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GEOPEKO LIMITED

KING ISLAND GROUP

REPORT ON ORE RESOURCE OF
THE No. 1 OREBODY - KING ISLAND
AUGUST, 1969

By

P. Le Messurier and N. Kinnane

OPEN FILE

001

CONTENTS

1. SUMMARY
2. INTRODUCTION
3. METHOD OF CALCULATION
4. DISCUSSION
 - (i) Possible Sources of Errors
 - (ii) General
5. REFERENCES

TABLE	I	-	ORE RESERVE SUMMARY
TABLE	II	-	C LENS - MAIN OPEN CUT
TABLE	III	-	C LENS - WEDGE BLOCK
TABLE	IV	-	B LENS

002

INDEX OF ACCOMPANYING PLANS

GI - 1 - Composite Plan - Open Cut
GI - 2 - Section Line 00
GI - 3 - Section Line 1S
GI - 4 - Section Line 2S
GI - 5 - Section Line 3S
GI - 6 - Section Line 5
GI - 7 - Section Line 6
GI - 8 - Section Line 7
GI - 9 - Section Line 8
GI - 10 - Section Line 9
GI - 11 - Section Line 10
GI - 12 - Section Line 11
GI - 13 - Section Line 12
GI - 14 - Section Line 13
GI - 15 - Section Line 14
GI - 16 - Section Line 15
GI - 17 - Section Line 15 + 80
GI - 18 - Section Line 16
GI - 19 - Section Line 17
GI - 20 - Section Line 17 + 80
GI - 21 - Section Line 18
GI - 22 - Section Line 19
GI - 23 - Section Line 20
GI - 24 - Section Line 21
GI - 25 - Section Line 22
GI - 26 - Ore Outline -80 Level
GI - 27 - Ore Outline -110 Level
GI - 28 - Ore Outline -140 Level
GI - 29 - Ore Outline -170 Level
GI - 30 - Ore Outline -200 Level
GI - 31 - Ore Outline -230 Level
GI - 32 - Ore Outline +70 Level
GI - 33 - Ore Outline +100 Level
GI - 34 - Ore Outline +130 Level
GI - 35 - Ore Outline +160 Level
GI - 36 - Ore Outline +190 Level
GI - 37 - Ore Outline +220 Level
GI - 38 - C Lens Histogram
GI - 39 - Line 2S Histogram
GI - 40 - Line 13 Histogram

003

1. SUMMARY

The ore resource of the No. 1 Orebody, King Island, has been re-calculated as at 26th August, 1969. This calculation has been of an area bounded by the No. 10 Fault on Line 15 + 80 in the West and the No. 3 Fault on Line 00 in the East and extending to a depth of 230 feet below sea level.

The calculation is based on a minimum mining cut off of 0.25% WO_3 .

The results of this calculation are summarised below.

	TONNAGE	MEAN GRADE % WO_3	LOWER 90% CONFIDENCE GRADE % WO_3
B LENS	256,200	0.593	0.522
C LENS (Wedge Block)	785,500	0.550	0.528
C LENS (Main Open Cut)	2,913,100	0.622	0.609
TOTAL	3,954,800	0.606	

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2. INTRODUCTION

The ore resource of the No. 1 Orebody has been completely re-calculated for this report. New cross sections and floor plans have been prepared from basic drilling data.

The floor plans prepared have been for absolute levels as stated and not for the corresponding mining level which are in fact at varying elevations.

Calculations have been made from the cross sections with some checking from the plans.

Reserves are presented separately for B Lens, C Lens in the main body of the Open Cut and C Lens in a faulted area high on the footwall known as the "Wedge Block".

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3. METHOD OF CALCULATION

Grade Calculation

The following methods were used in the calculation of the grade:-

1. The minimum grade cut off applied was 0.25% WO_3 . All sections of assay less than 0.25% WO_3 were excluded from the calculation except where lower grade portions formed part of the normal population within areas of above cut off grade.
2. All data was treated on an assay foot basis.
3. Grades were calculated on a section by section basis, with grades for each Lens or distinct portion of the orebody being calculated separately.
4. An area of influence was determined at half the distance between adjacent sections, and at 50 feet in the vertical plane above and below the limits of the calculation.
5. The upper limit for calculation was present pit or ground surface, the lower limit was a level of 230 feet below sea level.
6. Data was initially grouped in natural arithmetic increments of 0.05% WO_3 . Histograms were drawn of this grouped data, section by section and for the total orebody in each Lens. These histograms indicate that the distribution closely approximates to the log normal type.
7. The data was regrouped on a lognormal basis and the grades calculated in accordance with the methods of Sichel. A mean grade was calculated and the lower 90% confidence limit determined.

Tonnage Calculation

1. Tonnages were calculated on a section by section basis.
2. The area of influence for each section was taken as half the distance between adjacent section. On the Western and Eastern extremities of the area the terminating fault was used to delineate the area of influence.
3. A check calculation was made from the floor plans.
4. The areas of ore on each section were measured with a planimeter, with repeated measurements being made and averaged to reduce error.
5. The tonnage was calculated on the basis of -

$$\frac{(a + 6b + c) \times f \times i}{8p}$$

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3. Method of Calculation (Contd.)

where a Planimeter reading Western Section
 b Planimeter reading Prime Section
 c Planimeter reading Eastern Section
 f Planimeters factor
 i Area of Influence Prime Section
 p Density factor (ft.³ per ton)

6. The density factor used was 11.5 cubic feet per ton. This figure was supplied by the Mining Section of King Island Scheelite (1947) Limited as the figure that has been traditionally used. Although no recent investigations have been made to test the validity of this figure, experience has shown it to be generally applicable in determining ore mined in comparison with mill throughput, area excavated etc.

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4. DISCUSSION

1. Possible Sources of Errors

a. Inaccuracy in data location. Only a small percentage of the drill holes in the orebody have been surveyed. Although on surveyed holes the deflections are not excessive, sufficient deviation to displace ore boundaries has probably occurred in some places.

This type of error can be reduced by coordinating up to date bench mapping with the drill data. This will be done as soon as staff are available to carry out open cut mapping.

b. Doubt as to early assays. Much of the data used in the calculation is derived from drilling carried out some 20 years ago. Some doubt has been expressed as to the accuracy of the assay results on some of these early holes. No real evidence for or against this view is available.

c. Variance from perfect distribution. Although tests have shown the distribution of grade values to most closely approximate to a log normal distribution rather than any other, the distributions on some sections show quite important variations from a perfect lognormal curve. Such variations will lead to small errors in the determined grade due to the unbalanced weighting of values in the calculation based on a more perfect curve.

d. Non-linear changes between sections. To obtain a workable formulae which does not involve complicated and lengthy calculations, it is necessary to assume straight line changes in the ore outline from section to section. This is obviously not so and minor discrepancies will occur because of this. It is considered however, that many of these variations will be self compensating and the final result a fair estimate. This type of error will be mainly present where cross faulting occurs.

e. Variable weighting of adjacent sections. Again to obtain workable mathematics the weighting of adjacent sections in the tonnage formulae is based on sections being equally spaced. This is not so in the No. 1 Orebody where the interval between sections varies from 85 to 140 feet. Where the interval between the prime section and each of the adjacent sections is greatly different, an error will occur since the weighting of the closer adjacent section should be more than that of the farther.

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4. Discussion (Contd.)

1. Possible Sources of Errors (Contd.)

f. Oblique Terminations. The terminations of the orebody by faults oblique to the section means an average area of influence parallel to the section has to be applied and minor tonnage errors will occur on the two end sections.

g. Tonnage factor. This factor is unverified and some very preliminary tests as to the specific gravity of some ore samples suggests that the factor may be lower than the 11.5 used. Any lowering of the tonnage factor will lead to an overall increase in tonnage.

2. General

a. This resource calculation was terminated at the level of 230 feet below sea level. There is additional ore below this level particularly in the eastern end of the pit, however, the down dip continuation of the orebody is insufficiently defined to be included in the resource calculation. Drilling is currently in progress to further define this extension of the orebody. In 1967 and 1968 a tonnage of ore between the minus 230 level and the minus 300 level was included in the reserve estimate; this has been omitted in this report.

b. Also in 1967 and 1968 a mining cut off grade of 0.5% WO_3 was applied, as stated previously, a cut off grade of 0.25% WO_3 has been used in this report. This cut off has however been rigidly applied to measured assays prior to grouping into ore sections. Many areas of lower grade between ore zones have been omitted from the calculation.

c. This resource figure is a geological estimate of the ore in situ and no allowance has been made in respect to the 'mineability' of some small ore lenses or areas of waste within the orebody. It is considered beyond the scope of this report to anticipate the probable mining programme and determine a grade of ore as mined.

d. The Western end of the No. 1 Orebody from Line 16 to Line 22 has been covered in the re-evaluation of ore inter-sections. Plans and sections covering this area are included in this report, however, due to a lack of information ore in this area has not been included in the resource total. This area requires additional study and drilling as a good potential for ore exists.

4. Discussion (Contd.)

2. General

e. The B Lens orebody has been included in the resource total where it is adequately defined. This Lens is most likely more continuous than is indicated, however, information is very limited on some sections and it is not possible to define B Lens completely.

f. The total grades for each Lens unit have been calculated by two methods. Firstly the unit has been treated as a whole and a statistical count carried out and a Sichel average obtained and secondly a total grade has been derived as a weighted arithmetic average of the individual sections in each unit. These two values vary by up to 0.05% WO_3 . This variance is readily explained by statistical theory and because it is based on larger sample of data the Sichel average is considered the more accurate and is therefore quoted.

g. The calculation of this ore resource has been made unnecessarily complicated by the fact that there is a change in the direction of the drilling cross sections in the No. 1 Orebody. These sections cross each other obliquely in the eastern end of the Open Cut. With drill coverage suddenly switching from Line 5 to Line 3S. This has required a careful distribution of area of influence and a cross transfer to obtain a complete coverage of the area where the sections cross.

5. REFERENCES

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TABLE I
No. 1 OREBODY
ORE RESERVES SUMMARY

	TONNAGE	MEAN GRADE % WO_3	LOWER 90% CONFIDENCE GRADE % WO_3
B LENS	256,200	0.593	0.522
C LENS (Wedge Block)	785,500	0.550	0.528
C LENS (Main Open Cut)	2,913,100	0.622	0.609
TOTAL	3,954,800	0.606	

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TABLE IINo. 1 OREBODYC LENS - MAIN OPEN CUT

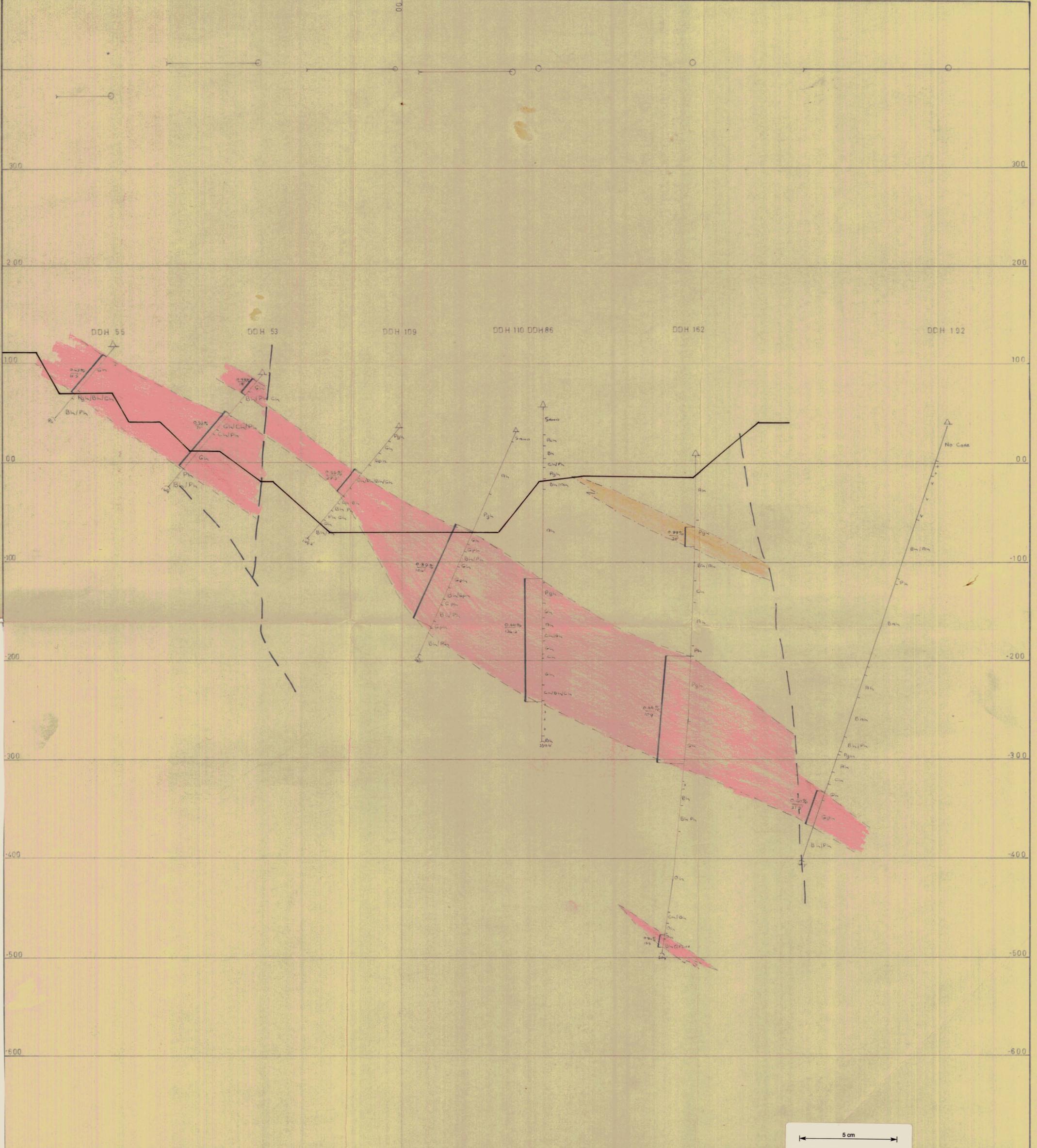
Section	Tonnage	Mean Grade % WO ₃	Lower 90% Confidence Grade % WO ₃
00	76,500	0.620	0.571
1S	207,600	0.667	0.607
2S	206,000	0.764	0.711
3S	193,300	0.549	0.498
5	18,400	0.555	0.498
6	112,900	0.621	0.551
7	234,900	0.511	0.475
8	245,300	0.476	0.427
9	220,300	0.639	0.574
10	364,700	0.553	0.516
11	174,000	0.696	0.640
12	264,300	0.520	0.475
13	245,300	0.577	0.528
14	150,800	0.430	0.397
15	128,900	0.572	0.528
15 + 80	69,900	0.664	0.627
All Sections	2,913,100	0.622	0.609

TABLE IIINo. 1 OREBODYC LENS - WEDGE BLOCK

Section	Tonnage	Mean Grade % WO_3	Lower 90% Confidence Grade % WO_3
8	17,500	0.765	0.735
9	70,800	0.545	0.498
10	71,900	0.647	0.603
11	142,300	0.493	0.456
12	201,300	0.457	0.428
13	109,700	0.437	0.423
14	73,700	0.574	0.557
15	87,400	0.464	0.415
15 + 80	10,900	0.464	0.415
All Sections	785,500	0.550	0.528

TABLE IV
No. 1 OREBODY
B LENS

Section	Tonnage	Mean Grade % WO_3	Lower 90% Confidence Grade % WO_3
00	50,100	0.449	0.363
1S	30,400	0.720	0.565
7	53,300	0.416	0.363
8	35,800	0.486	0.432
9	36,100	1.394	1.239
10	50,500	0.579	0.470
All Sections	256,200	0.593	0.522



GEOPEKO LTD N°1 OREBODY ORE OUTLINE LINE 1S	061018	Scale: 1 in - 50 ft
	Drawn: N.R.K.	Date: AUGUST 69
	Traced: A.M.T.	G1-3
	Checked: <i>Rlem</i>	6538



5 cm

GEOPEKO LTD N°1 OREBODY ORE OUTLINE LINE 2S	Scale: 1 in = 50 ft	G1-4 6539	
	061019		Date: AUG '69
	Drawn: N.R.K.		
	Traced: A.M.T.		
	Checked: P.L.M.		

