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Tittel
Ore Reserve Statment of Nikkel & Olivin Mine - Prepared using data available 31.12.1997

Forfatter
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Dato År
25.01 1998

Bedrift (Oppdragsgiver og/eller oppdragstaker)
Nikkel og Olivin A/S

Kommune
Ballangen

Fylke
Nordland

Bergdistrikt

1: 50 000 kartblad
13311

1: 250 000 kartblad
Narvik

Fagområde
Malmberegning

Dokument type

Forekomster (forekomst, gruvefelt, undersøkelsesfelt)

Bruvannsfeltet
Råna
Østmalmen
Vestmalmen
Dypmalmen
Elefantmalmen
Dinosaurmalmen

Råstoffgruppe
Malm/metall

Råstofftype
Ni, Cu

Sammenheng, innholdstegning eller innholdsbeskrivelse

Beskriver kort geologisk setting med mineraliseringen og malmtyper. Lokalisering av de forskjellige malmkropper og linser. Avslutningsvis beskrives gruve og oppredningsmetoden.
Videre blir kjerneboring/slamboring, prøvetaking og kalkulasjonsmetode beskrevet. Grunnlaget for beregningene er den Australske coden.
Ved en cut-off på 0,45% Ni, beregnes in situ mineralressurser å være 0,595 Mt med 0,51% Ni.
Total malmreserve er beregnet til 1,577 Mt med 0,54% Ni, når det antas en utvinning på 70% og sidebergfortynning (med 0,15% Ni) på 10%.

Vedlagt plankart, datatabeller, gruvekostnader, break-even og en rekke statistikkdiagram.

ORE RESERVE STATEMENT

of

NIKKEL OG OLIVIN AS

Prepared using data available 31.12.1997

Nikkel og Olivin AS

25.01.1998

Markus Ekberg

Lisbeth Storhaug

Distribution: Markku Isohanni, Outokumpu Mining (full set)
Jouni Reino, Outokumpu Mine Technology Group (full set)
Vidkun Henriksen, Nikkel og Olivin AS (no profiles)
Markus Ekberg, Nikkel og Olivin AS (no profiles)
Lisbeth Storhaug, Nikkel og Olivin AS (full set)

Nikkel og Olivin AS - Ore Reserve Statement

Summary

This ore reserve statement of Nikkel og Olivin mine has been prepared using data available 31.12.1997.

The in-situ mineral resources of all Nikkel og Olivin mineralisations have been calculated using conventional profile method. Diamond drill hole and sludge hole data have been used equal manner. The calculations have been made using Outokumpu's Minenet programme.

Results are as follows (cut-off grade 0.45 % Ni):

Proven ore reserves	0.743 Mt	0.55 % Ni
Probable ore reserves	0.834 Mt	0.53 % Ni
Total ore reserves	1.577 Mt	0.54 % Ni
Measured mineral resources	0.268 Mt	0.51 % Ni
Indicated mineral resources	0.126 Mt	0.52 % Ni
Inferred mineral resources	0.202 Mt	0.50 % Ni
Total mineral resources	0.596 Mt	0.51 % Ni

Mineral resources are additional to total ore reserves.

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1. Introduction

This ore reserve statement has been prepared by mine manager Markus Ekberg and mine geologist Lisbeth Storhaug. The document is prepared using instructions given in Outokumpu's "Evaluation procedures manual 1996" according to the "Australasian code for reporting of identified mineral resources and ore reserves 1996".

All data available by 31.12.1997 has been used when preparing this document.

Nikkel og Olivin AS is a 70% owned subsidiary of Outokumpu Harjavalta Metals Oy, with the remaining 30 % of the shares owned by Nordlandsbanken AS. Outokumpu has the full economical and technical responsibility of the mine.

The mine started production in 1989 and had by 31.12.1997 produced a total of 5.221 Mt of ore with a grade of 0,53 % Ni.

Ore reserves and production plan allow mining to the beginning of the year 2000, if nickel price will stay at a level over 7000 USD/tonne and mining costs can be kept at present level.

2. Geology of the deposit

The Bruvann nickel deposit is a part of the Råna mafic-ultramafic intrusion which was emplaced during the Caledonian orogeny at about 436 My ago. The intrusion is surrounded by various types of gneisses, and the nickel mineralisation occurs in the ultramafic rocks close to the contact with the surrounding gneisses. The nickel mineralisation is cut by the main fault zone so that the deposit is divided into the Østmalm and the Vestmalm. Østmalmen crops out at the surface and the vertical distance between the orebodies varies between 75 m and 200 m, increasing towards north. The mineralised zone extends for approximately 900 m in the east-west direction and 600 m in the north-south direction.

3. Mineralisation and Ore types

The Bruvann Deposit consists of several lenses which are separated by faulting and probably by original crystallisation stages. The main lenses are Østmalmen og Vestmalmen which are separated by a scissor (hinge) fault (Boyd 1980).

The Dypmalm mineralisation is a part of the Østmalm and seems to be separated from the main lense.

The main parts of the orebody are made up of disseminated mineralisation in peridotite (dunite). The main nickel carrier is pentlandite, other sulphide minerals are pyrrhotite and chalcopyrite. Olivine contains approximately 0.09 % Ni in its lattice (Palosaari and Jounela 1994). Nickel content in the sulphide phase in the disseminated mineralisation is 7 - 8 %.

Massive and semi massive ore exists near the southern contact to the gneisses. This mineralisation type has been discovered on both sides of the main fault zone. In the Østmalm the

Elefant ore and the 246-inngang are of massive type. In the Vestmalm the Dinosaur ore is of massive type.

The massive mineralisation occurs in peridotite, pyroxenite, norite and calcsilicate gneiss. Nickel content in the sulphide phase in massive and semi massive ore is 4.5 %.

4. Investigations Procedures and Assaying

4.1 Diamond drilling

Vestmalmen consists of three ore bodies, Dinosaurmalmen, Sydmalmen and Nordmalmen. Vestmalmen (Sydmalmen and Nordmalmen) was found in 1972 by NGU (Norges Geologiske Undersøkelser) by diamond drilling and the Dinosaurmalm was found in 1996 by mine organisation with diamond drilling southwards from the 100 level.

The mineral resource calculation for the Vestmalm includes drillholes made by NGU in the 1970ies, drillholes made from the ramp during the investigation program for the Feasibility study of the Vestmalm in 1993 and 1994 and drillholes made by Nikkel og Olivin AS from drifts in the Vestmalm during 1995 - 1997.

Østmalmen is close to exhaustion, but minor parts of the massive ore (246-inngang and Elefantmalmen) and some disseminated ore still remains to be mined. There are also two separate orebodies in the east, Dypmalmen and Sydøst dagbruddet. Kronpillaren has been denied to be mined by the Norwegian authorities.

The mineral resource calculations for the Østmalm are based on diamond drillholes by Bjørkåsen Gruber, German occupants, NGU, LKAB and Nikkel og Olivin AS.

The assay intervals of the NGU drillholes are always 2 meters irrespective of lithological changes. Most of the drillholes done by NGU have collar coordinates measured using tachymeter. Deviation measurements have been done in some of the drillholes using Eastco method.

The assay samples from the drillholes done by Nikkel og Olivin AS are normally about 2 meters. Lithological boundaries and mineralisation grade variations were used when determining drill core to the assay intervals. In case of grade variation, shorter assay intervals than 2 meters were used.

Drill-hole collar coordinates and start azimuths are measured using electronic tachymeter. Survey points used in the measurements are normal mine survey points which are connected to the state survey net. Drill hole start azimuths are measured using special drillrod with a survey prism. This rod is installed to the hole and two points are measured. Start azimuth is later calculated by a mine survey ADP-program. Drill hole dip deviation is measured in the hole each 10 meter using electric inclinometer (Pietari Peltonen). This information is stored to the geological database and later used when drill holes are plotted to the profiles.

Drill core recovery is normally 100% and RQD-values usually over 90% so these have not been calculated earlier. During the last six months RQD has been calculated to test the

benefit of this information. Core loss is reported only rarely in some drill holes. These areas as well as "weathered peridotite" are reported separately. "Weathered peridotite" in an especially weak altered peridotite, which contains a swelling clay mineral, most probably saponite.

Sampling of diamond drill holes made by other parties is not clear.

4.2 Sludge drilling

Sludge drilling has been done systematically in the Vestmalm and in certain areas in the Östmalm, that is in all production areas. The current amount of sludge drilling per year is 12 000 meters and is done by the mine contractor. Each sample is 1.8 meters (one rod length). Sludge drilling profiles are usually at 12.5 meters spacing, but in the massive ore also 6.25 meters spacing has been used.

4.3 Assaying

Drill cores are split in half using a hydraulic splitter. One half is stored at the mine site. The assaying half is crushed using two crusher stages to -5 mm. The crushed sample with assay number is later delivered to the Nikkel Og Olivin AS laboratory. Some assaying has been carried out in Outokumpu's Geoanalytical Laboratory, Outokumpu, Finland.

At the laboratory samples were analyzed for total-Ni (HNO_3 -soluble) using normal analyzing routines.

Some 40 density determinations have been done at the Geoanalytical laboratory, Outokumpu. The density determinations were done from pieces of drill core. According to these determinations the average density of the Vestmalm is 3.39.

4.4 Geological database

Assay results, lithological abbreviations, drill hole collar coordinates, azimuths and dip deviation measurements and all assay results are fed to the Minenet-program. This program is Outokumpu's mine-CAD for geological resource and reserve estimations and mine planning.

5. Mineral Resource Calculation Methods and Results

5.1 Cut-off grade

Cut-off grade in this mineral resource estimation is 0.45 % Ni (total-Ni). This decision is based on economical evaluation of the whole Vestmalm. In this evaluation (Ekberg and Alaniska 1994) mineral resources of the whole deposit were calculated using different cut-off grades (0.30, 0.40, 0.50 and 0.60 % Ni). Ore reserves were derived using different grades for diluting material as well as different waste rock dilution percentage for each cut-off grade.

Annual production rate and total production period were calculated for each cut-off grade tonnage. Production costs for each production rate were estimated and investments were estimated. Ni-price used in these economical simulations was 10 % higher than planning price due to estimate benefits of the whole production chain of Nikkel og Olivin and Harjavalta.

According to these simulations the best economical result when exploiting the Vestmalm will be achieved using a cut-off grade of 0.45 % Ni.

Cut-off grade has been calculated recently using Outokumpu's budget prices for 1998, realistic payment percentage of Ni-concentrate (given by Harjavalta officials) and present mining costs. Results of this Cut-off calculation are presented in appendix 11. The cut-off grade 0.45 % Ni is appropriate for mine production.

5.2 Calculation methods

The mineral resources are based on diamond drill holes and sludge drill holes. A minimum ore thickness of four meters was used in the resource estimate for disseminated ore. In massive and semi massive ore the minimum ore thickness used was 1.5 meters. The used density of ore is 3.39. Waste rock inclusions inside the mineral resource were included into the grade and the tonnage.

The calculation method used in this mineral resource estimation was the conventional section method. The estimate for Vestmalmen is based on 40 sections at 12.5 intervals in the Dinosaurmalmen and Sydmalmen and at 25 m intervals in Nordmalmen. The weighted distance of influence for each section is thus 6.25 and 12.5 m respectively on both sides.

The mineralized area in each section was divided into subpolygons between the levels 140, 120, 100, 80, 60, 40, 20, 0 and below 0. 3-D models for mined stopes were created, and the areas of mined stopes were subtracted from the conventional estimation.

The grade of each subpolygon is the weighted average of all samples inside the subpolygon. The weighting method for samples was assay length, density was not used. The grade of each section is the weighted average of each subpolygon and the tonnage is the sum of tonnages of the incorporated subpolygons.

A conventional sectional estimate was prepared for Vestmalmen. In this estimation the Vestmalm was divided into the following areas:

Dinosaurmalm, sections $x=1137.5 - x=1237.5$

Sydmalmen, sections $x=1250 - x=1537.5$

Nordmalmen, sections $x=1550 - x=1700$

The grade estimations are reliable because all assays are quite low. There is no reason for cutting high grade assays.

Similar conventional method was used in the Östmalmen (Elefanten, Kronpillär, Dypmalmen and Sydöst dagbrudd).

Measured mineral resources includes those parts of the mineralisation which have been investigated with profile distance 12.5 meters, and where the geological structures are well known and the geological interpretation is fairly confident.

Measured mineral resources 31.12.1997, cut-off 0.45 % Ni, density 3.39

	Grade (% Ni)	Tonnage
Ostmalmen		
Kronpillar	0.48	125000
Elefantmalmen	0.98	42000
246-inngang	2.45	6000
Vestmalmen		
Sydmalmen	0.53	876500
Pillar around ramp	0.54	143100
Dinosaurmalmen	0.93	126700
Nordmalmen	0.47	62600
Subtotal	0.58	1381900

Indicated mineral resources are those parts of the mineralisation which has been investigated with profile distance 25 meters. The geological interpretations have a certain confidence.

Indicated mineral resources 31.12.1997, cut-off 0.45 % Ni, density 3.39

	Grade (% Ni)	Tonnage
Ostmalmen		
Dypmalmen	0.52	90000
Vestmalmen		
Nordmalmen	0.57	815600
Ovre mineralisering	0.53	36000
Sydmalmen	0.58	267600
Subtotal	0.57	1209200

Inferred mineral resources comprises those parts of the mineralisation where there are only NGU-diamond drillholes, and where it is not possible to make a confident geological interpretation.

Inferred mineral resources 31.12.1997, cut-off 0.45 % Ni, density 3.39

	Grade (% Ni)	Tonnage
Ostmalmen		
Sydøst dagbrudd	0.49	154000
Vestmalmen		
Sydmalmen	0.53	48300
Subtotal	0.50	202300

6. Ore Reserve Calculation Methods and Results

The mineable reserves have been prepared using the previously presented in-situ mineral resource estimation as a basis.

Mining recovery has been estimated to be 70% from the in-situ mineral resources. This estimation is based on experience from similar production situation in Ostmalmen. The mine recovery in Ostmalmen is estimated to 85 - 90 %, but a more complex geology together with rock mechanical problems in Vestmalmen has resulted in decreased mining recovery.

