RESEARCH ON THE GEODETIC NETWORKING THICKENING BY GPS MEASUREMENTS IN LUGOJ TOWN

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Abstract: *The work was focused on the thickening of geodetic network in Lugoj town. The absolute rectangular coordinates for 40 points were determined, using the „fast static" method. Thickening GPS determined points, can be used in topographical measurements, which will be made in Lugoj town. The paper work was focused on the thickening of geodetic network in Lugoj using GPS technology. Using the GPS device has the advantage of not requiring angular and distance measurements, eliminating the drawbacks of using total stations, is worth mentioning that by developing the method stop / go kinematic is possible to determine accurate coordinates provided by comparison with the total stations and a convenient time. To determine the coordinates of those 40 points studied was used "rapid static" method, with six equipments Leica 1200 with dual frequency L1/L2. As fixed points were used: Sura, Watched Hill, New Salbagelul and Ohaba Valley, points that served as support for determining coordinates of the new points. For all the terminals were made two sessions of measurements with four fixed reference points: Throne Hill, Ohaba Valley, New Salbagelul and Sura, and two rovers points on new points. To obtain more accurate results and to ensure stability and confidence in solutions, specialized software was used in GPS data processing, namely Leica Geo Office software that allows data processing and clearing network simultaneously. After processing, the data were obtained absolute rectangular coordinates (x, y, z) of those forty points in Stereographic Projection System 1970, and for rate was taken the Black Sea as a benchmark. The work performed provides accuracies required by the technical rules in force. Thickening points located by GPS, can be used in the topographic surveys to be performed in future in Lugoj. During the campaign of GPS measurements to achieve Lugoj support network, have once again confirmed the performance of GPS technology and advantages that it has over traditional surveying methods.*

Key words: *fast static, GPS measurements, absolute rectangular coordinates, geodetic network.*

MATERIAL AND METHOD

The method used was „rapid static", with 6 equipment Leica 1200 of dual frequency L1/L2. For determination were used four references on four fixed points (Guarded Hill, Ohabei Valley, Sura and High Salbagelul).

Table 1

Old points coordinated inventory
Stereographical projection system 1970
Reference system Black Sea

No.	Naming	Order (Class)	x (m)	y (m)	z (m)
1	**Dealul Pazit**	**I**	462379.57	238419.47	323.94
2	**Vadul Ohabei**	**III**	475980.61	245448.64	107.27
3	**Sura**	**III**	478172.16	266538.75	223.18
4	**Salbagelul Nou**	**III**	456116.61	271388.99	170.55

Six dual frequency GPS receivers were used (four fixed references and two mobile

rovers) for each item measuring four vectors (Figure 1).

RESULTS AND DISCUTIONS

On the entire route, were placed 40 landmarks. They were located in protected areas, easily accessible by car, being located outside the areas of private property.

For all the landmarks two sessions of measurements were made, with four fixed reference points on Throne Hill, Ohatei Way, Great Sarbagelul and Sura and also two rovers on new points.

To obtain more accurate results and to ensure stability and confidence in solutions, specialized software was used in GPS data processing, namely Leica Geo Office program that has enabled processing data and simultaneously network compensation.

Stereographic coordinates 1970 of the 40 points determined are presented in Table 2, and will serve to prepare the plan situation

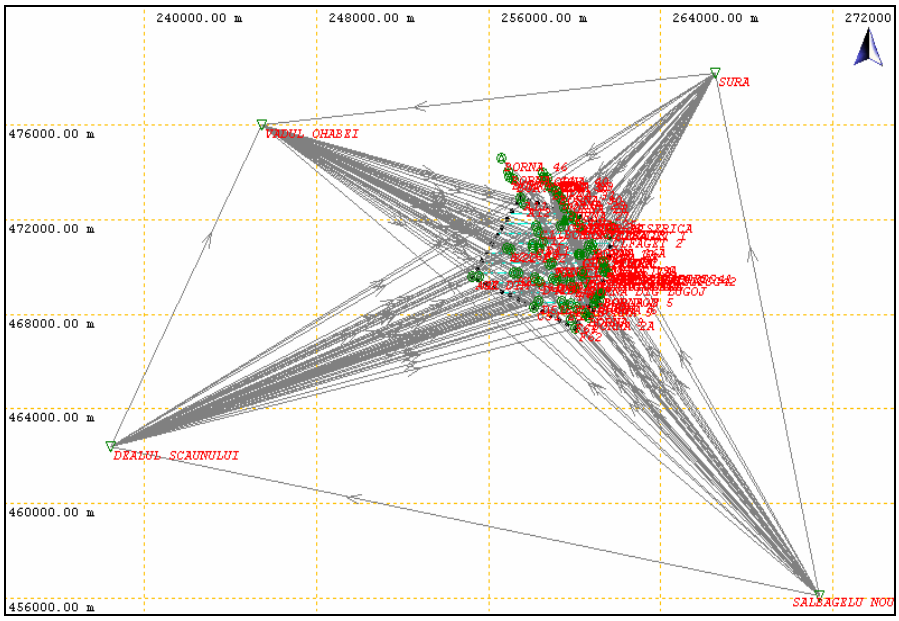

Figure 1. Sketch network

CONCLUSIONS

From a technical standpoint, geodesic-topography, the paper provides accuracies required by technical rules in force. Thickening points determined GPS could be used in the topographic surveys to be performed in Lugoj.

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Table 2

New points coordinated inventory
Stereographical projection system 1970
Reference system Black Sea

No.	Naming	x (m)	y (m)	z (m)
1	B11	472942.010	257505.316	116.342
2	B12	472668.599	257621.692	116.218
3	A31	470810.634	256851.584	119.071
4	B30	470724.956	257027.364	117.958
5	A41	469741.403	257164.782	120.313
6	F31	470523.171	260460.031	121.759
7	E52	469563.149	259783.525	123.012
8	D21	471755.923	259376.355	119.282
9	F52	469343.239	260482.537	123.339
10	C21	471715.596	258197.806	119.519
11	C22	471489.068	258290.097	120.730
12	B31	470950.858	258045.959	121.368
13	B32	470852.869	258032.923	120.697
14	B41	469763.008	257388.370	119.927
15	C51	469527.980	258158.088	121.766
16	C61	468299.046	258132.614	121.462
17	E21	471982.570	259519.684	118.888
18	G21	471683.699	261736.801	150.957
19	G31	471388.083	261602.275	139.888
20	E51	469530.559	259480.870	122.594
21	C32	471041.620	258518.587	121.132
22	C31	470753.432	258353.126	120.768
23	D51	469513.517	259010.386	122.244
24	C52	469377.476	258350.165	121.724
25	D52	469415.081	259142.525	120.833
26	D51	468526.848	258312.442	122.060
27	E53	469279.924	259835.843	123.010
28	D62	468301.788	259521.794	122.607
29	E54	469124.200	259994.611	122.642
30	E61	468425.736	259825.642	123.434
31	E62	468303.065	260070.770	123.756
32	E71	467777.793	259825.790	124.089
34	E72	467422.692	260015.485	123.938
35	G42	469756.096	261523.778	123.260
36	D41	470147.486	258946.601	123.117
37	E31	470520.890	260206.214	122.857
38	C41	470120.749	258813.504	122.945
39	G41	469858.983	261328.410	122.897
40	F51	469656.281	260353.242	123.055