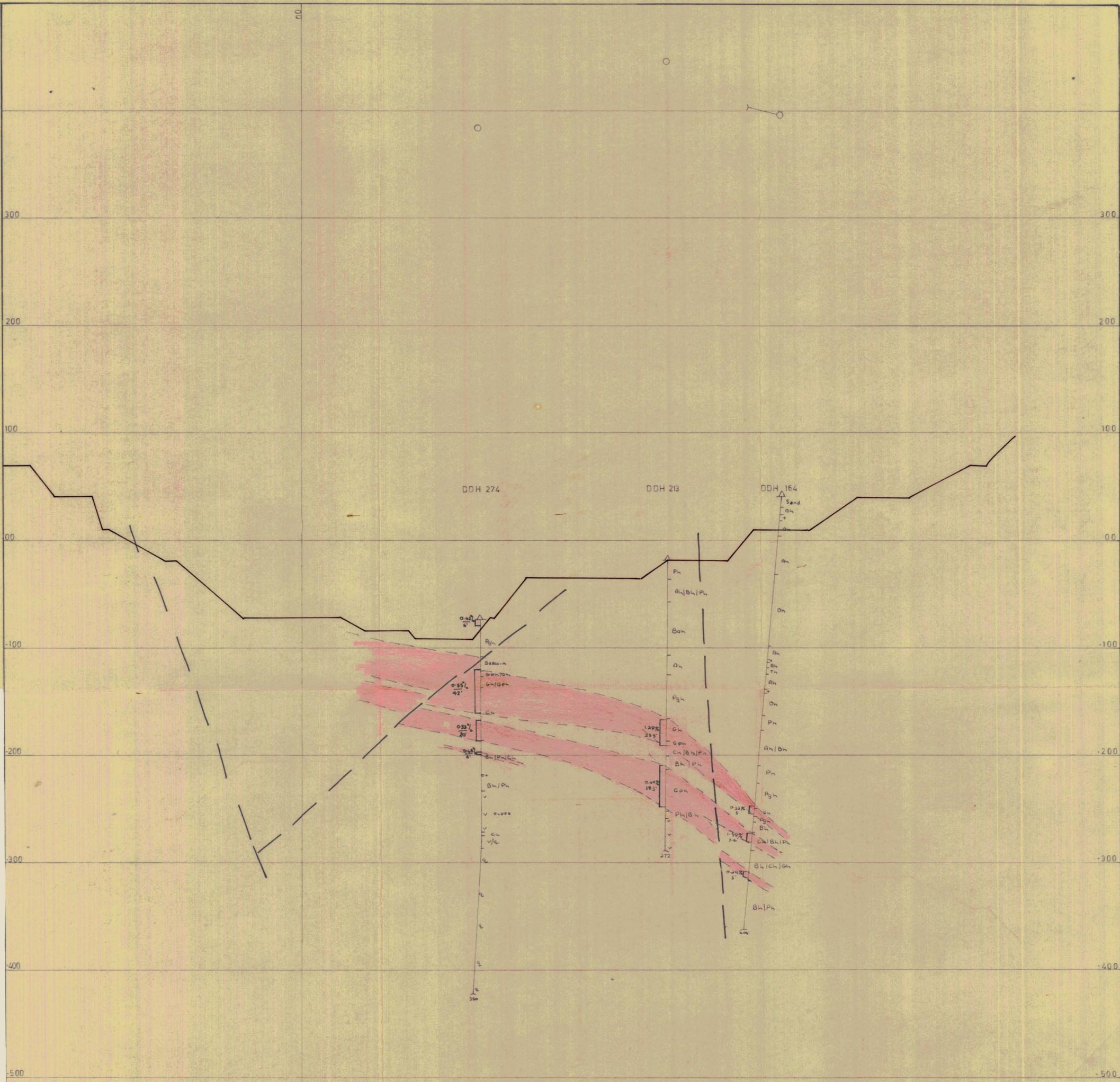


5 cm

GEOPEKO LTD		Scale: 1:10,000
Nº1 OREBODY		Date: AUGUST 68
ORE OUTLINE		Drawn: NRIK
LINE 3S		Traced: AMT
Checked: <i>Riem</i>		G1-5
		6540

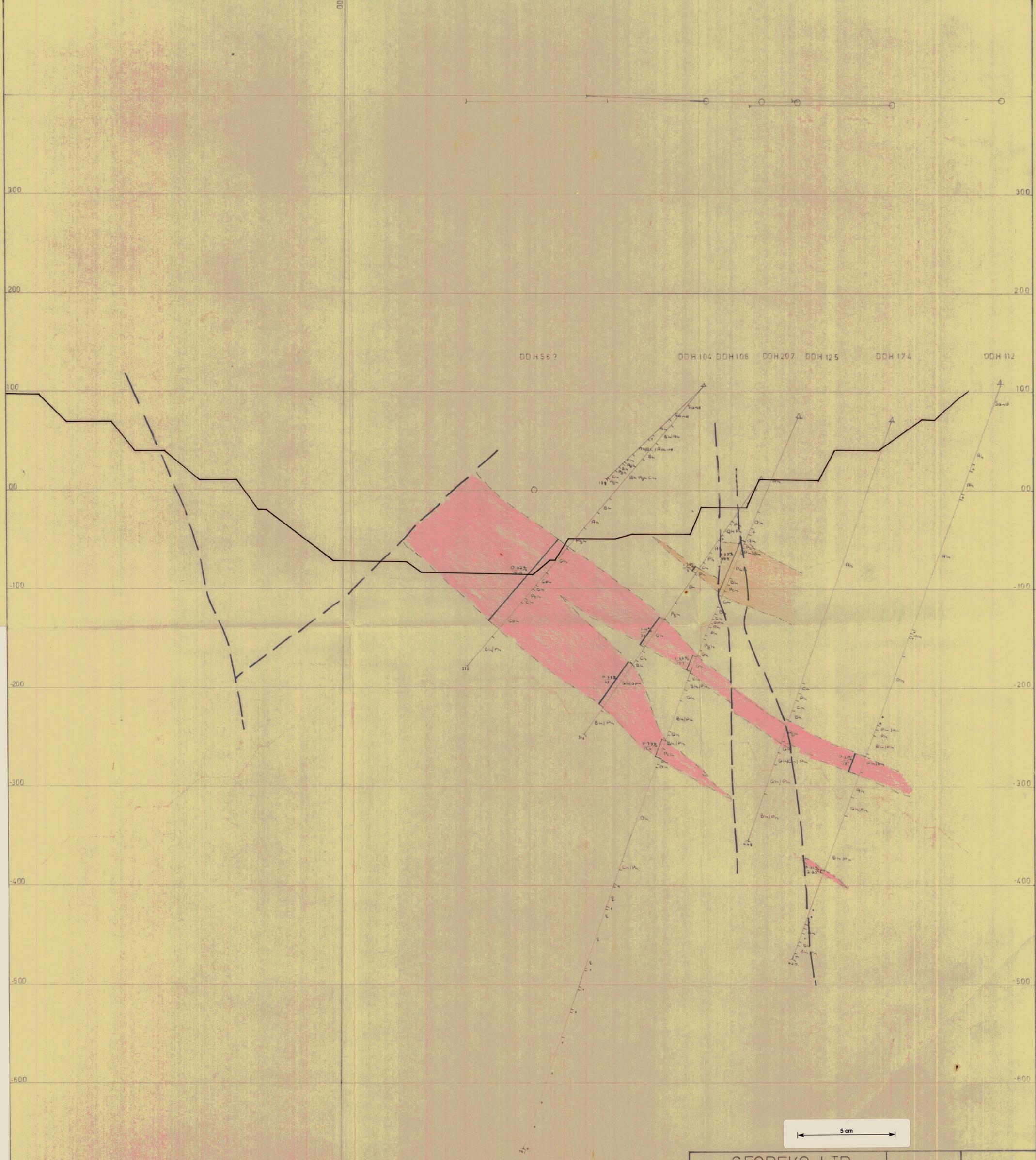


GEOPEKO LTD	061021	Scale: 1 in. = 50 ft
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ORE OUTLINE	Drawn: NRK	G1-6
LINE 5	Traced: AMT	
	Checked: P. L. M.	6541



5 cm

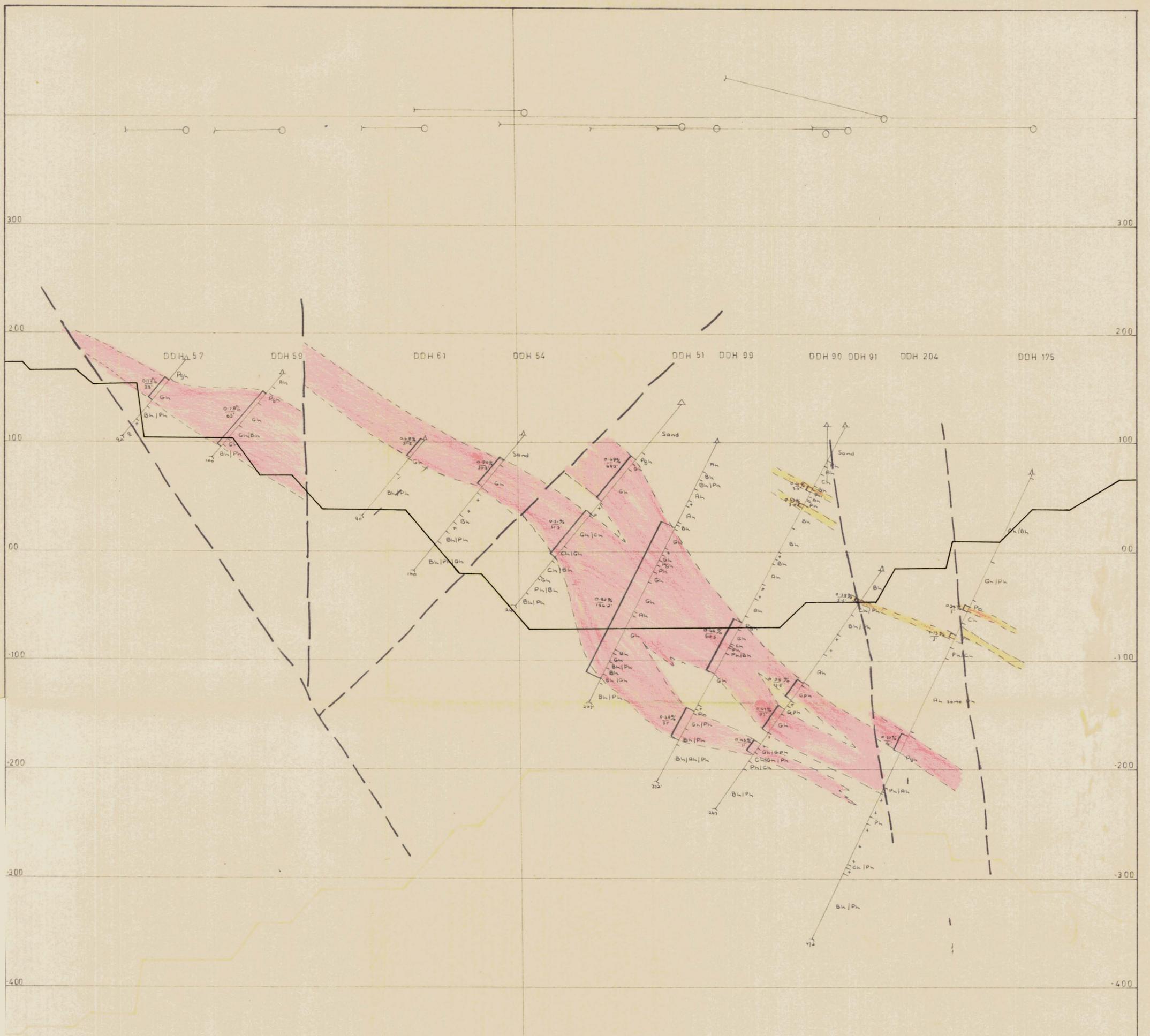
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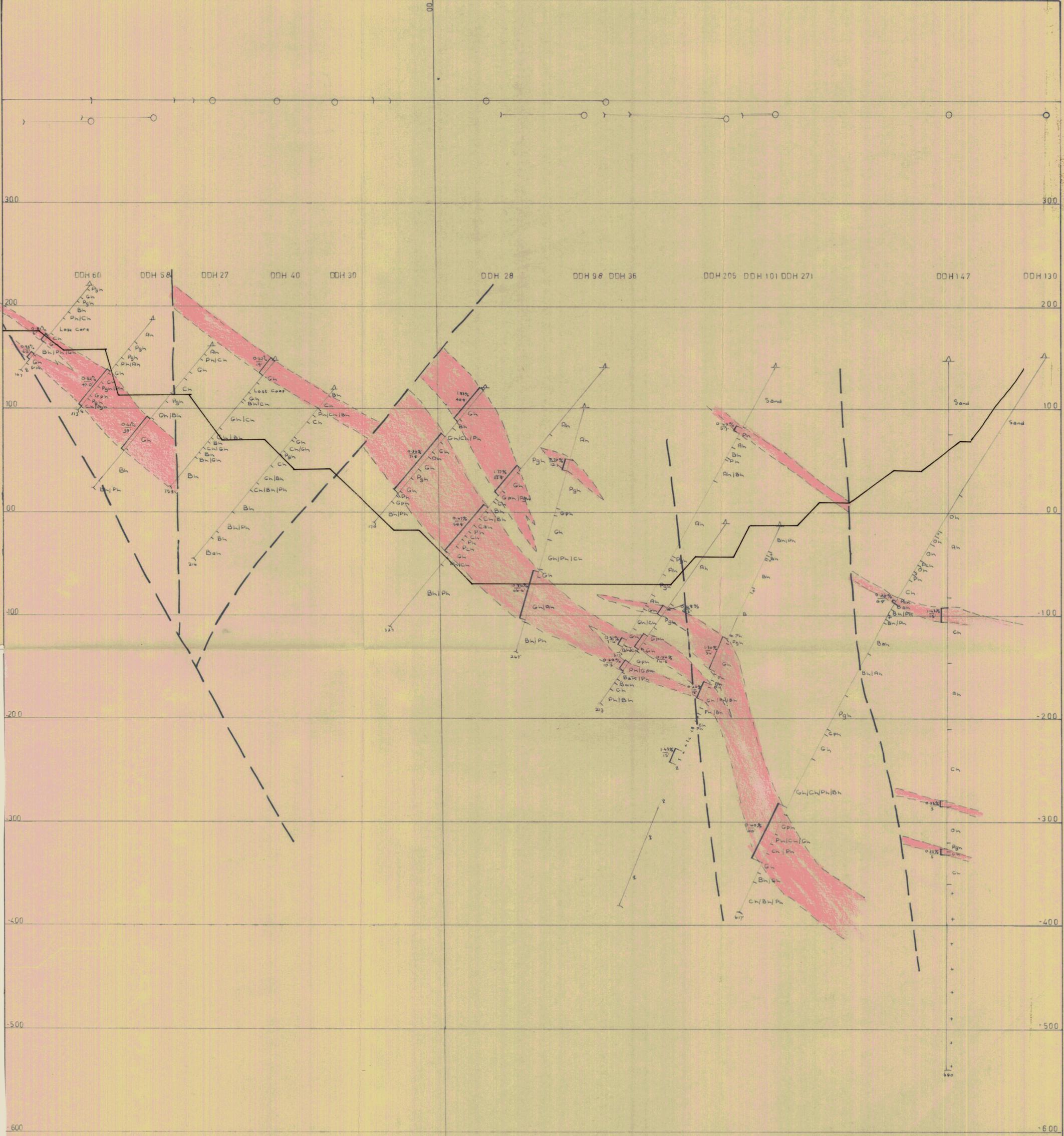
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	G1-8
	6543

061023

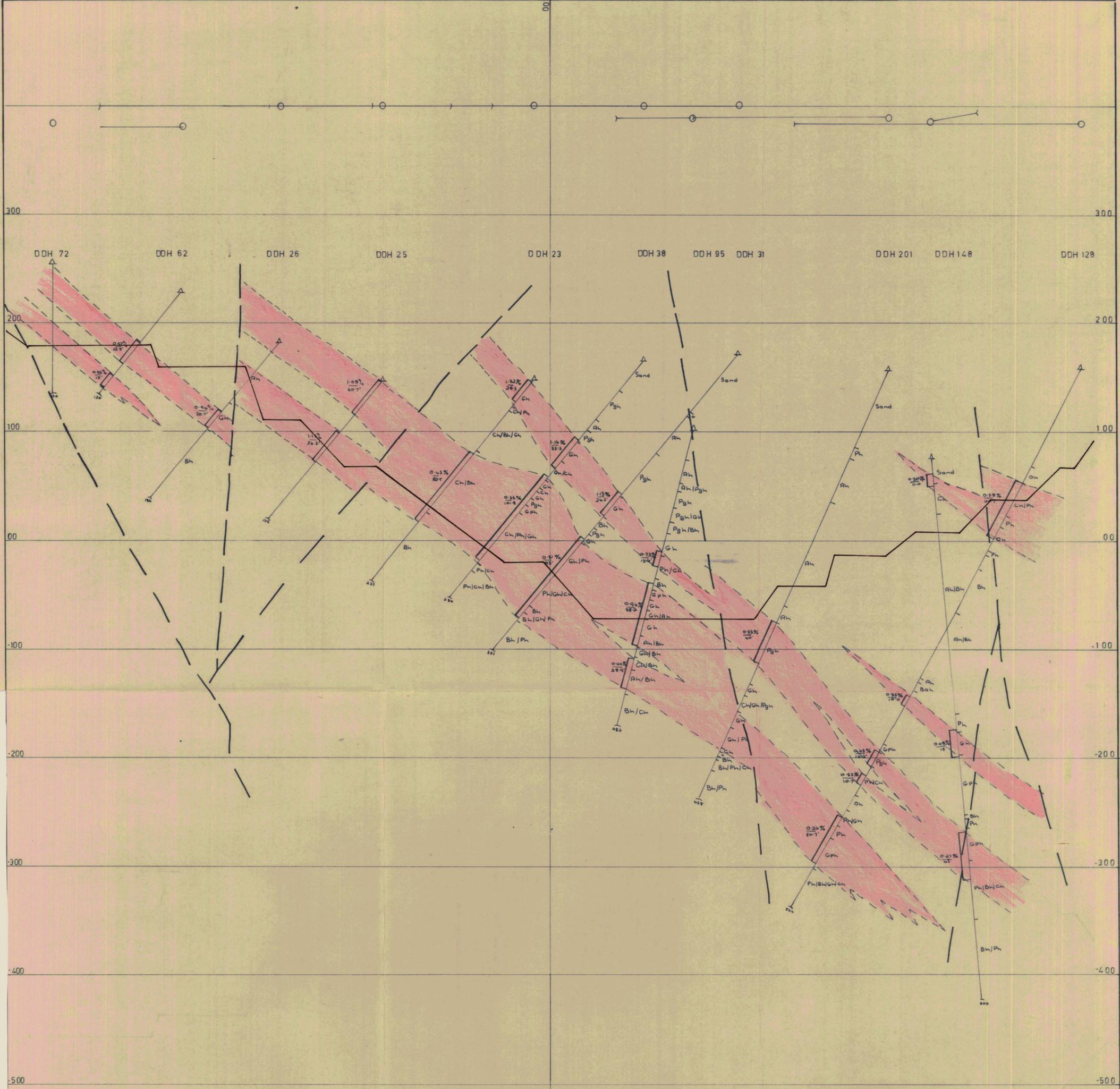
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 Traced: A.M.T.
 Checked: P.L.M.



