



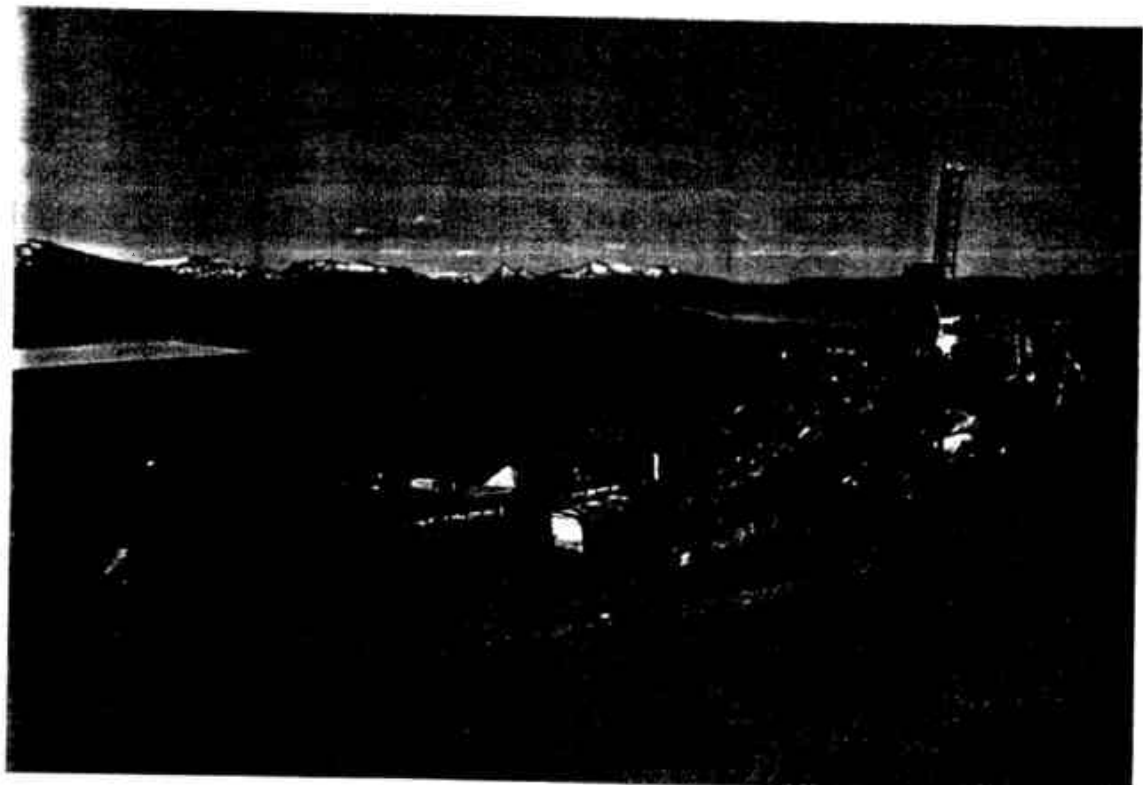
RÅNA DEPOSIT, BALLANGEN, NORWAY

GEOLOGICAL IN-SITU MINERAL RESOURCE ESTIMATE

SUMMARY

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 - 3 CALCULATION METHOD
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Copies Norsulfid A/S, 2
 OMS/EMS-IH, ME



1 INTRODUCTION

This mineral resource estimate of the remaining parts of the Råna Ni-deposit was prepared for Norsulfid A/S by Markus Ekberg, Outokumpu Mining Services at Ballangen and Outokumpu 6-7/1992.

The aim of this study was to check and calculate in-situ, undiluted mineral resources of the Råna deposit.

This estimate is based on the database which is created using diamond drill hole logs and maps collected during site visit 6/1992.

There were no possibilities to make check assays in an independent laboratory, so the estimation is based on the assays received from Nikkel og Olivin A/S.

The total number of drill holes used in this estimation is 141. The total number of assays made is 2947. Elements assayed are Ni and sometimes Cu and Co.

Cut-off grade in the base case of this estimation is 100 NOK/tonne, which equals present mining, milling and administration costs, which are approximately 96 NOK/tonne. This 100 NOK/tonne equals Ni-grade 0.35 % (with Cu and Co in the concentrate), which is exceptionally low for cut-off-grade. The reason for this is forecast Ni-price, which is 63.69 NOK/kg (FIM 44.46 average 1993-1997). Price for period 6/1992 was 44.22 NOK/kg.

SUMMARY

An ore reserve (mineral resource) estimation of the Råna Ni-(Cu-Co)-deposit, Norway, was prepared in Outokumpu Mining Services by Markus Ekberg. The work was done 7/1992 using Minenet-program and diamond drill holelogs collected during a site visit 6/1992.

The estimation was done by conventional section method. The estimation area includes remaining parts (situation as 1.1.1993) of the Eastern Orebody and unmined and undeveloped Western Orebody.

The estimation was prepared using Net Smelter Return-principle. NSR is the revenue from the sale of concentrates. Thus all assays in all drill holes were converted to Norwegian crown-values using forecast prices, present recoveries and grades for concentrates and present smelter terms.

Cut-off grade used in the base case of this estimation was 100 NOK/tonne. Also 130 NOK/tonne and 160 NOK/tonne estimates were prepared. These values equal 0.35 %, 0.45 % and 0.55 % Ni. The reason for using 100 NOK/tonne cut off grade was the present producing costs 96 NOK/tonne.

Specific gravity in this estimation was presently used 3.3 t/m³.

The results are as follows:

Cut-off grade 100 NOK/tonne			
Area	Tonnes	Ni %	NOK/tonne
West	6 965 000	0.53	153
East	1 146 000	0.62	179
Total	8 111 000	0.54	157
Cut-off grade 130 NOK/tonne			
Area	Tonnes	Ni %	NOK/tonne
West	3 905 000	0.62	181
East	910 000	0.67	194
Total	4 815 000	0.63	184
Cut-off grade 160 NOK/tonne			
Area	Tonnes	Ni %	NOK/tonne
West	1 443 000	0.73	213
East	398 000	0.85	246
Total	1 841 000	0.76	220

2 DATA INPUT AND DATABASE

Database for this estimation was created using diamond drill hole logs and maps collected and received from Nikkel og Olivin A/S 6/1992. All information which was asked was freely available and drill hole logs were in daily use at the mine site. However, accuracy of the assays is not checked in an independent laboratory.

Diamond drill hole logs used in this estimation are mainly from three periods: 1940-40, 1970-1979 and 1988-present. Assays from the first drilling period are obviously total Ni-assays (silicate nickel assayed together with sulphide nickel, whole rock solution). Assays from the other periods are sulphide nickel assays (bromium-methanol-solution).

Assays from the first drilling period were used after lowering them by 0.1 %. The reason for this reducing is that according to the reports olivin in the Råna-deposit contains 0.1 % Ni. This lowering is also used commonly for total nickel assays when converted to sulphide nickel. Assays from the other periods are reported to be sulphide nickel assays and they have been used directly.

The coordinate system used in this estimation was original except z-coordinate, which was transformed to be negative. The reason for this is computing. Coordinate system is presented in appendix 1, where also drill hole location and inclined ramp and planned exploration tunnel are presented.

Data input was done in Mining Services by own personnel and the database was later checked by M Ekberg. The database used for calculations is according to the original drill hole logs.

The database was also checked using basic statistics (appendix 2). There are no obvious mistakes in the database.

CALCULATION METHODS

The conventional mineral resource estimation is based on 10 sections at 50 or 100 meter intervals. Location of the sections is presented in appendix 1.

This estimation covers the Western orebody totally and the remaining parts of the Eastern Orebody (situation 1.1.1993). The Eastern orebody is estimated below +340-level from profile Y=2550 to Y=2800. Area from Y=2800 is not included.

Some minor areas which will be mined during 1993 are not included: Eastern end of open pit and underground area over +367, between profiles Y=2900-Y3100. The reason for excluding these areas is that there was almost no drilling data for these areas.

The cut-off grade (boundary cut-off) used in this estimation was Net Smelter Return value 100 NOK/tonne. All assays in the database were converted to ore values (NSR) using following prices, concentrate recoveries and grades and smelter terms.

Ni:	Price aver. 1993-1997	44.46 FIM/kg	63.69 NOK/kg
	Recovery	72 %	
	Conc. grade	12.7 %	
	Payable metals	92 %	
	Treatment charge	619.13 FIM/t	887.24 NOK/t
	Freight		180 NOK/dmt
	H2O-penalty		9.62 NOK/t
	Escalated ref.charge	9.76 FIM/kg	13.986 NOK/kg
Cu:		10.30 FIM/kg	14.71 NOK/kg
	Conc. grade	3.5 %	
	Unit deduction	0.5 %	
	Payment perc. of price	95.0 %	
	Ref. charge	3.48 FIM/kg	4.986 NOK/kg
Co:		15 USD/lb	222.86 NOK/kg
	Conc. grade	0.55 %	
	Payable metals	25.0 %	
	Payment perc. of price	90.0 %	
	Ref. charge	74.2 FIM/kg	106.304 NOK/kg
Exchange rates	NOK/FIM	0.698	
(aver. 1993-1997)	USD/FIM	4.704	

Concentrate grade and recovery for Ni, Cu and Co are according to the present mill performance. Cu and Co grades in the ore can not be estimated reliably because

of sparse analytical data. Cu and Co in the concentrate both make approximately 14 % (Cu 8 % and Co 6 %) of the revenues and thus also from the NSR-value.

Ni and Cu prices and all exchange rates are according to Outokumpu's long term price forecasts, but Co price is according to Kokkola Chemical Work's (J Hakkarainen) because Co-price is not forecasted by Outokumpu. The prices in this estimation are in constant 1992 money.

Boundary cut-off grade in this estimation means that if the intersection had values lower than 100 NOK/tonne, they were not included in the ore intersection. The ore was divided into two categories: width 4-6 meters and width over 6 meters. In some minor cases the ore intersection was "diluted" by surrounding material to create a minimum width of 4 meters. The same principles were also used for 130 NOK/t and 160 NOK/t calculations.

However, this estimation is undiluted mineral resource estimation so mining technical dilution is not included in the estimated grade. This must be kept on mind when evaluating the profitability of the future project.

Geological interpretation is according to the original profiles. Only changes are caused by varying cut-off grade.

The ore in each section was divided in subpolygons and the grade for each subpolygon is weighted average of all samples inside a subpolygon. The weighing method used was sample length.

The grade of each section is weighed average of each subpolygon and tonnage is a sum of the tonnage of each subpolygon.

The projection distance is mainly 100 m (50 m + 50 m) for the Western orebody and 50 meters for the Eastern orebody. Near the profile Y=2500 different projection distances were used because of changing section interval.

Lists of each subpolygon and sections are in appendices 4-6 with different cut-off-grade. Mineral resource sections are presented in appendices 7-9.

4
RESULTS

Estimated in-situ undiluted mineral resource for Råna deposit was prepared using three different cut-off-grades. The ore was divided into 2 classes according to the thickness of the ore.

The amount of high-sulphide ore (pyrrhotite) can not be estimated in this report because there was no time to go through drill hole logs in detail. This ore type can cause problems in the future, because there are strict limits for metal grades in the tailing.

The tonnages and grades for the Råna deposit are as follows:

Cut-off grade 100 NOK/tonne			
Western Orebody	Tonnes	Ni %	NSR-value
Thickness 4-6 m	1 236 848	0.55	159.5
over 6 m	5 728 244	0.52	152.0
Total	6 965 092	0.53	153.3
Eastern Orebody			
Thickness 4-6 m	114 886	0.77	223.5
over 6 m	1 030 955	0.60	173.7
Total	1 145 841	0.62	178.7
Western and Eastern Orebody			
Thickness 4-6 m	1 351 734	0.57	164.9
over 6 m	6 759 199	0.53	155.3
Total	8 110 933	0.54	156.9

Cut-off grade 130 NOK/tonne			
Western Orebody	Tonnes	Ni %	NSR-value
Thickness 4-6 m	379 766	0.85	246.5
over 6 m	3 525 804	0.60	174.3
Total	3 905 570	0.62	181.3
Eastern Orebody			
Thickness 4-6 m	220 880	0.74	214.9
over 6 m	688 775	0.65	187.2
Total	909 655	0.67	193.9
Western and Eastern Orebody			
Thickness 4-6 m	600 646	0.81	234.9
over 6 m	4 213 579	0.61	176.4
Total	4 815 226	0.63	183.7

Cut-off grade 160 NOK/tonne			
Western Orebody	Tonnes	Ni %	NSR-value
Thickness 4-6 m	143 309	1.03	298.7
over 6 m	1 300 438	0.70	203.0
Total	1 443 747	0.73	212.6
Eastern Orebody			
Thickness 4-6 m	97 520	1.05	306.7
over 6 m	300 196	0.78	226.3
Total	397 716	0.85	246.0
Western and Eastern Orebody			
Thickness 4-6 m	240 829	1.04	301.9
over 6 m	1 600 634	0.71	207.4
Total	1 841 463	0.76	219.8

DISTRIBUTION OF value WEIGHTED BY length , 27.7.1992/all.stl

class	no of samples	freq	cumul freq.	freq %	cumul %	class mean
0000 - 20.0000	824	4418.49	4418.49	48.88	48.88	5.1373
0000 - 40.0000	587	1191.24	5609.73	13.18	62.06	28.4792
0000 - 60.0000	392	787.12	6396.85	8.71	70.77	48.9259
0000 - 80.0000	264	541.95	6938.80	6.00	76.77	70.0636
0000 - 100.0000	232	449.20	7408.00	5.19	81.96	88.6218
0000 - 120.0000	166	449.00	7857.00	4.97	86.93	110.2126
0000 - 140.0000	119	296.47	8153.47	3.28	90.21	131.6343
0000 - 160.0000	157	366.90	8520.37	4.06	94.27	150.8348
0000 - 180.0000	75	199.04	8719.41	2.20	96.47	169.6040
0000 - 200.0000	65	134.31	8853.72	1.49	97.95	187.0513
0000 - 220.0000	41	89.75	8943.47	0.99	98.95	208.1723
0000 - 240.0000	11	22.60	8966.07	0.25	99.20	228.3671
0000 - 260.0000	13	26.00	8992.07	0.29	99.48	253.3678
0000 - 280.0000	6	12.00	9004.07	0.13	99.62	268.8980
0000 - 300.0000	6	11.75	9015.82	0.13	99.75	291.6777
0000 - 320.0000	1	2.00	9017.82	0.02	99.77	308.1425
0000 - 340.0000	0	0.00	9017.82	0.00	99.77	-
0000 - 360.0000	2	4.00	9021.82	0.04	99.81	348.8406
0000 - 380.0000	0	0.00	9021.82	0.00	99.81	-
0000 - 400.0000	0	0.00	9021.82	0.00	99.81	-
0000 - 420.0000	0	0.00	9021.82	0.00	99.81	-
0000 - 440.0000	0	0.00	9021.82	0.00	99.81	-
0000 - 460.0000	0	0.00	9021.82	0.00	99.81	-
0000 - 480.0000	1	1.20	9023.02	0.01	99.83	465.1208
0000 - 500.0000	1	1.00	9024.02	0.01	99.84	494.1909
0000 - 520.0000	1	2.00	9026.02	0.02	99.86	517.4470
0000 - 540.0000	1	2.00	9028.02	0.02	99.88	523.2609
0000 - 560.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 580.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 600.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 620.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 640.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 660.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 680.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 700.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 720.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 740.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 760.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 780.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 800.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 820.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 840.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 860.0000	0	0.00	9028.02	0.00	99.88	-
0000 - 880.0000	2	1.90	9029.92	0.02	99.90	872.1016
0000 - 900.0000	0	0.00	9029.92	0.00	99.90	-
0000 - 920.0000	1	1.00	9030.92	0.01	99.91	901.1716
0000 - 940.0000	1	1.10	9032.02	0.01	99.93	930.2416
0000 - 960.0000	0	0.00	9032.02	0.00	99.93	-
60.0000 - 1511.6427	3	6.70	9038.72	0.07	100.00	1123.3182

totals 2974 9038.72 9038.72 100.00 100.00 48.1460

minima..... 0.0000
 maxima..... 1511.6427
 range..... 1511.6427
 arithmetic mean... 16.1459
 geometric mean.... 24.7776
 median..... 20.3490
 variance..... 4499.0527
 std. deviation.... 67.0750
 std. error..... 0.7055
 relative deviation 4.1922

ewness.....	5.1629
rtosis.....	66.7872
ercentile of 25..	5.8140
ercentile of 75..	22.6751