Waste rock dilution has been estimated to be 10% in disseminated ore. This is based on the calculated waste rock dilution during 1995 - 1997. The waste rock dilution in massive ore is estimated to be 20%. The grade of waste rock during 1995 - 1997 has been 0.15 % Ni, this grade has been used in the present ore reserve estimation.

Proven Ore Reserves, cut-off 0.45 % Ni, derived from measured mineral resources

	Grade (% Ni)	Tonnage	Mine recovery	Dilution	Dilution grade
Ostmalmen					
level 300-260	0.45	25000		according to production plan	
Elefantmalmen	0.79	35200	70%	20%	0.05% Ni
246-inngang	1.50	8000		according to production plan	
Vestmalmen					
Sydmalmen	0.49	674900	70%	10%	0.15% Ni
Dinosaurmalmen	0.75	129200	85%	20%	0.05% Ni
Nordmalmen	0.44	43800	70%	10%	0.15% Ni
Subtotal	0.55	743100			

Probable Ore Reserves, cut-off 0.45 % Ni, derived from indicated mineral resources

	Grade (% Ni)	Tonnage	Mine recovery	Dilution	Dilution grade
Vestmalmen					
Nordmalmen	0.53	628000	70%	10%	0.15% Ni
Sydmalmen	0.54	206000	70%	10%	0.15% Ni
Subtotal	0.53	834000			

Grand total ore reserves

0.54 1577100

7. Mining

The mining methods are normal sublevel stoping and "top slicing". In top slicing the drilling and loading drift is developed in the middle of the planned stope. The stope is opened using a transverse drive and an opening slot at one end of the stope. Ore is blasted towards this

opening slot using drilling fans with a spacing 2 -2.5 meters. The distance between levels is normally 20 metres and the drift size for drilling drifts is 5 x 5 meters. The small distance between the levels is due to shallow dip of the ore body.

The mucking of ore is carried out using a remote controlled LHD or a conventional wheel loader. Ground support with cable bolting has not been utilized before the autumn of 1997 when stope stability in bigger stopes was so poor that manually installed cable bolting was started.

Mine production planning is based on 12 month rolling plan, which is updated every month. Also more detailed 4(5) week and weekly plans are in use. These plans are discussed in weekly and monthly meetings with the contractor and is signed and binding.

A long term plan for the remaining mine life-time is under preparation at the moment. Infill drilling for the Northern Part of Vestmalm is going on and plan can be prepared after drilling is finished. The problem with mine planning at the moment is a lack of planning engineer in the mine department.

8. Milling

The contractor transports the ore to the surface via decline using 4-axel, 12 wheel highway trucks, each carrying 35 tonnes to a three-stage crushing plant. The silo capacity is about 1800 tonnes which means that ore hauling during weekends is necessary. Grinding is carried out with one ball mill (4x6 meters) in closed circuit. Grinding fineness is some 70% - 150 μ m and 44 % - 75 μ m. In the grinding circuit there are two flash flotation cells (Outokumpu Skim-Air 80), which produces concentrate with a grade of 15-20 % Ni. These cells are used when mill feed grade is higher than 0.5-0.55 % Ni.

The flotation is carried out in an open circuit using second-hand equipment purchased from different mines in Nordic countries. These flotation machines have partly been rebuilt using OK-mechanisms. The total flotation volume is 54 m³ and the flow rate of the pulp is 190 m³/h. The chemicals used in the flotation are xanthate (fed into the mill), DOW-200 (fed into the flash flotation), xanthate and waterglass (fed into the flotation) and frother MIBC (fed into the rougher and scavenger flotation).

The flotation process is controlled manually using a Courier-30 analyser.

Dewatering is done with a thickener and two vacuum filters. The moisture of the final concentrate is about 8 % and is thus suitable for shipping to Outokumpu's Harjavalta smelter, which is the only customer of Nikkel og Olivin AS.

The final concentrate has a grade of 13 % Ni, 3.5 % Cu and 0.5 % Co. Ni recovery is 74 % of total nickel assay, which includes 0.09% silicate nickel in olivine (Palosaari and Jounela 1994). This recovery and concentrate have been constant for the whole operation period. When massive and semi-massive ore have been fed in to the production it has been sometimes problematic to achieve concentrate grade of 13 %.

According to previously prepared mineralogical studies the whole Vestmalm consists of homogenous disseminated mineralisation (Sotka and Huhtelin 1993) and thus problems in the processing are not expected in the future.

9. References

- Australasian code for reporting of identified mineral resources and ore reserves. 1996.** Report of the Joint committee of the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Australian Mining Industry (JORC).
- Boyd, R. 1980.** Geologisk oversiktsrapport, Bruvannsfeltet, NGU Rapport 1582A. 4 bind. 45 p.
- Ekberg, M. 1992.** Råna Deposit, Ballangen Norway, Geological in situ mineral resource estimate. Unpublished report, Outokumpu Mining Services Oy.
- Ekberg, M. and Alaniska, H. 1994.** Mineral resource estimate and evaluation of the Vestmalm deposit. Unpublished report. Nikkel og Olivin AS.
- Palosaari, V. and Jounela, S. 1994.** Mineral dressing study on the West Ore of Nikkel og Olivin A/S. Unpublished report 075/SJ, VIP/1994. Outokumpu Research, Geoanalytical laboratory.
- Sotka, P. and Huhtelin, T. 1993.** Mineralogical and chemical study on ore samples from the West Ore Body of Nikkel og Olivin's Ni-mine, Ballangen, Norway. Unpublished report 074/TAH, PMS/1993. Outokumpu Mining Services, Geoanalytical laboratory.

10. Appendices

1. Lay-out map of the mine.
2. Outokumpu Reserve/Resource Reporting 31.12.1997 - Nikkel og Olivin AS.
3. Mineral Resources and Ore Reserves 31 December 1997.
4. Codes for mineral resource estimation in Vestmalmen with cut off 0.45 % Ni.
5. In situ mineral resource list
 - 5.1 Østmalmen, Sydøst dagbrudd
 - 5.2 Østmalmen, Kronpillar
 - 5.3 Østmalmen, Dypmalmen
 - 5.4 Østmalmen, Elefantmalmen
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 - 5.6 Vestmalmen, Sydmalmen
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6. Profiles
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 - 6.2 Østmalmen, Kronpillar
 - 6.3 Østmalmen, Dypmalmen
 - 6.4 Østmalmen, Elefantmalmen
 - 6.5 Vestmalmen, Dinosaurmalmen
 - 6.6 Vestmalmen, Sydmalmen
 - 6.7 Vestmalmen, Nordmalmen
7. Histogram and distribution of Ni, basic statistics
8. Density measurements
9. Investigation activity 1990 -1997
10. 12 month production plan 1998
11. Cut-off grades for different decision making situations
12. Ore reserves and mineral resources at the end of the year 1989-97.
Production 1989-1997.

X=1725
Y=2250
Z=-100

X=1500

X=1250

X=1125
Y=2250
Z=-100

Y=2500

Y=2750

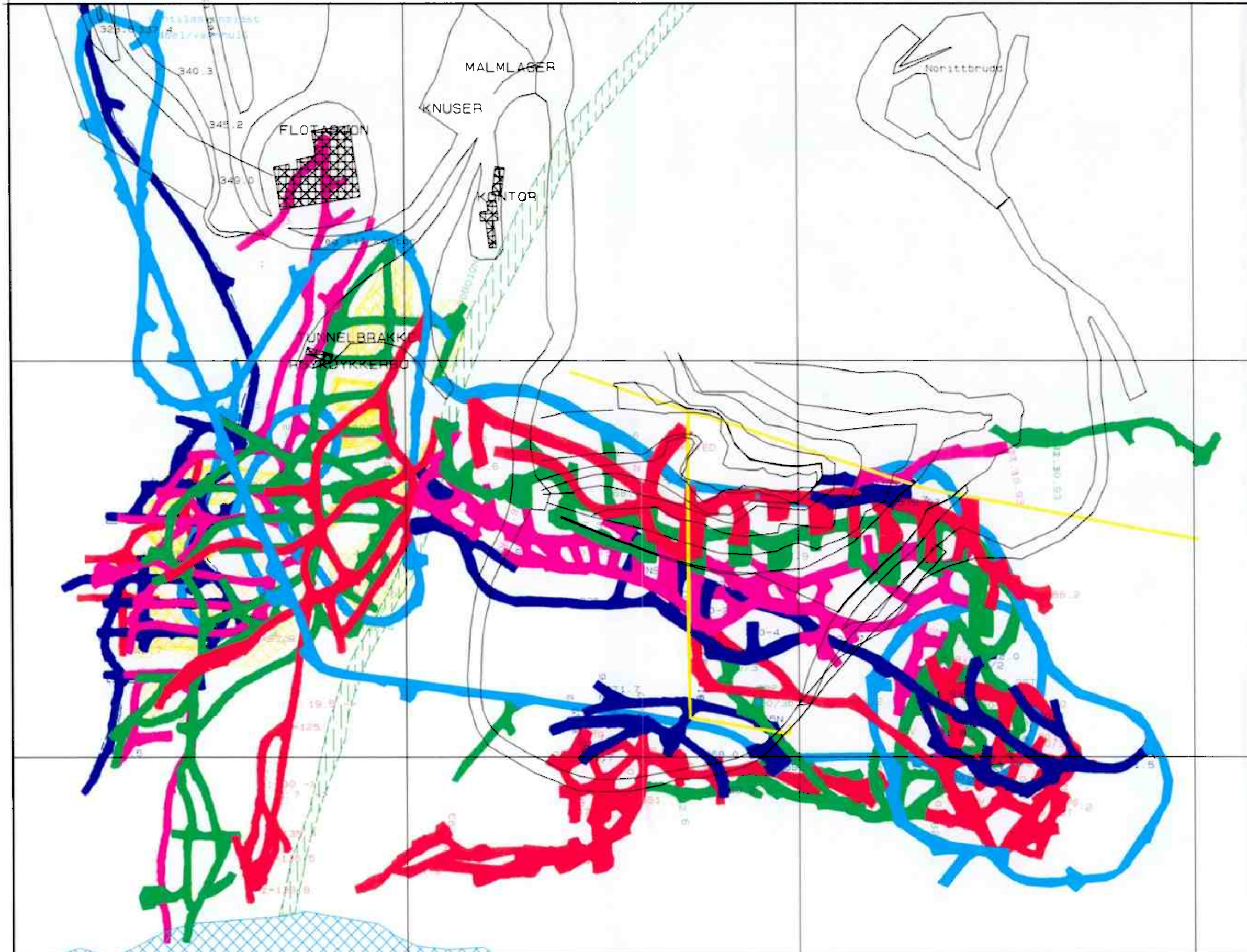
Y=3000

X=1725
Y=3050
Z=-100

X=1500

X=1250

X=1125
Y=3050
Z=-100



DD SD S P QB RB EX GS CS

Outokumpu
Nikkel og Olivin

1: 2500

15.1.1996

Z=-400

OUTOKUMPU RESERVE/RESOURCE REPORTING at 31.12.1997

ORE RESERVES

INVENTORY NAME: Nikkel og Olivin AS

COUNTRY: Norway

COMPANY: Nikkel og Olivin AS

OK'S SHARE: 70%

STATUS: In operation

DATE: 08.01.98

PREPARED BY: L.Storhaug/M.Ekberg

DATA GIVEN BY: M.Ekberg/V.Henriksen

ORE RESERVES

PROVEN TONNES	743100	METAL TONNES
PROVEN Cu%	0,10	743
PROVEN Ni%	0,55	4087
PROVEN Zn%		
PROVEN Pb%		
PROVEN S%		
PROVEN Au g/t		
PROVEN Ag g/t		
PROBABLE TONNES	834000	METAL TONNES
PROBABLE Cu%	0,10	834
PROBABLE Ni%	0,53	4420
PROBABLE Zn%		
PROBABLE Pb%		
PROBABLE S%		
PROBABLE Au g/t		
PROBABLE Ag g/t		
TOTAL TONNES	1577100	METAL TONNES
TOTAL Cu%	0,10	1577
TOTAL Ni%	0,54	8516
TOTAL Zn%		
TOTAL Pb%		
TOTAL S%		
TOTAL Au g/t		
TOTAL Ag g/t		

NOTE!

- * Ore Reserve data at 31st December 1997
- * The reported Mineral Resources are additional to the Ore Reserves
- * Total tonnes in JV project

OUTOKUMPU RESERVE/RESOURCE REPORTING at 31.12.1997
MINERAL RESOURCES

INVENTORY NAME: Nikkel og Olivin AS

COUNTRY: Norway

COMPANY: Nikkel og Olivin AS

OK'S SHARE: 70%

STATUS: In operation

DATE: 08.01.98

PREPARED BY: L.Storhaug/M.Ekberg

DATA GIVEN BY: M.Ekberg/V.Henriksen

MINERAL RESOURCES

MEASURED TONNES	268100	METAL TONNES
MEASURED Cu%	0,10	268
MEASURED Ni%	0,51	1367
MEASURED Zn%		
MEASURED Pb%		
MEASURED S%		
MEASURED Mo%		
MEASURED Au g/t		
INDICATED TONNES	126000	METAL TONNES
INDICATED Cu%	0,10	126
INDICATED Ni%	0,52	655
INDICATED Zn%		
INDICATED Pb%		
INDICATED S%		
INDICATED Mo%		
INDICATED Au g/t		
INFERRED TONNES	202300	METAL TONNES
INFERRED Cu%	0,10	202
INFERRED Ni%	0,50	1012
INFERRED Zn%		
INFERRED Pb%		
INFERRED S%		
INFERRED Mo %		
INFERRED Au g/t		
TOTAL TONNES	596400	METAL TONNES
TOTAL Cu%	0,10	596
TOTAL Ni%	0,51	3042
TOTAL Zn%		
TOTAL Pb%		
TOTAL S%		
TOTAL Mo%		
TOTAL Au g/t		

NOTE!