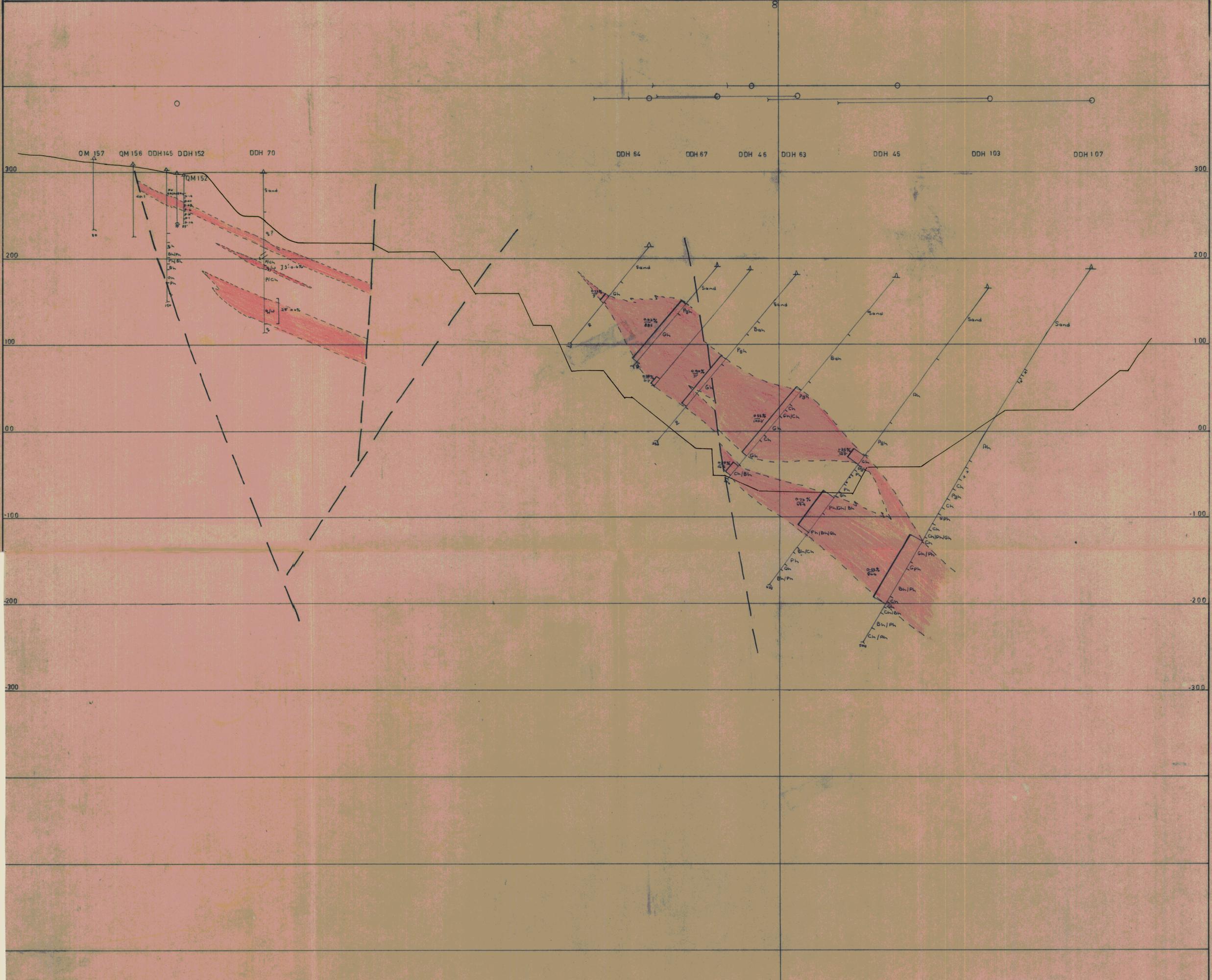
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	Traced: A.M.T.	G1-9
	Checked: P.L.M.	6544



GEOPEKO LTD Nº1 OREBODY ORE OUTLINE LINE 9	061025	Scale: 1in. 50ft
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	Traced: A-MT	G1-10
	Checked: P.lem	6545

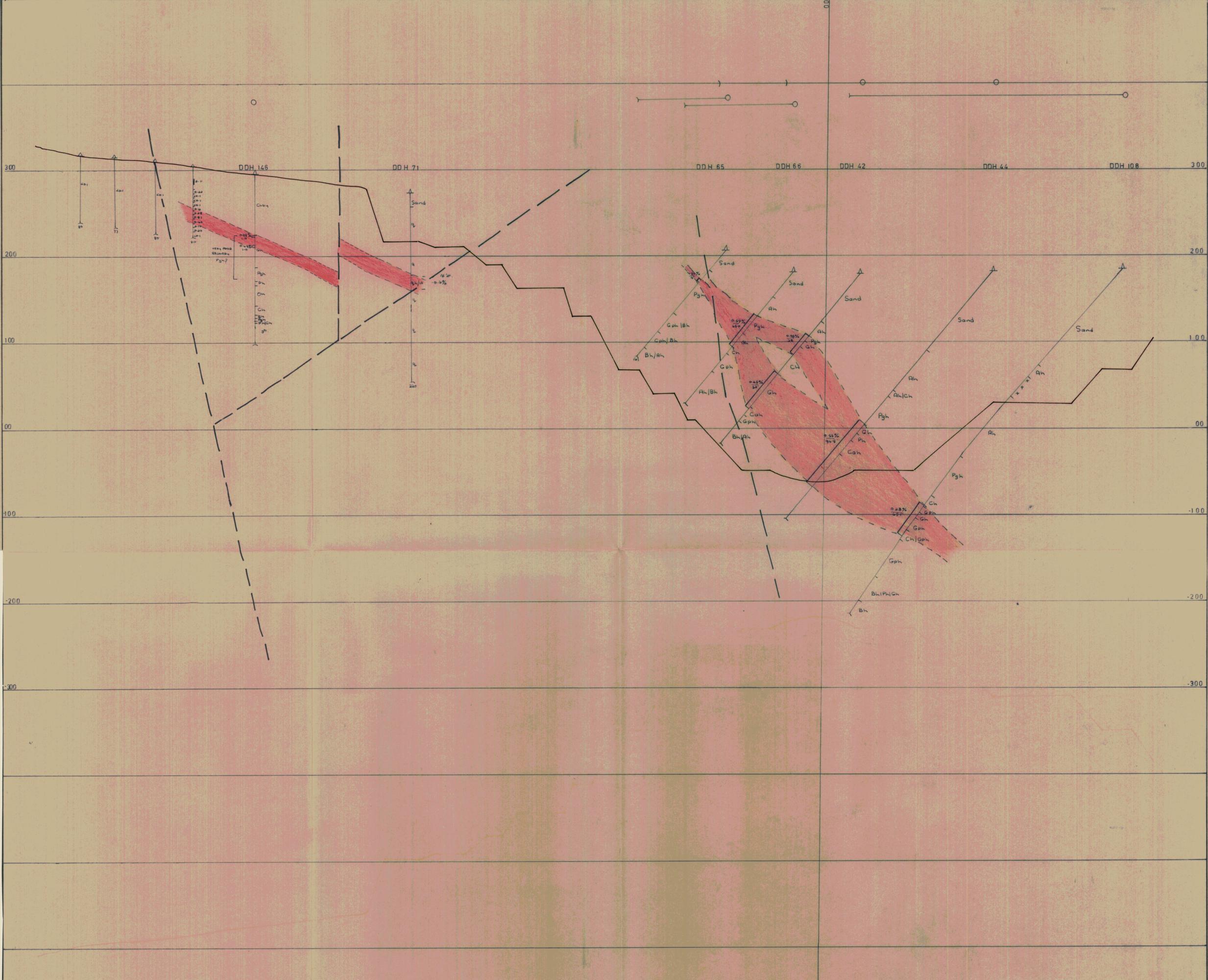


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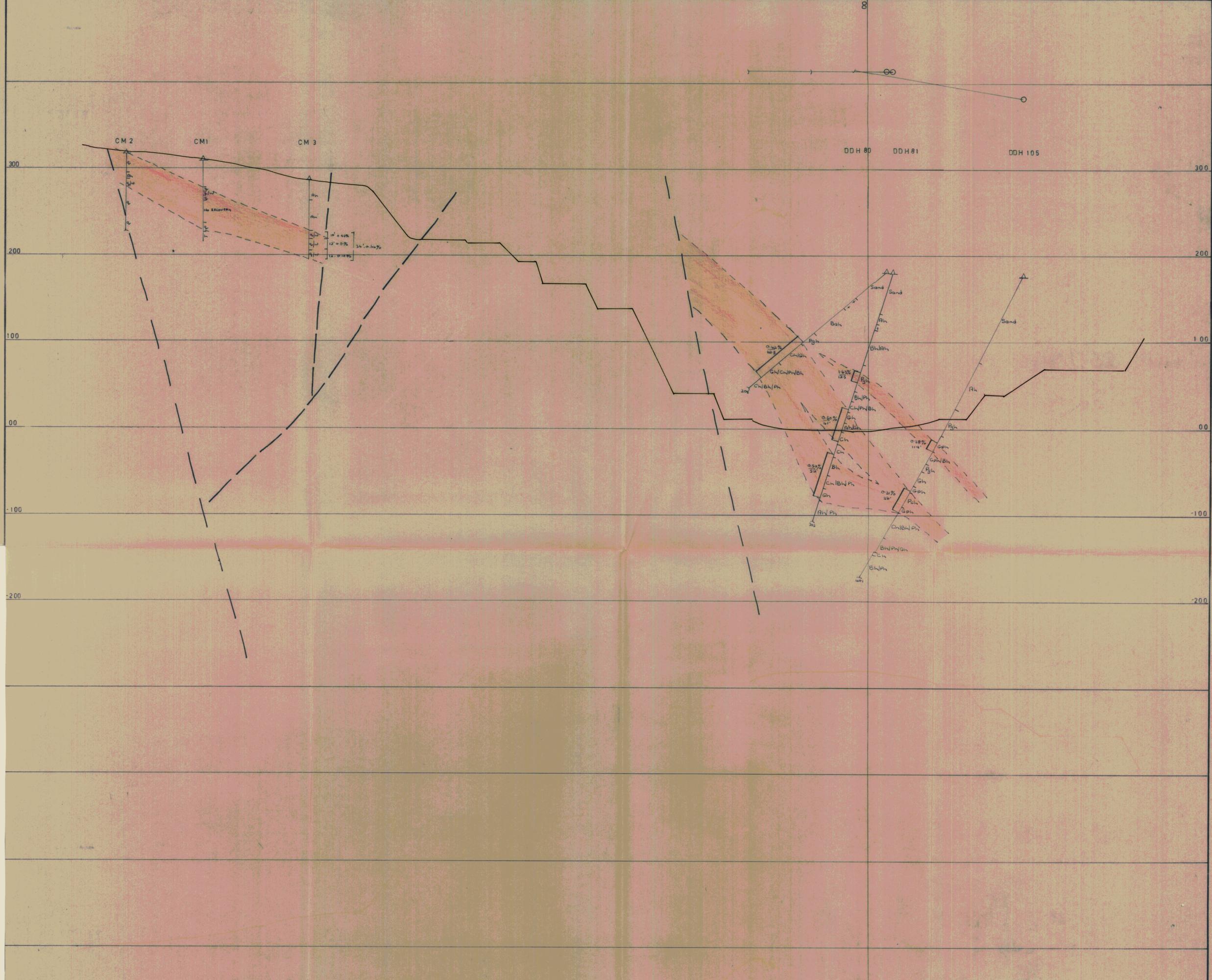


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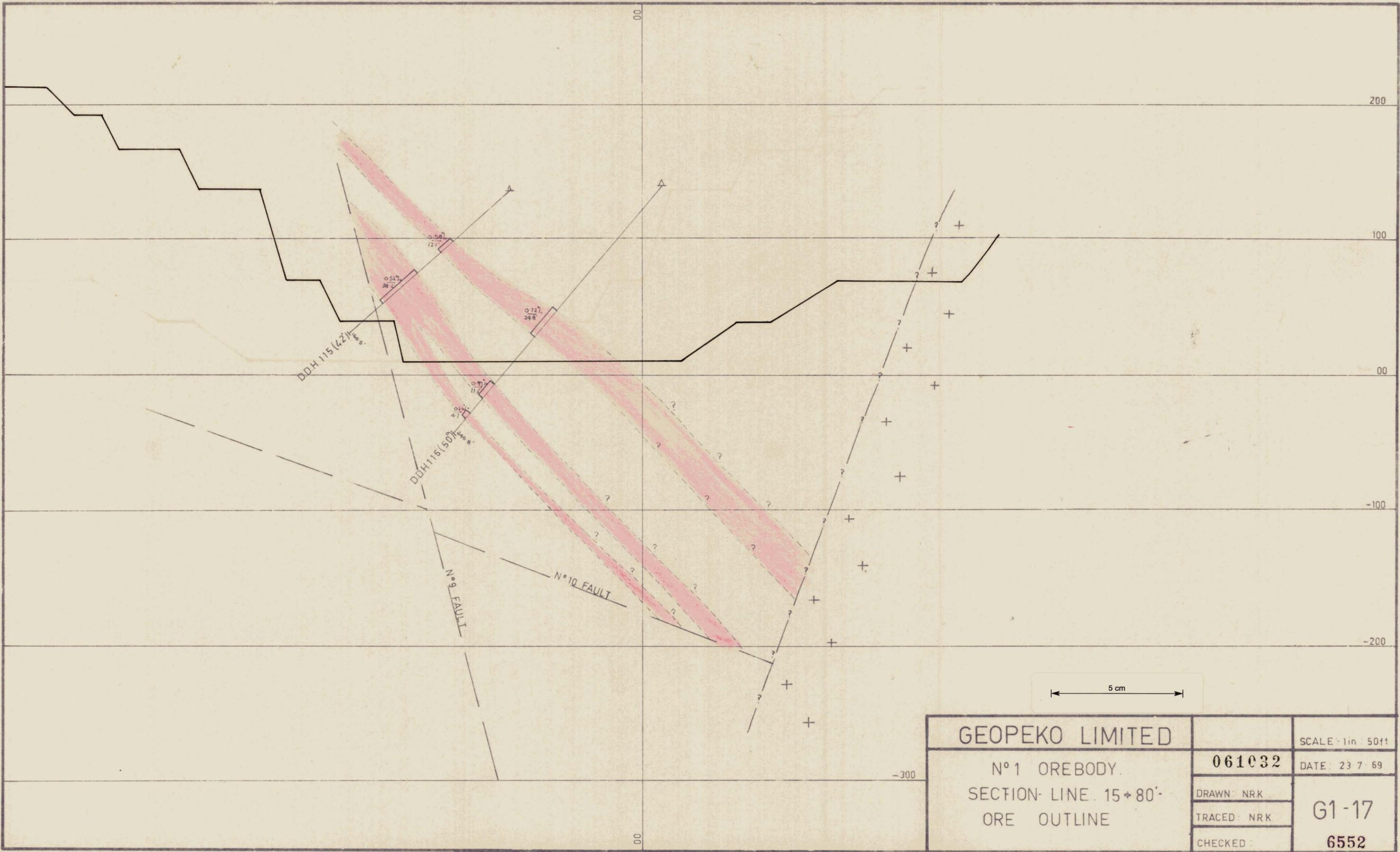
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	Traced: A.M.T.	G1-14 6549
	Checked: P.L.M.	



