution at the point (m/pixel). "999999.0" is n/a flag.
resmax	57-66	F10.1	Maximum resolution at the point (m/pixel). "999999.0" is n/a flag.
(stmin)	67-73	F7.2	Minimum stereo angle between the two vectors (degrees). "360.00" and "0.00" are n/a flags.
(stmax)	64-80	F7.2	Maximum stereo angle between the two vectors (degrees). "360.00" and "0.00" are n/a flag.
evpmin	81-92	F12.	Minimum expected vertical precision (m). "999999.0" is n/a flag.
evpmax	93-104	F12.	Maximum expected vertical precision (m). "999999.0" is n/a flag.

Example (first 6 records from output using ULCN 2005 files as input):

```
     1    1        0 999999.0000 999999.0000  999999.0  999999.0 360.00 360.00    999999.0
999999.0
    10    1        0 999999.0000 999999.0000  999999.0  999999.0 360.00 360.00    999999.0
999999.0
   100    2        1    521.4215    525.3299     132.7     133.7   3.25   3.25       470.2
470.2
  1000    2        1    452.5236    650.1677     115.2     165.5  30.12  30.12        57.0
57.0
  1001    2        1    654.2265    663.4558     166.5     168.9   3.96   3.96       487.5
487.5
  1003    2        1    675.8516    685.6348     172.0     174.5   3.94   3.94       507.0
507.0
```

Notes:

1. The *evpest* program currently works with only Clementine data, but will eventually be changed to handle other camera data as well. It has not yet been checked into the ISIS software package.

2. Currently as output from evpest program unit 11.

3. The variable name is as used in evpest.f program. Variable names in parentheses indicate the output is derived from that variable during printout.

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Document History:

Begun 2006.08.10 by B. Archinal.

Modifications:

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(End of document.)