* Mineral Resource data at 31.12.1997

* Total tonnes in JV project

Mineral resources and ore reserves 31 December 1997

26-jan-98

Measured mineral resources 31.12.1997, cut-off 0.45% Ni, density 3.39

	Grade (% Ni)	Tonnage	
Østmalmen			
Kronpillar	0.48	125000	Not allowed mined by authorities
Elefantmalmen	0.98	42000	
246-inngang	2.45	6000	
Vestmalmen			
Sydmalmen	0.53	876500	220 000 t drifting in the ore subtracted
Pillar around the ramp	0.54	143100	Excluded from ore reserves, mineable at the end of operations
Dinosaurmalmen	0.93	126700	30 000 t drifting in the ore subtracted
Nordmalmen	0.47	62600	15 000 t drifting in the ore subtracted
Subtotal	0.58	1381900	

Indicated mineral resources 31.12.1997, cut-off 0.45% Ni, density 3.39

	Grade (%Ni)	Tonnage	
Østmalmen			
Dypmalmen	0.52	90000	
Vestmalmen			
Nordmalmen	0.57	815600	15 000 t drifting in the ore subtracted
Øvre mineralisering	0.53	36000	
Sydmalmen	0.58	267600	20 000 t drifting in the ore subtracted
Subtotal	0.57	1209200	

Inferred mineral resources 31.12.1996, cut-off 0.45 % Ni, density 3.39

	Grade (%Ni)	Tonnage	
Østmalmen			
Sydøst dagbrudd	0.49	154000	
Vestmalmen			
Sydmalmen	0.53	48300	
Subtotal	0.50	202300	
Grand total mineral resources	0.57	2793400	

Ore reserves are derived from measured and indicated mineral resources using mine recovery 70 % or 85% and adding dilution 10 or 20 %.

Proven ore reserves 31.12.1997, cut-off 0.45 %Ni, derived from measured mineral resources

	Grade (%Ni)	Tonnage	Mine recovery	Dilution	Dilution grade (%Ni)
Østmalmen					
levels 300-260	0.45	25000		according to the production plan	
Elefantmalmen	0.79	35200	70%	20%	0.05
246-inngang	1.50	8000		according to the production plan	
Vestmalmen					
Sydmalmen	0.49	674900	70%	10%	0.15
Dinosaurmalmen	0.75	129200	85%	20%	0.05
Nordmalmen	0.44	43800	70%	10%	0.15
Subtotal	0.55	743100			

Probable ore reserves 31.12.1997, cut-off 0.45 %Ni, derived from indicated mineral resources

	Grade (%Ni)	Tonnage	Mine recovery	Dilution	Dilution grade (%Ni)
Vestmalmen					
Nordmalmen	0.53	628000	70%	10%	0.15
Sydmalmen	0.54	206000	70%	10%	0.15
Subtotal	0.53	834000			
Grand total ore reserves	0.54	1577100			

Codes for mineral resource estimation with cut-off 0.45, Nikkel og Olivin AS

		Code
Vestmalmen		
Sydmalmen x=1250 - x=1525, profile distance 12.5 m		
above z=140	indicated	21
120 - 140	measured	22
100 - 120	measured	23
80 - 100	measured	24
60 - 80	measured	25
40 - 60	indicated	26
20 - 40	indicated	27
0 - 20	indicated	28
for profiles x=1437.5 - x=1462.5		
below z=40	inferred	29
Nordmalmen main lense x=1550-1700, profile distance 25 m		
above z=100	measured	31
80 - 100	measured	32
60 - 80	indicated	33
40 - 60	indicated	34
20 - 40	indicated	35
0 - 20	indicated	36
-20 - 0	indicated	37
-40 - -20	indicated	38
Dinosaurmalmen x=1137.5 - 1237.5, profile distance 12.5 m		
above z=140	measured	51
120 - 140	measured	52
100 - 120	measured	53
80 - 100	measured	54
Other categories		
mined areas		99
abandoned areas		98
pillar around the ramp		97
mineralisation, no value		96

Sydøst for dagbrudd

IN SITU ORE RESERVE ESTIMATION

29.8.1994

polygons: s_m_ni_45_sydost

profile : Y=2900 - 3000

code(s) : 1

profile	intersection length	ni	area m2	density	projection range	tons
Y=2900	84.35	0.35	356	3.390	25.0	30180
Y=2925	47.05	0.44	479	3.390	25.0	40623
Y=2950	16.60	0.63	223	3.390	25.0	18661
Y=2975	29.10	0.56	669	3.390	25.0	56721
Y=3000	4.00	0.51	97	3.390	25.0	8251
total	181.10	0.49	1825	3.3900	125.0	154636

IN SITU ORE RESERVE ESTIMATION 6.1.1997

polygons: s m ni 45 dmudi
profile : Y=2600 - 2775
code(s) : 0+3

profile	intersection length	ni		area m2	density	projection range	tons
Y=2600	18.50	0.46	0.00	181	3.390	25.0	15328
Y=2625	0.00	0.47		173	3.390	25.0	14639
Y=2650	36.95	0.47	0.00	227	3.390	25.0	19224
Y=2675	7.50	0.47	0.00	218	3.390	25.0	18497
Y=2700	38.60	0.45	0.00	205	3.390	25.0	17353
Y=2725	0.00			59	0.000	25.0	0
Y=2750	64.01	0.51	0.00	208	3.390	25.0	17589
Y=2775	13.05	0.56	0.00	216	3.390	25.0	18322
total	178.61	0.48	0.00	1486	3.2561	200.0	120951

Handwritten notes:
3.39
Kronpiller

Dypmalmen

IN SITU ORE RESERVE ESTIMATION 4.11.1994

polygons: s_m_ni_45_dyp
 profile : Y=2712 - 2762
 code(s) : 1

profile	intersection length	ni	area m2	density	projection range	tons
Y=2712	62.95	0.52	516	3.390	15.3	26681
Y=2725	60.65	0.49	271	3.390	18.8	17246
Y=2737	0.00		0	0.000	0.0	0
Y=2750	35.50	0.53	287	3.390	16.3	15808
Y=2762	44.15	0.59	594	3.390	12.5	25185
total	203.25	0.54	1669	3.3900	62.8	84921

hovedlinse

IN SITU ORE RESERVE ESTIMATION

4.11.1994

polygons: s_m_ni_45_dyp
profile : Y=2712 - 2762
code(s) : 1+2+3

profile	intersection length	ni	area m2	density	projection range	tons
Y=2712	62.95	0.52	516	3.390	15.3	26681
Y=2725	68.95	0.46	360	3.246	18.8	21908
Y=2737	0.00		0	0.000	0.0	0
Y=2750	40.85	0.50	314	3.390	16.3	17276
Y=2762	63.40	0.58	821	3.390	12.5	34776
total	236.15	0.52	2010	3.3575	62.6	100642

alle linser
og forkeastninger i tillegg

Dypmalmen

IN SITU ORE RESERVE ESTINATION 4.11.1994

polygons: s_m_ni_45_dyp
 profile : Y=2712 - 2762
 code(s) : 1+2

profile	intersection length	ni	area m2	density	projection range	tons
Y=2712	62.95	0.52	516	3.390	15.3	26681
Y=2725	58.95	0.46	360	3.246	18.8	21908
Y=2737	0.00		0	0.000	0.0	0
Y=2750	40.85	0.50	314	3.390	16.3	17276
Y=2762	44.15	0.59	594	3.390	12.5	25185
total	216.90	0.52	1784	3.3542	62.8	91051

hovedlinje og
 forkastninger

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.m.m.1.res
 profile : Y=2462 - 2562
 code(s) : 21

profile intersection	ni	area	density	projection	tons
length		m2		range	
Y=2462 69.70	0.98	0.00	248	3.390	12.5 10506
Y=2470 0.00			0	0.000	0.0 0
Y=2475 191.95	0.90	0.00	411	3.390	12.5 17401
Y=2487 45.30	0.87	0.00	165	3.390	12.5 6978
Y=2500 33.55	0.70	0.00	154	3.390	9.8 5098
Y=2507 27.00	1.04	0.00	158	3.390	7.5 4028
Y=2515 37.60	1.50	0.00	251	3.390	9.0 7643
Y=2525 33.70	1.13	0.00	186	3.390	11.3 7094
Y=2537 19.20	1.00	0.00	56	3.390	12.5 2357
Y=2550 38.70	0.65	0.00	120	3.390	12.5 5106
Y=2562 22.10	0.88	0.00	75	3.390	12.5 3191
total 518.80	0.98	0.00	1824	3.3900	112.5 69401

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.m.ni.1.mas

profile : Y=2462

node(s) : 21

are/hum	inters. length	ni	area m2	density	projection range	tons
mas/3	34.10	1.28	111	3.390	12.5	4686
mas/4	35.60	0.73	137	3.390	12.5	5820
Total	69.70	0.98	248	3.390		10506

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.mni_1.mas
 profile : Y=2475
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	53.70	0.97	83	3.390	12.5	3531
mas/4	14.00	0.57	38	3.390	12.5	1618
mas/5	26.45	0.59	55	3.390	12.5	2324
mas/6	53.45	1.07	119	3.390	12.5	5057
mas/7	17.00	1.18	39	3.390	12.5	1646
mas/8	27.35	0.83	76	3.390	12.5	3225
Total	191.95	0.90	411	3.390		17401

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.m.ni_1.res
 profile : Y=2487
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	9.60	0.44	41	3.390	12.5	1742
mas/3	14.85	0.65	46	3.390	12.5	1968
mas/4	1.75	3.65	7	3.390	12.5	302
mas/5	16.70	1.00	59	3.390	12.5	2506
mas/6	2.40	0.92	11	3.390	12.5	460
Total	45.30	0.87	165	3.390		6978

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s_m_ni_1_mas
 profile : Y=2500
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	9.25	0.48	56	3.390	9.8	1864
mas/3	18.90	0.95	53	3.390	9.8	1751
mas/4	5.40	0.66	45	3.390	9.8	1483
Total	33.55	0.70	154	3.390		5098

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s_m_ni_1_mas
profile : Y=2507
code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/1	10.30	1.30	40	3.390	7.5	1006
mas/3	16.70	0.96	119	3.390	7.5	3022
Total	27.00	1.04	158	3.390		4028

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.m.ni.1.mas
 profile : Y-2515
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	1.90	3.46	11	3.390	9.0	345
mas/3	9.50	0.93	46	3.390	9.0	1406
mas/4	8.40	2.09	86	3.390	9.0	2628
mas/5	17.80	1.07	107	3.390	9.0	3264
Total	37.60	1.50	251	3.390		7643

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s.m.ni_1.mas
 profile : Y-2525
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/3	4.25	1.39	17	3.390	11.3	649
mas/4	1.70	1.45	12	3.390	11.3	474
mas/5	8.70	1.26	46	3.390	11.3	1740
mas/6	2.05	0.51	11	3.390	11.3	406
mas/7	7.50	0.88	36	3.390	11.3	1373
mas/8	9.50	1.14	64	3.390	11.3	2451
Total	33.70	1.13	186	3.390		7094

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s_mni_1.mas

profile : Y-2537

code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	19.20	1.00	56	3.390	12.5	2357
Total	19.20	1.00	56	3.390		2357

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s_mn1_mas
 profile : Y=2550
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	31.70	0.63	65	3.390	12.5	2748
mas/3	0.00		32	0.000	12.5	0
mas/4	7.00	0.69	23	3.390	12.5	992
Total	38.70	0.64	120	2.484		3741

IN SITU ORE RESERVE ESTIMATION 9.1.1996

polygons: s_m_ni_1_mas
 profile : Y-2562
 code(s) : 21

name/num	inters. length	ni	area m2	density	projection range	tons
mas/2	9.00	1.28	33	3.390	12.5	1393
mas/3	13.10	0.57	42	3.390	12.5	1798
Total	22.10	0.88	75	3.390		3191

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest
 profile : x=1137 - 1237
 code(s) : 51+52+53+54

profile	intersection length	ni		area m2	density	projection range	tons
x=1137	25.40	0.68	0.00	108	3.390	12.5	4584
x=1150	42.10	0.67	0.00	196	3.390	12.5	8284
x=1162	102.25	0.65	0.00	398	3.390	12.5	16877
x=1169	0.00			0	0.000	0.0	0
x=1175	142.25	0.93	0.00	595	3.390	12.5	25214
x=1181	0.00			0	0.000	0.0	0
x=1187	183.58	1.07	0.00	733	3.390	12.5	31064
x=1192	0.00			0	0.000	0.0	0
x=1200	275.05	1.23	0.00	1033	3.390	12.5	43785
x=1206	0.00			0	0.000	0.0	0
x=1212	31.55	0.60	0.00	149	3.390	12.5	6297
x=1225	83.00	0.64	0.00	242	3.390	12.5	10252
x=1237	81.75	0.54	0.00	246	3.390	12.5	10405
total	966.93	0.93	0.00	3699	3.3900	112.5	156763

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1137 - 1237

code(s) : 51

profile	intersection	ni		area	density	projection	tons
	length			m2		range	
x=1137	0.00			0	0.000	0.0	0
x=1150	0.00			0	0.000	0.0	0
x=1162	0.00			0	0.000	0.0	0
x=1169	0.00			0	0.000	0.0	0
x=1175	0.00			0	0.000	0.0	0
x=1181	0.00			0	0.000	0.0	0
x=1187	37.05	1.66	0.00	79	3.390	12.5	3369
x=1192	0.00			0	0.000	0.0	0
x=1200	30.20	1.91	0.00	87	3.390	12.5	3683
x=1206	0.00			0	0.000	0.0	0
x=1212	0.00			0	0.000	0.0	0
x=1225	0.00			0	0.000	0.0	0
x=1237	0.00			0	0.000	0.0	0
total	67.25	1.79	0.00	166	3.3900	25.0	7052

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1137 - 1237

code(s) : 52

profile	intersection	ni		area	density	projection	tons
	length			m2		range	
x=1137	0.00			0	0.000	0.0	0
x=1150	0.00			0	0.000	0.0	0
x=1162	0.00			0	0.000	0.0	0
x=1169	0.00			0	0.000	0.0	0
x=1175	22.60	0.89	0.00	59	3.390	12.5	2490
x=1181	0.00			0	0.000	0.0	0
x=1187	45.40	1.63	0.00	110	3.390	12.5	4664
x=1192	0.00			0	0.000	0.0	0
x=1200	93.25	1.49	0.00	269	3.390	12.5	11412
x=1206	0.00			0	0.000	0.0	0
x=1212	0.00			0	0.000	0.0	0
x=1225	0.00			0	0.000	0.0	0
x=1237	0.00			0	0.000	0.0	0
total	161.25	1.45	0.00	438	3.3900	37.5	18567