BITU ORE RESERVE ESTIMATION 24.7.1992

version: s_a_max_100_#
file : y=2250 - 2800
date : 4+6

file intersection	nibr	cu	co	value	area	density	projection	tons
length					a2		range	
250 54.00	0.59	0.01	0.00	171.26	4371	3.300	100.0	1442469
300 0.00					0	0.000	0.0	0
350 128.90	0.50	0.00	0.00	144.58	11262	3.300	100.0	3716382
400 0.00					0	0.000	0.0	0
450 96.20	0.54	0.00	0.00	158.32	5929	3.300	75.0	1467460
500 30.00	0.52	0.00	0.00	151.62	2053	3.300	50.0	338781
550 23.80	0.57	0.00	0.00	165.24	779	3.300	50.0	128598
600 42.80	0.68	0.00	0.00	197.02	1996	3.300	50.0	329282
650 5.20	2.74	0.38	0.18	796.07	58	3.300	50.0	16101
700 112.90	0.54	0.00	0.00	157.13	2302	3.300	50.0	379781
750 50.20	0.58			167.49	1215	3.300	50.0	300412
800 89.05	0.47	0.21	0.11	137.23	1111	3.300	25.0	91666
81 14.05	0.54	0.01	0.00	156.92	31115	3.3000	500.0	3110933

BITU ORE RESERVE ESTIMATION 24.7.1992

version:
file : y=2250 - 2800
date : 4+6

limit	tons	nibr	cu	co	value
value > 160.00	2812285	0.70	0.00	0.00	204.70
100 < value < 160.00	2447052	0.52	0.01	0.00	149.71
50 < value < 100.00	2851595	0.40	0.00	0.00	115.99
10 < value < 50.00	0				
value < 10.00	0				
Total	3110933	0.54	0.01	0.00	156.92

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_mnsh_100 *
 profile : Y=2250 - 2800
 code(s) : 4

profile intersection	length	nibr	cu	co	value	area	density	projection	tons
						m2		range	
Y=2250	19.90	0.41	0.03	0.00	118.08	1293	3.300	100.0	426787
Y=2300	0.00					0	0.000	0.0	0
Y=2350	16.90	0.44	0.03	0.00	126.84	1541	3.300	100.0	541500
Y=2400	0.00					0	0.000	0.0	0
Y=2450	22.10	1.00	0.00	0.00	291.18	1035	3.300	75.0	268562
Y=2500	0.00					0	0.000	0.0	0
Y=2550	5.40	0.46	0.00	0.00	132.32	143	3.300	50.0	23517
Y=2600	5.00	0.41			120.06	198	3.300	50.0	32729
Y=2650	5.20	2.74	0.38	0.18	296.07	98	3.300	50.0	16101
Y=2700	15.00	0.47	0.00	0.00	137.09	208	3.300	50.0	34320
Y=2750	0.00					0	0.000	0.0	0
Y=2800	3.40	0.46			135.11	100	3.300	25.0	8219
total	97.90	0.57	0.03	0.00	164.94	4765	3.3000	500.0	1351734

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : Y=2250 - 2800
 code(s) : 4

limit	tons	nibr	cu	co	value
value > 160.00	76971	2.81	0.08	0.04	815.84
130.00 < value < 160.00	418189	0.48	0.04	0.00	140.02
100.00 < value < 130.00	254574	0.41	0.01	0.00	118.62
70.00 < value < 100.00	0				
value < 70.00	0				
total	1351734	0.57	0.03	0.00	164.94

IN SITU ORE RESERVE ESTIMATION 24.7.1992

solvgens: s_m_low_100*
 profile : Y=2250 - 2800
 code(s) : 5

profile intersection	gibr	cu	co	value	area	density	projection	tens
length					m2		range	
Y=2250	34.10	0.67	0.00	0.00	193.60	3078	3.300	100.0 1015682
Y=2300	0.00				0	0.000	0.0	0
Y=2350	112.00	0.51	0.00	0.00	147.60	9621	3.300	100.0 3174882
Y=2400	0.00				0	0.000	0.0	0
Y=2450	74.10	0.44	0.00	0.00	128.56	4844	3.300	75.0 1198898
Y=2500	20.00	0.52	0.00	0.00	151.62	2053	3.300	50.0 338781
Y=2550	18.40	0.59	0.00	0.00	172.60	637	3.300	50.0 105081
Y=2600	37.80	0.71	0.00	0.00	205.51	1797	3.300	50.0 294553
Y=2650	0.00				0	0.000	0.0	0
Y=2700	37.90	0.55	0.00	0.00	159.12	2094	3.300	50.0 345462
Y=2750	50.20	0.58			167.49	1215	3.300	50.0 200412
Y=2800	71.65	0.47	0.21	0.11	137.44	1011	3.300	25.0 83447
total	516.15	0.53	0.00	0.00	155.32	26350	3.3000	550.0 6759199

IN SITU ORE RESERVE ESTIMATION 24.7.1992

solvgens:
 profile : Y=2250 - 2800
 code(s) : 5

limit	tens	gibr	cu	co	value
value > 160.00	2735314	0.65	0.00	0.00	187.51
130.00 < value < 160.00	2028863	0.52	0.00	0.00	151.70
100.00 < value < 130.00	1995021	0.40	0.00	0.00	114.86
70.00 < value < 100.00	0				
value < 70.00	0				
total	6759199	0.53	0.00	0.00	155.32

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: :a nok 100_1
 profile : r=2250 - 2500
 code(s) : 4+6

profile intersection	nibr	cu	co	value	area	density	projection	tons
length					m2		range	
y=2250	54.00	0.59	0.01	0.00	171.26	4371	3.300	100.0 1442469
y=2300	0.00				0	0.000	0.0	0
y=2350	138.90	0.50	0.00	0.00	144.58	11262	3.300	100.0 3716382
y=2400	0.00				0	0.000	0.0	0
y=2450	76.20	0.54	0.00	0.00	158.32	5929	3.300	75.0 1467460
y=2500	20.00	0.52	0.00	0.00	151.62	2053	3.300	50.0 338781
total	289.10	0.53	0.00	0.00	153.34	23615	3.3000	325.0 5965092

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : r=2250 - 2500
 code(s) : 4+6

limit	tons	nibr	cu	co	value
value > 150.00	2281801	0.69	0.00	0.00	300.70
120.00 < value < 150.00	1943855	0.52	0.01	0.00	150.76
100.00 < value < 130.00	2739435	0.40	0.00	0.00	115.73
70.00 < value < 100.00	0				
value < 70.00	0				
total	5965092	0.53	0.00	0.00	153.34

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_m_nok_100_1
 profile : y=2250 - 2500
 code(s) : 4

profile intersection	gibr	cu	co	value	area	density	projection	tons
length					m2		range	
y=2250 19.90	0.41	0.03	0.00	118.08	1293	3.300	100.0	426787
y=2300 0.00					0	0.000	0.0	0
y=2350 15.90	0.44	0.03	0.00	126.84	1841	3.300	100.0	541500
y=2400 0.00					0	0.000	0.0	0
y=2450 22.10	1.00	0.00	0.00	291.18	1085	3.300	75.0	368562
y=2500 0.00					0	0.000	0.0	0
total 58.90	0.55	0.02	0.00	159.51	4019	3.3000	275.0	1236848

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : y=2250 - 2500
 code(s) : 4

limit	tons	gibr	cu	co	value
value > 160.00	60870	2.82	0.00	0.00	821.07
130.00 < value < 160.00	367100	0.48	0.04	0.00	140.24
100.00 < value < 130.00	508878	0.41	0.02	0.00	118.47
70.00 < value < 100.00	0				
value < 70.00	0				
total	1236848	0.55	0.02	0.00	159.51

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_a_nor_100_1
 profile : Y=2250 - 2500
 code(s) : 5

profile intersection	nibr	cu	co	value	area	density	projection	tons
length					m2		range	
Y=2250	0.67	0.00	0.00	193.60	3078	3.300	100.0	1015682
Y=2300	0.00				0	0.000	0.0	0
Y=2350	0.51	0.00	0.00	147.60	8621	3.300	100.0	3174882
Y=2400	0.00				0	0.000	0.0	0
Y=2450	0.44	0.00	0.00	128.56	4844	3.300	75.0	1198898
Y=2500	0.52	0.00	0.00	151.52	2053	3.300	50.0	338781
total	2.14	0.52	0.00	152.01	19596	3.3000	225.0	5729244

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : Y=2250 - 2500
 code(s) : 5

limit	tons	nibr	cu	co	value
value > 160.00	2220931	0.63	0.00	0.00	183.70
120.00 < value < 160.00	1576755	0.53	0.00	0.00	153.21
100.00 < value < 120.00	1930558	0.39	0.00	0.00	114.58
70.00 < value < 100.00	0				
value < 70.00	0				
total	5729244	0.52	0.00	0.00	152.01

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_m_nok_100_1
profile : Y=2250
codes : 4+6

base/num	inters. length	nibr	cu	co	value	area m2	density	projection range	tons
1/2	5.00	0.40	0.07	0.00	115.31	508	3.300	100.0	167545
1/3	5.00	0.40	0.00	0.00	115.31	289	3.300	100.0	95402
1/5	7.90	0.42	0.00	0.00	122.54	496	3.300	100.0	163840
1/6	20.10	0.64	0.00	0.00	186.12	1783	3.300	100.0	588425
1/7	14.00	0.70	0.00	0.00	203.91	1295	3.300	100.0	427257
Total	54.00	0.59	0.01	0.00	171.26	4371	3.300		1442469

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_m_nok_100_1
profile : Y=2250
codes : 4+6

limit	tons	nibr	cu	co	value
value > 160.00	1015682	0.67	0.00	0.00	193.60
130.00 < value < 160.00	0				
100.00 < value < 130.00	426787	0.41	0.03	0.00	119.08
70.00 < value < 100.00	0				
value < 70.00	0				
Total	1442469	0.59	0.01	0.00	171.26

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_a_nak_100_1
profile: y=2350
codes: 4+6

name/num	inters. length	nibr	cu	co	value	area m2	density	projection range	tons
1/4	8.00	0.48	0.06	0.00	139.54	294	3.300	100.0	252161
1/6	24.00	0.42	0.00	0.00	121.13	1549	3.300	100.0	511267
1/7	32.00	0.58	0.00	0.00	169.88	2919	3.300	100.0	963296
1/8	16.00	0.39	0.00	0.00	114.28	1401	3.300	100.0	462345
1/11	12.00	0.53	0.00	0.00	155.36	1698	3.300	100.0	560214
1/12	22.00	0.52	0.00	0.00	152.22	2054	3.300	100.0	677760
1/13	4.00	0.44	0.00	0.00	127.20	290	3.300	100.0	95855
1/14	6.00	0.37	0.00	0.00	108.53	556	3.300	100.0	183484
Total	128.00	0.50	0.00	0.00	144.58	11262	3.300		3716382

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_a_nak_100_1
profile: y=2350
codes: 4+6

limit	tons	nibr	cu	co	value
value > 160.00	963296	0.58	0.00	0.00	169.88
120.00 < value < 160.00	1500134	0.52	0.01	0.00	151.13
100.00 < value < 120.00	1252951	0.40	0.00	0.00	117.22
70.00 < value < 100.00	0				
value < 70.00	0				
Total	3716382	0.50	0.00	0.00	144.58

IN SITU ORE RESERVE ESTIMATION 24.7.1992

lvgons: s_a_nok_100_1

ofile: y=2450

das(a): 4+6

size/nu	inters. length	nibr	cu	co	value	area #2	density	projection range	tons
1/2	16.00	0.38	0.00	0.00	111.19	1060	3.300	75.0	352462
1/2	32.00	0.36	0.00	0.00	103.38	1787	3.300	75.0	442327
1/5	10.10	0.68	0.00	0.00	197.13	978	3.300	75.0	241953
1/5	15.00	0.43	0.00	0.00	125.00	1019	3.300	75.0	252156
1/7	10.00	0.45	0.00	0.00	129.65	415	3.300	75.0	102752
1/8	5.50	1.32	0.00	0.00	321.07	346	3.300	75.0	60870
1/10	1.50	0.49	0.00	0.00	142.00	424	3.300	75.0	104940
total	75.20	0.54	0.00	0.00	153.32	5929	3.300		1467460

IN SITU ORE RESERVE ESTIMATION 24.7.1992

lvgons: s_a_nok_100_1

ofile: y=2450

das : 4+6

limit	tons	nibr	cu	co	value
value > 100.00	302823	1.11	0.00	0.00	322.55
0.00 < value < 100.00	104940	0.49	0.00	0.00	142.00
0.00 < value < 100.00	1059197	0.29	0.00	0.00	113.01
0.00 < value < 100.00	0				
value < 70.00	0				
total	1467460	0.54	0.00	0.00	153.32

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_a_001_100_1

profile: Y=2500

codes: 1

name/area	inters. length	nick	cu	co	value	area m2	density	projection range	tons
1/1	1.00	0.48	0.00	0.00	140.51	765	3.300	50.0	126292
1/2	14.00	0.54	0.00	0.00	158.22	1288	3.300	50.0	212489
Total	20.00	0.52	0.00	0.00	151.62	2053	3.300		338781

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_a_001_100_1

profile: Y=2500

codes: 1

limit	tons	nick	cu	co	value
value > 150.00	0				
130.00 < value < 150.00	338781	0.52	0.00	0.00	151.62
100.00 < value < 130.00	0				
70.00 < value < 100.00	0				
value < 70.00	0				
Total	338781	0.52	0.00	0.00	151.62

N SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_a_nox_100_2
 profile : x=2550 - 2800
 code(s) : 4+6

profile intersection	nibr	cu	co	value	area	density	projection	tons
length					m2		range	
=2550 33.80	0.57	0.00	0.00	165.24	779	3.300	50.0	128598
=2600 42.80	0.68	0.00	0.00	197.02	1996	3.300	50.0	329282
=2650 5.20	2.74	0.38	0.18	796.07	98	3.300	50.0	16101
=2700 112.90	0.54	0.00	0.00	157.13	2302	3.300	50.0	379781
=2750 50.20	0.58			167.49	1215	3.300	50.0	300412
=2800 50.05	0.47	0.21	0.11	137.23	1111	3.300	55.0	21666
total 314.95	0.62	0.02	0.01	178.70	7500	3.3000	575.0	1145841

N SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : y=2550 - 2800
 code(s) : 4+6

limit	tons	nibr	cu	co	value
value > 150.00	530484	0.76	0.01	0.01	221.94
30.00 < value < 150.00	503197	0.50	0.02	0.01	145.64
100.00 < value < 150.00	112160	0.42	0.00	0.00	132.54
70.00 < value < 100.00	0				
value < 70.00	0				
total	1145841	0.62	0.02	0.01	178.70

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: z_1_nok_100_2
 profile : Y=2550 - 2800
 code(s) : 4

profile	intersection length	nibr	cu	co	value	area m2	density	projection range	tons
Y=2550	1.40	0.46	0.00	0.00	132.32	143	3.300	50.0	23517
Y=2600	1.00	0.41			120.06	198	3.300	50.0	22729
Y=2650	1.20	2.74	0.38	0.18	796.07	29	3.300	50.0	15101
Y=2700	15.00	0.47	0.00	0.00	137.07	208	3.300	50.0	24320
Y=2750	1.00					0	0.000	0.0	0
Y=2800	1.40	0.46			135.11	100	3.300	25.0	3219
total	22.00	0.77	0.08	0.04	223.48	246	3.3000	225.0	114886

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile : Y=2550 - 2800
 code(s) : 4

limit	tons	nibr	cu	co	value
value > 150.00	15101	2.74	0.38	0.18	796.07
120.00 < value < 150.00	51988	0.48	0.00	0.00	138.40
100.00 < value < 120.00	47697	0.42	0.00	0.00	121.31
70.00 < value < 100.00	0				
value < 70.00	0				
total	114886	0.77	0.08	0.04	223.48

SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: s_m_nz_100_2
 profile: Y=2550 - 2800
 side(s): s

profile intersection	nibr	cu	co	value	area	density	projection	tons
length					m2		range	
2550 18.40	0.59	0.00	0.00	172.60	837	3.300	50.0	105081
2600 37.80	0.71	0.00	0.00	205.51	1797	3.300	50.0	296553
2650 0.00					0	0.000	0.0	0
2700 97.90	0.55	0.00	0.00	159.12	2094	3.300	50.0	345462
2750 50.20	0.58			167.49	1215	3.300	50.0	200412
2800 71.61	0.47	0.21	0.11	137.44	1011	3.300	35.0	23447
total 375.95	0.60	0.01	0.00	173.71	6754	3.3000	325.0	1030955

