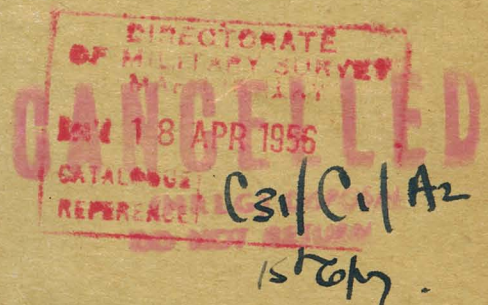


C31/C1/A2.
1st copy.

Analysis of datums, control etc.
for Polish 1:25000 series.

(covering M35, N35.)

Dumburg.
1956.



Analysis diagrams
held as C31/B1/C6.

Polish native Series. 1:25,000A. Borowa GoraI Polish New Survey

Datum : Borowa Gora

Control: New triangulation.

Scaling of stereographics and comparison with Borowa Gora stereographics in Bn 363G shows:-

that errors are the smallest of any comparison of scaling of co-ordinates, although they were not as good as might be expected ($\pm 15m$)

They were of the same order for churches as for trigonometrical points.

II 'Pulled' sheets

Datum: Borowa Gora

- (a) Sheets 4542 A and B
4543 E, F, G, H and I

Control: Both new and old control appears on the sheets (It was assumed that new control triangulation points did not have heights printed on the maps). Scaling of stereographics and comparison with Borowa Gora values in Bn 363G showed:- that errors were of the order of $\pm 20m$ in both northing and easting. Differences in height of trig points as between figures printed on the lists and on the map occurred.

- (b) Sheets 4641 DE GH
4743 BE FG

Control: Both new and old control appears on the sheets. No new and old control points are coincident.

Scaling of stereographics and comparison with Borowa Gora values in Bn 363G shows: that errors vary between - 1 and + 69 in northing, and - 19 and + 27 in easting.

B. Old DatumsIII New Survey

Datum: Dorpat I.

Control: New triangulation.

Comparison with stereographics:-

- (a) With Zone IV co-ordinates: Poor results. Differences mainly in northing, averaging 35m. This is probably due to the very rough method of deriving 'Zone' co-ordinates from Borowa Gora values in this zone. i.e. an all over correction of 200m and 40m. (In this area a better correction would have been 202m easting and 7m northing as shown on the Polish sheets 4443 E, F, G, H and I.)

Therefore (b) With Borowa Gora co-ordinates (and correction for datum given on the sheets already stated). Results better. Differences generally $< 10m$.

IV Ordinary revised sheets

- (a) Datum: Dorpat I, on Bessel.

Control: Old triangulation.

Comparison with stereographics:- the values obtained compare only with 'Polish' co-ordinates (in Bu 363D), to $\pm 20m$, in both northing and easting. Greater differences in some cases occur near system junctions. This is not as apparent as might have been expected, as shown on the accompanying charts for 4441 H and I and 4541 A, B and C.

(b) Datum: Niemeż on Walbeck

Control: Old triangulation.

Comparison with stereographics:- as for IVA

(c) Sheets on two systems.

Datum: Bessel-Dorpat I and Walbeck - Nieżmeż.

Control: Old triangulation.

Comparison of stereographics: errors of the order of $\pm 20m$ in northing and easting but greater differences do occur, as shown on the charts for 4441 D and G. These appear to be near the zone of distortion in detail which occurs between the two systems.

NOTE:- The classification of trig lists used above i.e. Bu 363 G or Bu 363 D is based on the old cataloguing system.

3442 E, F, H, I	Average errors	
3542 B, C, E, F, H, I		
3642 B, F, I		
3742 C, F, I		$\pm 5m$ easting
3743 A - I		$\pm 5m$ northing
3744 A		

Overlap along the western edge of the block seems to be slightly more in the region of 200-250m.

No visible discrepancies in northing adjustment.

On another datum

Control: New triangulation

3843 D, E, F, G, H, I
3943 D, E, F, G, H, I
4043 E, I
4143 A to I
4243 A, B, D, E, G, H

Comparison with Borow Gora stereographics:-

Easting difference approx. - 195m
Northing " " - 7m

This was consistent throughout the block of sheets.