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest
 profile : x=1137 - 1237
 code(s) : 53

profile	intersection length	ni		area m2	density	projection range	tons
x=1137	0.00			0	0.000	0.0	0
x=1150	6.20	0.46	0.00	17	3.390	12.5	722
x=1162	80.25	0.61	0.00	245	3.390	12.5	10384
x=1169	0.00			0	0.000	0.0	0
x=1175	99.05	0.68	0.00	411	3.390	12.5	17428
x=1181	0.00			0	0.000	0.0	0
x=1187	52.43	0.89	0.00	327	3.390	12.5	13871
x=1192	0.00			0	0.000	0.0	0
x=1200	108.70	1.14	0.00	400	3.390	12.5	16936
x=1206	0.00			0	0.000	0.0	0
x=1212	5.20	0.48	0.00	24	3.390	12.5	1015
x=1225	47.60	0.62	0.00	96	3.390	12.5	4085
x=1237	0.00			0	0.000	0.0	0
total	399.43	0.83	0.00	1521	3.3900	87.5	64440

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1137 - 1237

code(s) : 54

profile	intersection	ni		area	density	projection	tons
	length			m2		range	
x=1137	25.40	0.68	0.00	108	3.390	12.5	4584
x=1150	35.90	0.69	0.00	178	3.390	12.5	7563
x=1162	22.00	0.71	0.00	153	3.390	12.5	6493
x=1169	0.00			0	0.000	0.0	0
x=1175	20.60	1.77	0.00	125	3.390	12.5	5296
x=1181	0.00			0	0.000	0.0	0
x=1187	48.70	0.86	0.00	216	3.390	12.5	9160
x=1192	0.00			0	0.000	0.0	0
x=1200	42.90	0.88	0.00	277	3.390	12.5	11754
x=1206	0.00			0	0.000	0.0	0
x=1212	26.35	0.62	0.00	125	3.390	12.5	5282
x=1225	35.40	0.66	0.00	146	3.390	12.5	6167
x=1237	81.75	0.54	0.00	246	3.390	12.5	10405
total	339.00	0.80	0.00	1574	3.3900	112.5	66704

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1137

code(s) : -1+1+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	18.20	0.72	63	3.390	12.5	2668
vest/3	0.00		1	0.000	12.5	0
vest/4	7.20	0.62	45	3.390	12.5	1916
Total	25.40	0.68	109	3.355		4584

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest
 profile : x=1150
 code(s) : 1+53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	35.90	0.69	178	3.390	12.5	7563
vest/3	6.20	0.46	17	3.390	12.5	722
Total	42.10	0.67	196	3.390		8284

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m ni_0.45_vest

profile : x=1162

code(s) : -1+1+53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00		3	0.000	12.5	0
vest/3	23.50	0.59	76	3.390	12.5	3208
vest/4	1.80	0.72	27	3.390	12.5	1157
vest/5	20.20	0.71	126	3.390	12.5	5336
vest/6	56.75	0.62	169	3.390	12.5	7176
Total	102.25	0.65	401	3.364		16877

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni_0.45_vest
 profile : x=1175
 code(s) : 52+53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	20.60	1.77	125	3.390	12.5	5296
vest/3	22.60	0.89	59	3.390	12.5	2490
vest/4	99.05	0.68	411	3.390	12.5	17428
Total	142.25	0.93	595	3.390		25214

IN SITU ORE RESERVE ESTIMATION 2.1.1997

polygons: s m ni_0.45_vest
 profile : x=1187
 code(s) : 51+52+53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	5.10	1.03	15	3.610	12.5	671
vest/3	8.30	0.73	59	3.390	12.5	2513
vest/5	10.65	1.42	71	3.610	12.5	3216
vest/6	4.65	1.88	33	3.840	12.5	1605
vest/7	4.83	0.68	136	3.390	12.5	5747
vest/9	32.70	0.94	195	3.610	12.5	8784
Total	66.23	0.99	509	3.541		22536

IN SITU ORE RESERVE ESTIMATION 4.2.1998

polygons: s_m_ni_0.45_vest

profile : x=1200

code(s) : 51+52+53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	16.30	0.56	152	3.390	12.5	6459
vest/3	19.30	1.44	104	3.390	12.5	4388
vest/5	7.30	0.45	21	3.390	12.5	907
vest/6	27.10	0.58	114	3.390	12.5	4820
vest/7	21.10	2.38	77	3.390	12.5	3259
vest/8	93.25	1.49	269	3.390	12.5	11412
vest/9	30.20	1.91	87	3.390	12.5	3683
vest/10	60.50	0.99	209	3.390	12.5	8857
Total	275.05	1.23	1033	3.390		43785

IN STIU ORE RESERVE ESTIMATION 4.2.1998

polygons: s_m_ni_0.45_vest
profile : x=1212
code(s) : 53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	26.35	0.62	125	3.390	12.5	5282
vest/3	5.20	0.48	24	3.390	12.5	1015
Total	31.55	0.60	149	3.390		6297

IN SITU ORE RESERVE ESTIMATION 6.1.1997

polygons: s m ni_0.45_vest
 profile : x=1225
 code(s) : 53+54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	14.85	0.74	78	3.390	12.5	3322
vest/4	5.00	0.54	31	3.390	12.5	1327
vest/5	35.90	0.64	100	3.390	12.5	4257
Total	55.75	0.67	210	3.390		8906

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1237

code(s) : 54

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	39.75	0.56	146	3.390	12.5	6199
vest/4	42.00	0.52	99	3.390	12.5	4207
Total	81.75	0.54	246	3.390		10405

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1250 - 1537

code(s) : 22+23+24+25+26+27+28+29+96+97+98+99

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1250	119.50	0.58	0.00	455	3.390 12.5 19277
x=1262	165.15	0.57	0.00	812	3.390 12.5 34421
x=1275	232.45	0.61	0.00	960	3.390 12.5 39194
x=1287	316.36	0.59	0.00	1192	3.390 12.5 50505
x=1300	349.04	0.53	0.00	2004	3.390 12.5 74192
x=1312	254.13	0.53	0.00	2332	3.390 7.3 57319
x=1325	610.89	0.57	0.00	3605	3.390 12.5 152754
x=1337	810.63	0.55	0.00	5298	3.390 12.5 224523
x=1350	686.43	0.56	0.00	6086	3.390 12.5 257883
x=1362	825.85	0.55	0.00	5832	3.390 12.5 247124
x=1375	574.90	0.53	0.00	4382	3.390 12.5 185688
x=1387	386.15	0.47	0.00	1652	3.390 12.5 70024
x=1400	521.57	0.50	0.00	3743	3.372 12.5 153279
x=1412	451.35	0.50	0.00	3019	3.390 12.5 127947
x=1425	562.50	0.53	0.00	3847	3.390 12.5 163008
x=1437	457.15	0.52	0.00	3625	3.390 12.5 153608
x=1450	505.40	0.51	0.00	3320	3.390 12.5 140691
x=1462	496.88	0.52	0.00	3411	3.390 12.5 144539
x=1475	226.69	0.55	0.00	1600	3.390 12.5 67820
x=1487	121.06	0.52	0.00	1256	3.390 12.5 53231
x=1500	140.70	0.56	0.00	865	3.377 12.5 36525
x=1512	225.58	0.49	0.00	1789	3.390 12.5 75802
x=1525	259.10	0.53	0.00	1867	3.390 12.5 79097
x=1537	205.25	0.54	0.00	1717	3.390 12.5 72773
total	9504.71	0.54	0.00	64671	3.3888 294.8 2681222

IN SITU OPE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 22+23+24+25+26+27+28+29

profile	intersection	ni	area	density	projection	tons
	length		m2		range	
x=1250	119.50	0.58	0.00	455	3.390	12.5 19277
x=1262	165.15	0.57	0.00	812	3.390	12.5 34421
x=1275	232.45	0.61	0.00	960	3.390	12.5 39194
x=1287	269.51	0.60	0.00	985	3.390	12.5 41723
x=1300	269.44	0.52	0.00	1590	3.390	12.5 56620
x=1312	200.30	0.53	0.00	2077	3.390	7.3 51056
x=1325	194.35	0.63	0.00	1619	3.390	12.5 68611
x=1337	278.75	0.56	0.00	2173	3.390	12.5 92062
x=1350	326.20	0.54	0.00	2913	3.390	12.5 123422
x=1362	469.20	0.57	0.00	3549	3.390	12.5 150405
x=1375	160.35	0.56	0.00	1823	3.390	12.5 77255
x=1387	87.00	0.48	0.00	514	3.390	12.5 21782
x=1400	358.57	0.49	0.00	2842	3.367	12.5 115099
x=1412	103.57	0.52	0.00	723	3.390	12.5 30649
x=1425	130.75	0.51	0.00	1200	3.390	12.5 50843
x=1437	343.75	0.53	0.00	3011	3.390	12.5 127587
x=1450	236.65	0.52	0.00	1959	3.390	12.5 83016
x=1462	289.93	0.52	0.00	2349	3.390	12.5 99556
x=1475	124.94	0.54	0.00	774	3.390	12.5 32810
x=1487	41.66	0.48	0.00	521	3.390	12.5 22062
x=1500	34.50	0.62	0.00	210	3.336	12.5 8761
x=1512	79.20	0.52	0.00	440	3.390	12.5 18646
x=1525	67.10	0.54	0.00	679	3.390	12.5 28767
x=1537	79.40	0.51	0.00	919	3.390	12.5 38954
total	4662.22	0.54	0.00	35097	3.3878	294.8 1432578

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest
 profile : x=1250 - 1537
 code(s) : 22

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1250 0.00		0	0.000	0.0	0
x=1262 26.50	0.55	0.00	166	3.390	12.5 7034
x=1275 0.00		0	0.000	0.0	0
x=1287 0.00		0	0.000	0.0	0
x=1300 0.00		0	0.000	0.0	0
x=1312 0.00		0	0.000	0.0	0
x=1325 24.25	0.45	0.00	59	3.390	12.5 2506
x=1337 0.00		0	0.000	0.0	0
x=1350 29.75	0.50	0.00	276	3.390	12.5 11680
x=1362 0.00		0	0.000	0.0	0
x=1375 0.00		0	0.000	0.0	0
x=1387 0.00		0	0.000	0.0	0
x=1400 66.80	0.47	0.00	215	3.390	12.5 9105
x=1412 14.46	0.45	0.00	66	3.390	12.5 2804
x=1425 0.00		0	0.000	0.0	0
x=1437 0.00		0	0.000	0.0	0
x=1450 0.00		0	0.000	0.0	0
x=1462 24.90	0.45	0.00	204	3.390	12.5 8653
x=1475 0.00		0	0.000	0.0	0
x=1487 0.00		0	0.000	0.0	0
x=1500 0.00		0	0.000	0.0	0
x=1512 0.00		0	0.000	0.0	0
x=1525 0.00		0	0.000	0.0	0
x=1537 0.00		0	0.000	0.0	0
total 186.66	0.48	0.00	986	3.3900	75.0 41783

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 23

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1250 13.75	0.55	0.00 55	3.390	12.5	2342
x=1262 23.20	0.59	0.00 154	3.390	12.5	6546
x=1275 35.20	0.46	0.00 175	3.390	10.0	5943
x=1287 26.51	0.51	0.00 137	3.390	12.5	5809
x=1300 93.74	0.45	0.00 487	3.390	6.0	9913
x=1312 40.65	0.53	0.00 399	3.390	7.3	9814
x=1325 0.00		0	0.000	0.0	0
x=1337 77.80	0.51	0.00 323	3.390	12.5	13685
x=1350 61.05	0.55	0.00 370	3.390	12.5	15674
x=1362 0.00		0	0.000	0.0	0
x=1375 5.90	0.50	0.00 70	3.390	12.5	2974
x=1387 37.80	0.45	0.00 264	3.390	12.5	11178
x=1400 121.37	0.46	0.00 868	3.390	12.5	32269
x=1412 44.01	0.48	0.00 254	3.390	12.5	10771
x=1425 29.40	0.45	0.00 431	3.390	12.5	18263
x=1437 104.20	0.48	0.00 765	3.390	12.5	32410
x=1450 65.15	0.46	0.00 383	3.390	12.5	16228
x=1462 66.36	0.50	0.00 404	3.390	12.5	17130
x=1475 45.64	0.56	0.00 345	3.390	12.5	14601
x=1487 25.46	0.48	0.00 243	3.390	12.5	10286
x=1500 26.50	0.63	0.00 153	3.316	12.5	6323
x=1512 37.80	0.51	0.00 223	3.390	12.5	9445
x=1525 18.15	0.61	0.00 223	3.390	12.5	9462
x=1537 41.40	0.48	0.00 236	3.390	12.5	9990
total 1041.04	0.50	0.00 6963	3.3882	260.8	271057

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 24

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1250 40.75	0.59	0.00	187	3.390	12.5 7941
x=1262 110.65	0.57	0.00	472	3.390	12.5 19993
x=1275 122.70	0.63	0.00	546	3.390	12.5 23119
x=1287 155.15	0.65	0.00	558	3.390	12.5 23644
x=1300 65.35	0.55	0.00	625	3.390	12.5 26482
x=1312 105.95	0.54	0.00	794	3.390	7.3 19524
x=1325 125.35	0.61	0.00	709	3.390	12.5 30033
x=1337 106.50	0.56	0.00	707	3.390	12.5 29945
x=1350 33.80	0.52	0.00	603	3.390	12.5 25570
x=1362 176.00	0.51	0.00	1184	3.390	12.5 50152
x=1375 25.60	0.55	0.00	276	3.390	12.5 11687
x=1387 0.00			0	0.000	0.0 0
x=1400 63.80	0.49	0.00	551	3.273	12.5 22548
x=1412 0.00			0	0.000	0.0 0
x=1425 75.60	0.53	0.00	602	3.390	12.5 25504
x=1437 93.50	0.51	0.00	976	3.390	12.5 41370
x=1450 72.30	0.54	0.00	570	3.390	12.5 24137
x=1462 92.77	0.54	0.00	483	3.390	12.5 20457
x=1475 79.30	0.55	0.00	283	3.390	12.5 11990
x=1487 16.20	0.51	0.00	159	3.390	12.5 6738
x=1500 8.00	0.60	0.00	58	3.390	12.5 2438
x=1512 41.40	0.53	0.00	217	3.390	12.5 9201
x=1525 35.50	0.53	0.00	271	3.390	12.5 11466
x=1537 25.20	0.50	0.00	230	3.390	12.5 9740
total 1671.37	0.55	0.00	11059	3.3840	269.8 453679