N SITU ORE RESERVE ESTIMATION 24.7.1992

polygons:
 profile: Y=2550 - 2800
 side(s): s

limit	tons	nibr	cu	co	value
value 160.00	514383	0.70	0.00	0.00	203.96
130.00 value 150.00	452109	0.51	0.03	0.01	146.46
100.00 value 130.00	34463	0.42	0.00	0.00	123.46
70.00 value 100.00	0				
value 70.00	0				
total	1030955	0.60	0.01	0.00	173.71

IN SITU ORE RESERVE ESTIMATION 24.7.1992

colvcons: s_a_nok_100_2
 profile : Y=2550
 codes : 4+6

name/num	inters. length	nibr	cu	co	value	area m2	densitv	projection range	tons
2/1	5.40	0.46	0.00	0.00	102.32	143	3.300	50.0	23517
2/3	15.40	0.59	0.00	0.00	172.60	637	3.300	50.0	105081
Total	20.80	0.57	0.00	0.00	165.24	779	3.300		128598

IN SITU ORE RESERVE ESTIMATION 24.7.1992

colvcons: s_a_nok_100_2
 profile : Y=2550
 codes : 4+6

limit	tons	nibr	cu	co	value
value > 150.00	105081	0.59	0.00	0.00	172.60
130.00 < value < 150.00	23517	0.46	0.00	0.00	102.32
100.00 < value < 130.00	0				
70.00 < value < 100.00	0				
value < 70.00	0				
Total	128598	0.57	0.00	0.00	165.24

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_m_nsk_100_2
 profile : Y=2500
 codes: 1 : 4+5

name/num	inters. length	nibr	cu	co	value	area a2	density	projection range	tons
2/2	5.00	0.41			120.06	198	3.300	50.0	32729
2/3	11.00	0.57	0.00	0.00	164.64	699	3.300	50.0	115351
2/4	13.80	1.72	0.00	0.00	499.25	274	3.300	50.0	45223
2/5	13.00	0.49	0.00	0.00	142.49	824	3.300	50.0	135979
Total	42.80	0.66	0.00	0.00	137.02	1996	3.300		129282

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_m_nsk_100_2
 profile : Y=2500
 codes : 4+5

limit	tons	nibr	cu	co	value
value > 160.00	160574	0.89	0.00	0.00	258.86
130.00 < value < 160.00	135979	0.49	0.00	0.00	142.49
100.00 < value < 130.00	32729	0.41	0.00	0.00	120.06
70.00 < value < 100.00	0				
value < 70.00	0				
Total	329282	0.66	0.00	0.00	137.02

SITU RESERVE ESTIMATION 24.7.1992

geom: s_a_nok_100_2
file: 12650
as: +

value	inters.	inter	cu	co	value	area	density	projection	tons
	length					m2		range	
1	5.20	2.74	0.38	0.18	796.07	98	3.300	50.0	16101
2	5.20	2.74	0.38	0.18	796.07	98	3.300		16101

SITU RESERVE ESTIMATION 24.7.1992

geom: s_a_nok_100_2
file: 12650
as: +

value	tons	inter	cu	co	value
value > 160.00	16101	2.74	0.38	0.18	796.07
value < 160.00	0				
value < 170.00	0				
value < 180.00	0				
value < 190.00	0				
value < 200.00	0				
Total	16101	2.74	0.38	0.18	796.07

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_a_nsk_100_2
 profile : y=2700
 codes : 4+6

name/num	inters. length	nitr	cu	co	value	area m2	density	projection range	tons
2/3	14.90	0.54	0.00	0.00	157.97	435	3.300	50.0	71721
2/5	8.00	0.43	0.00	0.00	124.03	91	3.300	50.0	14967
2/6	7.00	0.51	0.00	0.00	147.19	117	3.300	50.0	19352
2/7	2.10	0.42	0.00	0.00	123.46	391	3.300	50.0	64463
2/8	45.30	0.58	0.00	0.00	168.55	812	3.300	50.0	101033
2/9	3.00	0.59	0.00	0.00	172.87	277	3.300	50.0	46010
2/11	20.00	0.59	0.00	0.00	171.92	377	3.300	50.0	62233
Total	112.90	0.54	0.00	0.00	157.13	2302	3.300		379781

IN SITU ORE RESERVE ESTIMATION 24.7.1992

polygons: a_a_nsk_100_2
 profile : y=2700
 codes : 4+6

limit	tons	nitr	cu	co	value
value > 160.00	309277	0.59	0.00	0.00	170.50
130.00 < value < 160.00	31073	0.54	0.00	0.00	155.68
100.00 < value < 130.00	79431	0.43	0.00	0.00	123.57
70.00 < value < 100.00	0				
value < 70.00	0				
Total	379781	0.54	0.00	0.00	157.13

ITU ORE RESERVE ESTIMATION 24.7.1992

ponds: a_nok_100_2

file: 7=2750

is: 5

num	inters. length	nbr	cu	co	value	area a2	densitv	projection range	tons
271	14.00	0.51			149.57	236	3.300	50.0	39008
273	5.00	0.52			151.16	254	3.300	50.0	41950
275	11.00	0.52			151.16	297	3.300	50.0	49053
277	10.70	0.52			143.73	128	3.300	50.0	30950
278	8.50	0.83			241.50	239	3.300	50.0	39451
1	50.20	0.58			167.49	1215	3.300		200412

ITU ORE RESERVE ESTIMATION 24.7.1992

ponds: a_nok_100_2

file: 7=2750

is: 5

limit	tons	nbr	cu	co	value
value > 160.00	39451	0.83	0.00	0.00	241.51
00 < value < 160.00	160961	0.52	0.00	0.00	149.35
00 < value < 130.00	0				
00 < value < 100.00	0				
value < 70.00	0				
Total	200412	0.58	0.00	0.00	167.49

TU ORE RESERVE ESTIMATION 24.7.1992

ns: s_m_nok_100_2
 a: Y=2800
 b: 4+6

ua	inters. length	nibr	cu	co	value	area m2	density	projection range	tons
2/2	51.65	0.49	0.21	0.11	142.19	399	3.300	25.0	32924
2/3	12.00	0.46			134.21	266	3.300	25.0	21905
2/4	3.00	0.46			134.45	347	3.300	25.0	28618
2/6	3.40	0.46			135.11	100	3.300	25.0	8219
	20.05	0.47	0.21	0.11	137.23	1111	3.300		91666

TU ORE RESERVE ESTIMATION 24.7.1992

ns: s_m_nok_100_2
 a: Y=2800
 b: 4+6

limit	tons	nibr	cu	co	value
value > 160.00	0				
0 < value < 160.00	91666	0.47	0.08	0.04	137.23
0 < value < 130.00	0				
0 < value < 100.00	0				
value < 70.00	0				
Total	91666	0.47	0.21	0.11	137.23

Appendices 4-6 include details of each subpolygon in the sections. Subpolygon numbers refer to the numbers presented in the sections (appendices 7-9).

Mineral resources of the Råna deposit can be classified as indicated mineral resources according to the "Australasian code for reporting of identified mineral resources and ore reserves". In the estimated area there are no measured ore reserves as in normal cases in operating mines.

FUTURE EXPLORATION AND MINE DEVELOPMENT

Future exploration and mine development seem to be problematic at the Råna deposit. There are no measured ore reserves and thus mine planning is very problematic.

Exploration tunnel for the Western orebody has started during spring 1992. However, it is difficult to get this tunnel ready in time for exploration and mine development until the Eastern orebody is mined. Also the location of the now planned exploration tunnel is difficult, because it will be situated to the hanging wall of the Western orebody. Also ore transport distance will be long if this tunnel will be used as transport tunnel.

This exploration tunnel and ramp are planned to be ready at the end of 1993. Although diamond drilling can partly be done during drifting, it is very difficult to get the Western orebody to production in time.

The amount of diamond drilling holes from this exploration tunnel will be about 50 and average length 100-200 m, totally 7500 m. Then the drilling pattern will be about 50 m and it is enough for mine planning. The problem with this plan is that the exploration tunnel can not be safely used for ore transportation and the development of the Western orebody needs a new tunnel to the footwall or a shaft for transportation.

Other alternatives for exploration tunnel location and ore transportation should be carefully studied. One possibility could be a (horizontal) exploration tunnel to the footwall of the Western orebody to the level +50 - +100. This tunnel should be started as a separate project from the hillside. This tunnel could then be used for the development of the Western orebody. Ore transportation could be done using a shaft (inclined or vertical), thus it is not necessary to transport ore along the hillside.

CONCLUSIONS AND RECOMMENDATIONS

Comparison of this estimation to the other previously done estimations must be done using cut-off grade 130 NOK/tonne in this estimation and 0.4 % Ni in the others.

Original resources in the Eastern orebody have been reported to be some 4 - 4.4 Mt. Total mining (situation 1.1.1993) will be about 1.8 Mt. Mining recovery has been about 60 % (pillars 10 m, stopes 15 m wide). Thus it means that there has been some 3 Mt in the already mined area. The remaining part of the Eastern orebody should then have some 1 - 1.4 Mt ore.

The remaining resources according to this estimation in the Eastern orebody are about 0.9 Mt. This correlates very well with previous calculation because some minor areas were excluded from this estimation.

The last estimation for the Western orebody has been prepared by A/S Prospektering 4.7.1991. The estimation has been done very roughly and the cut-off grade is unknown. This ASPRO-estimation has been done between profiles Y=2250 - Y=2500 with influence area 250 m. Thus the ore is not assumed to continue from the last known profiles as is done in normal resource estimations.

This ASPRO-estimation shows 2.75 Mt ore with average grade of 0.55 % Ni. The now prepared new estimate shows 3.9 Mt with average grade of 0.62 % Ni. The reason for this difference is a difference in the influence distance (325 m in this estimate compared to 250 m in the ASPRO estimate). The difference in the grade can be explained by one high-grade block in the profile Y=2450 (Ni 4.18 %); if this is left out from the estimate the average grade will be 0.58 % Ni. It is unknown whether this area is included in the ASPRO-estimation.

Project economics should be carefully evaluated using different metal prices and cut-off grades. Evaluation of the mill feed grade can be easily done using base work of this estimation and after selection of mining method.

Timing of the development of the Western orebody seems to be problematic. Other alternatives for exploration tunnel should be carefully studied so that the tunnel could also be used in mining.

APPENDICES

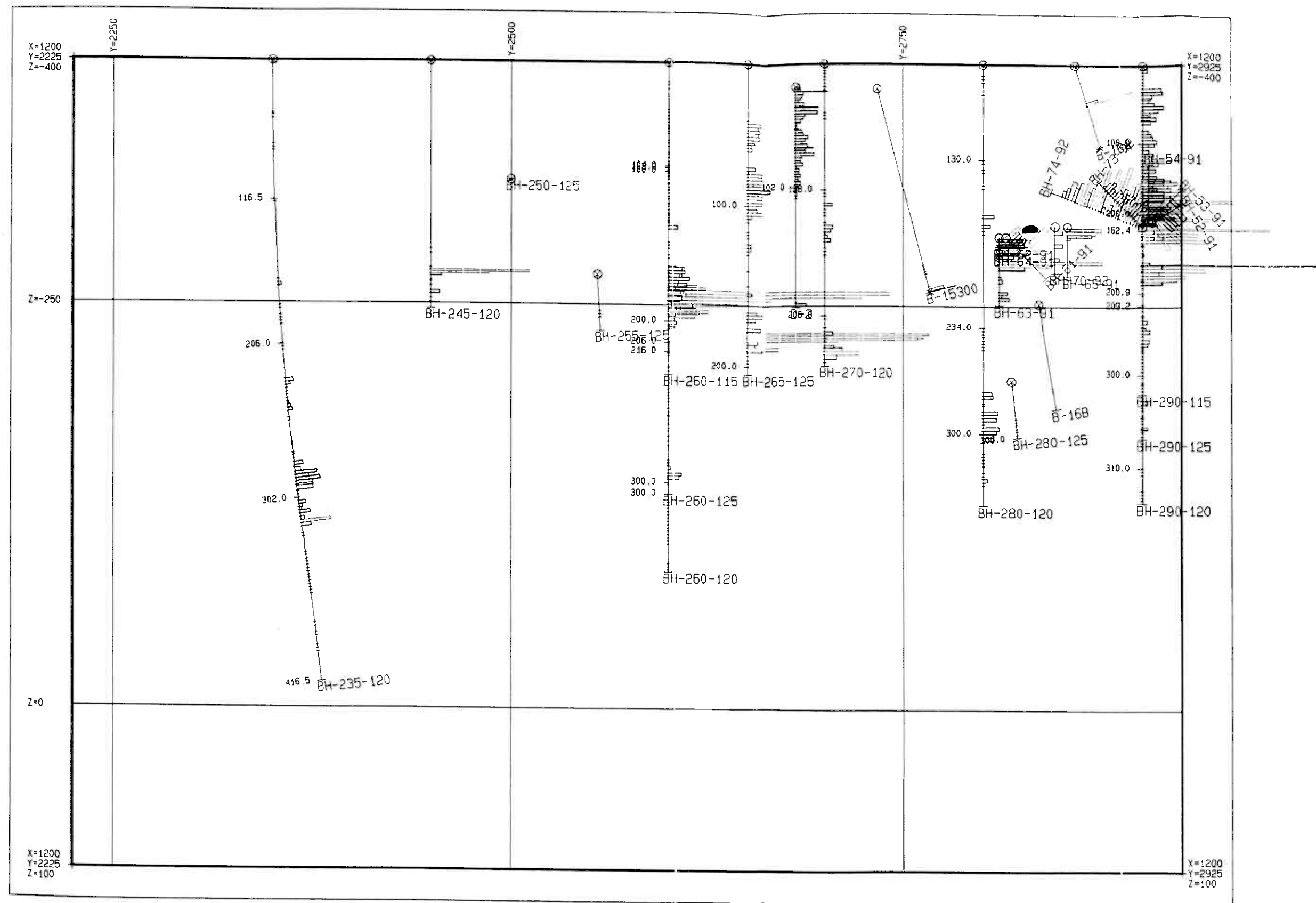
1. Drill hole locations, projections of ramp and planned exploration tunnel and ore reserve estimation polygon locations.
2. 3D-picture of ramp and planned exploration tunnel.
3. Basic statistics of the Ni (sulphide nickel) and NSR-value.
4. Mineral resource estimate results with cut-off grade 100 NOK/tonne.
5. Mineral resource estimate results with cut-off grade 130 NOK/tonne.
6. Mineral resource estimate results with cut-off grade 160 NOK/tonne.
7. Mineral resource estimation profiles with cut-off grade 100 NOK/tonne.
8. Mineral resource estimation profiles with cut-off grade 130 NOK/tonne.
9. Mineral resource estimation profiles with cut-off grade 160 NOK/tonne.
10. E-W-profiles of the Råna deposit