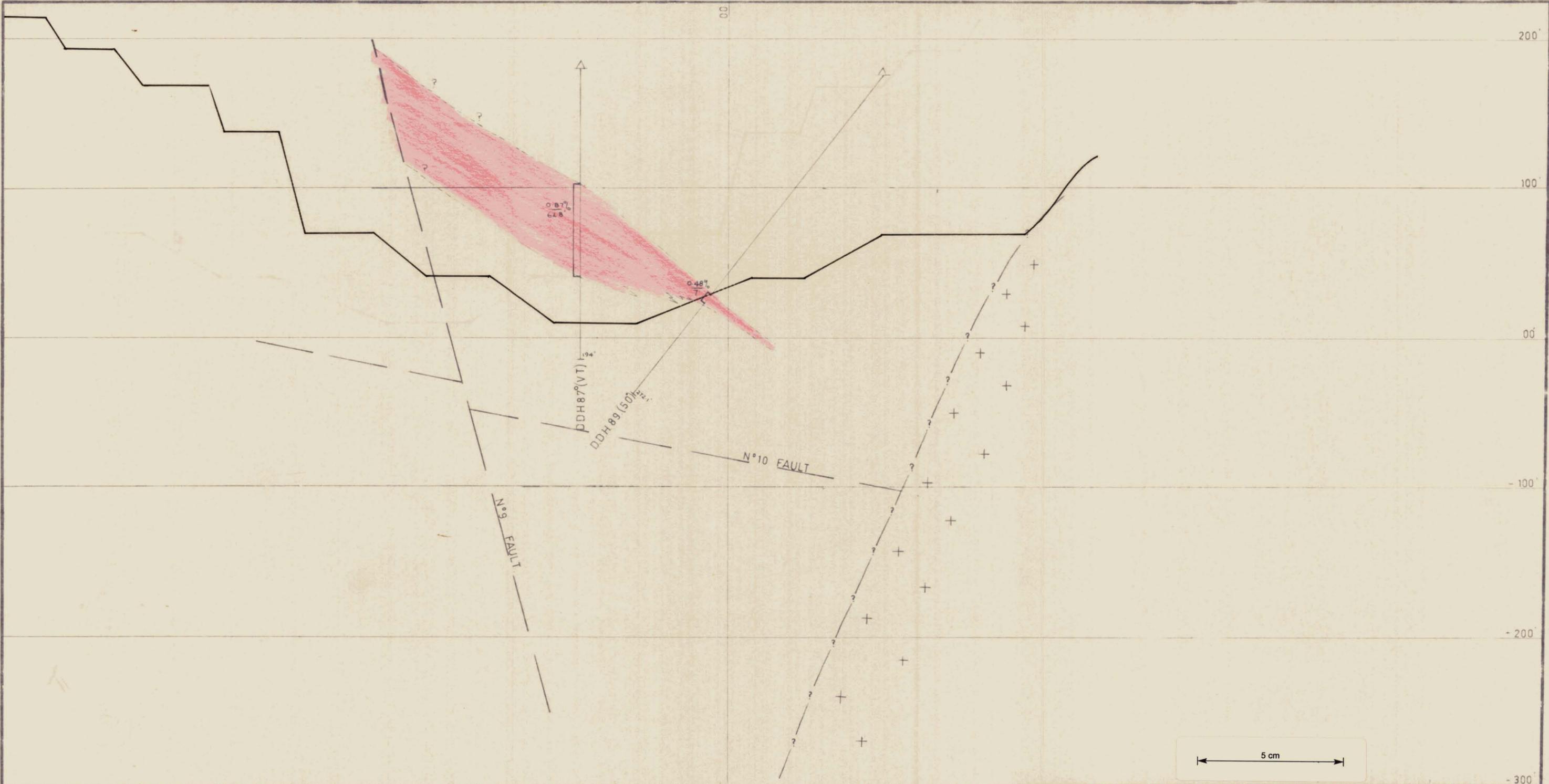
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ORE OUTLINE		Drawn: NRK
LINE 14		Traced: AMT
		Checked: P.K.M
		G1-15 6550



GEOPEKO LTD		Scale: 1 in = 50 ft
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Traced: A.M.T.		
Checked: P.L.P.M.		

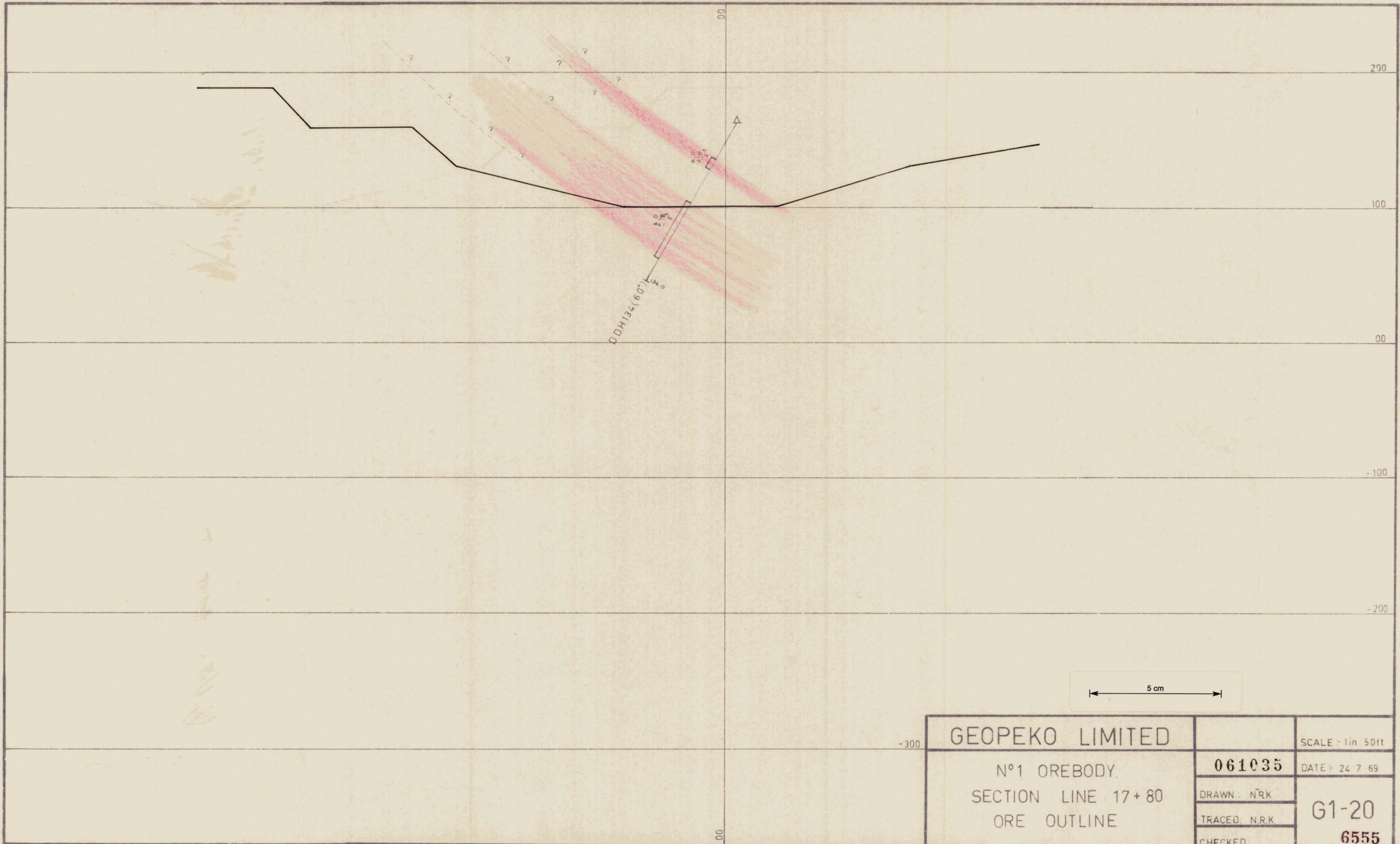


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ORE OUTLINE		G1-17 6552
DRAWN: NRK		
TRACED: NRK		
CHECKED:		



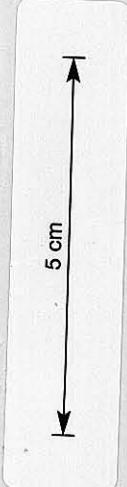
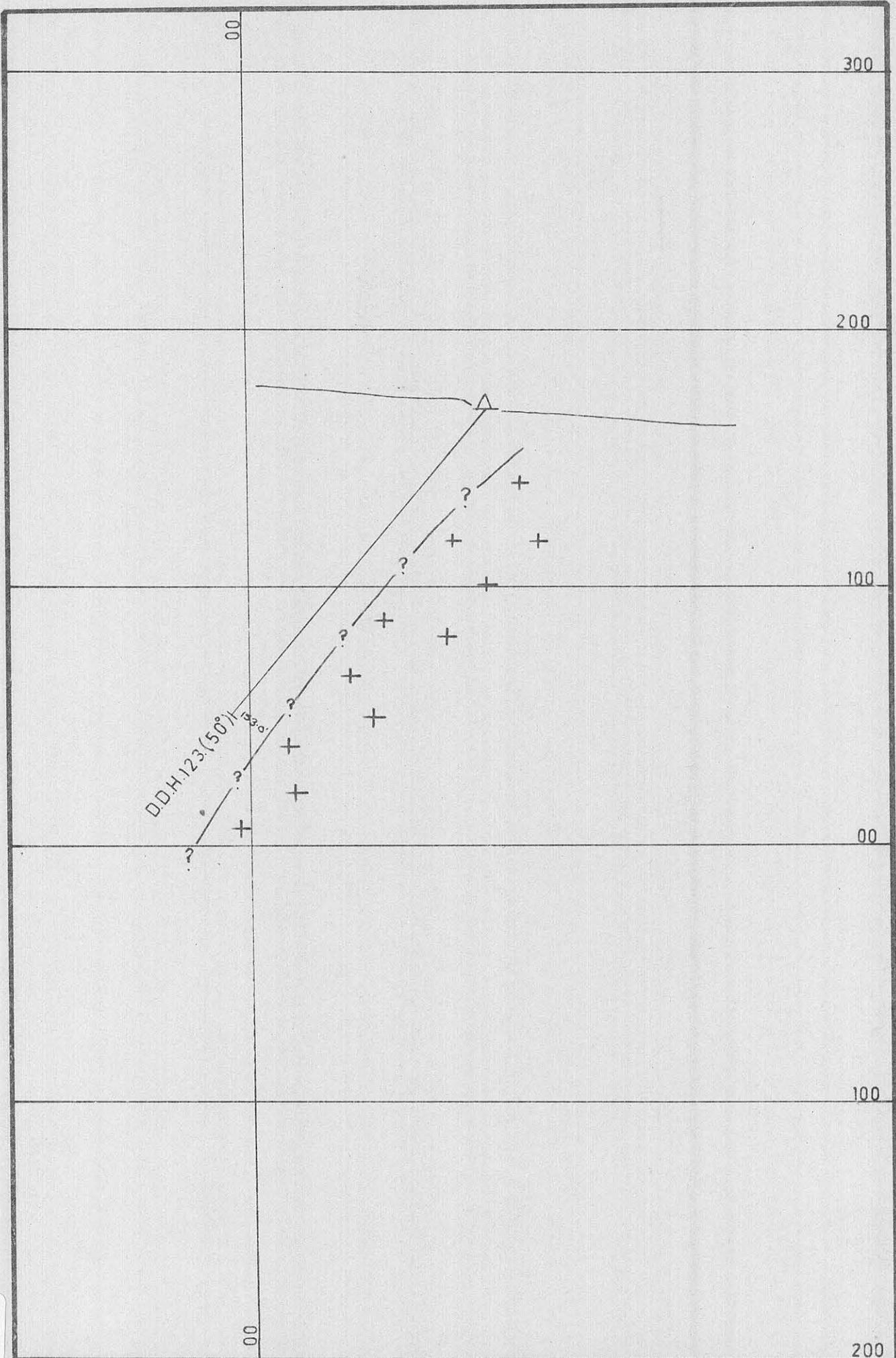
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SECTION LINE 16		DATE: 22 7 69
ORE OUTLINE		DRAWN: NRK
		TRACED: NRK
		CHECKED:
		G1-18
		6553