IN SITU ORE RESERVE ESTIMATION

3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 25

profile	intersection length	ni		area m2	density	projection range	tons
x=1250	65.00	0.58	0.00	212	3.390	12.5	8994
x=1262	4.80	0.61	0.00	20	3.390	12.5	848
x=1275	74.55	0.67	0.00	239	3.390	12.5	10131
x=1287	69.65	0.58	0.00	252	3.390	12.5	10664
x=1300	108.70	0.51	0.00	452	3.390	12.5	19171
x=1312	45.00	0.50	0.00	648	3.390	7.3	15928
x=1325	28.80	0.66	0.00	390	3.390	12.5	16519
x=1337	43.90	0.56	0.00	417	3.390	12.5	17655
x=1350	61.80	0.56	0.00	447	3.390	12.5	18927
x=1362	190.85	0.55	0.00	1093	3.390	12.5	46310
x=1375	29.20	0.49	0.00	235	3.390	12.5	9973
x=1387	31.00	0.50	0.00	145	3.390	12.5	6158
x=1400	96.20	0.52	0.00	1004	3.390	12.5	42560
x=1412	24.00	0.61	0.00	219	3.390	12.5	9277
x=1425	0.00	0.49		37	3.390	12.5	1550
x=1437	108.20	0.61	0.00	580	3.390	12.5	24569
x=1450	70.20	0.55	0.00	515	3.390	12.5	21810
x=1462	43.90	0.50	0.00	342	3.390	12.5	14501
x=1475	0.00	0.45		147	3.390	12.5	6219
x=1487	0.00	0.45		119	3.390	12.5	5037
x=1500	0.00			0	0.000	0.0	0
x=1512	0.00			0	0.000	0.0	0
x=1525	13.45	0.48	0.00	146	3.390	12.5	6181
x=1537	12.80	0.53	0.00	403	3.390	12.5	17095
total	1122.00	0.55	0.00	8062	3.3900	269.8	330076

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 26

profile	intersection length	ni	area m2	density	projection range	tons	
x=1250	0.00		0	0.000	0.0	0	
x=1262	0.00		0	0.000	0.0	0	
x=1275	0.00		0	0.000	0.0	0	
x=1287	18.20	0.45	0.00	38	3.390	12.5	1606
x=1300	1.65	0.70	0.00	25	3.390	12.5	1054
x=1312	8.70	0.62	0.00	212	3.390	7.3	5221
x=1325	6.15	0.68	0.00	361	3.390	12.5	15279
x=1337	35.50	0.61	0.00	530	3.390	12.5	22477
x=1350	139.80	0.56	0.00	1044	3.390	12.5	44240
x=1362	62.80	0.63	0.00	833	3.390	12.5	35280
x=1375	46.90	0.50	0.00	657	3.390	12.5	27853
x=1387	5.15	0.45	0.00	30	3.390	12.5	1254
x=1400	10.40	0.46	0.00	203	3.390	12.5	8618
x=1412	21.10	0.48	0.00	184	3.390	12.5	7797
x=1425	25.75	0.59	0.00	130	3.390	12.5	5526
x=1437	18.80	0.53	0.00	428	3.390	12.5	18137
x=1450	22.70	0.54	0.00	248	3.390	12.5	10514
x=1462	39.10	0.55	0.00	281	3.390	12.5	11887
x=1475	0.00		0	0.000	0.0	0	
x=1487	0.00		0	0.000	0.0	0	
x=1500	0.00		0	0.000	0.0	0	
x=1512	0.00		0	0.000	0.0	0	
x=1525	0.00	0.48	39	3.390	12.5	1658	
x=1537	0.00	0.52	50	3.390	12.5	2129	
total	462.70	0.57	0.00	5293	3.3900	207.3	220528

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1250 - 1537

code(s) : 27

profile intersection	ni	area	density	projection	tons		
length		m2		range			
x=1250	0.00	0	0.000	0.0	0		
x=1262	0.00	0	0.000	0.0	0		
x=1275	0.00	0	0.000	0.0	0		
x=1287	0.00	0	0.000	0.0	0		
x=1300	0.00	0	0.000	0.0	0		
x=1312	0.00	23	3.390	7.3	570		
x=1325	9.80	101	3.390	12.5	4274		
x=1337	15.05	196	3.390	12.5	8300		
x=1350	0.00	173	3.390	12.5	7331		
x=1362	39.55	440	3.390	12.5	18663		
x=1375	52.75	560	3.390	12.5	23732		
x=1387	13.05	75	3.390	12.5	3193		
x=1400	0.00	0	0.000	0.0	0		
x=1412	0.00	0	0.000	0.0	0		
x=1425	0.00	0	0.000	0.0	0		
x=1437	0.00	0	0.000	0.0	0		
x=1450	0.00	0	0.000	0.0	0		
x=1462	0.00	0	0.000	0.0	0		
x=1475	0.00	0	0.000	0.0	0		
x=1487	0.00	0	0.000	0.0	0		
x=1500	0.00	0	0.000	0.0	0		
x=1512	0.00	0	0.000	0.0	0		
x=1525	0.00	0	0.000	0.0	0		
x=1537	0.00	0	0.000	0.0	0		
total	130.20	0.61	0.00	1569	3.3900	82.3	66063

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_mni_0.45_vest
 profile : x=1250 - 1537
 code(s) : 28

profile	intersection length	ni	area m2	density	projection range	tons	
x=1250	0.00	0.66	0	0.000	0.0	0	
x=1262	0.00		0	0.000	0.0	0	
x=1275	0.00		0	0.000	0.0	0	
x=1287	0.00		0	0.000	0.0	0	
x=1300	0.00		0	0.000	0.0	0	
x=1312	0.00		0	0.000	0.0	0	
x=1325	0.00		0	0.000	0.0	0	
x=1337	0.00		0	0.000	0.0	0	
x=1350	0.00		0	0.000	0.0	0	
x=1362	0.00		0	0.000	0.0	0	
x=1375	0.00		24	3.390	12.5	1036	
x=1387	0.00		0	0.000	0.0	0	
x=1400	0.00		0	0.000	0.0	0	
x=1412	0.00		0	0.000	0.0	0	
x=1425	0.00		0	0.000	0.0	0	
x=1437	0.00		0	0.000	0.0	0	
x=1450	0.00		0	0.000	0.0	0	
x=1462	0.00		0	0.000	0.0	0	
x=1475	0.00		0	0.000	0.0	0	
x=1487	0.00		0	0.000	0.0	0	
x=1500	0.00		0	0.000	0.0	0	
x=1512	0.00		0	0.000	0.0	0	
x=1525	0.00		0	0.000	0.0	0	
x=1537	0.00		0	0.000	0.0	0	
total	0.00	0.66	0.00	24	3.3900	12.5	1036

IN STU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 29

profile intersection	ni	area	density	projection	tons		
length		m2		range			
x=1250	0.00	0	0.000	0.0	0		
x=1262	0.00	0	0.000	0.0	0		
x=1275	0.00	0	0.000	0.0	0		
x=1287	0.00	0	0.000	0.0	0		
x=1300	0.00	0	0.000	0.0	0		
x=1312	0.00	0	0.000	0.0	0		
x=1325	0.00	0	0.000	0.0	0		
x=1337	0.00	0	0.000	0.0	0		
x=1350	0.00	0	0.000	0.0	0		
x=1362	0.00	0	0.000	0.0	0		
x=1375	0.00	0	0.000	0.0	0		
x=1387	0.00	0	0.000	0.0	0		
x=1400	0.00	0	0.000	0.0	0		
x=1412	0.00	0	0.000	0.0	0		
x=1425	0.00	0	0.000	0.0	0		
x=1437	19.05	0.56	0.00	262	3.390	12.5	11101
x=1450	6.30	0.51	0.00	244	3.390	12.5	10328
x=1462	22.90	0.52	0.00	635	3.390	12.5	26928
x=1475	0.00			0	0.000	0.0	0
x=1487	0.00			0	0.000	0.0	0
x=1500	0.00			0	0.000	0.0	0
x=1512	0.00			0	0.000	0.0	0
x=1525	0.00			0	0.000	0.0	0
x=1537	0.00			0	0.000	0.0	0
total	48.25	0.53	0.00	1141	3.3900	37.5	48357

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 96

profile intersection		ni		area	density	projection	tons
length				m2		range	
x=1250	0.00			0	0.000	0.0	0
x=1262	0.00			0	0.000	0.0	0
x=1275	0.00			0	0.000	0.0	0
x=1287	0.00			0	0.000	0.0	0
x=1300	0.00			0	0.000	0.0	0
x=1312	0.00			0	0.000	0.0	0
x=1325	0.00			0	0.000	0.0	0
x=1337	0.00			0	0.000	0.0	0
x=1350	25.68	0.51	0.00	152	3.390	12.5	6426
x=1362	0.00			0	0.000	0.0	0
x=1375	39.55	0.47	0.00	257	3.390	12.5	10903
x=1387	0.00			0	0.000	0.0	0
x=1400	17.80	0.40	0.00	81	3.390	12.5	3447
x=1412	0.00			0	0.000	0.0	0
x=1425	0.00			0	0.000	0.0	0
x=1437	0.00	0.45		33	3.390	12.5	1419
x=1450	22.55	0.56	0.00	247	3.390	12.5	10479
x=1462	0.00			0	0.000	0.0	0
x=1475	5.45	0.63	0.00	131	3.390	12.5	5568
x=1487	2.00	0.46	0.00	146	3.390	12.5	6197
x=1500	7.45	0.49	0.00	49	3.390	12.5	2090
x=1512	2.80	0.45	0.00	176	3.390	12.5	7456
x=1525	7.20	0.50	0.00	63	3.390	12.5	2671
x=1537	0.00			0	0.000	0.0	0
total	130.48	0.50	0.00	1337	3.3900	125.0	56658

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 97

profile	intersection	ni	area	density	projection	tons	
	length		m2		range		
x=1250	0.00		0	0.000	0.0	0	
x=1262	0.00		0	0.000	0.0	0	
x=1275	0.00		0	0.000	0.0	0	
x=1287	0.00		0	0.000	0.0	0	
x=1300	0.00		0	0.000	0.0	0	
x=1312	0.00		0	0.000	0.0	0	
x=1325	0.00		0	0.000	0.0	0	
x=1337	0.00		0	0.000	0.0	0	
x=1350	0.00		0	0.000	0.0	0	
x=1362	0.00		0	0.000	0.0	0	
x=1375	0.00		0	0.000	0.0	0	
x=1387	0.00		0	0.000	0.0	0	
x=1400	12.60	0.51	0.00	123	3.390	12.5	5204
x=1412	27.60	0.49	0.00	204	3.390	12.5	8626
x=1425	7.20	0.59	0.00	80	3.390	12.5	3379
x=1437	14.40	0.47	0.00	116	3.390	12.5	4904
x=1450	39.20	0.50	0.00	225	3.390	12.5	9553
x=1462	88.45	0.54	0.00	567	3.390	12.5	24031
x=1475	47.80	0.56	0.00	397	3.390	12.5	16833
x=1487	36.00	0.60	0.00	307	3.390	12.5	13024
x=1500	39.35	0.54	0.00	220	3.390	12.5	9323
x=1512	50.50	0.50	0.00	350	3.390	12.5	14832
x=1525	46.95	0.59	0.00	214	3.390	12.5	9060
x=1537	53.85	0.56	0.00	335	3.390	12.5	14196
total	463.90	0.54	0.00	3138	3.3900	150.0	132965

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 98

profile	intersection	ni	area	density	projection	tons	
	length		m2		range		
x=1250	0.00		0	0.000	0.0	0	
x=1262	0.00		0	0.000	0.0	0	
x=1275	0.00		0	0.000	0.0	0	
x=1287	0.00		0	0.000	0.0	0	
x=1300	0.00		0	0.000	0.0	0	
x=1312	0.00		0	0.000	0.0	0	
x=1325	20.70	0.59	0.00	101	3.390	12.5	4285
x=1337	0.00		0	0.000	0.0	0	0
x=1350	0.00		0	0.000	0.0	0	0
x=1362	36.00	0.55	0.00	190	3.390	12.5	8043
x=1375	0.00		0	0.000	0.0	0	0
x=1387	32.40	0.48	0.00	111	3.390	12.5	4702
x=1400	19.60	0.56	0.00	139	3.390	12.5	5888
x=1412	0.00		0	0.000	0.0	0	0
x=1425	0.00		0	0.000	0.0	0	0
x=1437	0.00		0	0.000	0.0	0	0
x=1450	0.00		0	0.000	0.0	0	0
x=1462	0.00		0	0.000	0.0	0	0
x=1475	0.00		0	0.000	0.0	0	0
x=1487	0.00		0	0.000	0.0	0	0
x=1500	0.00		0	0.000	0.0	0	0
x=1512	0.00		0	0.000	0.0	0	0
x=1525	0.00		0	0.000	0.0	0	0
x=1537	0.00		0	0.000	0.0	0	0
total	108.70	0.55	0.00	541	3.3900	50.0	22919