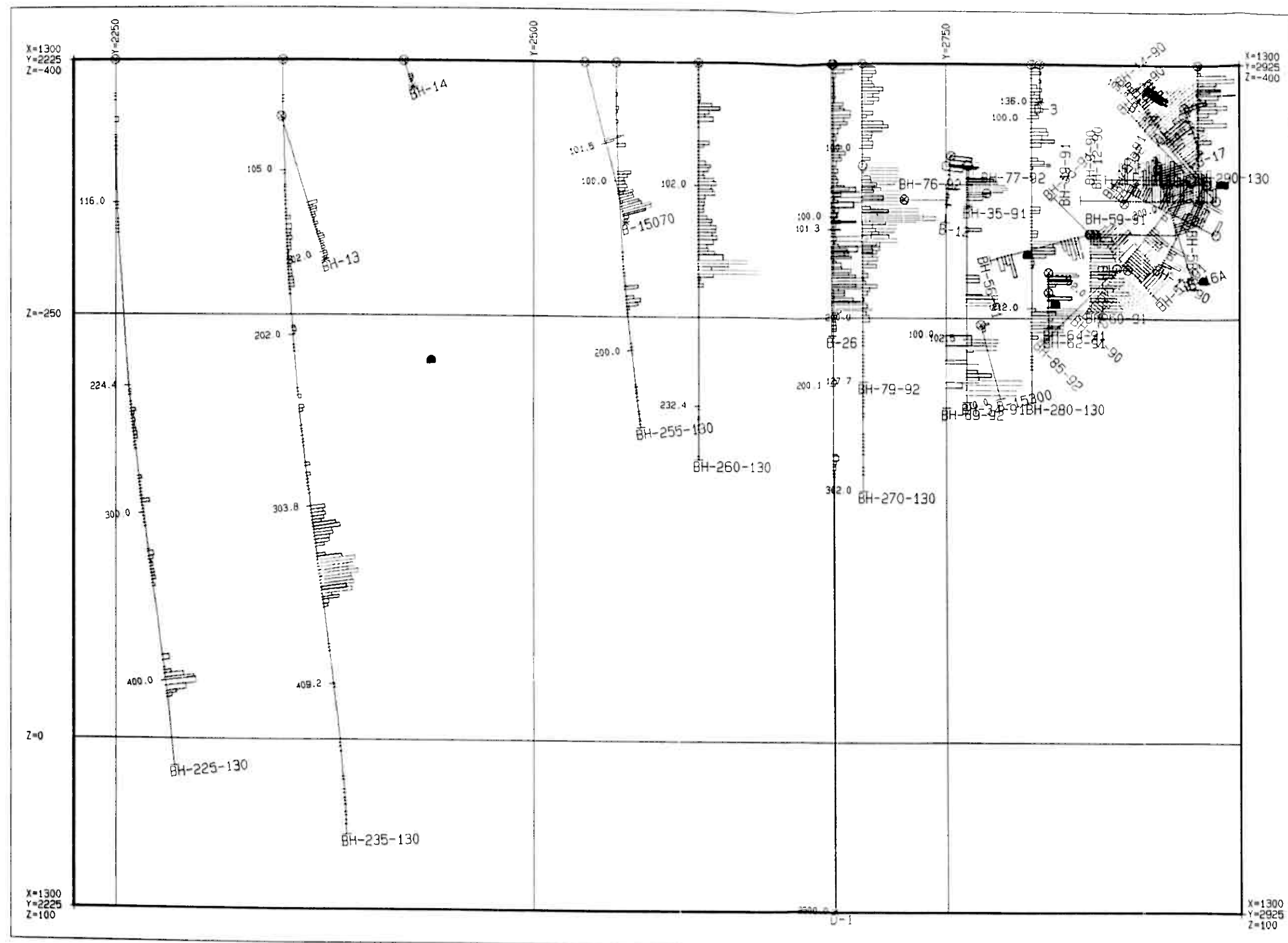
Legend for appendices 4-6:

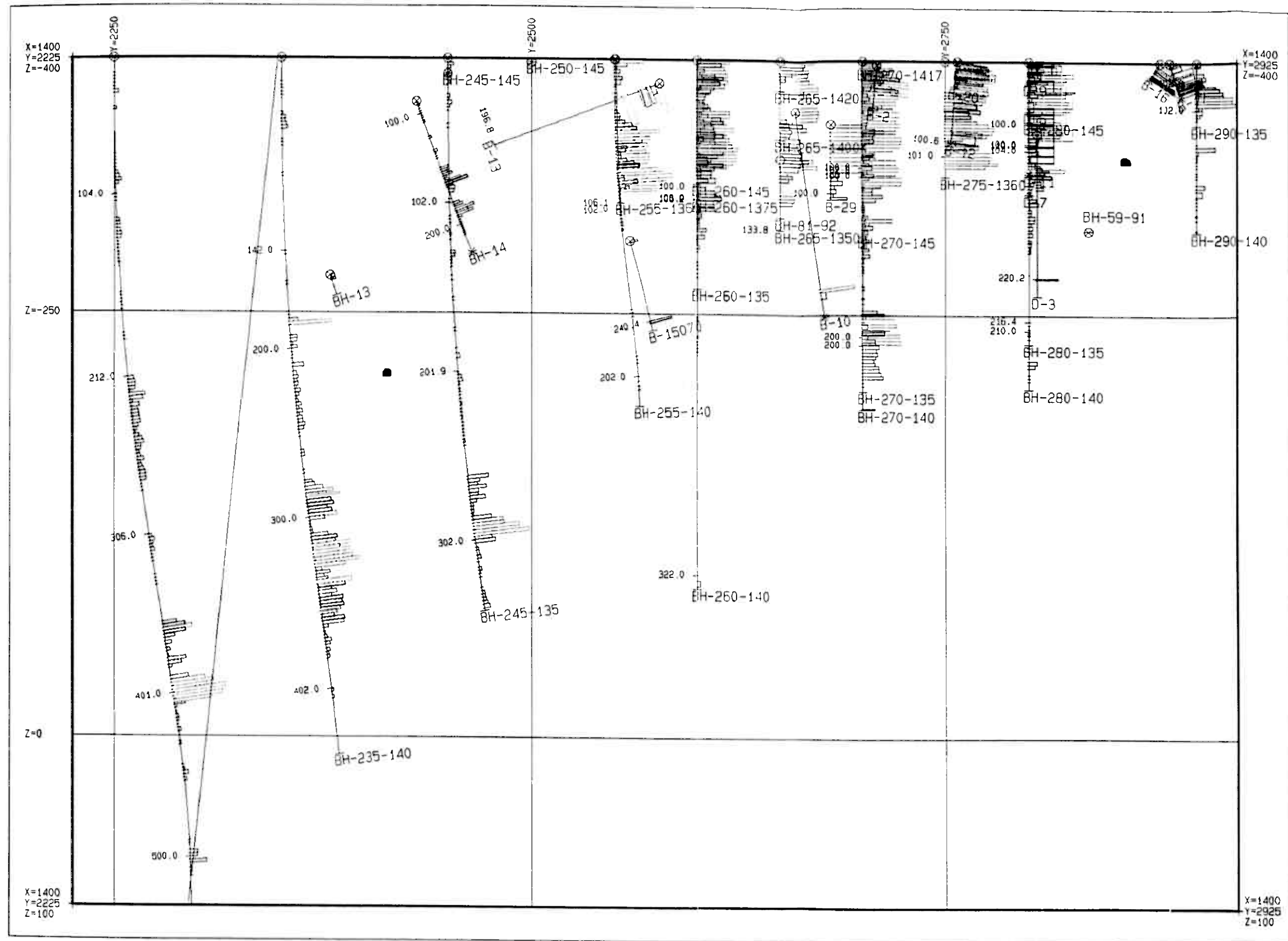
Polygons:

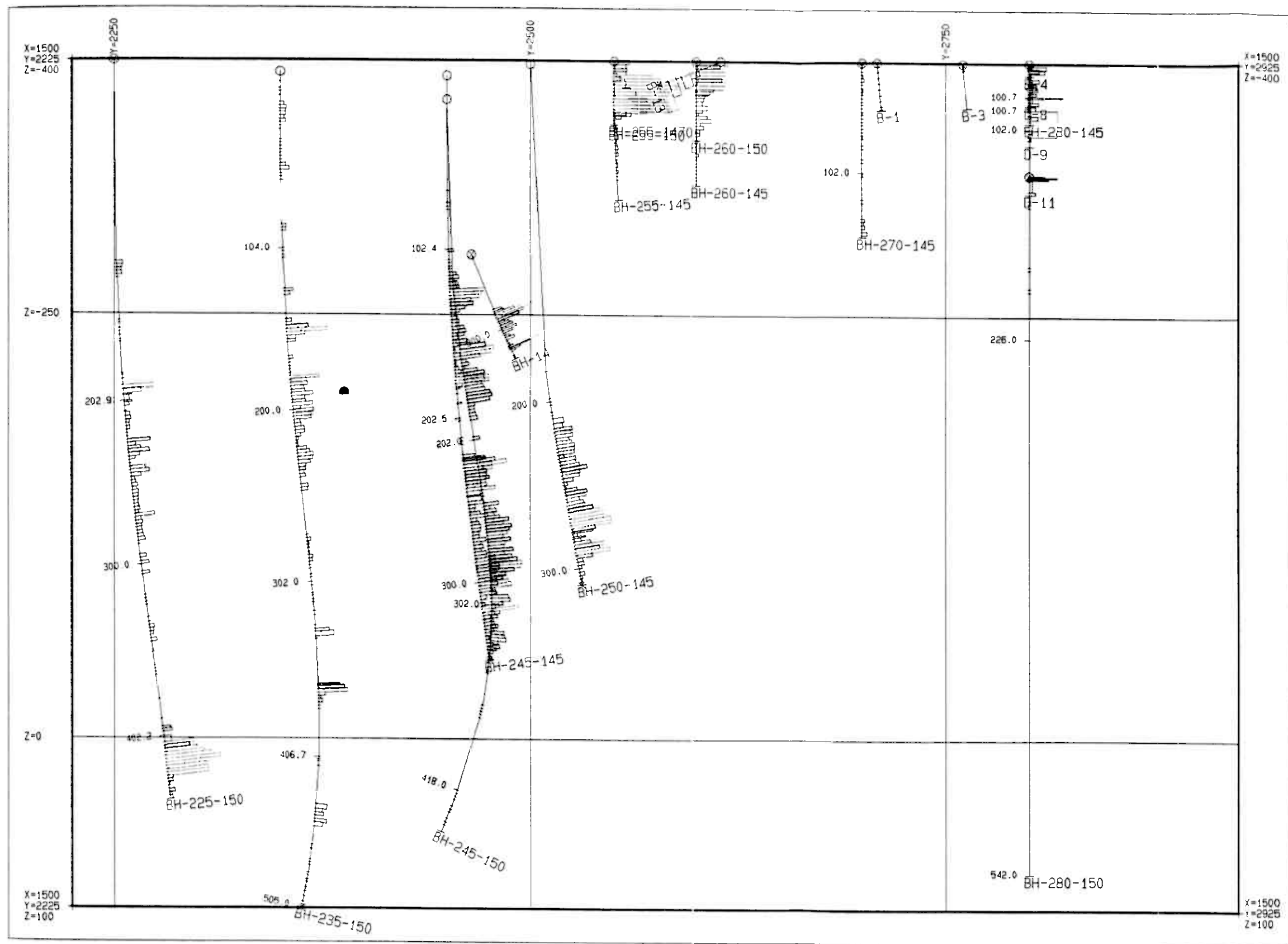
*s_m_nok_cut off grade NOK/t_ore (1 = West, 2 = East, * = both)*

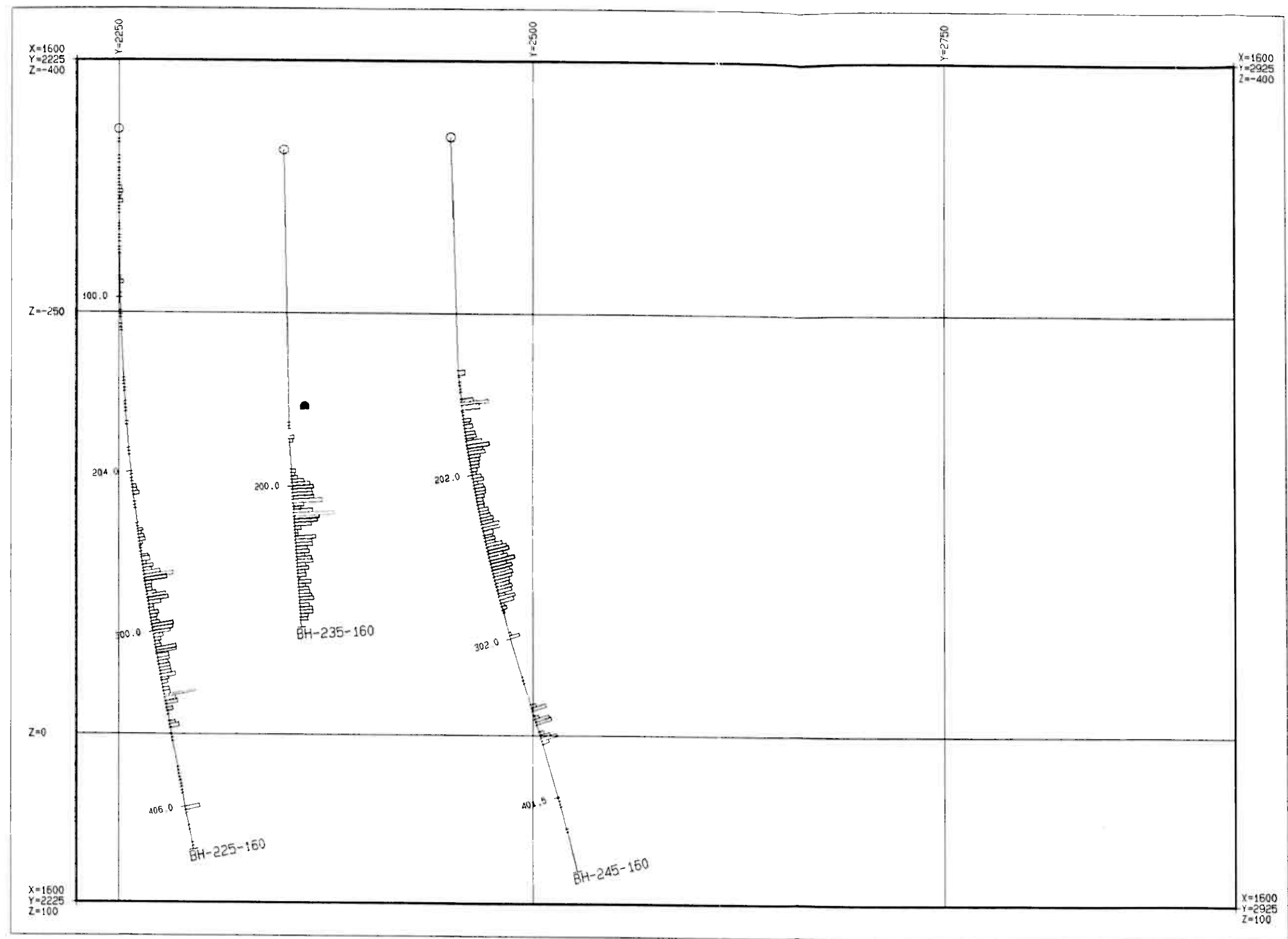
Code(s): 4 = ore thickness between 4 and 6 m
 6 = ore thickness over 6 m