1. Sheets stated to be on a specific system.

- (a) Sheet 3442C - on Bessel-Dorpat I, giving adjustment to Borowa Gora (+ 192m, + 14m) for sheet on its southern edge. By sheet edge joining this is assumed to be a correct statement.
- (b) Sheet 3542H. On Bessel Dorpat I, giving adjustment to Borowa Gora (+ 194m, + 13m). By sheet joining methods, this sheet should be on Borowa Gora. This is checked also by scaling of stereographic co-ordinates.

2. Polish revised sheets and reprints (from Russian).

These are assumed to be on the same system as the comparable Russian sheets if a good fit was obtained.

e.g. Comparison made with 3641D and XIX-19-Γ and also in block 3740. Thus, these sheets were assumed to be on Warsaw (adjustment spheroid) system, as were all those fitted against them.

3. Polish New Survey

- (a) on 'Borowa Góra'

Control: New triangulation.

Comparison with stereographic co-ordinates and trig. lists (index 2) on Borowa Gora.

3338 G, H & I	} Average errors \pm 15m easting
3438 B, C & E	

3442 E, F, H, I	} Average errors
3542 B, C, E, F, H, I	
3642 B, F, I	
3742 C, F, I	
3743 A - I	
3744 A	\pm 5m easting
	\pm 5m northing

Overlap along the western edge of the block seems to be slightly more the 194m. stated on 3542H - more in the region of 200-250m.

No visible discrepancies in northing adjustment.

- (b) On another datum

Control: New triangulation

2940 D, E, F, G, H, I
 2941 D, E, F, G, H, I
 3029 F, I
 3040 A to I
 3041 A, B, D, E, G, H

Comparison with Borowa Gora stereographics:-

Easting difference approx. - 195m

Northing " " - 7m

This was consistent throughout the block of sheets.

Fitting with adjacent sheets:-

Gap of 3mm in easting on the eastern edge.
Gap of 2-3mm in northing on the northern edge.
Overlap of 3mm, decreasing westwards to nil on the southern edge.
Perfect fit of detail on the western political boundary.

Comparison with 1:10,000s in the Wilno region. On the same datum. See notes.

4. (a) Sheets through which a datum junction is known to pass.

-4°30' Warsaw to Bessel Dorpat I
-4°57' " " " " "

No sign of this is given on the Polish sheets. Comparison with stereographic co-ordinates was not possible since the requisite lists were not available.

Sheets 3741 A, D and G

3741A - as above. The datum junction appears to have been ignored by the Polish (when a comparison with the similar Russian sheets was made, i.e. detail fitted with the 'old' corners of the Russian sheets).

3741D and G. Here a better fit was obtained when the Polish sheets were superimposed on the Russian sheets joined by the new sheet covers. The detail on the datum line had, of course, been slightly adjusted on the Polish sheets.

Along the Meridian -4°30' scaling of geographical co-ordinates of churches and trig. points on the 42,000 Russian sheets gave relatively poor results when compared with co-ordinate lists in B.S.G.8.

(b) Adjacent sheets along the junction of which a system junction occurs.

e.g. 3641 G, H and I, 3741 A, B and C.

Sheets fit exactly in detail and grid. Therefore the system junction has been ignored.

The **embayment** of Warsaw into Bessel-Dorpat as indicated in Diagram III B.S.G.8.

Sheets 3642 A, C, D, E, G, H.

By joining sheet edges - good fit with those to north and south on Bessel-Dorpat I. Similar overlap between Borowa Gora and these sheets.

No conclusive evidence by scaling stereographic co-ordinates since the required trig. lists were not available. Ditto scaling of geographicals.

Note that on sheet 3643D, a fitting line is given for adjustment to 1930 edition of 3642F. This is done by the addition of a strip 37½m wide in the north to 75m in the south.

(c) Bessel Dorpat I and Bessel Dorpat II, system junction.

No means of telling where datum change occurs by sheet edge joining. Good fit all the way across the block. No tables with the same control. By scaling geographicals it is impossible to tell where the change of datum occurs as the readable error is greater than the difference between the two.

i.e. readable error av 0.4"
diffce. between Dorpat I and Dorpat II
0."229

From B.S.G.8., the tables suggest that the diagram given is incorrect and

Polish Analysis of 1:25,000

that the System junction occurs at about $-3^{\circ}35'$. Has the date of survey anything to do with the shape of the system junction between sheets 3643 H and I and those immediately to the north?

This sheet is stated to be on Bessel Dorpat I, and gives an adjustment to Borowna Gora (+ 1942, + 194).