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1250 - 1537

code(s) : 99

profile	intersection	ni	area	density	projection	tons	
	length		m2		range		
x=1250	0.00		0	0.000	0.0	0	
x=1262	0.00		0	0.000	0.0	0	
x=1275	0.00		0	0.000	0.0	0	
x=1287	46.85	0.56	0.00	207	3.390	12.5	8782
x=1300	79.60	0.56	0.00	415	3.390	12.5	17572
x=1312	53.83	0.46	0.00	255	3.390	7.3	6263
x=1325	395.84	0.53	0.00	1885	3.390	12.5	79858
x=1337	531.88	0.55	0.00	3126	3.390	12.5	132460
x=1350	334.55	0.58	0.00	3021	3.390	12.5	128035
x=1362	320.65	0.53	0.00	2093	3.390	12.5	88675
x=1375	375.00	0.50	0.00	2302	3.390	12.5	97529
x=1387	266.75	0.47	0.00	1027	3.390	12.5	43540
x=1400	113.00	0.55	0.00	558	3.390	12.5	23641
x=1412	320.18	0.49	0.00	2093	3.390	12.5	88672
x=1425	424.55	0.54	0.00	2567	3.390	12.5	108786
x=1437	99.00	0.53	0.00	465	3.390	12.5	19698
x=1450	207.00	0.46	0.00	888	3.390	12.5	37642
x=1462	118.50	0.53	0.00	494	3.390	12.5	20952
x=1475	48.50	0.52	0.00	298	3.390	12.5	12609
x=1487	41.40	0.52	0.00	282	3.390	12.5	11948
x=1500	59.40	0.55	0.00	386	3.390	12.5	16352
x=1512	93.08	0.49	0.00	823	3.390	12.5	34868
x=1525	137.85	0.52	0.00	911	3.390	12.5	38599
x=1537	72.00	0.58	0.00	463	3.390	12.5	19623
total	4139.41	0.53	0.00	24558	3.3900	257.3	1036102

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1250

code(s) : -1+1+23+24+25

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	59.20	0.57	179	3.390	12.5	7602
vest/3	25.70	0.60	103	3.390	12.5	4348
vest/4	5.80	0.67	33	3.390	12.5	1392
vest/5	3.60	0.57	26	3.390	12.5	1105
vest/6	3.00	0.45	9	3.390	12.5	372
vest/7	13.75	0.55	55	3.390	12.5	2342
vest/9	11.45	0.58	59	3.390	12.5	2488
vest/10	1.80	0.14	14	3.390	12.5	594
Total	124.30	0.57	478	3.390		20243

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1262

code(s) : -1+1+22+23+24+25

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	1.80	0.60	9	3.390	12.5	376
vest/3	26.50	0.55	166	3.390	12.5	7034
vest/4	23.20	0.59	154	3.390	12.5	6546
vest/5	3.00	0.62	11	3.390	12.5	472
vest/6	0.00		3	0.000	12.5	0
vest/7	54.05	0.57	260	3.390	12.5	11031
vest/8	42.80	0.58	136	3.390	12.5	5759
vest/9	13.80	0.57	76	3.390	12.5	3203
vest/11	0.00		2	0.000	12.5	0
Total	165.15	0.57	817	3.371		34421

polygons: s_m_ni_0.45_vest
 profile : x=1275
 code(s) : 1+23+24+25

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	74.55	0.67	239	3.390	12.5	10131
vest/3	122.70	0.63	546	3.390	12.5	23119
vest/4	35.20	0.46	175	3.390	10.0	5943
Total	232.45	0.61	960	3.390		39194

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1287

code(s) : -1+1+23+24+25+26+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	18.20	0.45	38	3.390	12.5	1606
vest/3	5.46	0.48	47	3.390	12.5	1984
vest/4	41.39	0.58	160	3.390	12.5	6798
vest/5	26.51	0.51	137	3.390	12.5	5809
vest/6	0.00		3	0.000	12.5	0
vest/7	6.95	0.52	68	3.390	12.5	2887
vest/8	5.46	0.53	45	3.390	12.5	1916
vest/9	155.15	0.65	558	3.390	12.5	23644
vest/10	69.65	0.58	252	3.390	12.5	10664
Total	328.77	0.59	1308	3.382		55309

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1300

code(s) : 1+23+24+25+26+99

name/nr	inters. length	ni	area m2	density	projection range	tons
vest/1	1.65	0.70	25	3.390	12.5	1054
vest/3	45.55	0.52	184	3.390	12.5	7807
vest/4	16.55	0.60	157	3.390	12.5	6658
vest/5	64.10	0.57	331	3.390	12.5	14011
vest/6	15.50	0.51	84	3.390	12.5	3560
vest/7	63.15	0.49	268	3.390	12.5	11363
vest/8	48.80	0.53	468	3.390	12.5	19823
vest/9	93.74	0.45	487	3.390	6.0	9913
Total	349.04	0.53	2004	3.390		74192

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1312

code(s) : -1+1+23+24+25+26+27+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.66	23	3.390	7.3	570
vest/3	8.70	0.66	159	3.390	7.3	3913
vest/4	0.00	0.51	53	3.390	7.3	1307
vest/5	27.00	0.48	302	3.390	7.3	7425
vest/6	0.00		4	0.000	7.3	0
vest/7	7.20	0.53	56	3.390	7.3	1383
vest/8	18.00	0.51	346	3.390	7.3	8503
vest/9	0.00	0.49	16	3.390	7.3	394
vest/10	15.95	0.45	176	3.390	7.3	4324
vest/11	48.60	0.56	249	3.390	7.3	6112
vest/12	36.00	0.49	292	3.390	7.3	7168
vest/13	4.65	0.64	108	3.390	7.3	2645
vest/14	32.55	0.45	200	3.390	7.3	4915
vest/15	21.28	0.48	55	3.390	7.3	1348
vest/16	34.20	0.58	297	3.390	7.3	7311
vest/17	0.00		4	0.000	7.3	0
Total	254.13	0.53	2340	3.379		57319

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1325

code(s) : -1+1+22+24+25+26+27+98+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	9.80	0.57	101	3.390	12.5	4274
vest/4	6.15	0.68	361	3.390	12.5	15279
vest/5	27.00	0.47	175	3.390	12.5	7420
vest/8	18.00	0.59	182	3.390	12.5	7710
vest/9	128.04	0.46	643	3.390	12.5	27263
vest/10	24.25	0.45	59	3.390	12.5	2506
vest/11	18.00	0.18	12	3.390	12.5	502
vest/12	2.10	0.89	6	3.390	12.5	236
vest/13	18.60	0.57	96	3.390	12.5	4049
vest/14	10.80	0.72	208	3.390	12.5	8809
vest/15	184.40	0.51	539	3.390	12.5	22839
vest/16	33.00	0.71	331	3.390	12.5	14037
vest/17	125.35	0.61	709	3.390	12.5	30033
vest/18	23.40	0.52	196	3.390	12.5	8299
Total	628.89	0.57	3617	3.390		153256

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest
 profile : x=1337
 code(s) : 23+24+25+26+27+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	6.40	0.49	157	3.390	12.5	6642
vest/4	8.65	0.49	39	3.390	12.5	1658
vest/5	24.30	0.64	386	3.390	12.5	16355
vest/6	12.60	0.45	175	3.390	12.5	7395
vest/7	31.30	0.64	242	3.390	12.5	10260
vest/8	106.50	0.56	707	3.390	12.5	29945
vest/9	88.90	0.69	486	3.390	12.5	20579
vest/11	71.20	0.51	303	3.390	12.5	12856
vest/12	6.60	0.48	20	3.390	12.5	829
vest/13	304.48	0.51	1726	3.390	12.5	73121
vest/17	11.20	0.52	144	3.390	12.5	6123
vest/18	23.40	0.48	146	3.390	12.5	6180
vest/19	115.10	0.56	769	3.390	12.5	32580
Total	810.63	0.55	5298	3.390		224523

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1350

code(s) : -1+1+22+23+24+25+26+27+96+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.56	173	3.390	12.5	7331
vest/3	6.00	0.55	69	3.390	12.5	2927
vest/4	2.71	0.43	17	3.390	12.5	712
vest/5	139.80	0.56	1044	3.390	12.5	44240
vest/7	13.00	0.59	101	3.390	12.5	4288
vest/8	11.60	0.56	213	3.390	12.5	9033
vest/10	73.80	0.68	761	3.390	12.5	32250
vest/11	95.80	0.47	573	3.390	12.5	24277
vest/12	4.00	0.49	82	3.390	12.5	3458
vest/13	19.58	0.47	83	3.390	12.5	3500
vest/14	29.75	0.50	276	3.390	12.5	11680
vest/15	86.55	0.58	871	3.390	12.5	36922
vest/16	18.00	0.55	252	3.390	12.5	10681
vest/17	0.00		2	0.000	12.5	0
vest/18	74.40	0.56	735	3.390	12.5	31128
vest/19	22.20	0.50	390	3.390	12.5	16537
vest/20	30.80	0.55	93	3.390	12.5	3958
vest/21	61.05	0.55	370	3.390	12.5	15674
vest/22	0.00		6	0.000	12.5	0
Total	689.14	0.56	6110	3.386		258595

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1362

code(s) : -1+24+25+26+27+98+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	190.85	0.55	1093	3.390	12.5	46310
vest/3	36.00	0.55	190	3.390	12.5	8043
vest/4	137.80	0.57	1190	3.390	12.5	50405
vest/5	0.00		12	0.000	12.5	0
vest/7	37.80	0.44	277	3.390	12.5	11757
vest/8	0.00		13	0.000	12.5	0
vest/9	37.45	0.51	181	3.390	12.5	7679
vest/10	73.40	0.50	293	3.390	12.5	12397
vest/11	10.75	0.33	11	3.390	12.5	478
vest/12	34.20	0.50	152	3.390	12.5	6436
vest/13	176.00	0.51	1184	3.390	12.5	50152
vest/14	39.55	0.64	440	3.390	12.5	18663
vest/15	62.80	0.63	833	3.390	12.5	35280
vest/16	0.00		8	0.000	12.5	0
Total	836.60	0.55	5877	3.371		247601

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni_0.45_vest

profile : x=1375

code(s) : -1+1+23+24+25+26+27+28+96+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.66	24	3.390	12.5	1036
vest/3	52.75	0.66	560	3.390	12.5	23732
vest/4	46.90	0.50	657	3.390	12.5	27853
vest/5	25.20	0.48	180	3.390	12.5	7636
vest/6	1.80	0.28	24	3.390	12.5	1013
vest/7	198.95	0.47	1005	3.390	12.5	42601
vest/8	39.55	0.47	257	3.390	12.5	10903
vest/9	0.00		5	0.000	12.5	0
vest/10	4.00	0.52	55	3.390	12.5	2337
vest/11	57.25	0.50	164	3.390	12.5	6954
vest/12	0.00		14	0.000	12.5	0
vest/13	25.60	0.55	276	3.390	12.5	11687
vest/14	0.00		14	0.000	12.5	0
vest/15	118.80	0.54	1132	3.390	12.5	47974
vest/16	5.90	0.50	70	3.390	12.5	2974
Total	576.70	0.52	4439	3.365		186701

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1387

code(s) : -1+1+23+25+26+27+98+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	13.05	0.54	75	3.390	12.5	3193
vest/3	5.15	0.45	30	3.390	12.5	1254
vest/4	0.00		33	0.000	12.5	0
vest/5	31.00	0.50	145	3.390	12.5	6158
vest/6	125.70	0.47	465	3.390	12.5	19696
vest/7	32.40	0.48	111	3.390	12.5	4702
vest/8	105.90	0.46	258	3.390	12.5	10944
vest/9	6.00	0.40	25	3.390	12.5	1069
vest/10	37.80	0.45	264	3.390	12.5	11178
vest/11	3.60	0.47	7	3.390	12.5	312
vest/12	35.15	0.47	304	3.390	12.5	12900
Total	395.75	0.47	1718	3.324		71404

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1400

code(s) : -1+1+22+23+24+25+26+96+97+98+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	1.10	0.54	13	3.390	12.5	569
vest/3	9.30	0.45	190	3.390	12.5	8049
vest/4	72.55	0.54	733	3.390	12.5	31057
vest/5	23.65	0.46	271	3.390	12.5	11503
vest/6	41.45	0.47	275	3.390	12.5	11633
vest/7	0.00		5	0.000	12.5	0
vest/8	18.00	0.52	207	3.390	12.5	8760
vest/9	113.00	0.55	558	3.390	12.5	23641
vest/10	11.10	0.46	32	3.390	12.5	1349
vest/11	19.60	0.56	139	3.390	12.5	5888
vest/12	3.45	0.52	13	3.390	12.5	559
vest/13	14.35	0.38	68	3.390	12.5	2889
vest/14	2.00	0.29	17	3.390	12.5	699
vest/15	4.35	0.48	51	3.390	12.5	2156
vest/16	34.17	0.47	302	3.390	12.5	12816
vest/17	43.20	0.46	111	3.390	12.5	4716
vest/18	1.80	0.39	8	3.390	12.5	351
vest/19	0.00		19	0.000	12.5	0
vest/20	76.10	0.45	534	3.390	10.0	18104
vest/21	0.00		21	0.000	12.5	0
vest/22	12.60	0.51	123	3.390	12.5	5204
vest/23	23.60	0.48	104	3.390	12.5	4389
Total	525.37	0.50	3794	3.349		154330

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1412

code(s) : -1+1+22+23+25+26+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	21.10	0.48	184	3.390	12.5	7797
vest/3	24.00	0.61	219	3.390	12.5	9277
vest/4	6.00	0.51	76	3.390	12.5	3224
vest/5	227.78	0.48	1660	3.390	12.5	70323
vest/6	0.00		3	0.000	12.5	0
vest/7	0.00		14	0.000	12.5	0
vest/8	12.60	0.45	70	3.390	12.5	2987
vest/9	25.41	0.48	108	3.390	12.5	4561
vest/10	0.00		8	0.000	12.5	0
vest/11	0.00		11	0.000	12.5	0
vest/12	27.60	0.49	204	3.390	12.5	8626
vest/13	92.40	0.54	433	3.390	12.5	18349
vest/14	14.46	0.45	66	3.390	12.5	2804
Total	451.35	0.50	3055	3.350		127947

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1425

code(s) : -1+1+23+24+25+26+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.50	37	3.390	12.5	1550
vest/2	11.20	0.45	46	3.390	12.5	1970
vest/4	18.60	0.45	90	3.390	12.5	3830
vest/5	0.00		12	0.000	12.5	0
vest/6	35.20	0.49	287	3.390	12.5	12143
vest/8	7.20	0.59	80	3.390	12.5	3379
vest/9	5.40	0.16	18	3.390	12.5	763
vest/11	3.60	0.41	20	3.390	12.5	848
vest/14	10.80	0.45	341	3.390	12.5	14432
vest/17	25.75	0.59	130	3.390	12.5	5526
vest/20	347.55	0.55	2291	3.390	12.5	97061
vest/22	65.80	0.52	230	3.390	12.5	9754
vest/26	40.40	0.56	315	3.390	12.5	13362
Total	571.50	0.53	3897	3.379		164619