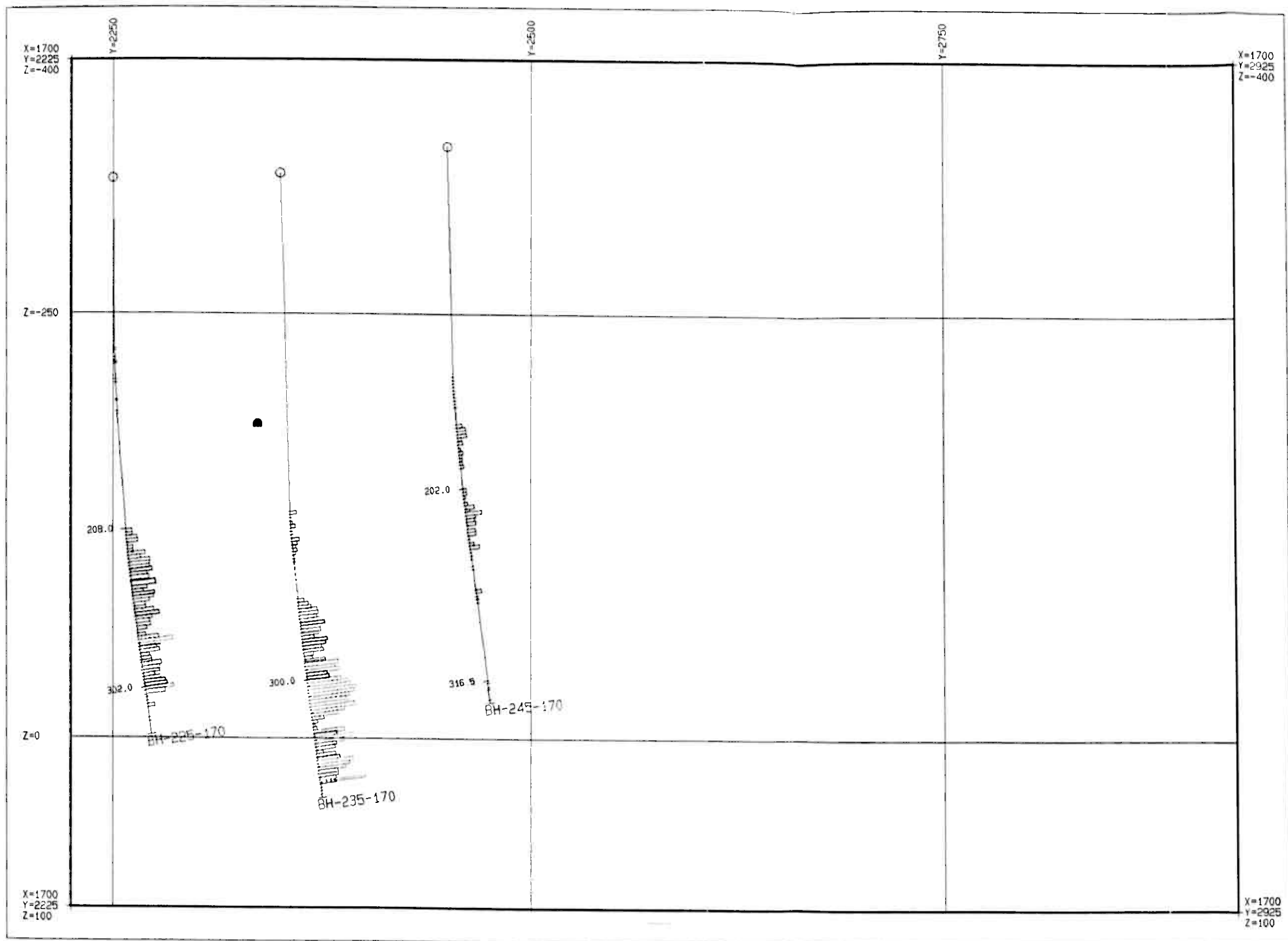


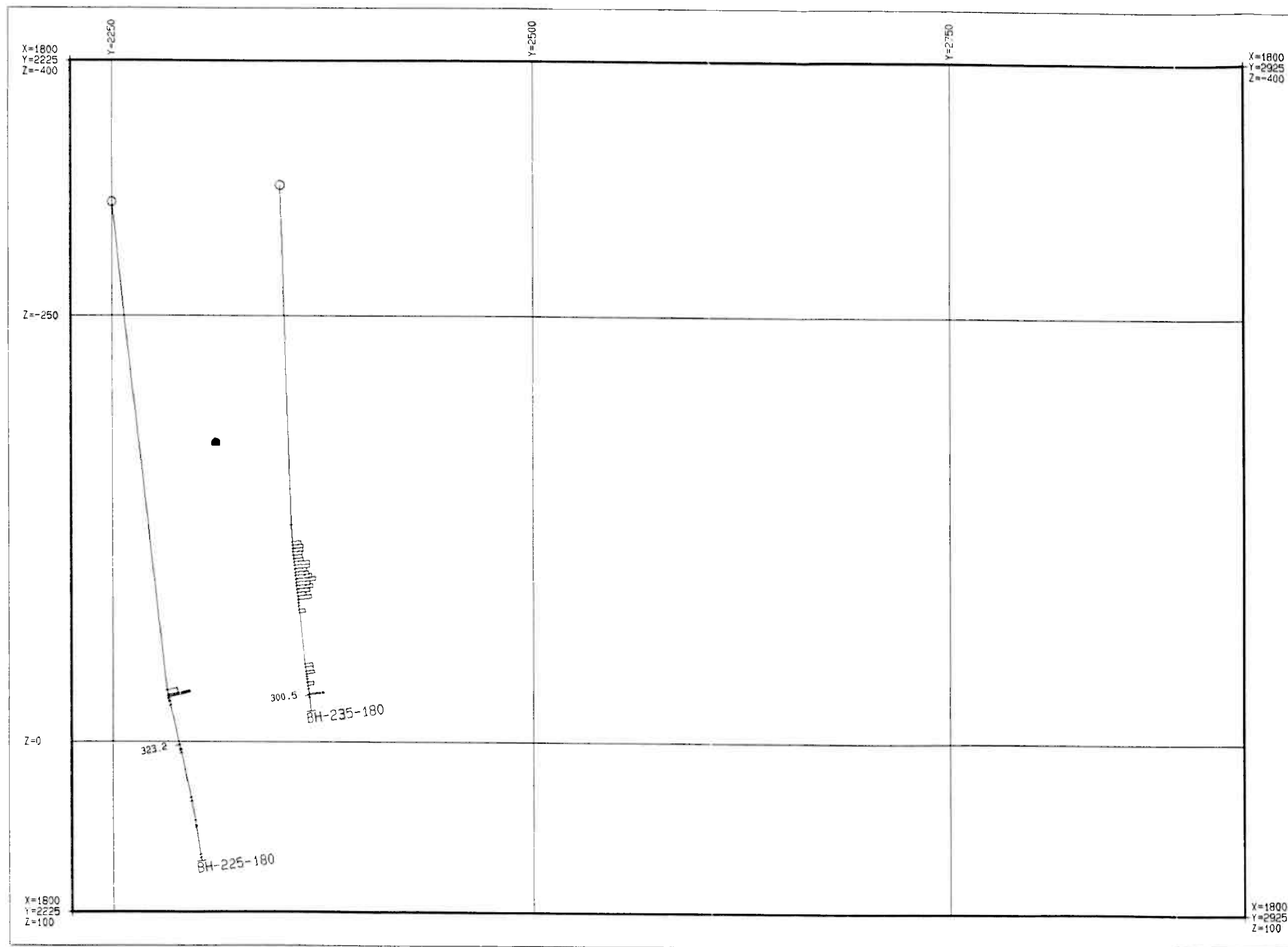


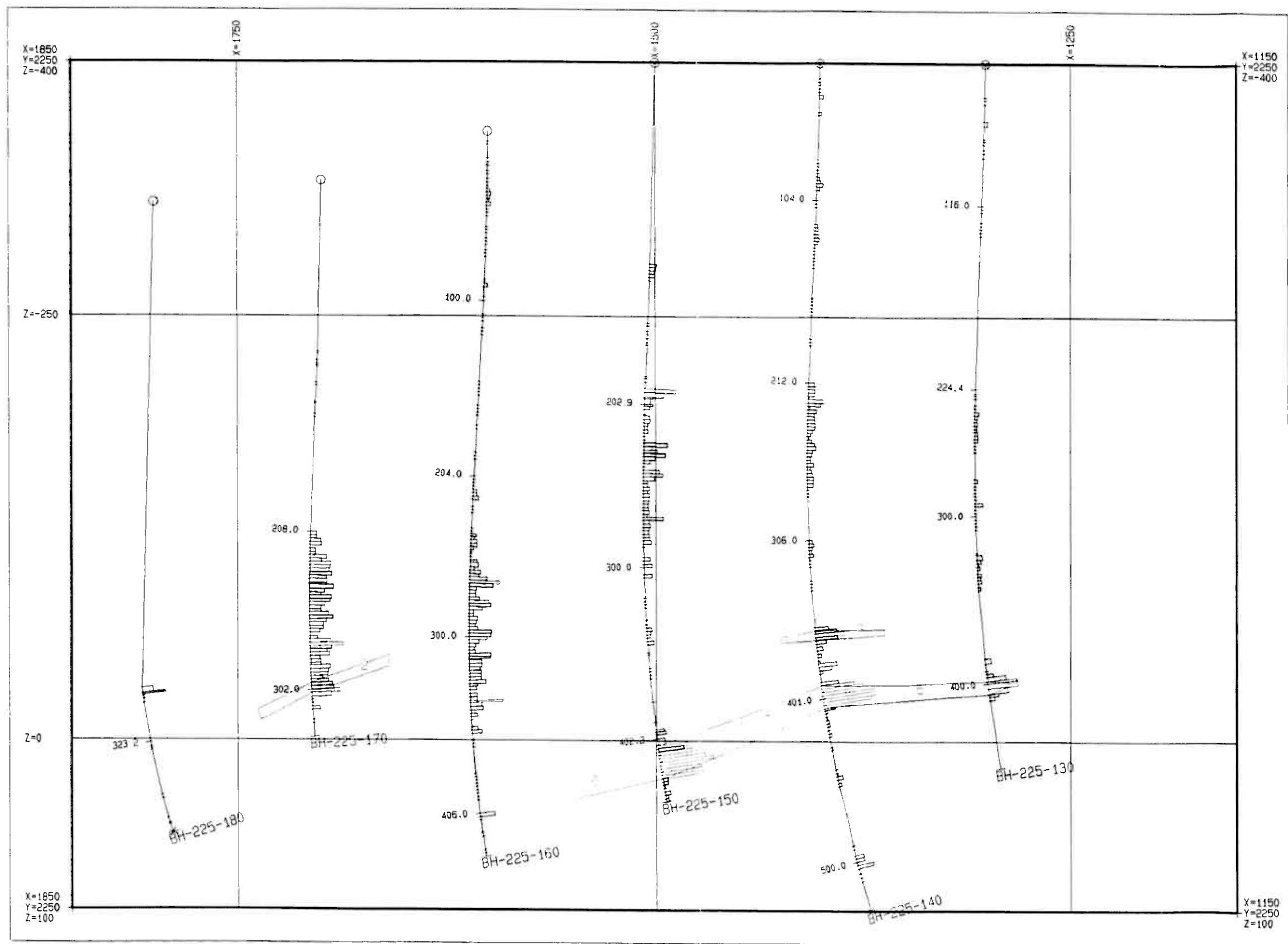


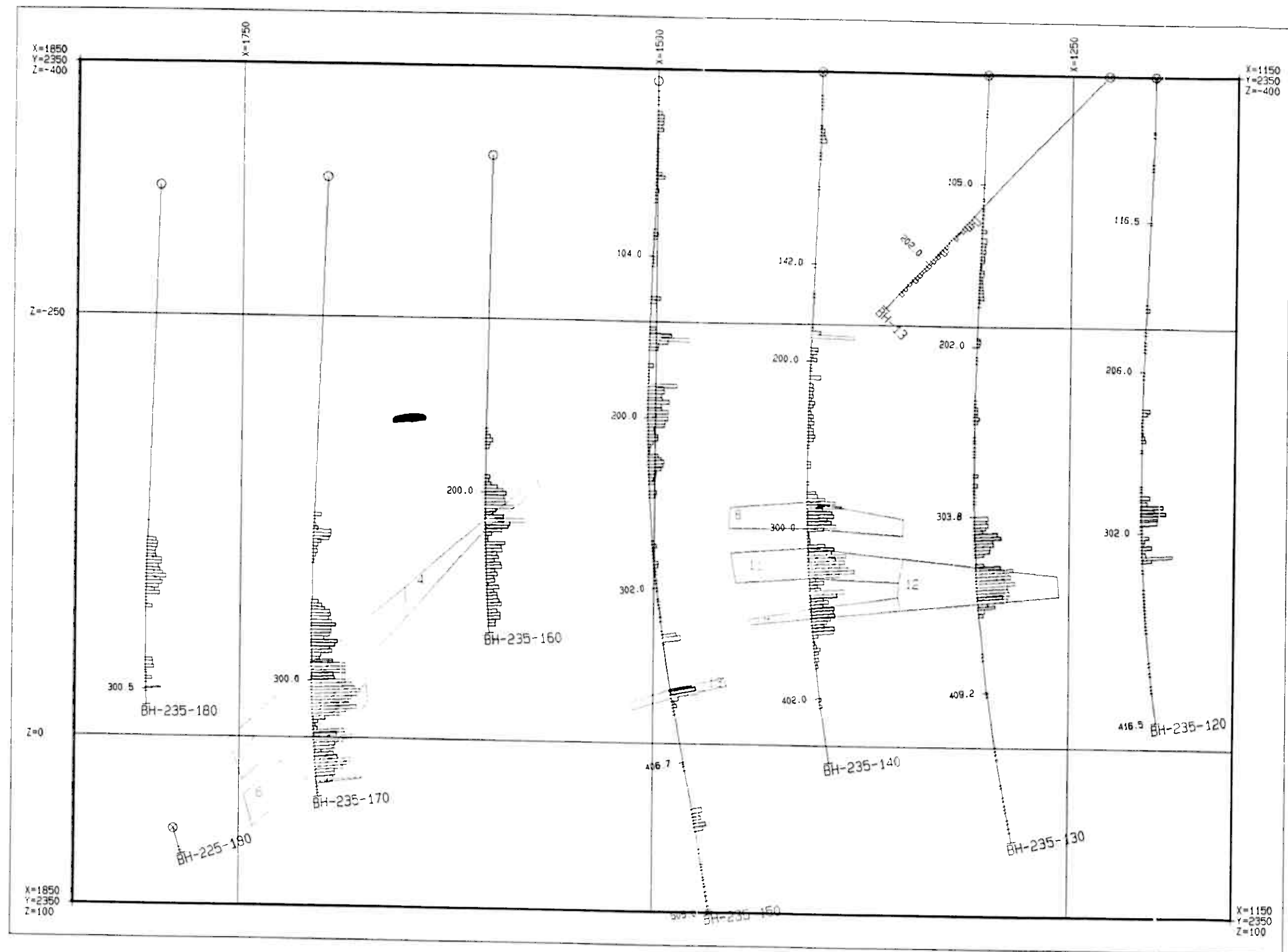


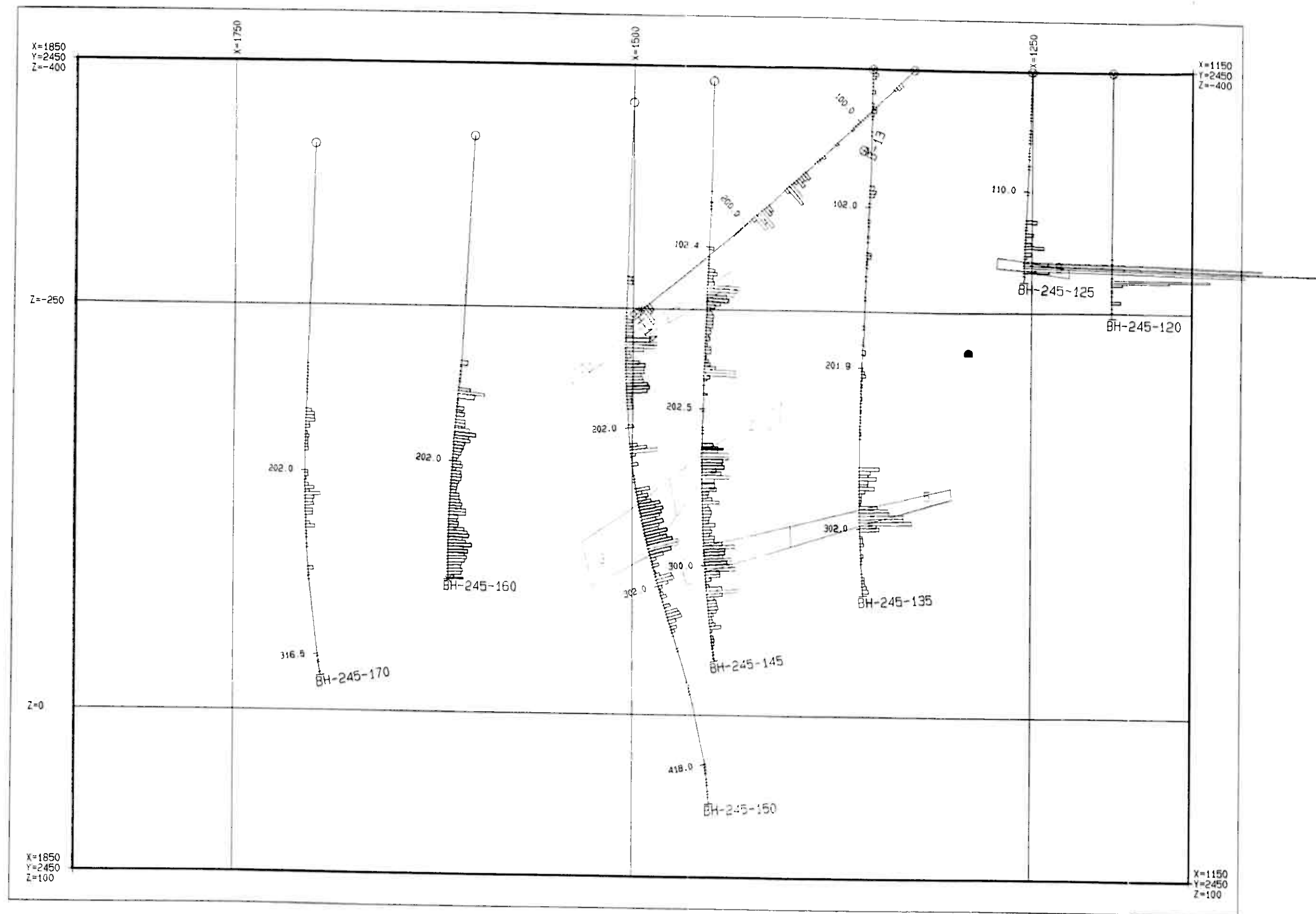


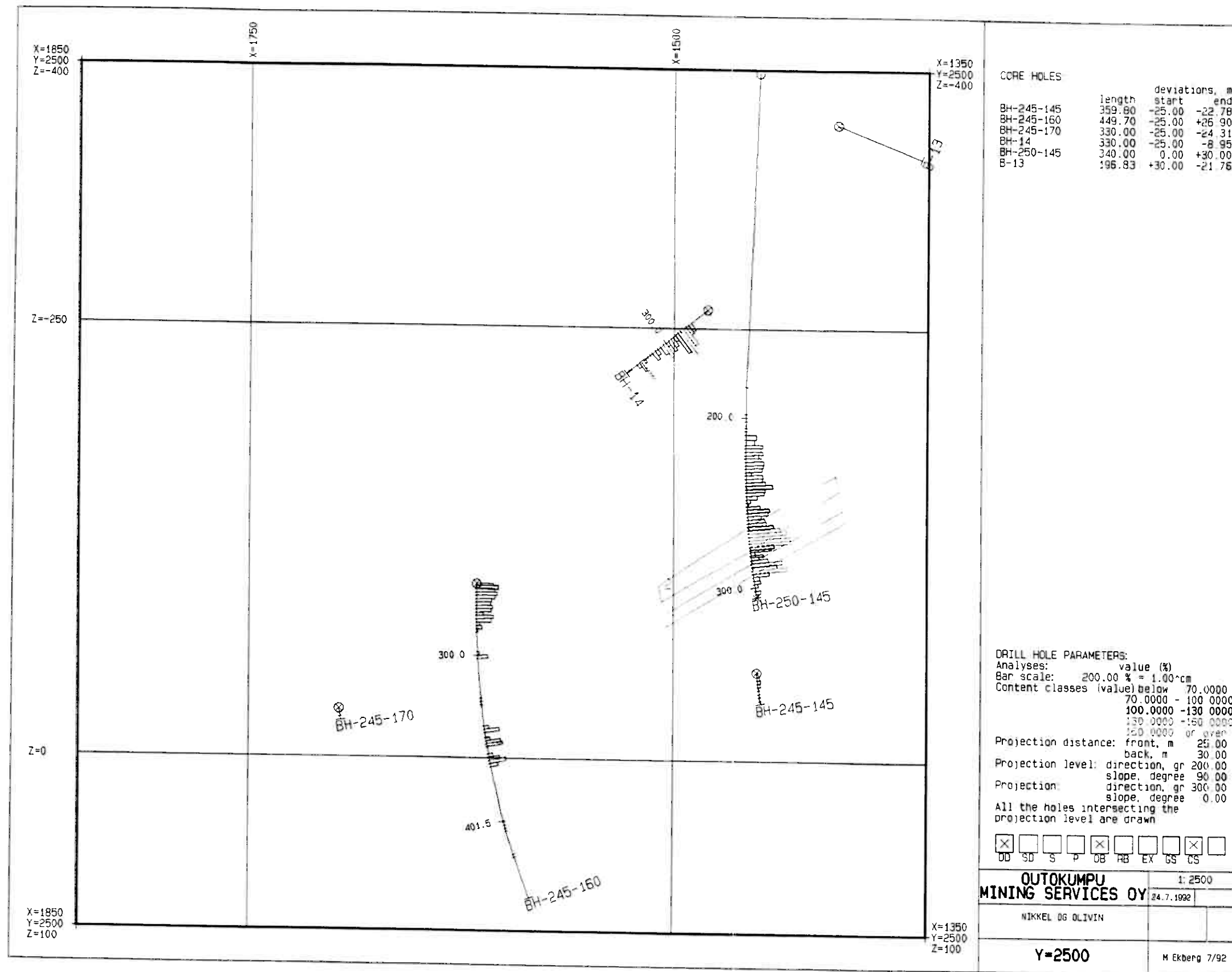


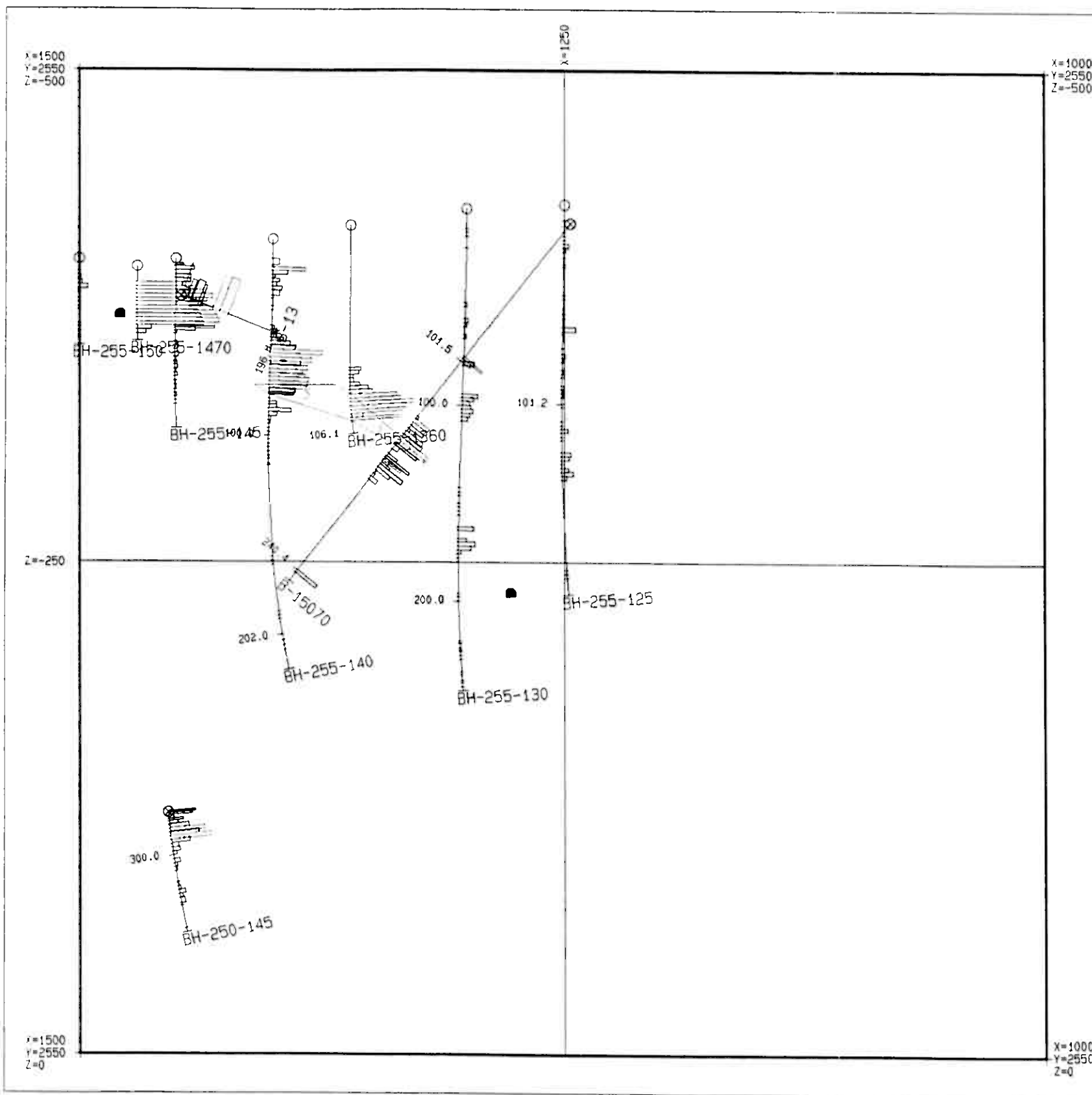












CORE HOLES

	length	deviations, m	
		start	end
BH-250-145	340.00	-25.00	-14.72
BH-255-125	198.40	0.00	+7.03
BH-255-130	246.00	0.00	+15.31
BH-255-140	220.00	0.00	+15.07
BH-255-145	86.00	0.00	+2.84
BH-255-150	43.50	0.00	0.00
BH-255-1470	37.60	0.00	0.00
BH-255-1360	106.10	0.00	+3.76
B-15070	247.40	-25.00	+23.46
B-13	196.83	+25.00	-25.00

DRILL HOLE PARAMETERS:
 Analyses: value (%)
 Bar scale: 200.00 % = 1.00 cm
 Content classes (value) below
 70.0000 - 100.0000
 100.0000 - 130.0000
 130.0000 - 150.0000
 150.0000 or over
 Projection distance: front, m 25.00
 back, m 25.00
 Projection level: direction, gr 200.00
 slope, degree 90.00
 Projection: direction, gr 300.00
 slope, degree 0.00
 All the holes intersecting the
 projection level are drawn

☒ DD
 ☐ SD
 ☐ S
 ☐ P
 ☒ OB
 ☐ AB
 ☐ EX
 ☐ GS
 ☒ CS

OUTOKUMPU MINING SERVICES OY		1:2500
NIKKEL OG OLIVIN		24.7.1992
Y=2550		M Ekberg 7/92

X=1500
Y=2600
Z=-500

X=1250

X=1000
Y=2600
Z=-500

Z=-250

X=1500
Y=2600
Z=0

X=1000
Y=2600
Z=0

CORE HOLES

	length	deviations, m	
		start	end
BH-260-115	230.00	0.00	0.00
BH-260-120	355.20	0.00	0.00
BH-260-125	300.00	0.00	0.00
BH-260-130	264.00	0.00	0.00
BH-260-135	160.00	0.00	0.00
BH-260-140	330.00	0.00	0.00
BH-260-145	85.20	0.00	0.00
BH-260-150	58.80	0.00	0.00
BH-260-1375	105.20	0.00	0.00
B-13	196.83	+15.00	-25.00
B-11	116.60	+25.00	-0.26

DRILL HOLE PARAMETERS:

Analyses: value (%)
Bar scale: 200.00 % = 1.00 cm
Content classes (value) below
70.0000
70.0000 - 100.0000
100.0000 - 130.0000
130.0000 - 160.0000
160.0000 - 200.0000
200.0000 - 250.0000
250.0000 - 300.0000
300.0000 - 350.0000
350.0000 - 400.0000
400.0000 - 450.0000
450.0000 - 500.0000
500.0000 - 550.0000
550.0000 - 600.0000
600.0000 - 650.0000
650.0000 - 700.0000
700.0000 - 750.0000
750.0000 - 800.0000
800.0000 - 850.0000
850.0000 - 900.0000
900.0000 - 950.0000
950.0000 - 1000.0000
1000.0000 - 1050.0000
1050.0000 - 1100.0000
1100.0000 - 1150.0000
1150.0000 - 1200.0000
1200.0000 - 1250.0000
1250.0000 - 1300.0000
1300.0000 - 1350.0000
1350.0000 - 1400.0000
1400.0000 - 1450.0000
1450.0000 - 1500.0000
1500.0000 - 1550.0000
1550.0000 - 1600.0000
1600.0000 - 1650.0000
1650.0000 - 1700.0000
1700.0000 - 1750.0000
1750.0000 - 1800.0000
1800.0000 - 1850.0000
1850.0000 - 1900.0000
1900.0000 - 1950.0000
1950.0000 - 2000.0000
2000.0000 - 2050.0000
2050.0000 - 2100.0000
2100.0000 - 2150.0000
2150.0000 - 2200.0000
2200.0000 - 2250.0000
2250.0000 - 2300.0000
2300.0000 - 2350.0000
2350.0000 - 2400.0000
2400.0000 - 2450.0000
2450.0000 - 2500.0000
2500.0000 - 2550.0000
2550.0000 - 2600.0000
2600.0000 - 2650.0000
2650.0000 - 2700.0000
2700.0000 - 2750.0000
2750.0000 - 2800.0000
2800.0000 - 2850.0000
2850.0000 - 2900.0000
2900.0000 - 2950.0000
2950.0000 - 3000.0000
3000.0000 - 3050.0000