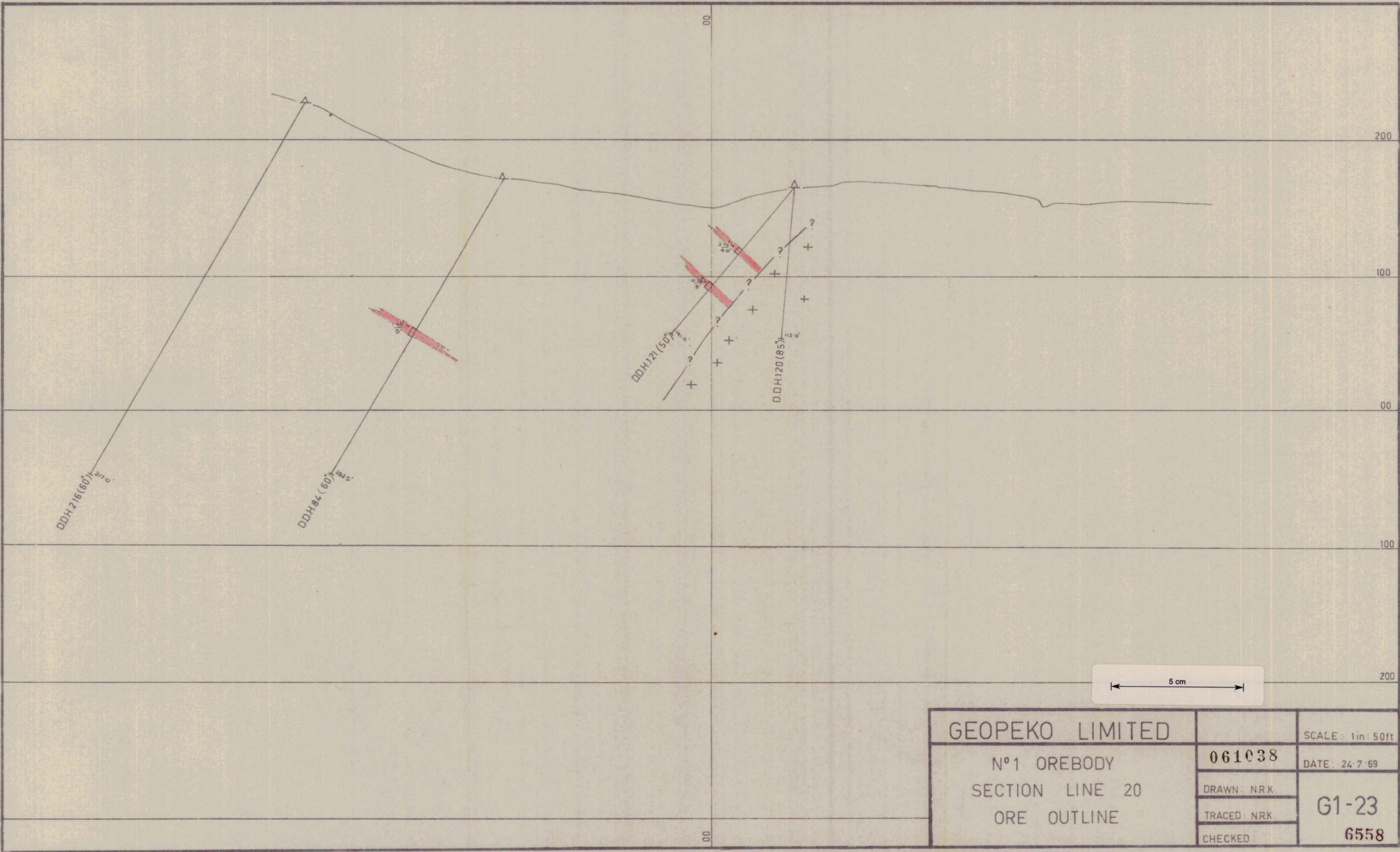


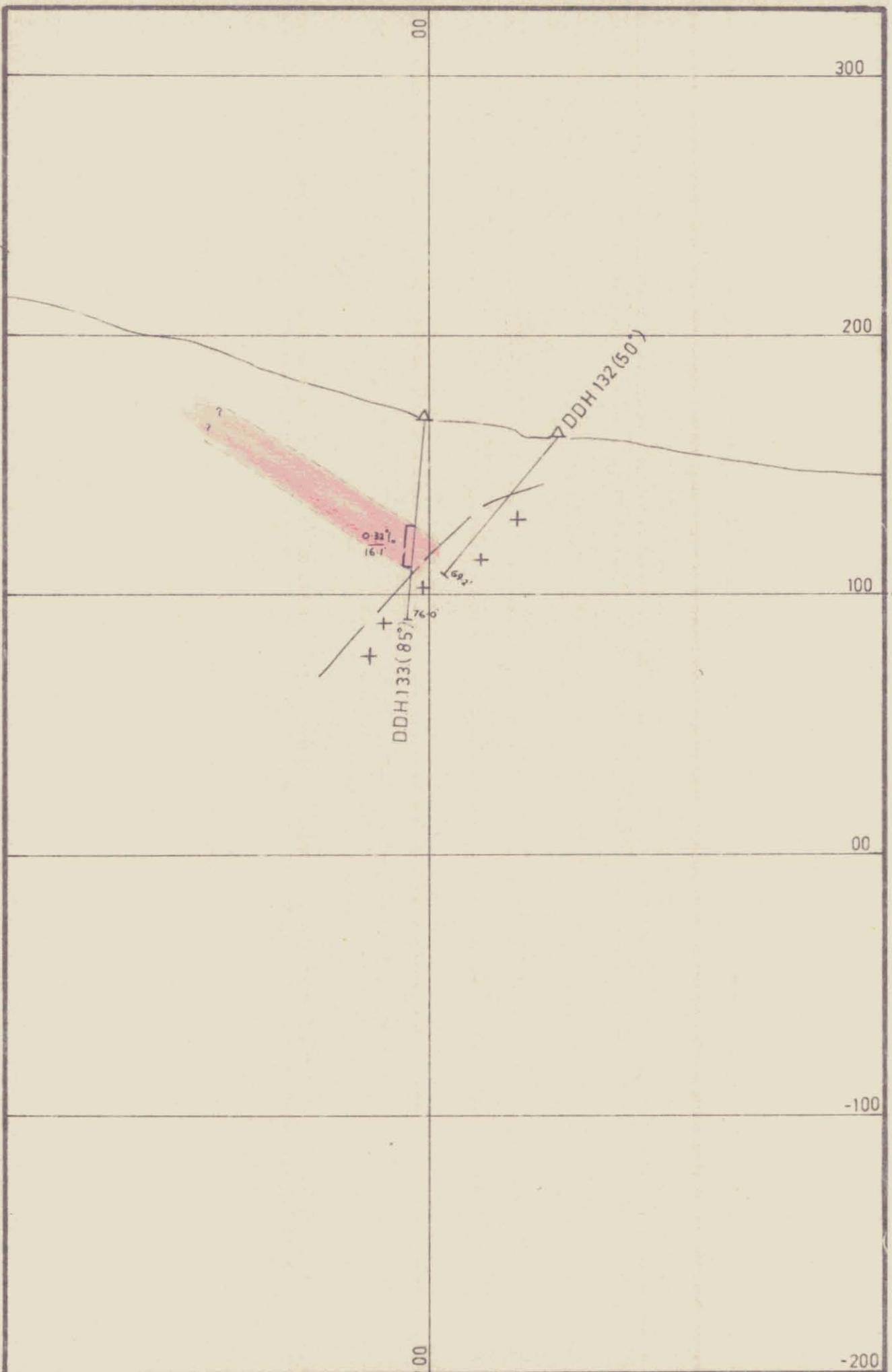


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		TRACED - NRK.	
		CHECKED	



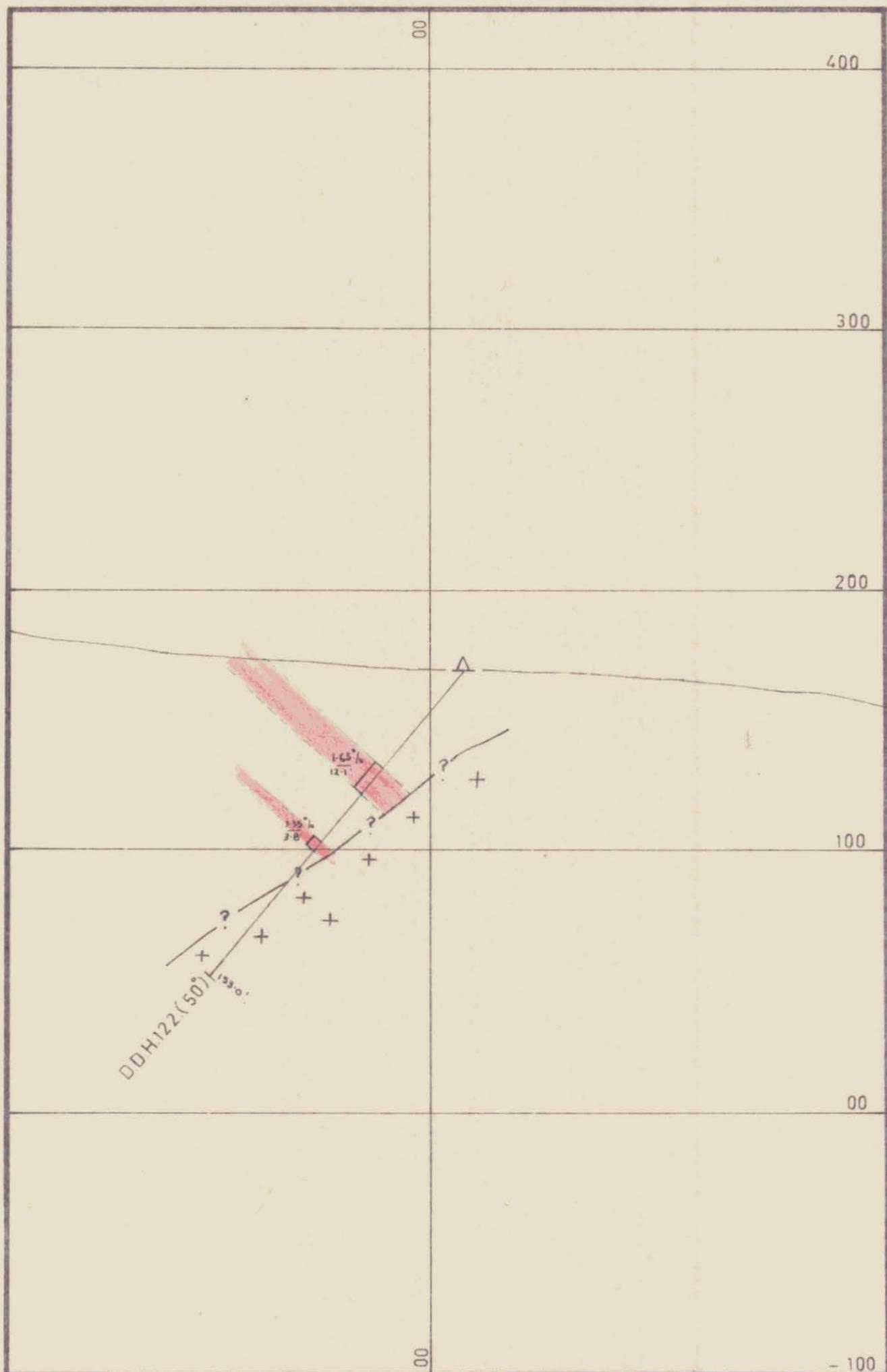
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N°1 OREBODY SECTION LINE 19 ORE OUTLINE		061037
		DRAWN: NRK.
		TRACED NRK.
CHECKED <i>Rkm</i>		G1-22 6557





GEOPEKO LIMITED		SCALE : 1in : 50ft
N°1 OREBODY SECTION LINE 21 ORE OUTLINE	061039	DATE : 25.7.69
	DRAWN : N.R.K.	G1-24
	TRACED : N.R.K.	
	CHECKED : - P.lem.	6559





GEOPEKO LIMITED

N° 1 OREBODY.
SECTION LINE 22
ORE OUTLINE

5 cm

061040

DRAWN - N.R.K.

TRACED - N.R.K.