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1437

code(s) : -1+23+24+25+26+29+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	5.30	0.54	71	3.390	12.5	3015
vest/3	13.50	0.53	357	3.390	12.5	15122
vest/4	0.00		7	0.000	12.5	0
vest/5	7.10	0.51	62	3.390	12.5	2612
vest/7	11.95	0.58	200	3.390	12.5	8489
vest/8	108.20	0.61	580	3.390	12.5	24569
vest/9	93.50	0.51	976	3.390	12.5	41370
vest/10	104.20	0.48	765	3.390	12.5	32410
vest/11	99.00	0.53	465	3.390	12.5	19698
vest/12	14.40	0.47	116	3.390	12.5	4904
vest/13	0.00	0.45	33	3.390	12.5	1419
Total	457.15	0.52	3632	3.384		153608

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45_vest

profile : x=1450

code(s) : -1+1+23+24+25+26+29+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	6.30	0.59	111	3.390	12.5	4691
vest/3	0.00	0.45	133	3.390	12.5	5637
vest/4	22.70	0.54	248	3.390	12.5	10514
vest/5	70.20	0.55	515	3.390	12.5	21810
vest/6	72.30	0.54	570	3.390	12.5	24137
vest/8	19.20	0.49	122	3.390	12.5	5187
vest/9	1.80	0.45	6	3.390	12.5	238
vest/10	0.00	0.00	4	0.000	12.5	0
vest/11	44.15	0.45	255	3.390	12.5	10802
vest/13	199.80	0.46	813	3.390	12.5	34456
vest/14	39.20	0.50	225	3.390	12.5	9553
vest/15	7.20	0.48	75	3.390	12.5	3186
vest/16	0.00	0.00	101	0.000	12.5	0
vest/17	12.30	0.52	70	3.390	12.5	2987
vest/18	10.25	0.58	177	3.390	12.5	7493
vest/20	0.00	0.00	9	0.000	12.5	0
Total	505.40	0.51	3434	3.278		140691

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1462

code(s) : -1+1+22+23+24+25+26+29+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	15.55	0.76	139	3.390	12.5	5884
vest/3	0.00	0.45	247	3.390	12.5	10457
vest/4	5.90	0.55	103	3.390	12.5	4370
vest/7	7.35	0.45	250	3.390	12.5	10587
vest/8	2.20	0.47	19	3.390	12.5	822
vest/9	0.00	0.00	5	0.000	12.5	0
vest/10	33.20	0.56	177	3.390	12.5	7517
vest/11	41.70	0.50	323	3.390	12.5	13678
vest/12	92.77	0.54	483	3.390	12.5	20457
vest/14	66.36	0.50	404	3.390	12.5	17130
vest/15	24.90	0.45	204	3.390	12.5	8653
vest/16	118.50	0.53	494	3.390	12.5	20952
vest/17	62.60	0.54	315	3.390	12.5	13356
vest/18	25.85	0.54	252	3.390	12.5	10675
Total	496.88	0.52	3416	3.385		144540

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1475
 code(s) : 1+23+24+25+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	3.15	0.59	19	3.390	12.5	787
vest/3	2.30	0.64	113	3.390	12.5	4781
vest/4	0.00	0.45	147	3.390	12.5	6219
vest/5	79.30	0.55	283	3.390	12.5	11990
vest/6	26.30	0.54	211	3.390	12.5	8951
vest/7	13.79	0.58	138	3.390	12.5	5855
vest/8	43.08	0.58	349	3.390	12.5	14807
vest/9	31.85	0.55	206	3.390	12.5	8746
vest/10	4.72	0.46	48	3.390	12.5	2026
vest/11	22.20	0.49	86	3.390	12.5	3658
Total	226.69	0.55	1600	3.390		67820

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1487

code(s) : 23+24+25+26+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	2.00	0.48	50	3.390	12.5	2126
vest/3	0.00	0.45	96	3.390	12.5	4071
vest/4	0.00	0.45	119	3.390	12.5	5037
vest/5	16.20	0.51	159	3.390	12.5	6738
vest/6	21.60	0.60	95	3.390	12.5	4036
vest/7	25.46	0.48	243	3.390	12.5	10286
vest/8	19.80	0.48	187	3.390	12.5	7912
vest/9	36.00	0.60	307	3.390	12.5	13024
Total	121.06	0.52	1256	3.390		53231

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest
 profile : x=1500
 code(s) : -1+1+23+24+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	8.00	0.60	58	3.390	12.5	2438
vest/3	26.50	0.63	149	3.390	12.5	6323
vest/4	14.40	0.49	51	3.390	12.5	2180
vest/5	0.00		3	0.000	12.5	0
vest/6	7.20	0.52	114	3.390	12.5	4834
vest/10	39.35	0.54	220	3.390	12.5	9323
vest/13	37.80	0.58	220	3.390	12.5	9338
vest/14	7.45	0.49	49	3.390	12.5	2090
vest/15	0.00		3	0.000	12.5	0
Total	140.70	0.56	869	3.364		36525

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1512

code(s) : 1+23+24+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	37.80	0.51	223	3.390	12.5	9445
vest/4	50.48	0.46	405	3.390	12.5	17157
vest/5	50.50	0.50	350	3.390	12.5	14832
vest/6	42.60	0.51	418	3.390	12.5	17711
vest/7	2.80	0.46	28	3.390	12.5	1170
vest/8	41.40	0.53	217	3.390	12.5	9201
vest/9	0.00	0.45	148	3.390	12.5	6285
Total	225.58	0.49	1789	3.390		75802

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1525

code(s) : 23+24+25+26+96+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.48	39	3.390	12.5	1658
vest/3	13.45	0.48	146	3.390	12.5	6181
vest/4	35.50	0.53	271	3.390	12.5	11466
vest/5	89.90	0.52	637	3.390	12.5	27006
vest/6	7.20	0.50	63	3.390	12.5	2671
vest/7	47.95	0.52	274	3.390	12.5	11593
vest/8	46.95	0.59	214	3.390	12.5	9060
vest/9	18.15	0.61	223	3.390	12.5	9462
Total	259.10	0.53	1867	3.390		79097

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1537

code(s) : 1+23+24+25+26+97+99

name/run	inters. length	ni	area m2	density	projection range	tons
vest/1	0.00	0.52	50	3.390	12.5	2129
vest/3	12.80	0.53	403	3.390	12.5	17095
vest/4	25.20	0.50	230	3.390	12.5	9740
vest/5	68.40	0.59	434	3.390	12.5	18383
vest/6	41.40	0.48	236	3.390	12.5	9990
vest/7	20.40	0.50	137	3.390	12.5	5812
vest/8	33.45	0.59	198	3.390	12.5	8384
vest/9	3.60	0.53	29	3.390	12.5	1239
Total	205.25	0.54	1717	3.390		72773

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1550 - 1700

code(s) : 31+32+33+34+35+36+37+38+96+97+99

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1550 291.85	0.50	0.00	1340	3.390	18.8 76481
x=1562 0.00			1336	0.000	0.0 0
x=1575 312.50	0.49	0.00	1228	3.390	25.0 104031
x=1600 153.75	0.58	0.00	1513	3.390	25.0 128206
x=1625 97.60	0.58	0.00	1863	3.390	25.0 157906
x=1650 174.60	0.60	0.00	3591	3.390	25.0 304313
x=1675 141.93	0.54	0.00	1417	3.390	25.0 120089
x=1700 109.20	0.51	0.00	875	3.390	25.0 74185
total 1281.43	0.56	0.00	13163	3.3900	168.8 965211

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1550 - 1700

code(s) : 31+32+33+34+35+36+37+38

profile	intersection	ni		area	density	projection	tons
	length			m2		range	
x=1550	151.45	0.51	0.00	879	3.390	18.8	52269
x=1562	0.00			1336	0.000	0.0	0
x=1575	246.70	0.48	0.00	841	3.390	25.0	71313
x=1600	153.75	0.58	0.00	1513	3.390	25.0	128206
x=1625	97.60	0.58	0.00	1863	3.390	25.0	157906
x=1650	174.60	0.60	0.00	3591	3.390	25.0	304313
x=1675	141.93	0.54	0.00	1417	3.390	25.0	120089
x=1700	109.20	0.51	0.00	875	3.390	25.0	74185
total	1075.23	0.56	0.00	12315	3.3900	168.8	908281

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1550 - 1700

code(s) : 31

profile	intersection	ni		area	density	projection	tons
	length			m2		range	
x=1550	22.40	0.46	0.00	124	3.390	10.3	4311
x=1562	0.00			304	0.000	0.0	0
x=1575	59.95	0.45	0.00	124	3.390	25.0	10478
x=1600	0.00			0	0.000	0.0	0
x=1625	0.00			0	0.000	0.0	0
x=1650	0.00			0	0.000	0.0	0
x=1675	0.00			0	0.000	0.0	0
x=1700	0.00			0	0.000	0.0	0
total	82.35	0.45	0.00	552	3.3900	35.3	14789

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1550 - 1700
 code(s) : 32

profile	intersection length	ni		area m2	density	projection range	tons
x=1550	72.40	0.47	0.00	251	3.390	18.8	15956
x=1562	0.00			572	0.000	0.0	0
x=1575	137.30	0.47	0.00	267	3.390	25.0	22624
x=1600	108.65	0.47	0.00	287	3.390	25.0	24297
x=1625	0.00			0	0.000	0.0	0
x=1650	0.00			0	0.000	0.0	0
x=1675	0.00			0	0.000	0.0	0
x=1700	0.00			0	0.000	0.0	0
total	318.35	0.47	0.00	1377	3.3900	68.8	62876

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest
 profile : x=1550 - 1700
 code(s) : 33

profile intersection	ni	area	density	projection	tons
length		n2		range	
x=1550 49.85	0.52	0.00 425	3.390	18.8	27029
x=1562 0.00		399	0.000	0.0	0
x=1575 44.55	0.50	0.00 346	3.390	25.0	29287
x=1600 25.05	0.70	0.00 582	3.390	25.0	49310
x=1625 5.20	0.49	0.00 75	3.390	25.0	6357
x=1650 14.35	0.51	0.00 260	3.390	25.0	22076
x=1675 35.30	0.51	0.00 243	3.390	25.0	20603
x=1700 49.90	0.54	0.00 254	3.390	25.0	21518
total 224.20	0.57	0.00 2584	3.3900	168.8	176179

IN STIU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1550 - 1700
 code(s) : 34

profile	intersection length	ni		area m2	density	projection range	tons
x=1550	6.80	0.63	0.00	78	3.390	18.8	4974
x=1562	0.00			61	0.000	0.0	0
x=1575	4.90	0.45	0.00	105	3.390	25.0	8925
x=1600	14.25	0.51	0.00	566	3.390	25.0	47987
x=1625	42.85	0.51	0.00	822	3.390	25.0	69646
x=1650	35.80	0.58	0.00	734	3.390	25.0	62231
x=1675	39.20	0.55	0.00	327	3.390	25.0	27681
x=1700	19.75	0.51	0.00	147	3.390	25.0	12461
total	163.55	0.54	0.00	2841	3.3900	168.8	233905

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1550 - 1700

code(s) : 35

profile	intersection	ni	area	density	projection	tons	
	length		m2		range		
x=1550	0.00		0	0.000	0.0	0	
x=1562	0.00		0	0.000	0.0	0	
x=1575	0.00		0	0.000	0.0	0	
x=1600	5.80	0.65	0.00	78	3.390	25.0	6612
x=1625	29.65	0.60	0.00	581	3.390	25.0	49268
x=1650	40.45	0.58	0.00	772	3.390	25.0	65391
x=1675	36.15	0.55	0.00	425	3.390	25.0	36001
x=1700	27.80	0.50	0.00	275	3.390	25.0	23314
total	139.85	0.57	0.00	2131	3.3900	125.0	180586

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1550 - 1700

code(s) : 36

profile intersection	length	ni	area m2	density	projection range	tons	
x=1550	0.00		0	0.000	0.0	0	
x=1562	0.00		0	0.000	0.0	0	
x=1575	0.00		0	0.000	0.0	0	
x=1600	0.00		0	0.000	0.0	0	
x=1625	4.00	0.72	0.00	205	3.390	25.0	17380
x=1650	44.55	0.69	0.00	955	3.390	25.0	80934
x=1675	17.88	0.53	0.00	256	3.390	25.0	21698
x=1700	11.75	0.50	0.00	199	3.390	25.0	16892
total	78.18	0.65	0.00	1615	3.3900	100.0	136903

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni 0.45 vest

profile : x=1550 - 1700

code(s) : 37

profile	intersection	ni	area	density	projection	tons	
	length		m2		range		
x=1550	0.00		0	0.000	0.0	0	
x=1562	0.00		0	0.000	0.0	0	
x=1575	0.00		0	0.000	0.0	0	
x=1600	0.00		0	0.000	0.0	0	
x=1625	15.90	0.66	0.00	180	3.390	25.0	15255
x=1650	33.45	0.56	0.00	749	3.390	25.0	63487
x=1675	13.40	0.50	0.00	166	3.390	25.0	14107
x=1700	0.00		0	0.000	0.0	0	
total	62.75	0.57	0.00	1096	3.3900	75.0	92849

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni_0.45_vest
 profile : x=1550 - 1700
 code(s) : 38

profile intersection	ni	area	density	projection	tons		
length		m2		range			
x=1550	0.00	0	0.000	0.0	0		
x=1562	0.00	0	0.000	0.0	0		
x=1575	0.00	0	0.000	0.0	0		
x=1600	0.00	0	0.000	0.0	0		
x=1625	0.00	0	0.000	0.0	0		
x=1650	6.00	0.49	0.00	120	3.390	25.0	10195
x=1675	0.00	0	0.000	0.0	0		
x=1700	0.00	0	0.000	0.0	0		
total	6.00	0.49	0.00	120	3.3900	25.0	10195