3050.0000 - 3100.0000
3100.0000 - 3150.0000
3150.0000 - 3200.0000
3200.0000 - 3250.0000
3250.0000 - 3300.0000
3300.0000 - 3350.0000
3350.0000 - 3400.0000
3400.0000 - 3450.0000
3450.0000 - 3500.0000
3500.0000 - 3550.0000
3550.0000 - 3600.0000
3600.0000 - 3650.0000
3650.0000 - 3700.0000
3700.0000 - 3750.0000
3750.0000 - 3800.0000
3800.0000 - 3850.0000
3850.0000 - 3900.0000
3900.0000 - 3950.0000
3950.0000 - 4000.0000
4000.0000 - 4050.0000
4050.0000 - 4100.0000
4100.0000 - 4150.0000
4150.0000 - 4200.0000
4200.0000 - 4250.0000
4250.0000 - 4300.0000
4300.0000 - 4350.0000
4350.0000 - 4400.0000
4400.0000 - 4450.0000
4450.0000 - 4500.0000
4500.0000 - 4550.0000
4550.0000 - 4600.0000
4600.0000 - 4650.0000
4650.0000 - 4700.0000
4700.0000 - 4750.0000
4750.0000 - 4800.0000
4800.0000 - 4850.0000
4850.0000 - 4900.0000
4900.0000 - 4950.0000
4950.0000 - 5000.0000
5000.0000 - 5050.0000
5050.0000 - 5100.0000
5100.0000 - 5150.0000
5150.0000 - 5200.0000
5200.0000 - 5250.0000
5250.0000 - 5300.0000
5300.0000 - 5350.0000
5350.0000 - 5400.0000
5400.0000 - 5450.0000
5450.0000 - 5500.0000
5500.0000 - 5550.0000
5550.0000 - 5600.0000
5600.0000 - 5650.0000
5650.0000 - 5700.0000
5700.0000 - 5750.0000
5750.0000 - 5800.0000
5800.0000 - 5850.0000
5850.0000 - 5900.0000
5900.0000 - 5950.0000
5950.0000 - 6000.0000
6000.0000 - 6050.0000
6050.0000 - 6100.0000
6100.0000 - 6150.0000
6150.0000 - 6200.0000
6200.0000 - 6250.0000
6250.0000 - 6300.0000
6300.0000 - 6350.0000
6350.0000 - 6400.0000
6400.0000 - 6450.0000
6450.0000 - 6500.0000
6500.0000 - 6550.0000
6550.0000 - 6600.0000
6600.0000 - 6650.0000
6650.0000 - 6700.0000
6700.0000 - 6750.0000
6750.0000 - 6800.0000
6800.0000 - 6850.0000
6850.0000 - 6900.0000
6900.0000 - 6950.0000
6950.0000 - 7000.0000
7000.0000 - 7050.0000
7050.0000 - 7100.0000
7100.0000 - 7150.0000
7150.0000 - 7200.0000
7200.0000 - 7250.0000
7250.0000 - 7300.0000
7300.0000 - 7350.0000
7350.0000 - 7400.0000
7400.0000 - 7450.0000
7450.0000 - 7500.0000
7500.0000 - 7550.0000
7550.0000 - 7600.0000
7600.0000 - 7650.0000
7650.0000 - 7700.0000
7700.0000 - 7750.0000
7750.0000 - 7800.0000
7800.0000 - 7850.0000
7850.0000 - 7900.0000
7900.0000 - 7950.0000
7950.0000 - 8000.0000
8000.0000 - 8050.0000
8050.0000 - 8100.0000
8100.0000 - 8150.0000
8150.0000 - 8200.0000
8200.0000 - 8250.0000
8250.0000 - 8300.0000
8300.0000 - 8350.0000
8350.0000 - 8400.0000
8400.0000 - 8450.0000
8450.0000 - 8500.0000
8500.0000 - 8550.0000
8550.0000 - 8600.0000
8600.0000 - 8650.0000
8650.0000 - 8700.0000
8700.0000 - 8750.0000
8750.0000 - 8800.0000
8800.0000 - 8850.0000
8850.0000 - 8900.0000
8900.0000 - 8950.0000
8950.0000 - 9000.0000
9000.0000 - 9050.0000
9050.0000 - 9100.0000
9100.0000 - 9150.0000
9150.0000 - 9200.0000
9200.0000 - 9250.0000
9250.0000 - 9300.0000
9300.0000 - 9350.0000
9350.0000 - 9400.0000
9400.0000 - 9450.0000
9450.0000 - 9500.0000
9500.0000 - 9550.0000
9550.0000 - 9600.0000
9600.0000 - 9650.0000
9650.0000 - 9700.0000
9700.0000 - 9750.0000
9750.0000 - 9800.0000
9800.0000 - 9850.0000
9850.0000 - 9900.0000
9900.0000 - 9950.0000
9950.0000 - 10000.0000