By sheet joining methods, this sheet should be on Borowna Gora. This is checked also by scaling of stereographic co-ordinates.

Polish 1:10,000

This series occurs in the Wilno district, in the same region as the New Survey of the Polish 1:25,000.

Same control as the latter, and same topographical detail.

By scaling of stereographic co-ordinates it was proved that the sheets were on the same datum.

Sheet 3041-H73 original. Greatest differences ± 2 in easting and northing

Bromides 3040 F1 and 2

3041 D1 and 2

3041 G3 and 4

Average differences of ± 10 in easting.
 ± 5 in northing.

Sheet 3041-G-3

Grid and graticule on this sheet are incorrectly placed. They should refer to sheet 3041-I-3.

4441-H

403

02

01

400

99

98

97

96

395

846 47 48 49 50 51 52 53 54 55 56

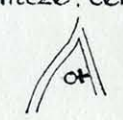


846

857

Scale: 2cm = 100m

Comparison of trigulation data,
between map readings and
trig. lists

- I Spot height, "Punkt" 276

- II Hodomicze, cerk.

- III Antonówka, Trigulation pt.

- IV Spot height "Punkt" 292

- V Spot height, "Punkt" 273

-  Difference in Easting and Northing (in metres)

with C31/C1/A2
1876h

III
-4.5
-1

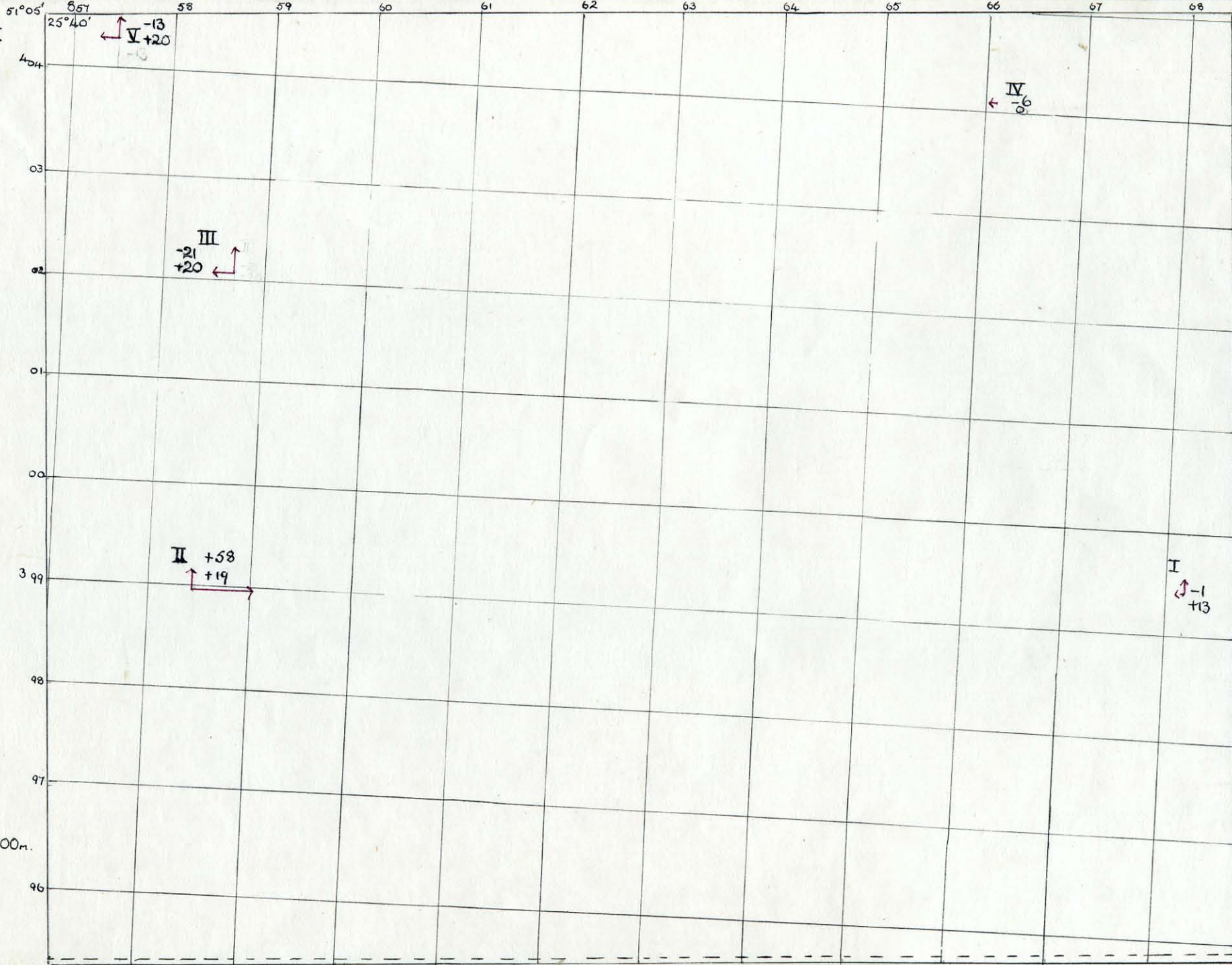
II
+1.9
-6

I
+12.4
-25.3

V
-2.8
+5

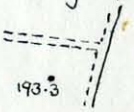
IV
-1.7
+1

4441-I



Comparison of trigonometric data between map readings and trig. lists.