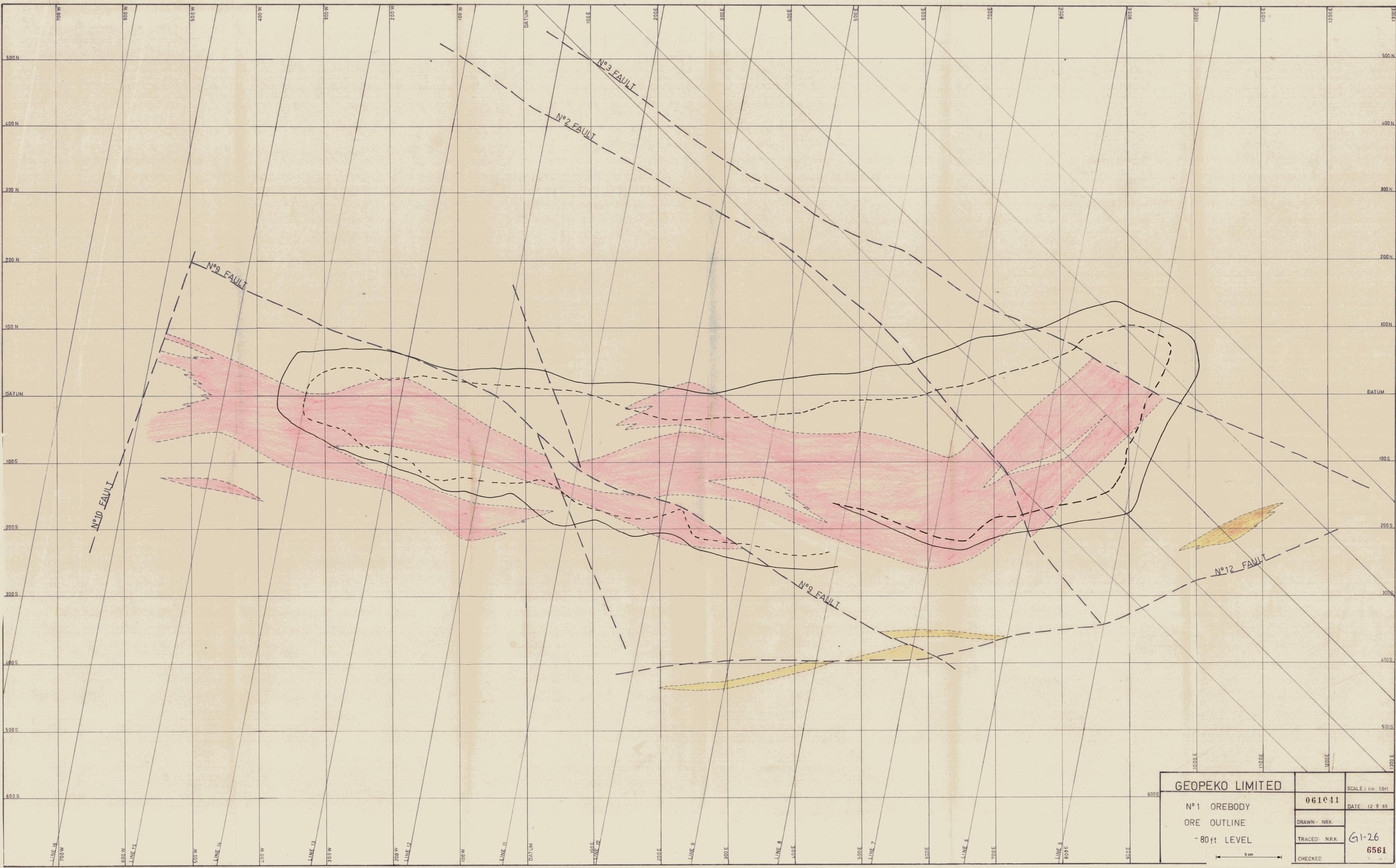
CHECKED: P.lem

SCALE: 1in : 50ft

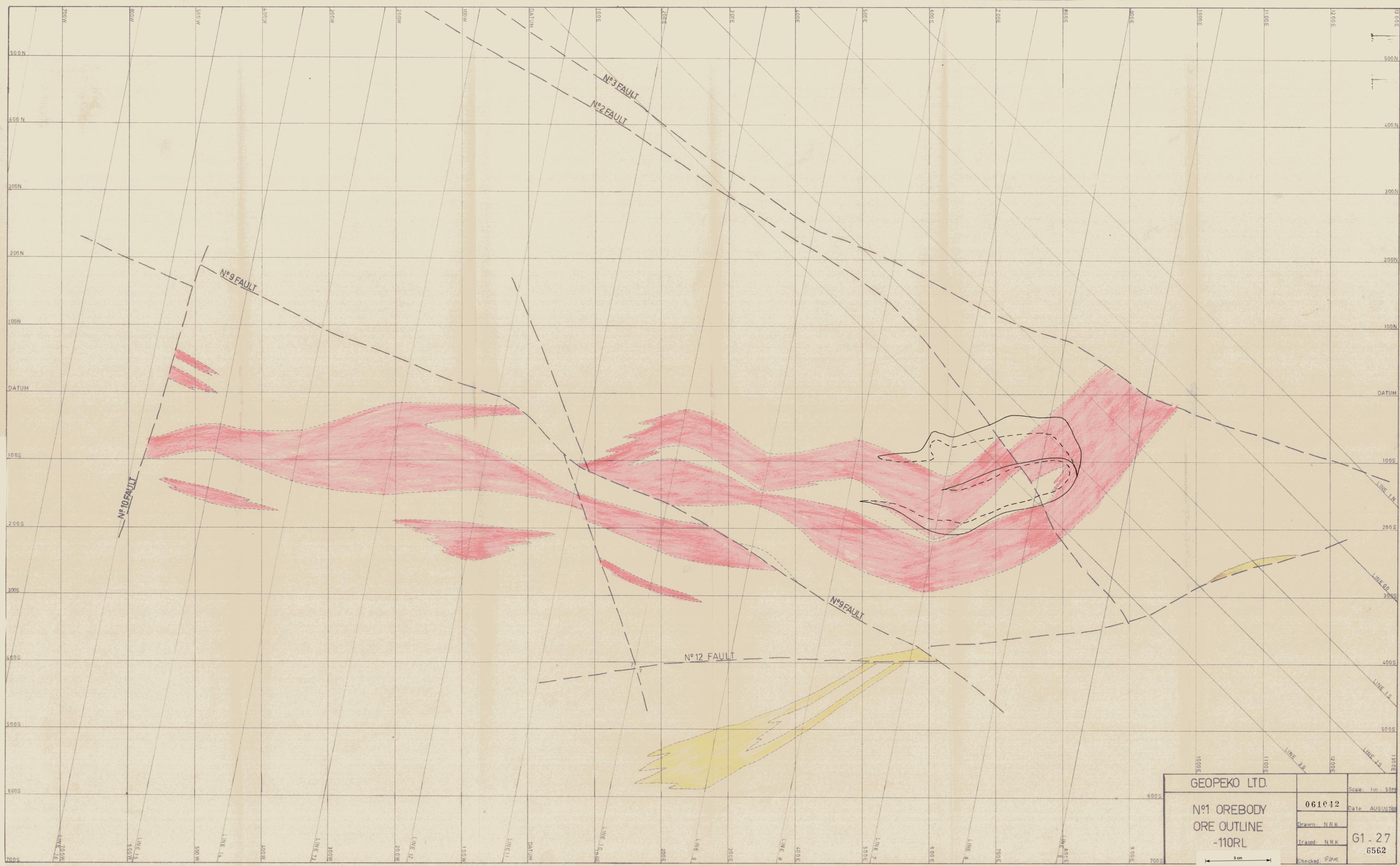
DATE: 25-7-69

G1-25

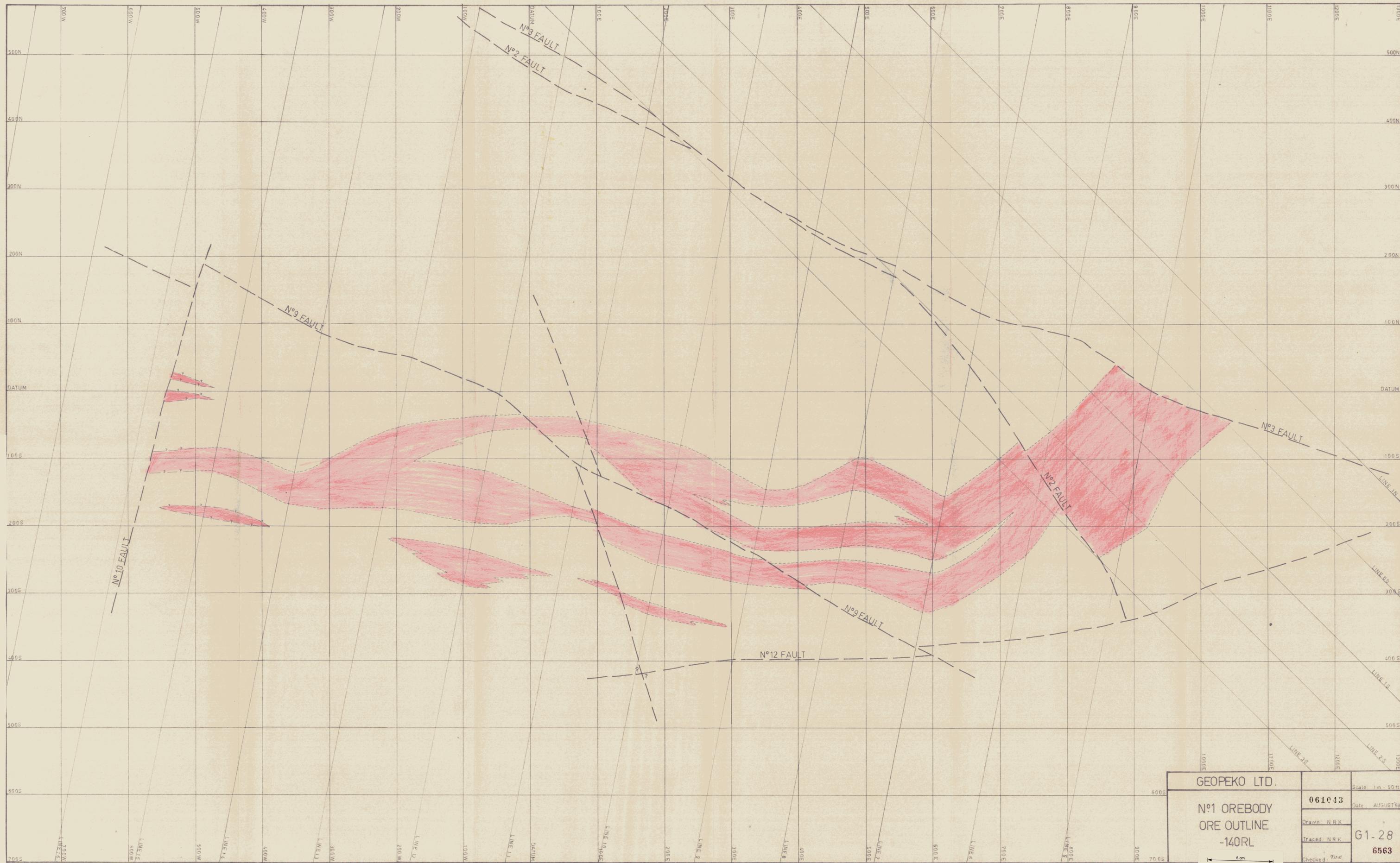
6560



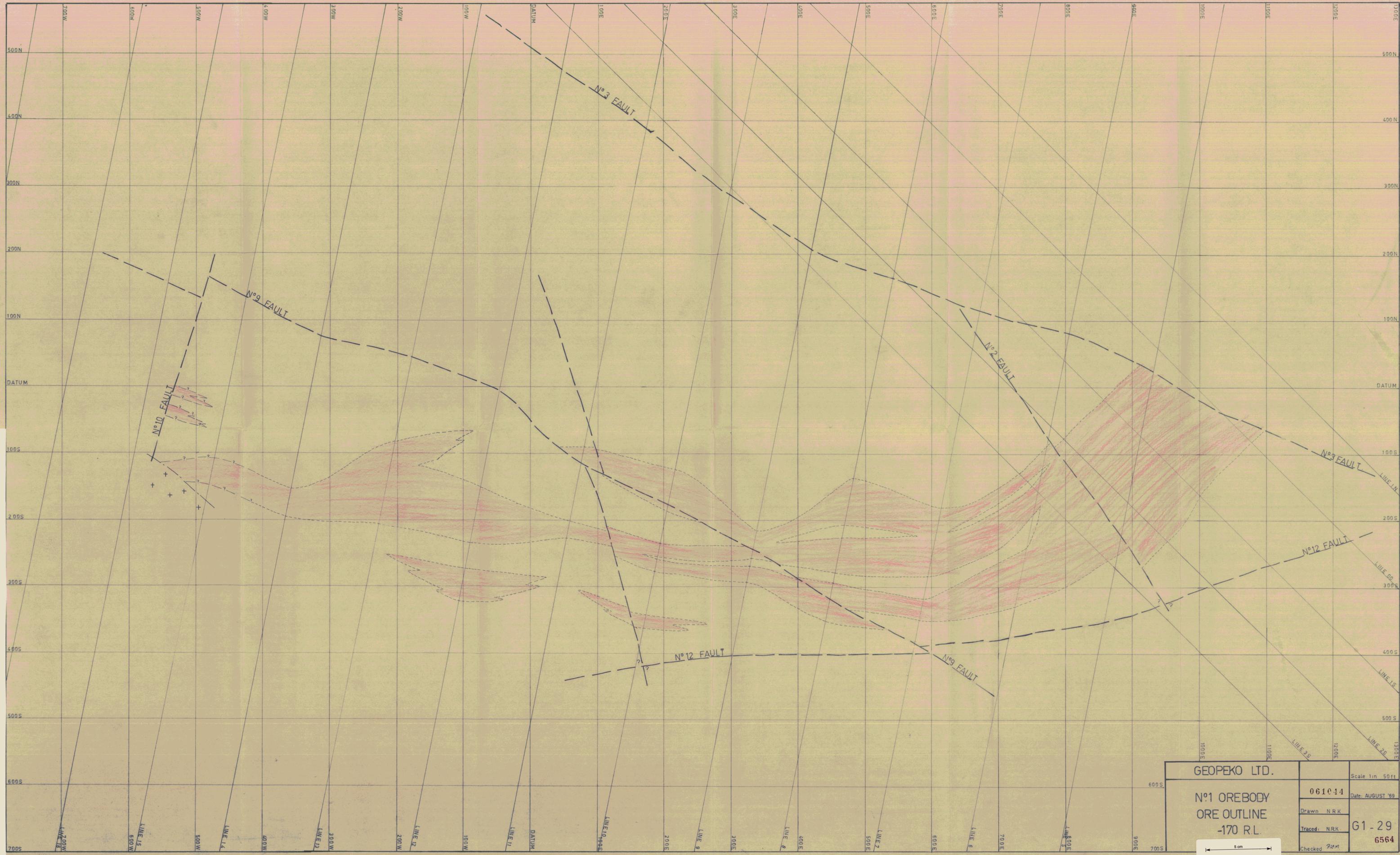
GEOPEKO LIMITED		SCALE: 1 in = 50ft
N°1 OREBODY ORE OUTLINE -80ft LEVEL		DATE: 12-8-69
DRAWN: NRK	TRACED: NRK	G1-26
CHECKED:		6561



GEOPEKO LTD.		Scale: 1 in = 50 ft
Nº 1 OREBODY ORE OUTLINE -110RL		061042 Date: AUGUST 1968
Drawn: N.R.K.	Traced: N.R.K.	G1 - 27
Checked: P.M.		6562

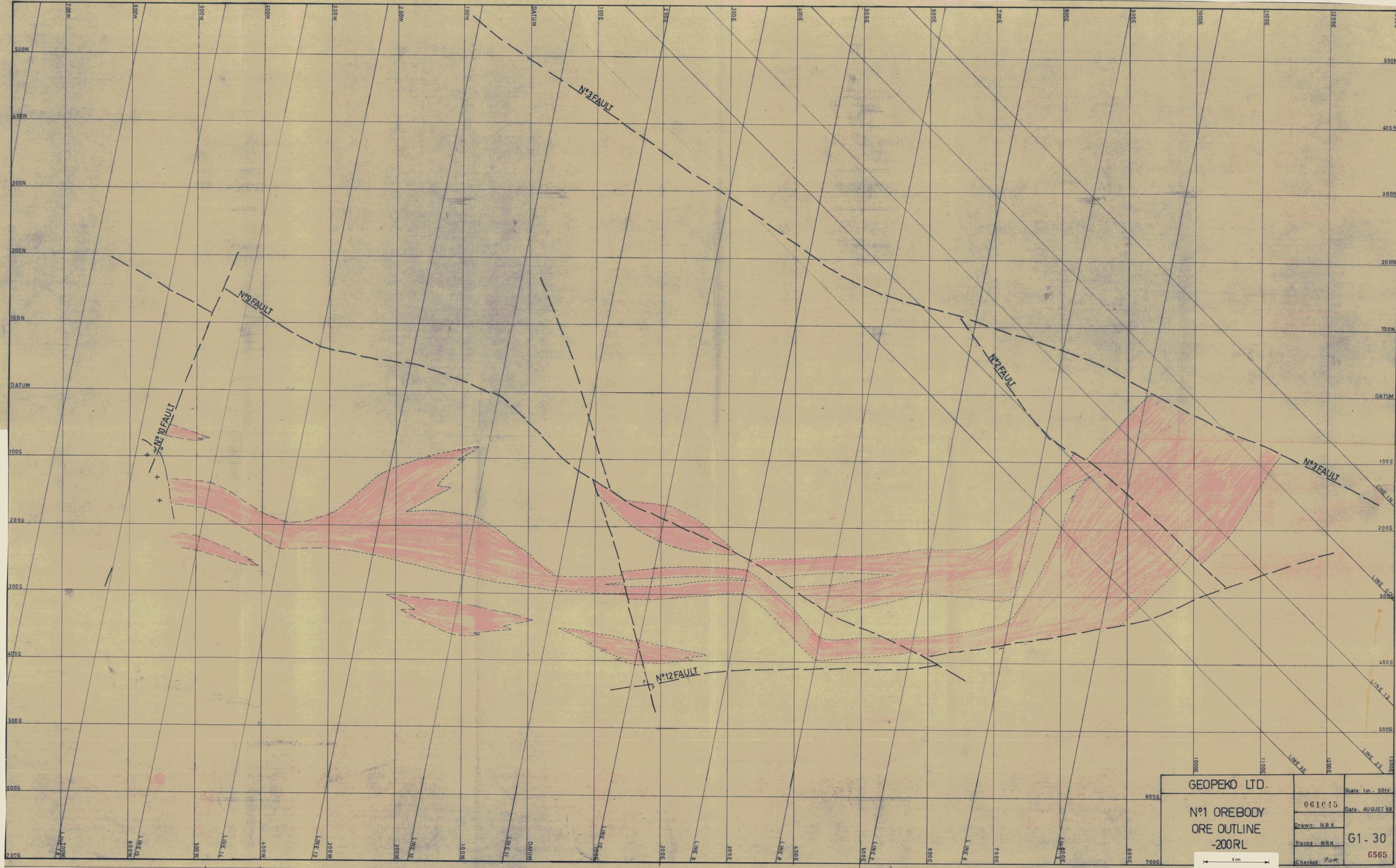


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Checked: 9/2/81		6563

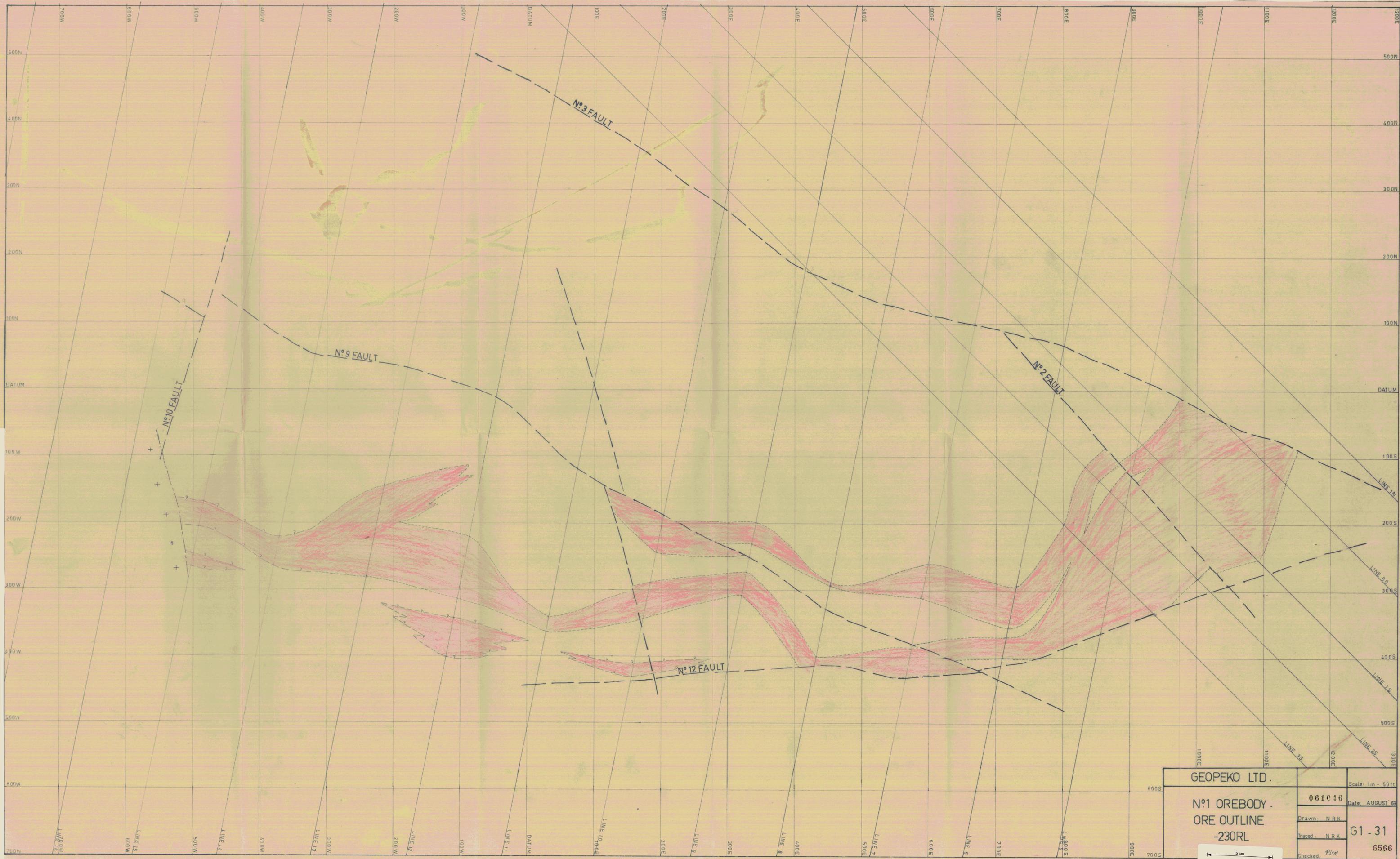


GEOPEKO LTD.		Scale 1 in 50 ft
N°1 OREBODY ORE OUTLINE -170 R.L.		061044 Date: AUGUST '69
Drawn N.R.K.	Traced N.R.K.	G1-29
Checked P.M.		6564

