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PHOTOGRAMMETRIC TEST FIELD IN YUGOSLAVIA

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ABSTRACT

In socialistic republic of Slovenia /Yugoslavia/ the methods of analytical photogrammetry /block adjustment with independent models/ have been using for production of basic national map series in scales 1:5000 and 1:10000 since 1976. In the year 1978 the methods of digital aerotriangulation have been developed. For testing of both methods an test photogrammetric area has been established in the year 1979. Test area will be used in next period for extensive research for photogrammetric methods and procedures.

1. General

Methods of analytical photogrammetry /block adjustment of independent models/ have been initiated in our organisation in 1976. This adjustment has been used for production of our basic maps in scales 1:5000 and 1:10000. Due to production needs an extensive research work has been initiated with intention of automation of photogrammetric proces. In the project the computer programs for digital relative orientation and post-adjustment method /digital filtering/ have been generated. The obtained results regarding accuracy of adjusted points were relatively good compared with the existing controll. Although the obtained absolute accuracy has been satisfactory for present production needs it was decided to establish test photogrammetric area with complete new geodetic trigonometric net. Test area is used now for testing photogrammetric procedures in order to obtain real absolute accuracy. This contribution represents the main characteristics of test area completed in 1979.

2. The evaluation of test area /fig. 1/

The test area has been selected on the variable terrain covering approximately 25 sq. km. It contains 70 regularly spaced points /according to the present photogrammetric research needs/. The positional and height observations have been carried out by AGA Geodimeter 710. and Wild theodolite T2. After corresponding positional and and height adjustment the following mean s.r.e. have been obtained. :

$$m_{xy} - 6 \text{ mm}$$
$$m_z - 25 \text{ mm}$$

The obtained accuracy has been estimated as sufficient for planned photogrammetric research.

3. Accuracy estimation of photogrammetric block adjustment

The block adjustment has been carried out with two different photo scales /1:5000, 1:10000/ and with two different methods /analogue relative orientation, digital relative orientation/.

The results are presented in the figure 2.

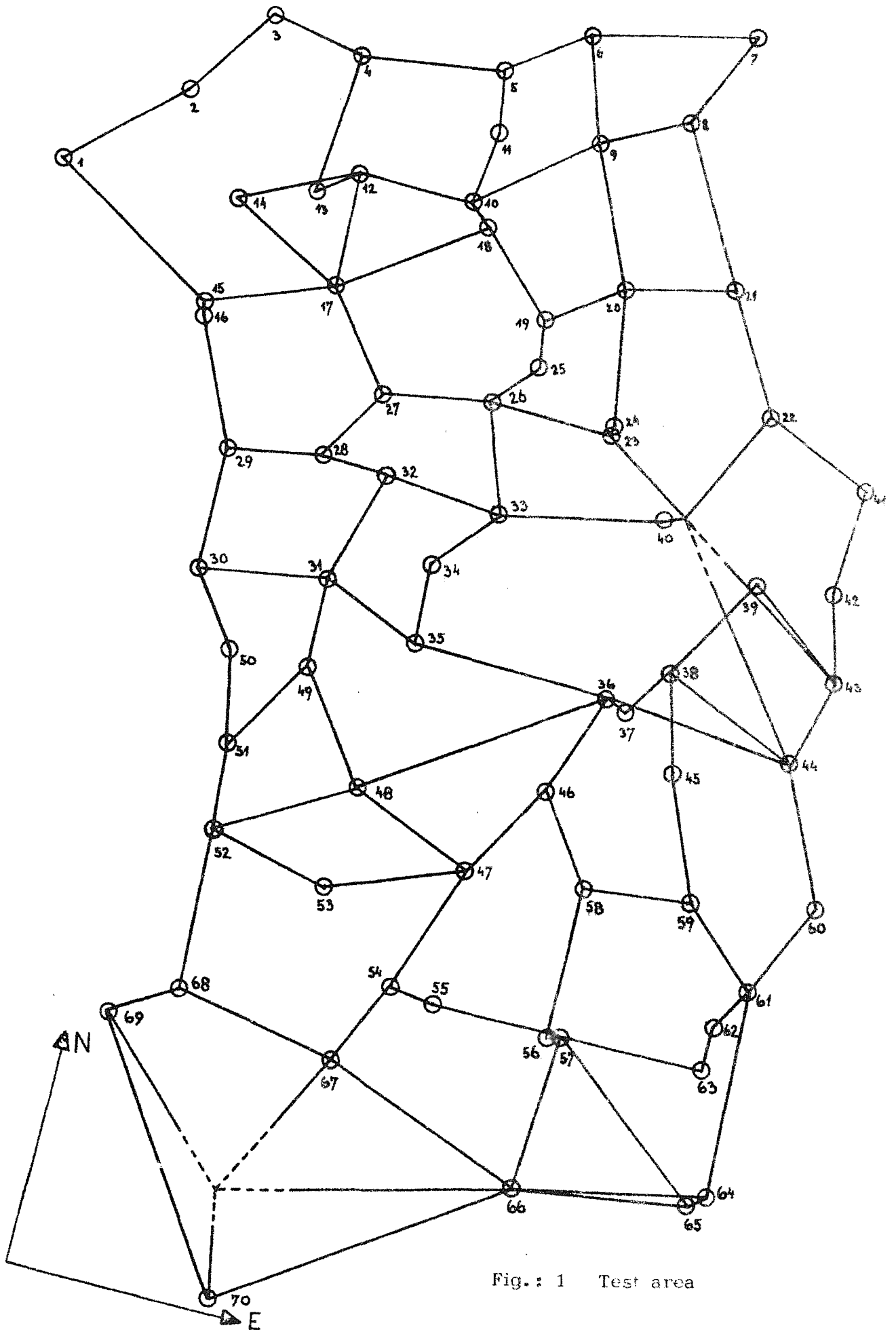


Fig.: 1 Test area

Results of block adjustment with independent models

photo scale	Digital relative orientation		analogue relative orientation	
	On the ground	in the photo scale	On the ground	in the photo scale
1:5000	$m_{x,y}$ 0,11 m	22 μ m	$m_{x,y}$ 0,07 m	14 μ m
	m_z 0,30 m	60 μ m	m_z 0,23 m	46 μ m
1:10000	$m_{x,y}$ 0,11 m	11 μ m	$m_{x,y}$ 0,09 m	9 μ m
	m_z 0,35 m	35 μ m	m_z 0,24 m	24 μ m

The mean r.s.e. are computed as comparison with 50 terrestrially determined points. The digital relative orientation has been realized by monoscopic observations on stereoplotter Wild A7.

Fig. : 2

4. Conclusions

Considering available instrumental means /stereoplotter Wild A 7/ the obtained results are relatively sufficient. With incorporation of corresponding digital photogrammetric comparator it is estimated that results should be better for about 60-70%. In further research work this will be probably proved.

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