I Spot height, 'Punkt' 283



II Trig. Pt. 'Punkt' 282



III Spot height, Punkt 263

IV Spot height, 'Punkt' 259.

V Spot height, 'Punkt' 255

↗ Difference in Easting and Northing (in Metres)

with C31/C1/A2
KTH

System junction B.D.I
W-N

II
+93
-23

I
-145
+182

III
-1
+15

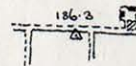
IV
-11
-37

V
-4
+7

51°00'
25°30'

4541/A/1.

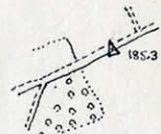
V. Punkt 344. 840263.
385312
Triangulation point.



IV Punkt 331. 841294
389012
Triangulation Point.



III Punkt 314. 844686
391325
Triangulation Point.



I Punkt 308 837782
392263.
Spot height



I Punkt 306 840780
392818
Triangulation point



Co-ordinates used are those from tables.
Comparison of these co-ordinates with
those as read from map.

Differences in northing in metres.
casting

with C31/C1/A2
12/20/21

Scale: 1:50,000.

2cms: 100metres.

50°55'
25°30'

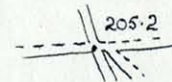
4541-C

Scale 2cm=100m

with C31/C1/A2. 1st G.H.

Comparison of trigonometric data,
between map readings and
trig. lists.

I Spot height, 'Punkt' 347



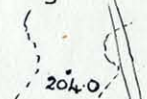
II Spot height, 'Punkt' 341.



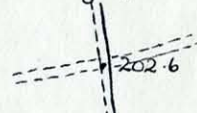
III Spot height, 'Punkt' 340.



IV Spot height, 'Punkt' 334.



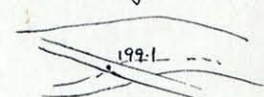
V Spot height, 'Punkt' 329.