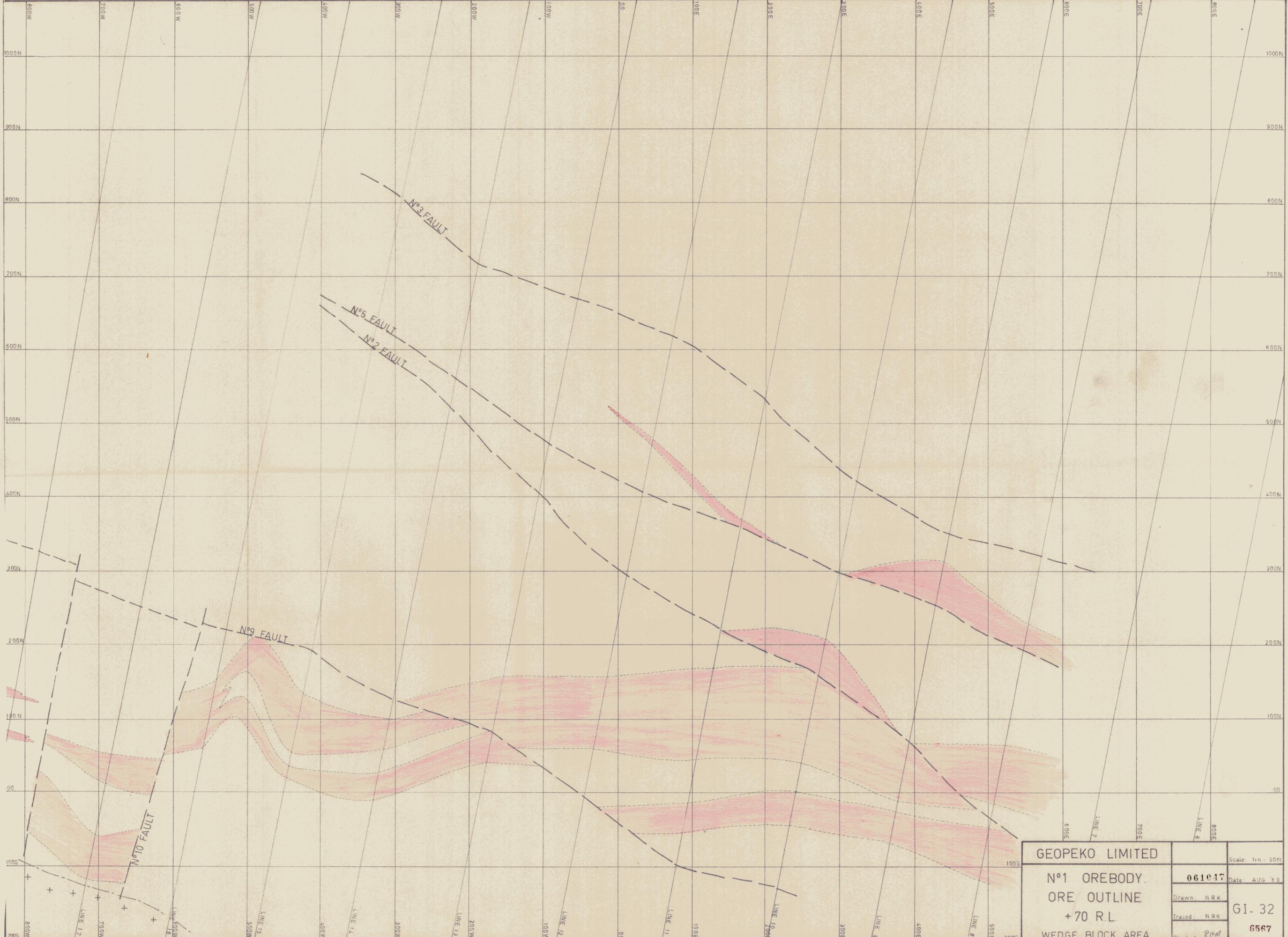
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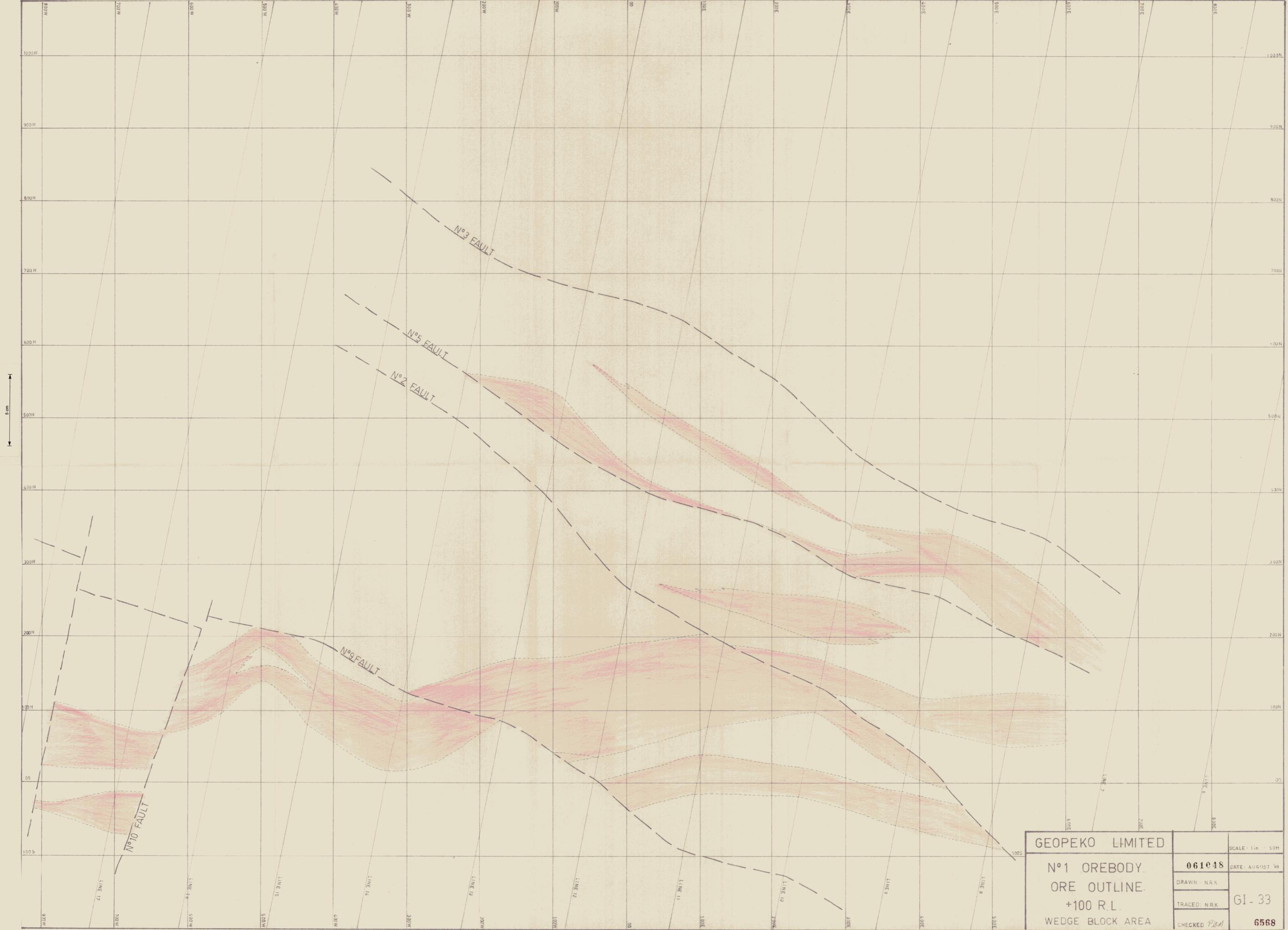
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Drawn: NRK		G1-30
Traced: NRK		
Checked: P.S.M.		6565



GEOPEKO LTD.		Scale: 1in - 50ft
Nº1 OREBODY . ORE OUTLINE -230RL		061046 Date: AUGUST '69
Drawn: N.R.K.	Traced: N.R.K.	G1-31
Checked: P.L.M.		6566

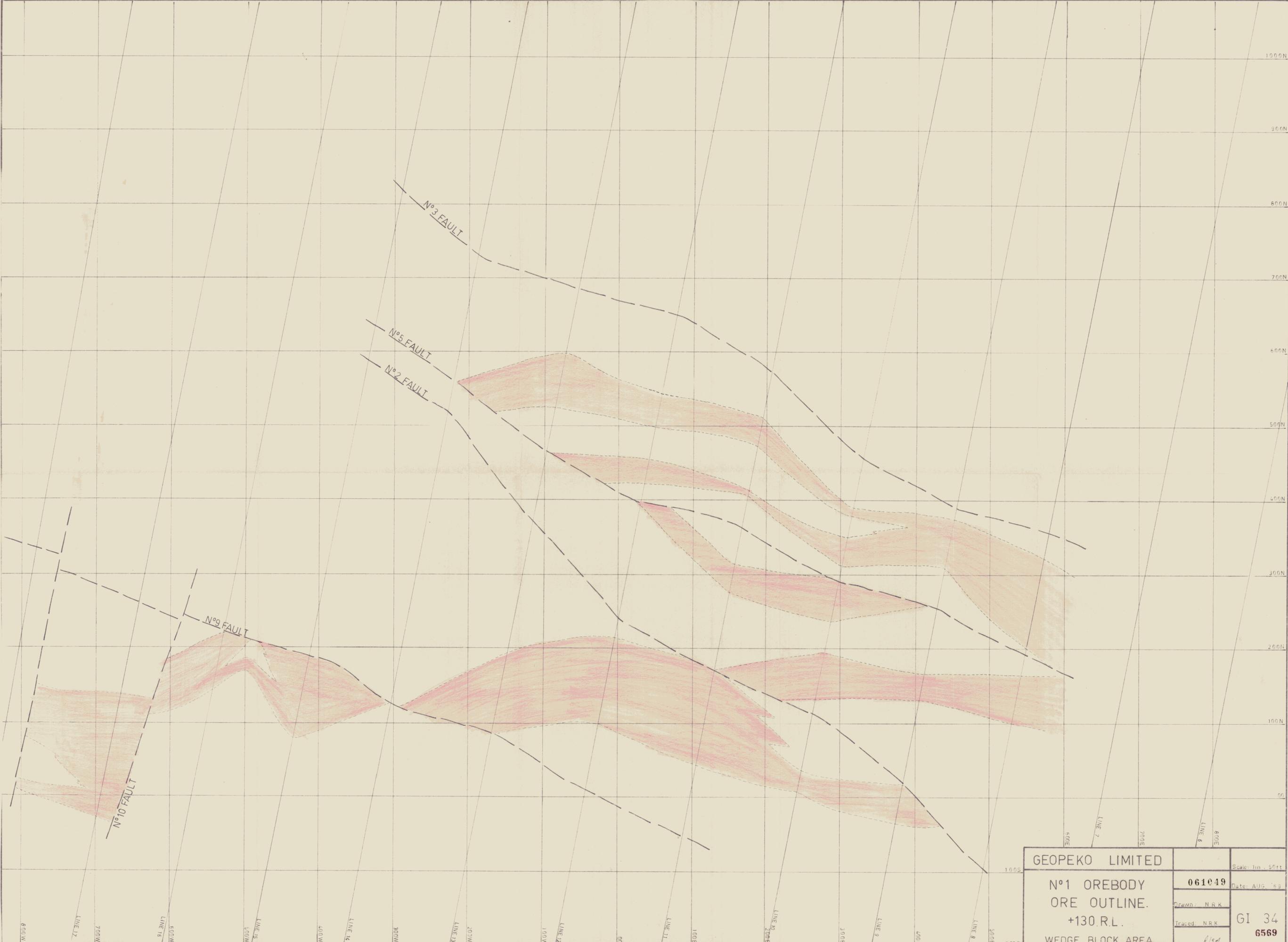


GEOPEKO LIMITED		Scale: 1in - 50ft
Nº1 OREBODY. ORE OUTLINE +70 R.L. WEDGE BLOCK AREA		Date: AUG '69
061047	Drawn: NRK	GI-32
	Traced: NRK	
	Checked: RLM	6567

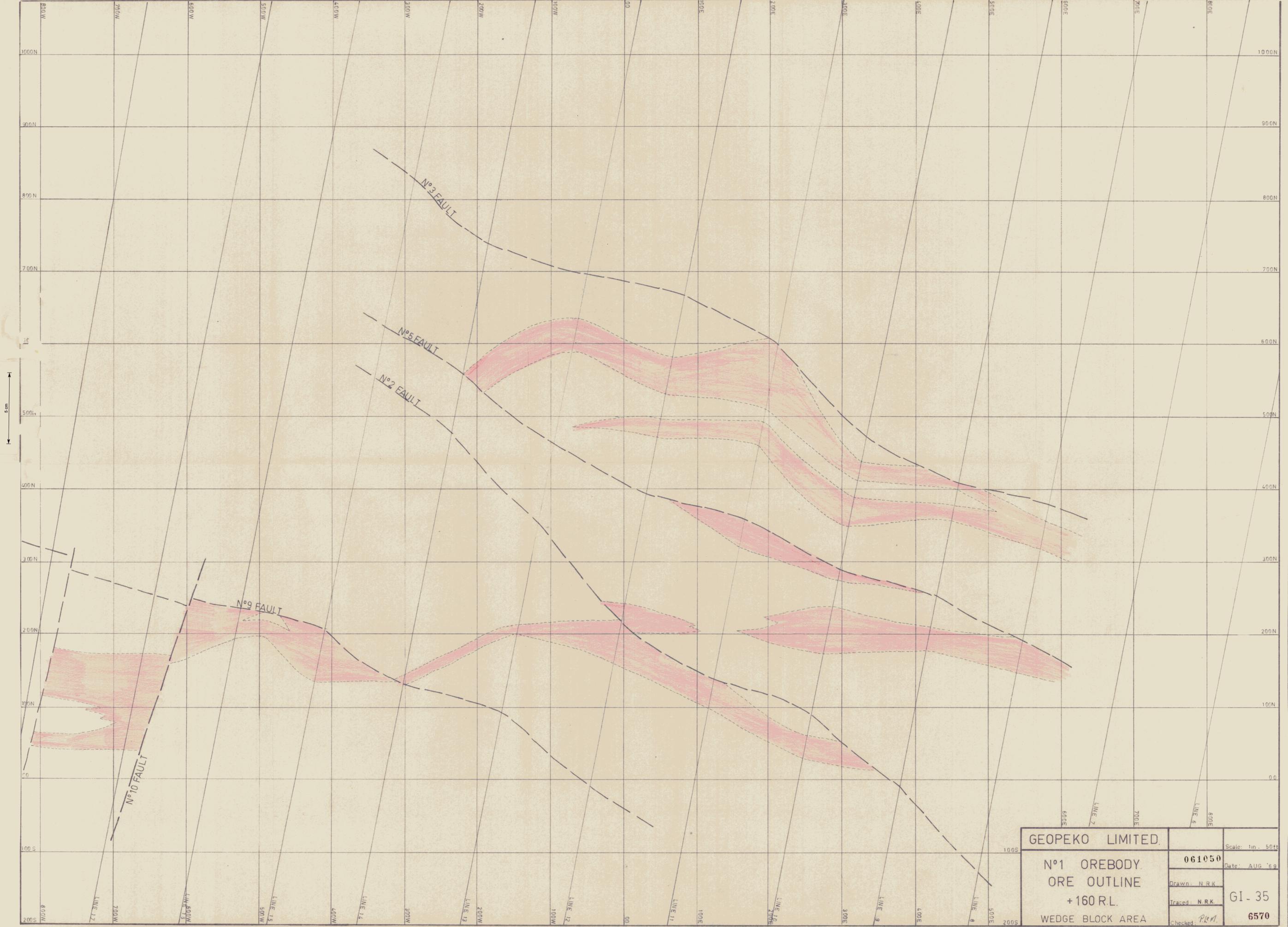


GEOPEKO LIMITED		SCALE: 1 in = 50 ft
N°1 OREBODY. ORE OUTLINE. +100 R.L. WEDGE BLOCK AREA		061048 DATE: AUGUST '69
DRAWN: NRK	TRACED: NRK	GI-33
CHECKED: P. L. M.		6568