All the holes intersecting the projection level are drawn

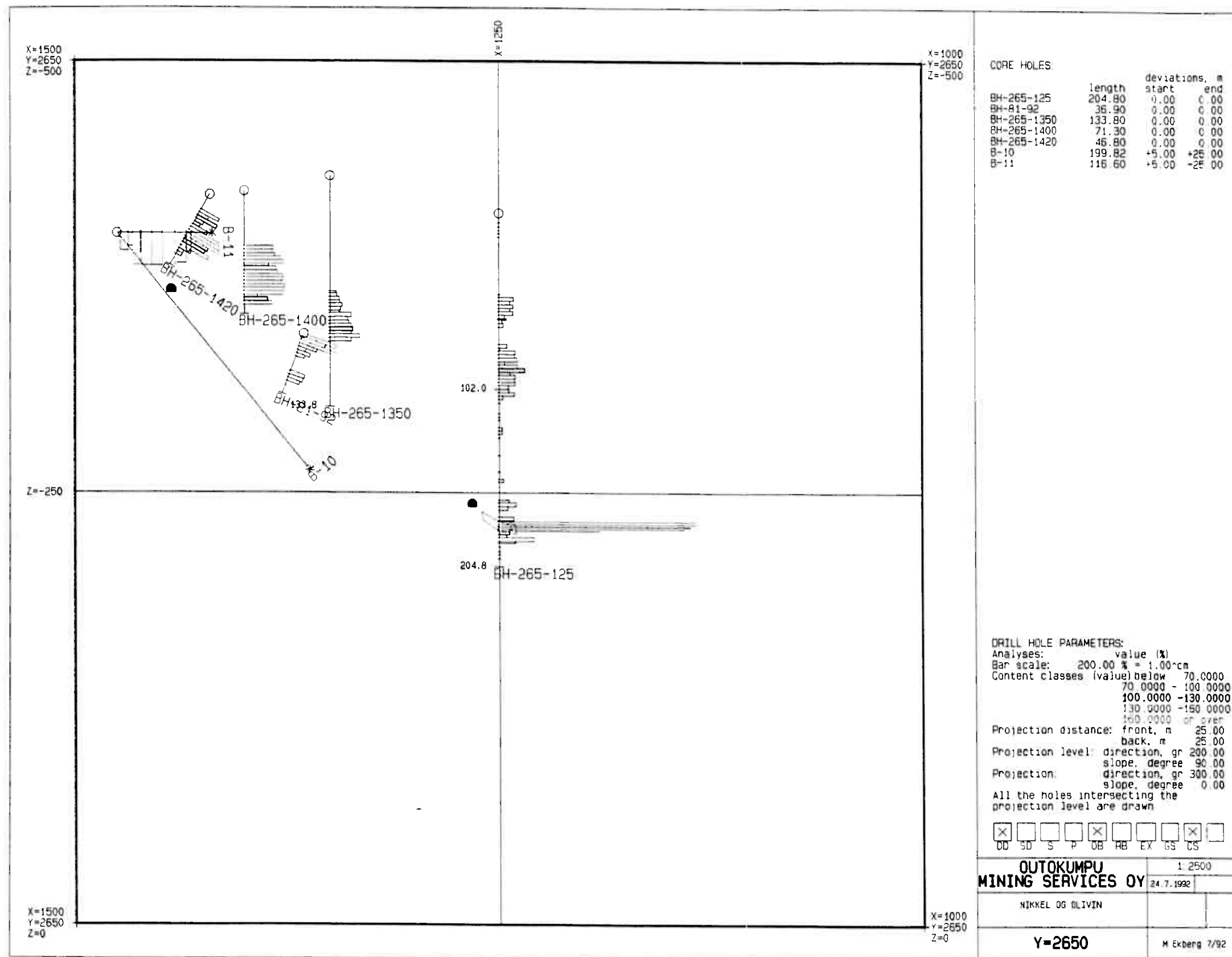
OUTOKUMPU
MINING SERVICES OY

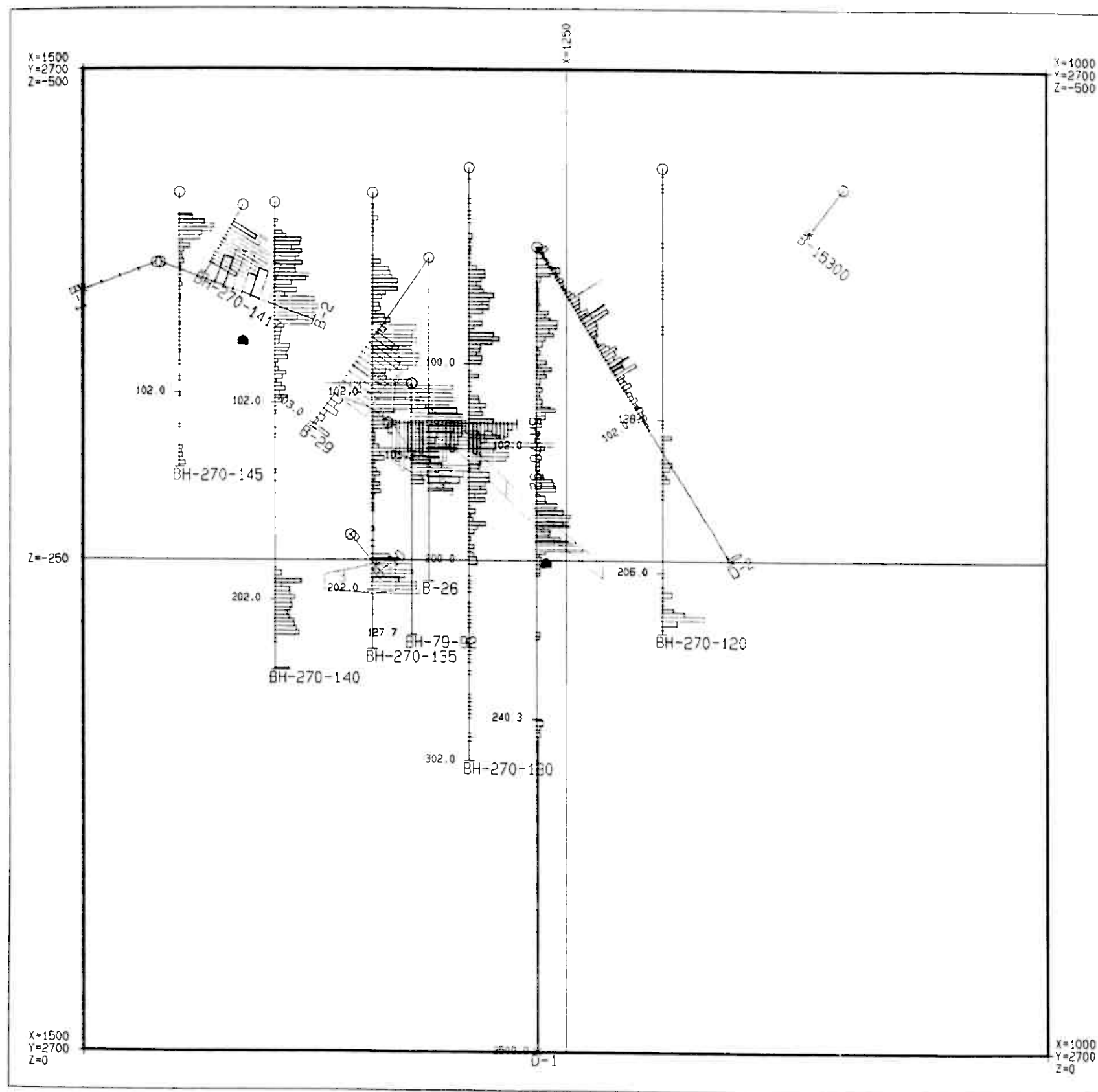
24.7.1992

NIKKEI OG OLIVIN

Y=2600

M Ekberg 7/92





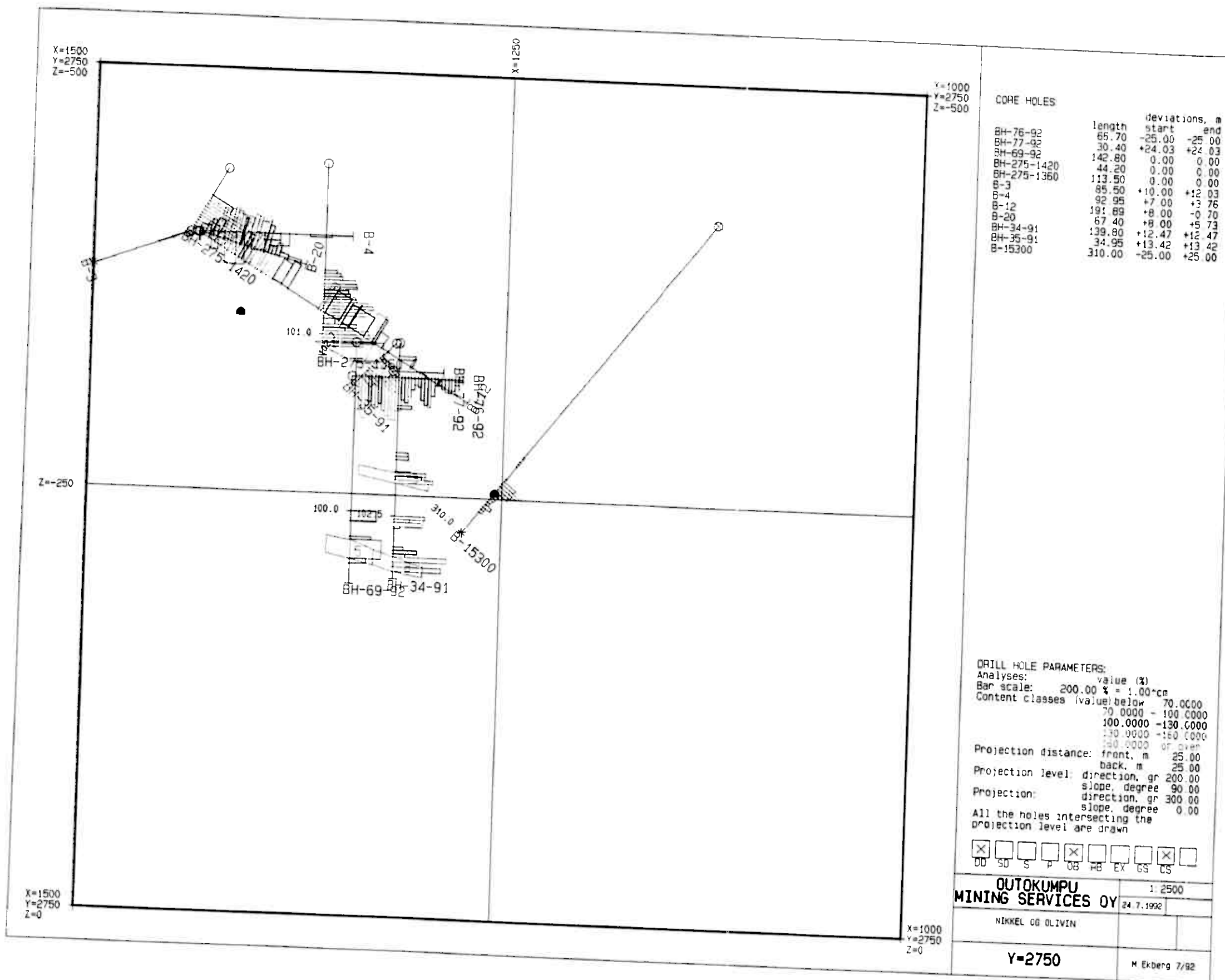
CORE HOLES		deviations, m	
	length	start	end
B-10	199.82	-25.00	-22.70
BH-270-145	140.00	0.00	0.00
BH-270-140	237.90	0.00	0.00
BH-270-135	232.10	0.00	0.00
BH-270-130	302.00	0.00	0.00
BH-270-120	237.00	0.00	0.00
BH-79-92	127.70	0.00	0.00
BH-76-92	66.70	+25.00	+25.00
BH-270-141.7	40.00	0.00	0.00
B-1	86.50	+9.00	+10.33
B-2	85.00	+9.00	+6.21
B-26	164.36	-19.00	-19.00
B-29	105.00	-19.00	-19.00
D-1	2500.00	-18.00	-18.00
D-2	189.90	-18.00	-18.00
B-15300	310.00	+19.00	+25.00

```

DRILL HOLE PARAMETERS:
Analyses: value (%)
Bar scale: 200.00 % = 1.00 cm
Content classes (value) below 70.0000
70.0000 - 100.0000
100.0000 - 130.0000
130.0000 - 160.0000
160.0000 or over
Projection distance: front, m 25.00
back, m 25.00
Projection level: direction, gr 200.00
slope, degree 90.00
Projection: direction, gr 300.00
slope, degree 0.00
All the holes intersecting the
projection level are drawn

```

☒ DD ☐ SD ☐ S ☐ P ☒ OB ☐ AB ☐ EX ☐ GS ☒ CS ☐	1 2500 24.7.1992
AUTOKUMPU MINING SERVICES OY NIKKEL OG OLIVIN	M Ekberg 7/92



CORE HOLES

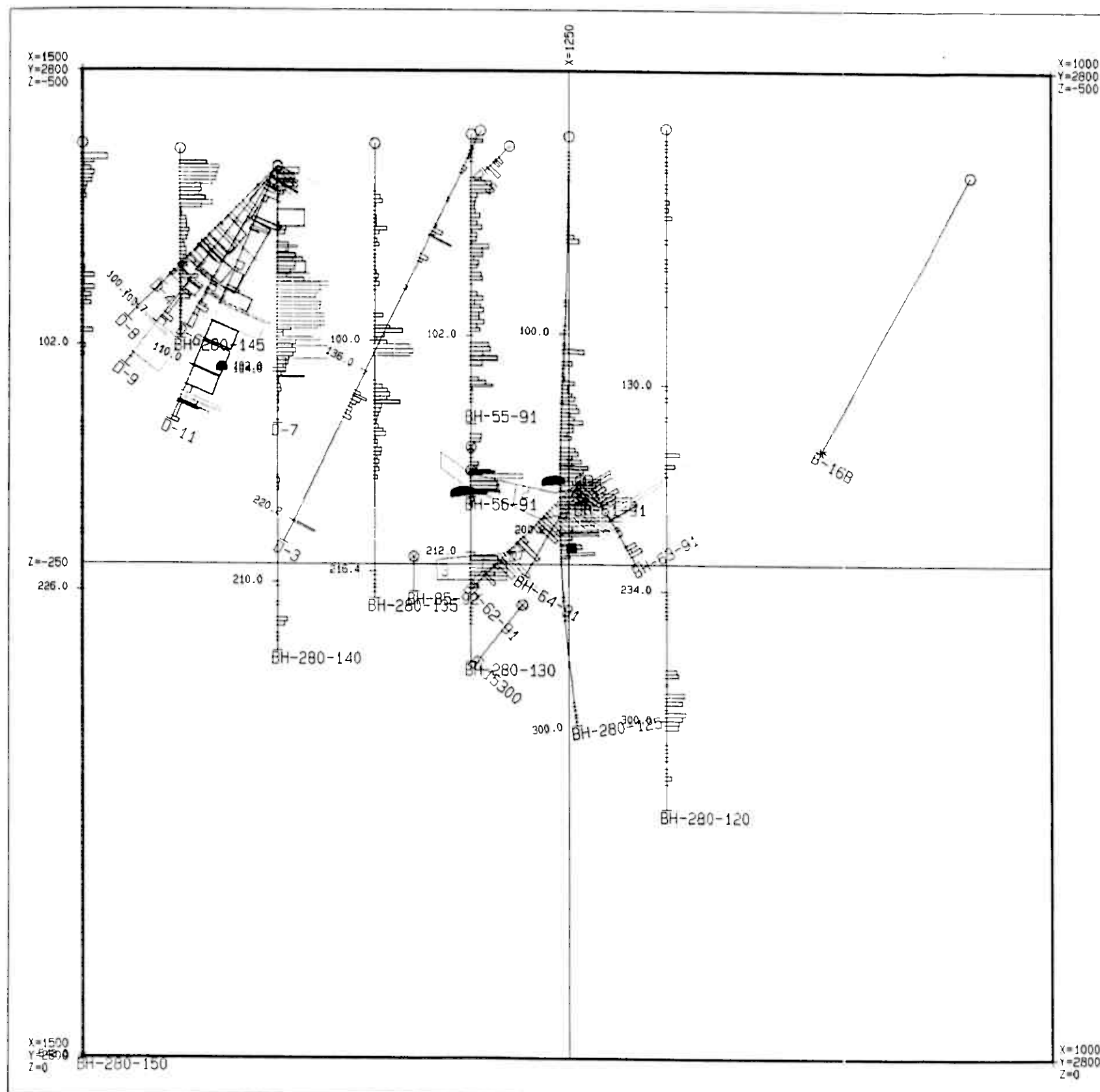
	length	deviations, m	
		start	end
BH-76-92	66.70	-25.00	-25.00
BH-77-92	30.40	+24.03	+24.03
BH-69-92	142.80	0.00	0.00
BH-275-1420	44.20	0.00	0.00
BH-275-1360	113.50	0.00	0.00
B-3	85.50	+10.00	+12.03
B-4	92.95	+7.00	+3.76
B-12	191.89	+8.00	-0.70
B-20	67.40	+8.00	+5.73
BH-34-91	139.80	+12.47	+12.47
BH-35-91	34.95	+13.42	+13.42
B-15300	310.00	-25.00	+25.00