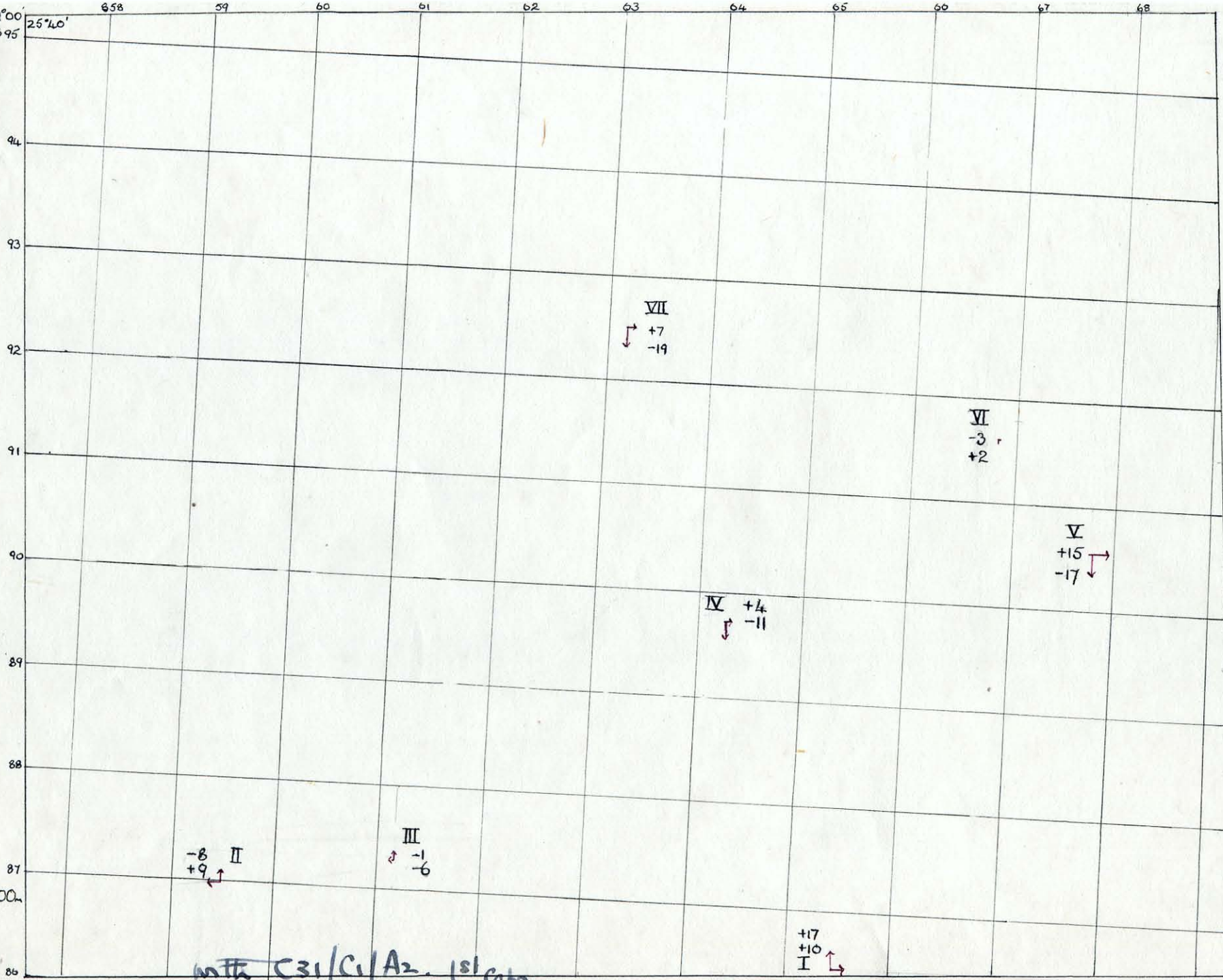
VI Spot height, 'Punkt' 326.



VII Spot height, 'Punkt' 316



↕ Difference in Easting
and Northing (in Metres)



4441/D/123.

25° 20'
51° 10'

I. Punkt 242. 839872
409252
Spot height.



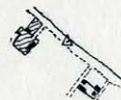
II Unty cerkiew 837865
409226
church



III Punkt 231. 841859
412481
Spot height.



IV. Hruziatyn. 842022
404618
Triangulation Point.



Co-ordinates used are those from tables.

Comparison of these co-ordinates with those as read from map.

↑ Differences in northing in metres.
↓ in easting

MT C31/C1/A2.
NTOM

W-N System junction -4°57'
B-DI

II
-25
+14

I
-7
-22

III
-24
-11

IV
+13
+12

51° 05'
25° 20'

51° 05'
25° 30'

4441 | G/3.

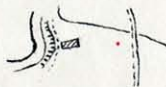
I Borowicze. 844 105
church. 402 503.



II Nawoz cerk. 836 740
Church. 401 737



III Niezwir 840 729
Spot height. 401 655



IV Punkt 264 834 864
Spot height. 400 809



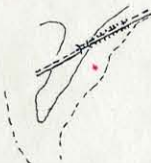
V Czatwertnia cerk 843 247
church. 400 203



VI Sokul Kosciol. 834 864
church. 399 350.



VII Punkt 279 827 746
Spot height. 398 262



Co-ordinates used are those from tables.

Comparison of these co-ordinates with those as read from map.

↑ Differences in northing in metres.
→ easting

with C31/C1/A2.
ishcm.

Scale 1:50,000.

2 cms : 100 metres.

51°00'
25°20'

W-N System
B-DI Junction

II
~20
+63

IV
-14
+21

VI
-29
+25

III
+11
+12

I
+0
-8

V
+3
-3

VII
-6
-82

System junction B-DI
W-N

51°00'
25°30'