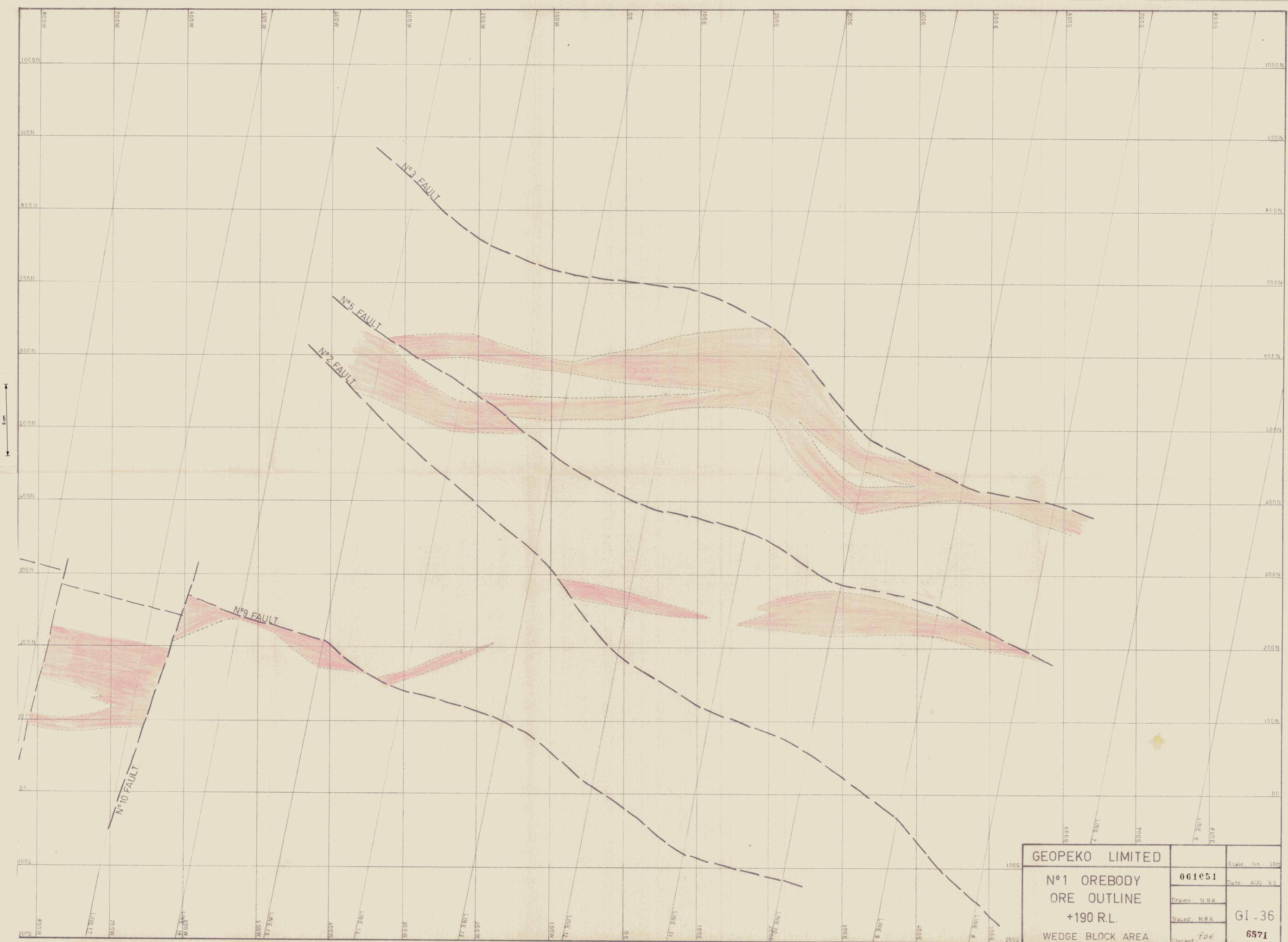
5 cm



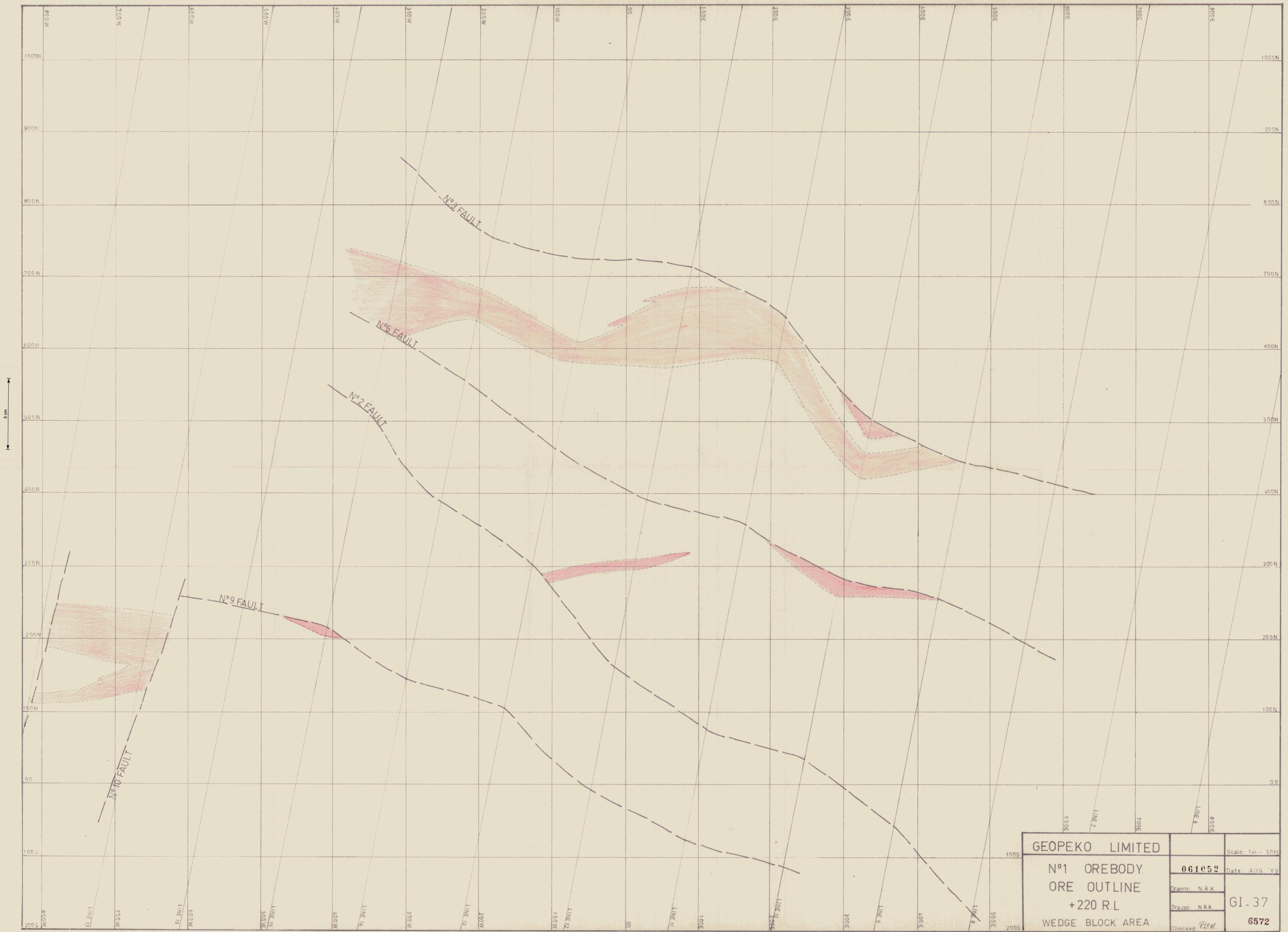
GEOPEKO LIMITED		Scale: 1 in = 50 ft
N°1 OREBODY ORE OUTLINE. +130 R.L.		061049 Date: AUG. '69
WEDGE BLOCK AREA		GI 34
Drawn: N.R.K.	Traced: N.R.K.	Checked: A.L.M.
		6569



GEOPEKO LIMITED.		Scale: 1 in. = 50 ft
N°1 OREBODY ORE OUTLINE + 160 R.L. WEDGE BLOCK AREA		Date: AUG '69
061050	Drawn: N.R.K.	G1-35 6570
	Traced: N.R.K.	
	Checked: P.K.M.	



GEOPEKO LIMITED		Scale: 1in. = 50ft
N°1 OREBODY ORE OUTLINE +190 R.L. WEDGE BLOCK AREA		061051
Drawn: N.R.K.	Traced: N.R.K.	Date: AUG '69
Checked: P.R.K.		GI - 36
		6571



GEOPEKO LIMITED		Scale: 1in - 50ft
N°1 OREBODY.		Date: AUG '69
ORE OUTLINE		061052
+220 R.L.		Drawn: N.R.K.
WEDGE BLOCK AREA		Traced: N.R.K.
Checked: R.L.M.		GI-37
		6572

Assay Ft

400

350

300

250

200

150

100

50

0.25

0.50

0.75

1.0

1.25

1.50

1.75

2.0

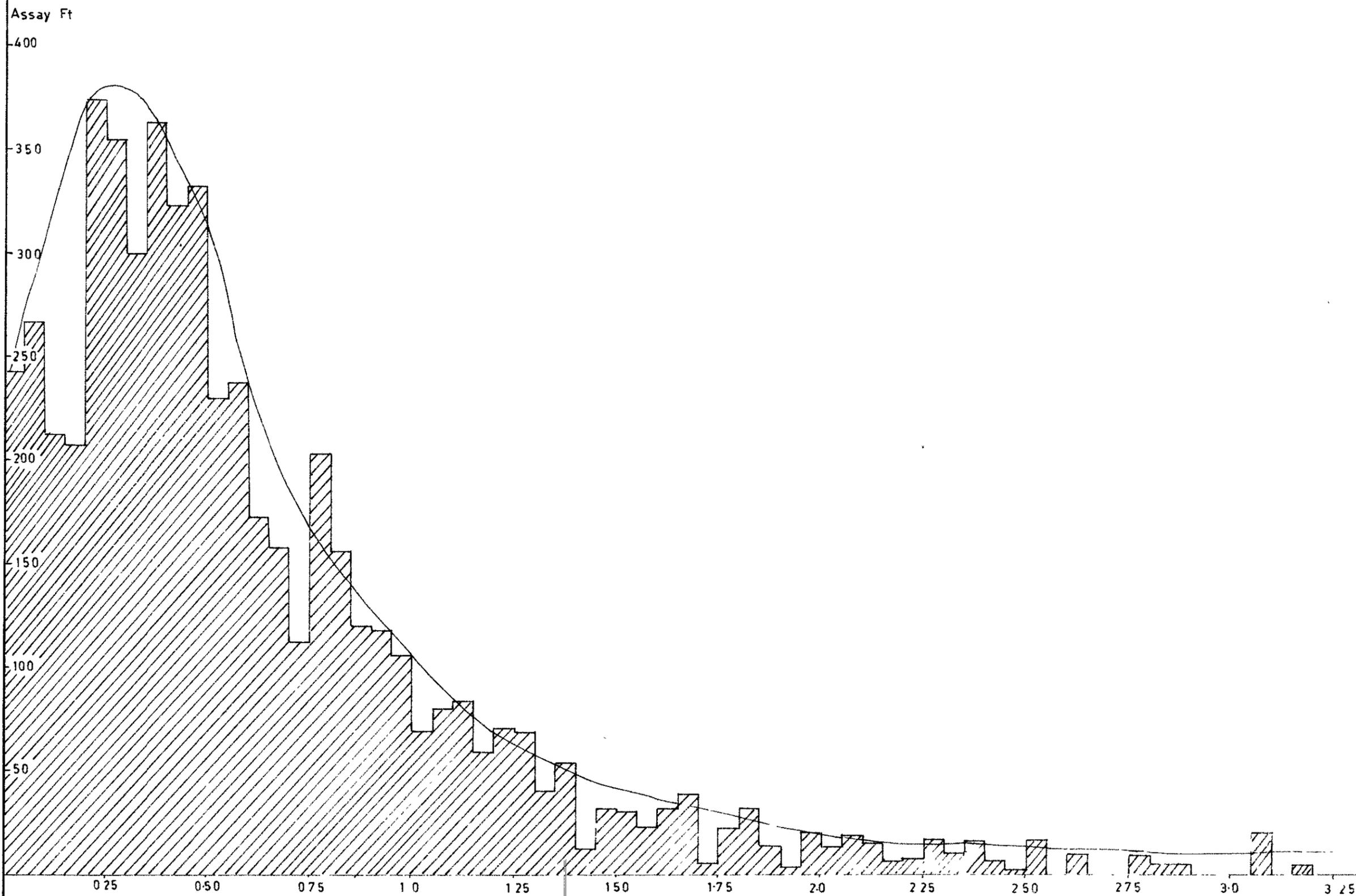
2.25

2.50

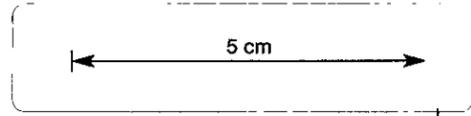
2.75

3.0

3.25

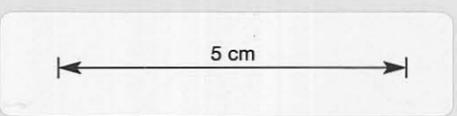
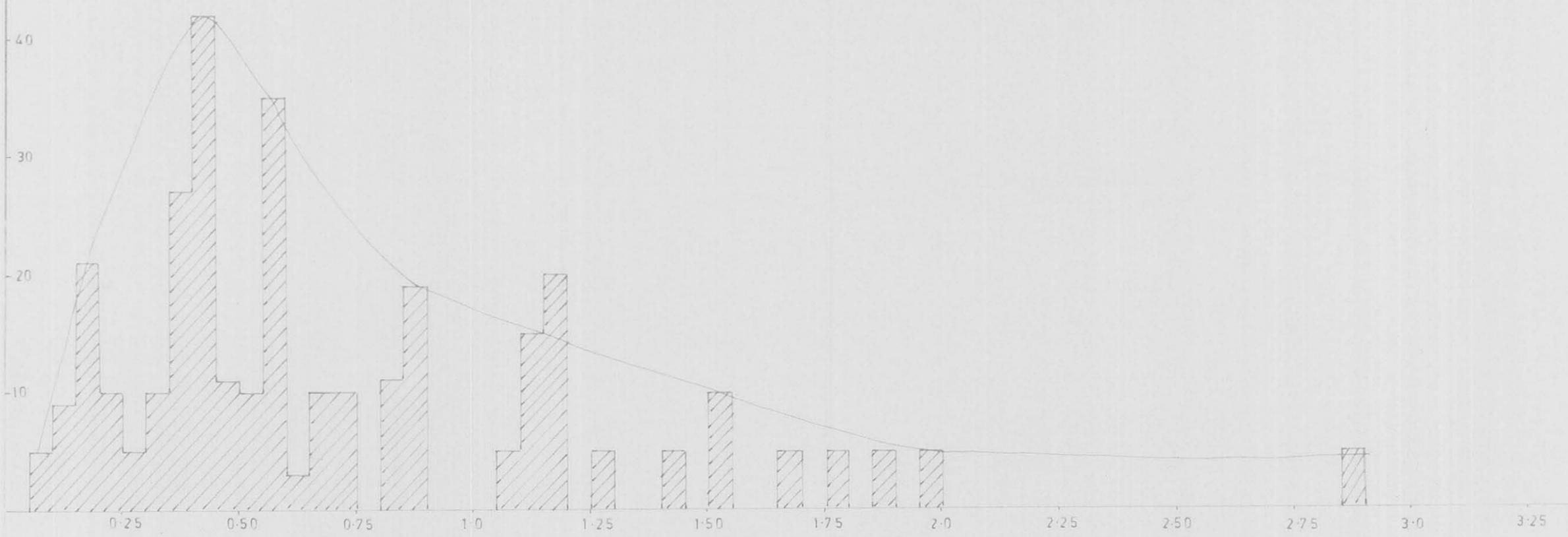


061053



GEOPEKO LTD		Scale
ASSAY HISTOGRAM		Date AUG 69
C LENS		GI-38 6573
N° 1 OREBODY		
Drawn A.M.T.	Checked P. LEW	

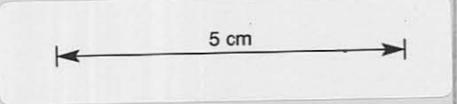
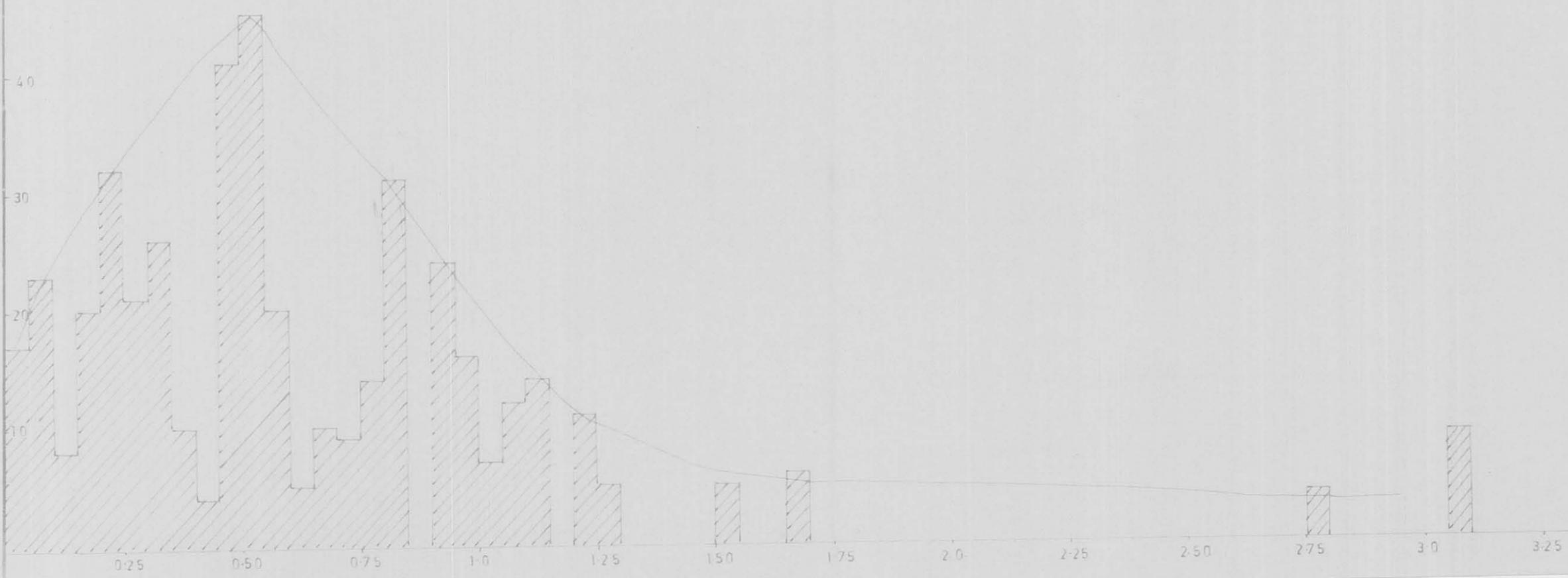
Assay Ft
50



061054

GEOPEKO LTD ASSAY HISTOGRAM C LENS LINE 25 N°1 OREBODY	Scale :
	Date : AUG 69
	Drawn : AMT
	Traced : AMT
Checked: <i>PLM</i>	GI-39 6574

Assay Ft
50



061055

GEOPEKO LTD ASSAY HISTOGRAM C LENS LINE 13 N°1 OREBODY	Scale :
	Date : AUG 69
	Drawn : AMT
	Traced : AMT
Checked : P. LEM	GI-40 6575