DRILL HOLE PARAMETERS:

Analyses: value (%)
 Bar scale: 200.00 m = 1.00 cm
 Content classes (value) below 70.0000
 70.0000 - 100.0000
 100.0000 - 130.0000
 130.0000 - 150.0000
 150.0000 or over
 Projection distance: front, m 25.00
 back, m 25.00
 Projection level: direction, gr 200.00
 slope, degree 90.00
 Projection: direction, gr 300.00
 slope, degree 0.00
 All the holes intersecting the
 projection level are drawn

☒ DD ☐ SD ☐ S ☐ P ☒ OB ☐ HB ☐ EX ☐ GS ☒ CS

OUTOKUMPU MINING SERVICES OY		1:2500
NIKKELOID OLIVIN		24.7.1992
Y=2750		M Ekberg 7/92



CORE HOLES

	length	deviations, m	
		start	end
B-15300	310.00	-25.00	-17.77
BH-280-120	344.80	0.00	0.00
BH-280-125	300.00	0.00	+21.09
BH-280-130	267.50	0.00	0.00
BH-280-135	230.00	0.00	0.00
BH-280-140	244.80	0.00	0.00
BH-280-145	95.60	0.00	0.00
BH-280-150	542.00	0.00	0.00
D-4	83.00	0.00	0.00
D-5	17.77	0.00	0.00
D-6	93.29	0.00	0.00
D-7	130.06	0.00	0.00
D-8	108.62	0.00	0.00
D-9	127.38	0.00	0.00
D-11	139.83	0.00	0.00
BH-64-91	56.20	+10.00	+10.00
BH-63-91	48.60	+10.00	+10.00
BH-62-91	75.20	+10.00	+10.00
BH-61-91	35.57	+14.00	+25.00
D-3	232.00	+5.00	+5.00
B-168	301.00	+2.00	+25.00
BH-85-92	61.40	+25.00	+7.37
BH-55-91	30.10	+25.00	+13.22
BH-56-91	60.00	+25.00	-23.96

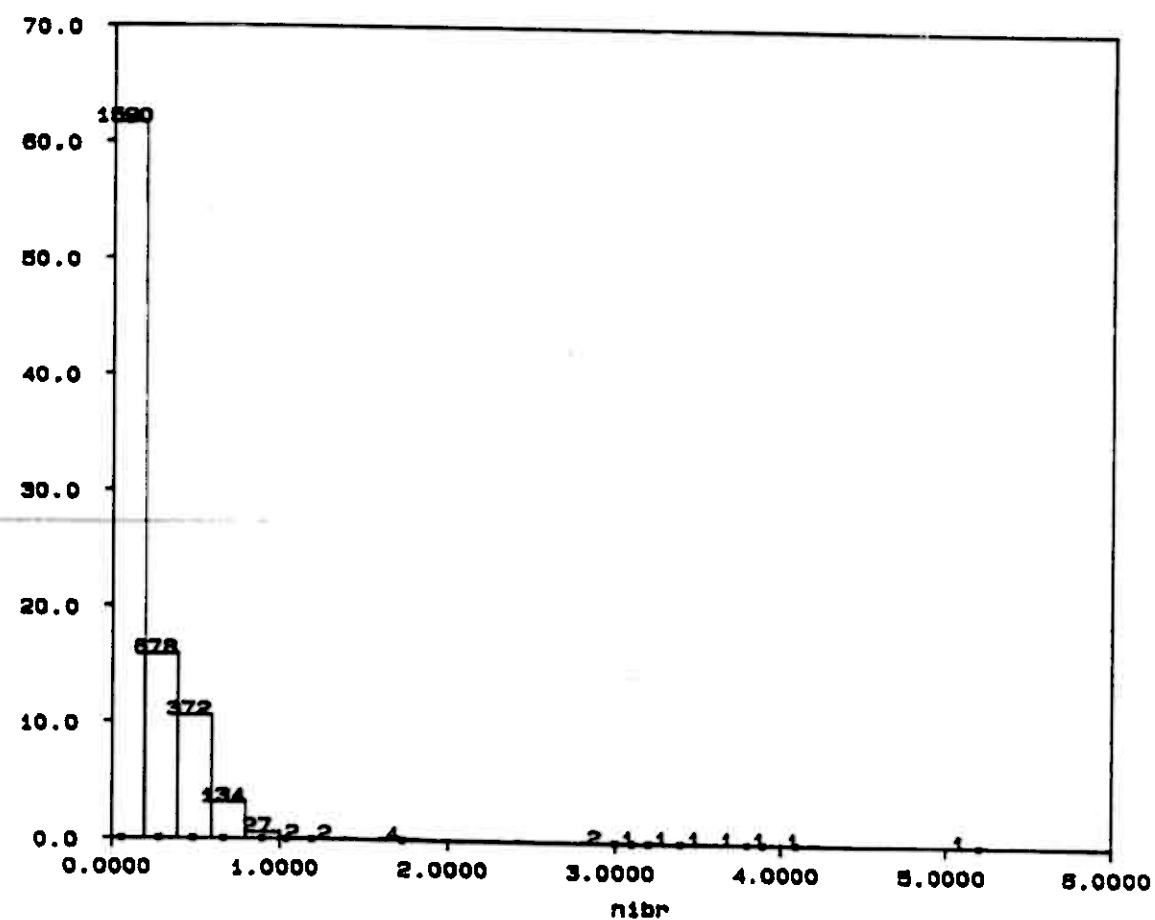
DRILL HOLE PARAMETERS:

Analyses: value (%)
 Bar scale: 200.00 % = 1.00 cm
 Content classes (value) below 70.0000
 70.0000 - 100.0000
 100.0000 - 130.0000
 130.0000 - 160.0000
 160.0000 or over
 Projection distance: front, m 25.00
 back, m 25.00
 Projection level: direction, gr 200.00
 slope, degree 90.00
 Projection: direction, gr 300.00
 slope, degree 0.00
 All the holes intersecting the
 projection level are drawn

☒ DD ☐ SD ☐ S ☐ P ☒ OB ☐ RB ☐ EX ☐ GS ☐ CS

OUTOKUMPU MINING SERVICES OY		1:2500
NIKKEL OG OLIVIN		24.7.1992
Y=2800		M Ekberg 7/92

(Total 8324.83/8037.58 m)



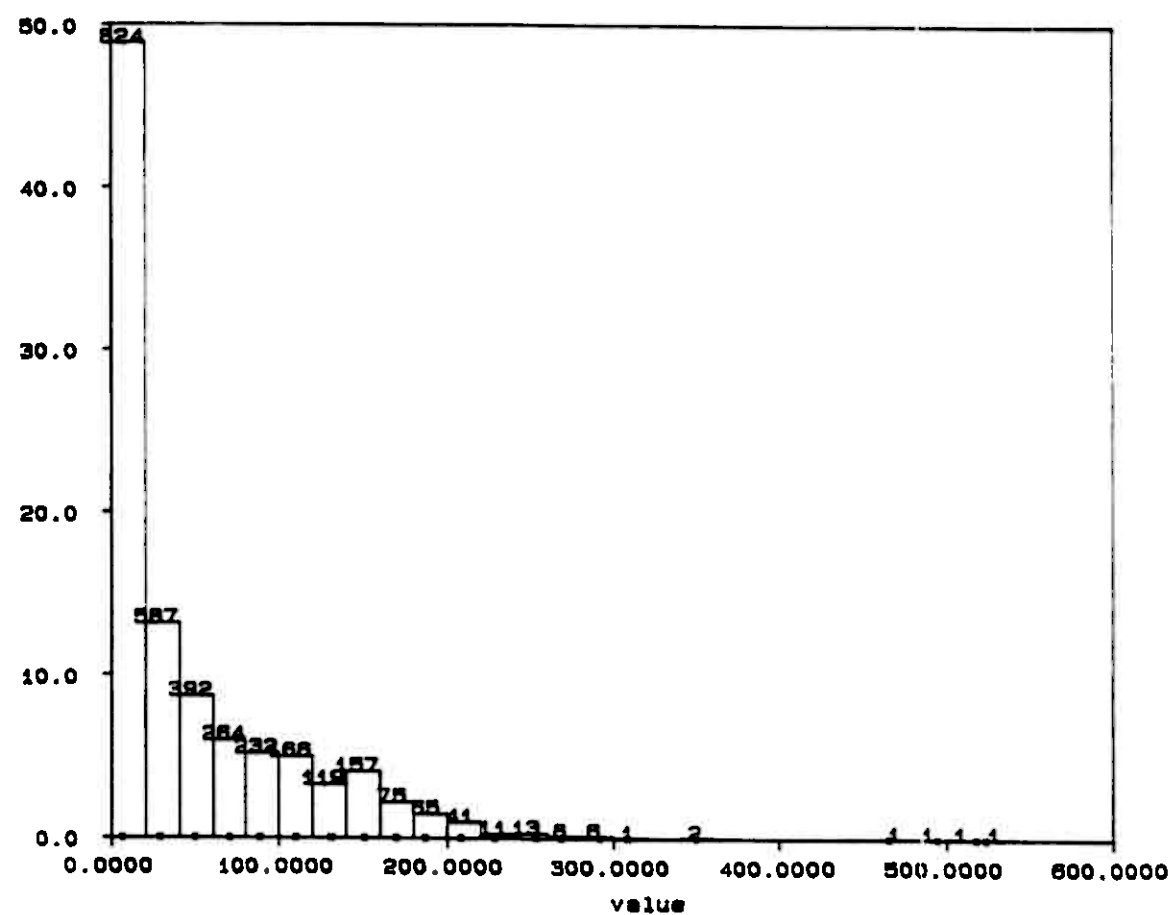
SELECTION OF DRILL CORE SAMPLES BY all.stl

Rock types: all

Drill hole from to
Number of samples is 2974
Number of samples in plot is 2818
BH-225-140 0.00 542.50
27.7.1992

Histogram of value

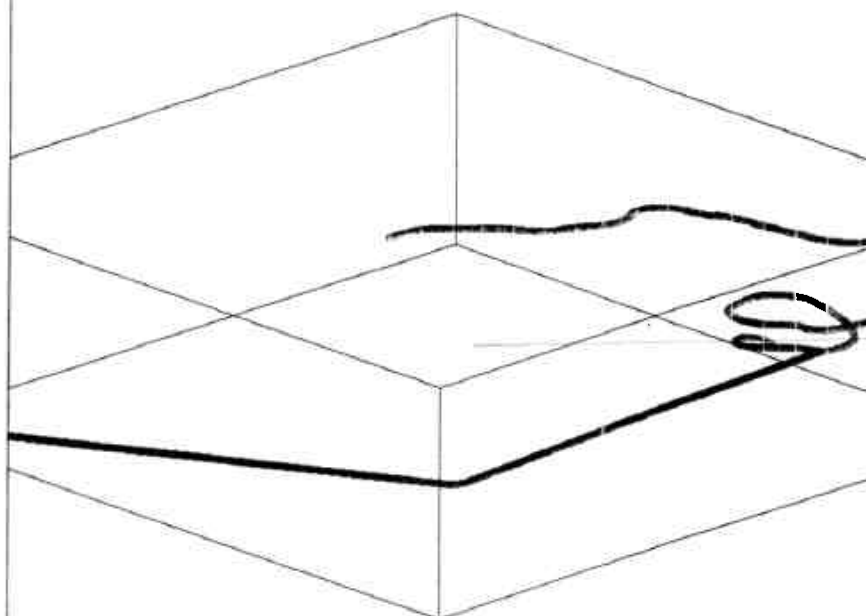
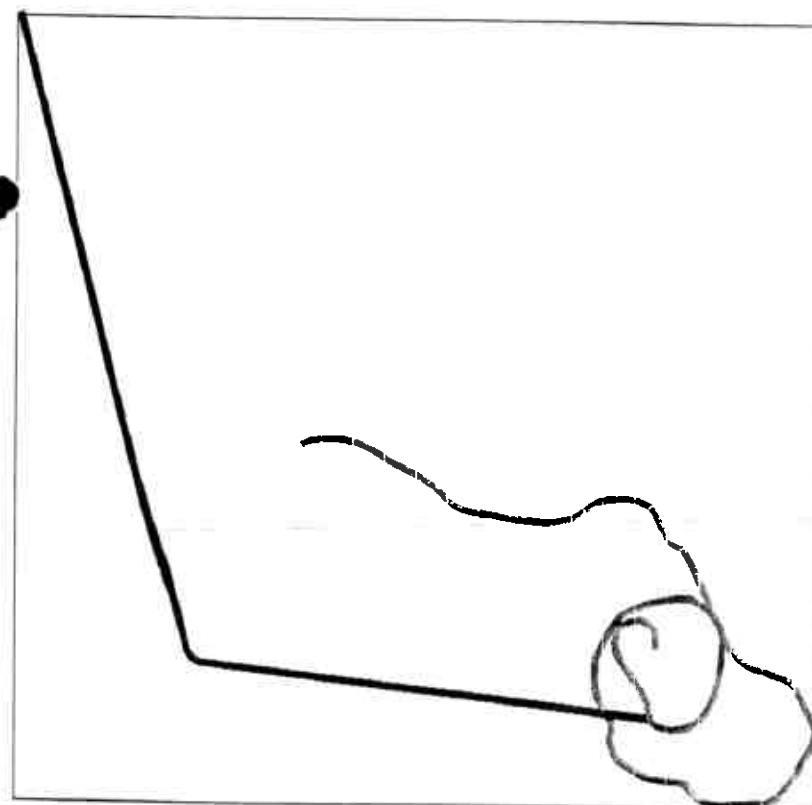
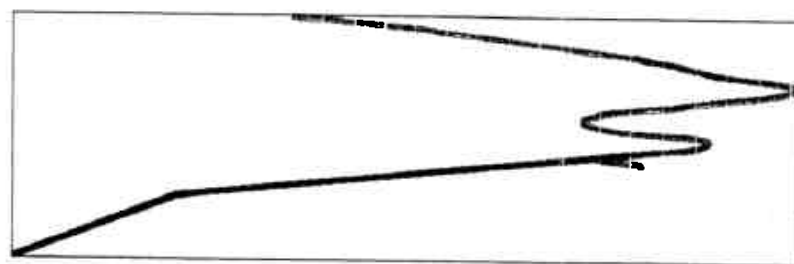
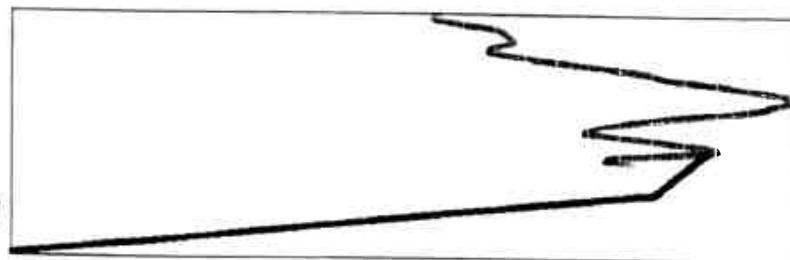
(Total 9028.02/9038.72 m)



SELECTION OF DRILL CORE SAMPLES BY all.st1

Rock types: all

Drill hole from to
 Number of samples is 2974
 Number of samples in plot is 2965
 BH-225-150 0.00 440.00
 27.7.1992



Orthogonal views:
 Upper left: Eye = 0, -1, 0
 Upper right: Eye = -1, 0, 0
 Lower left: Eye = 0, 0, -1
 User view:
 Lower right: Eye = -1, -1, -1

Project: ballan

Parts:
 z=ut/perat
 z=vt/perat

Box coordinates:
 x = 1169 - 1839
 y = 2298 - 2986
 z = -379 - -170

MINENET Ver 1.2

(c) Tietakumpu Oy
 1988, 1990

Made by minenet 24/7/92 13:22
 File: pic/vtut3d.out