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest

profile : x=1550 - 1700

code(s) : 96

profile	intersection	ni	area	density	projection	tons
	length		m2		range	
x=1550	0.00		0	0.000	0.0	0
x=1562	0.00		0	0.000	0.0	0
x=1575	65.80	0.50	386	3.390	25.0	32718
x=1600	0.00		0	0.000	0.0	0
x=1625	0.00		0	0.000	0.0	0
x=1650	0.00		0	0.000	0.0	0
x=1675	0.00		0	0.000	0.0	0
x=1700	0.00		0	0.000	0.0	0
total	65.80	0.50	386	3.3900	25.0	32718

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s m ni_0.45 vest

profile : x=1550 - 1700

code(s) : 97

profile intersection	ni	area	density	projection	tons
length		m2		range	
x=1550 25.20	0.50	0.00	241	3.390	12.5 10229
x=1562 0.00			0	0.000	0.0 0
x=1575 0.00			0	0.000	0.0 0
x=1600 0.00			0	0.000	0.0 0
x=1625 0.00			0	0.000	0.0 0
x=1650 0.00			0	0.000	0.0 0
x=1675 0.00			0	0.000	0.0 0
x=1700 0.00			0	0.000	0.0 0
total 25.20	0.50	0.00	241	3.3900	12.5 10229

IN SITU ORE RESERVE ESTIMATION 2.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1550 - 1700
 code(s) : 99

profile	intersection length	ni		area m2	density	projection range	tons
x=1550	115.20	0.48	0.00	220	3.390	18.8	13983
x=1562	0.00			0	0.000	0.0	0
x=1575	0.00			0	0.000	0.0	0
x=1600	0.00			0	0.000	0.0	0
x=1625	0.00			0	0.000	0.0	0
x=1650	0.00			0	0.000	0.0	0
x=1675	0.00			0	0.000	0.0	0
x=1700	0.00			0	0.000	0.0	0
total	115.20	0.48	0.00	220	3.3900	18.8	13983

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1550

code(s) : 1+31+32+33+34+97+99

name/num	inters. length	ni	area m2	density	projection range	tons
vest/5	72.40	0.47	251	3.390	18.8	15956
vest/6	115.20	0.48	220	3.390	18.8	13983
vest/7	22.40	0.46	124	3.390	10.3	4311
vest/8	25.20	0.49	241	3.390	12.5	10229
vest/10	6.80	0.63	78	3.390	18.8	4974
vest/13	49.85	0.52	425	3.390	18.8	27029
Total	291.85	0.50	1340	3.390		76481

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1575
 code(s) : -1+31+32+33+34+96

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	4.90	0.45	105	3.390	25.0	8925
vest/3	25.80	0.54	228	3.390	25.0	19357
vest/4	0.00	0.00	36	0.000	25.0	0
vest/5	15.85	0.45	56	3.390	25.0	4780
vest/6	0.00	0.00	6	0.000	25.0	0
vest/7	6.00	0.59	130	3.390	25.0	10984
vest/8	0.00	0.00	6	0.000	25.0	0
vest/9	88.70	0.48	154	3.390	25.0	13021
vest/10	0.00	0.00	8	0.000	25.0	0
vest/11	59.95	0.45	124	3.390	25.0	10478
vest/12	0.00	0.00	4	0.000	25.0	0
vest/13	9.55	0.45	39	3.390	25.0	3282
vest/14	0.00	0.00	7	0.000	25.0	0
vest/15	38.55	0.45	216	3.390	25.0	18302
vest/16	48.60	0.45	113	3.390	25.0	9603
vest/17	14.60	0.45	63	3.390	25.0	5298
Total	312.50	0.49	1294	3.215		104031

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s m ni 0.45 vest

profile : x=1600

code(s) : -1+1+32+33+34+35

rate/num	inters. length	ni	area m2	density	projection range	tons
vest/1	5.80	0.65	78	3.390	25.0	6612
vest/4	108.65	0.47	287	3.390	25.0	24297
vest/5	10.40	0.48	380	3.390	25.0	32194
vest/6	0.00		7	0.000	25.0	0
vest/8	3.85	0.59	186	3.390	25.0	15793
vest/9	25.05	0.70	582	3.390	25.0	49310
Total	153.75	0.58	1519	3.375		128206

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1625
 code(s) : -1+1+33+34+35+36+37

name/num	inters. length	ni	area m2	density	projection range	tons
vest/3	15.90	0.66	180	3.390	25.0	15255
vest/5	33.05	0.52	681	3.390	25.0	57756
vest/6	5.20	0.49	75	3.390	25.0	6357
vest/7	29.65	0.60	581	3.390	25.0	49268
vest/8	4.00	0.72	205	3.390	25.0	17380
vest/9	9.80	0.51	140	3.390	25.0	11890
vest/10	0.00		12	0.000	25.0	0
Total	97.60	0.58	1875	3.368		157906

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1650
 code(s) : -1+1+33+34+35+36+37+38

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	33.45	0.56	749	3.390	25.0	63487
vest/4	6.30	0.55	109	3.390	25.0	9228
vest/5	2.05	0.38	23	3.390	25.0	1986
vest/6	18.10	0.52	251	3.390	25.0	21297
vest/7	10.10	0.52	100	3.390	25.0	8473
vest/8	0.00		11	0.000	25.0	0
vest/11	30.35	0.59	672	3.390	25.0	56918
vest/12	44.55	0.69	955	3.390	25.0	80934
vest/13	6.00	0.49	120	3.390	25.0	10195
vest/14	17.70	0.61	483	3.390	25.0	40934
vest/16	8.05	0.48	152	3.390	25.0	12848
Total	176.65	0.60	3625	3.380		306299

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest
 profile : x=1675
 code(s) : -1+1+33+34+35+36+37

name/num	inters. length	ni	area m2	density	projection range	tons
vest/2	4.15	0.55	79	3.390	25.0	6676
vest/4	13.40	0.50	166	3.390	25.0	14107
vest/5	0.00		5	0.000	25.0	0
vest/6	13.73	0.53	177	3.390	25.0	15022
vest/7	36.15	0.55	425	3.390	25.0	36001
vest/8	39.20	0.55	327	3.390	25.0	27681
vest/9	35.30	0.51	243	3.390	25.0	20603
Total	141.93	0.54	1422	3.378		120089

IN SITU ORE RESERVE ESTIMATION 3.1.1998

polygons: s_m_ni_0.45_vest

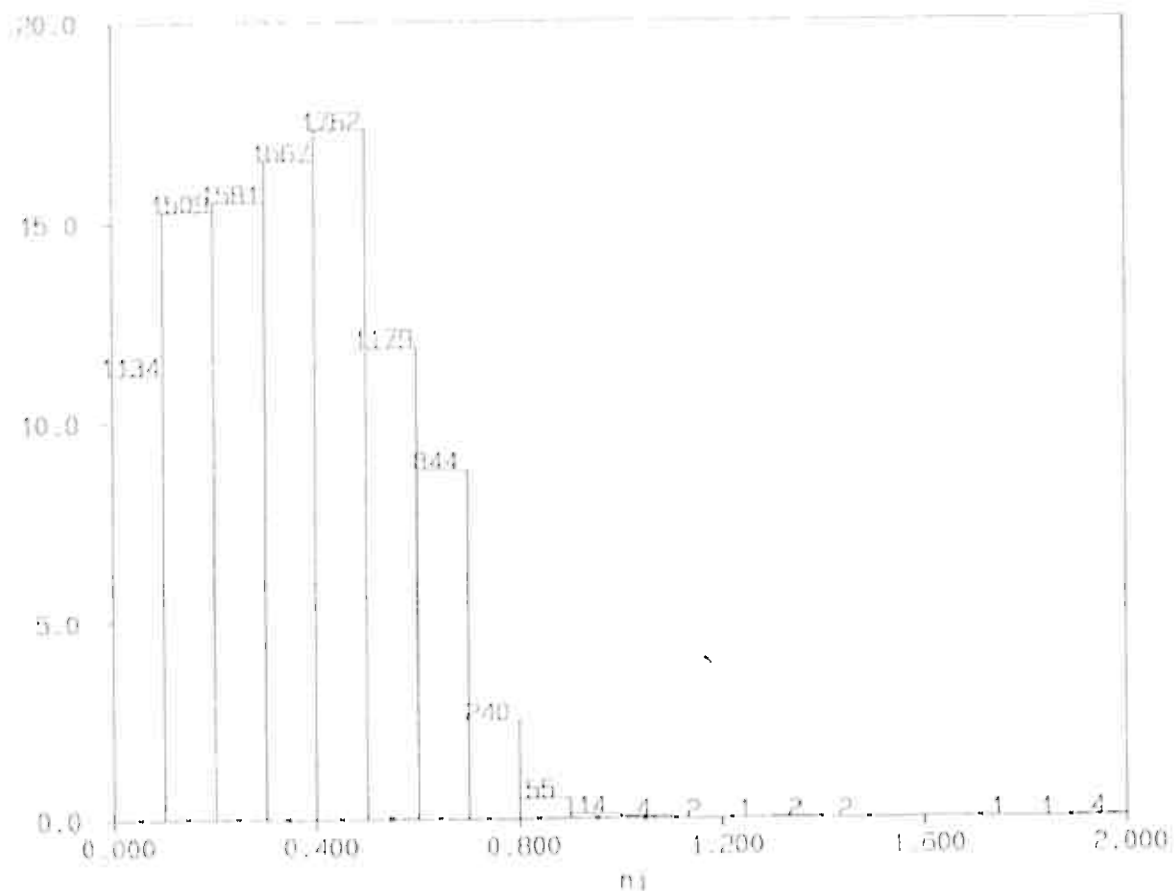
profile : x=1700

code(s) : -1+1+33+34+35+36

name/num	inters.	ni	area	density	projection	tons
	length		m2		range	
vest/1	11.75	0.50	199	3.390	25.0	16892
vest/3	0.00		31	0.000	25.0	0
vest/4	4.45	0.44	30	3.390	25.0	2521
vest/5	19.75	0.51	147	3.390	25.0	12461
vest/6	49.90	0.54	254	3.390	25.0	21518
vest/7	23.35	0.50	245	3.390	25.0	20793
Total	109.20	0.51	906	3.274		74185

Histogram of ni

[Total: 17258.49/17278.02 m]



SELECTION OF DRILL CORE SAMPLES BY vest.stl

(Rock Types: 31)

Drill hole	from	to
k80-101	0.00	34.20
k80-102	0.00	34.20
k80-103	0.00	34.20
k80-104	0.00	34.20
k80-70	0.00	32.40
k80-71	0.00	34.40
k80-72	0.00	34.40
k80-73	0.00	38.00
k80-74	0.00	38.00
k80-75	0.00	38.00
k80-76	0.00	34.40
k80-77	0.00	34.40
k80-78	0.00	38.00
k80-79	0.00	38.00
k80-80	0.00	38.00
k80-81	0.00	34.40
k80-82	0.00	38.00
k80-83	0.00	38.00
k80-84	0.00	38.00
k80-85	0.00	38.20
k80-86	0.00	38.00
k80-87	0.00	34.40
k80-88	0.00	34.20
k80-89	0.00	38.00
k80-90	0.00	21.60
k80-98	0.00	27.00
k80-99	0.00	32.40
k80-100	0.00	34.20
k80-107	0.00	34.20
k80-108	0.00	34.20
k80-109	0.00	34.20
k80-110	0.00	21.60
k80-111	0.00	10.80
k80-112	0.00	23.40
k80-113	0.00	23.40
k80-97	0.00	32.40
k80-98	0.00	32.40
k80-99	0.00	32.40
k80-100	0.00	34.20

Number of samples is 10024

Number of samples in plot is 10002

27.1.1998

DISTRIBUTION OF ni WEIGHED BY length , 27.1.1998/vest.stl

class	no of samples	freq	cumul freq.	freq %	cumul %	class mean
0.0000 - 0.1000	1134	1939.05	1939.05	11.22	11.22	0.0527
0.1000 - 0.2000	1509	2642.90	4581.95	15.30	26.52	0.1454
0.2000 - 0.3000	1581	2681.77	7263.72	15.52	42.04	0.2449
0.3000 - 0.4000	1667	2864.13	10127.85	16.58	58.62	0.3441
0.4000 - 0.5000	1762	2998.41	13126.25	17.35	75.97	0.4503
0.5000 - 0.6000	1179	2051.30	15177.55	11.87	87.84	0.5472
0.6000 - 0.7000	844	1521.11	16698.66	8.80	96.65	0.6433
0.7000 - 0.8000	240	431.71	17130.37	2.50	99.15	0.7396
0.8000 - 0.9000	55	91.00	17221.37	0.53	99.67	0.8377
0.9000 - 1.0000	14	19.65	17241.02	0.11	99.79	0.9525
1.0000 - 1.1000	4	8.00	17249.02	0.05	99.83	1.0482
1.1000 - 1.2000	2	1.37	17250.39	0.01	99.84	1.1068
1.2000 - 1.3000	1	0.25	17250.64	0.00	99.84	1.2200
1.3000 - 1.4000	2	2.15	17252.79	0.01	99.85	1.3974
1.4000 - 1.5000	2	0.40	17253.19	0.00	99.86	1.4900
1.5000 - 1.6000	0	0.00	17253.19	0.00	99.86	-
1.6000 - 1.7000	0	0.00	17253.19	0.00	99.86	-
1.7000 - 1.8000	1	0.30	17253.49	0.00	99.86	1.7100
1.8000 - 1.9000	1	0.50	17253.99	0.00	99.86	1.8900
1.9000 - 2.0000	4	4.50	17258.49	0.03	99.89	1.9471
2.0000 - 5.8700	17	19.58	17278.07	0.11	100.00	2.5327

totals	10019	17278.07	17278.07	100.00	100.00	0.3512
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minimum.....	0.0000
maximum.....	5.8700
range.....	5.8700
arithmetic mean...	0.3512
geometric mean....	0.2770
median.....	0.3400
variance.....	0.0450
std. deviation....	0.2121
std. error.....	0.0016
relative deviation	0.6038
skewness.....	1.5865
kurtosis.....	14.1991
percentile of 25..	0.1900
percentile of 75..	0.5000

BASIC STATISTICS, WEIGHTED BY length , 27.1.1998/vest.stl

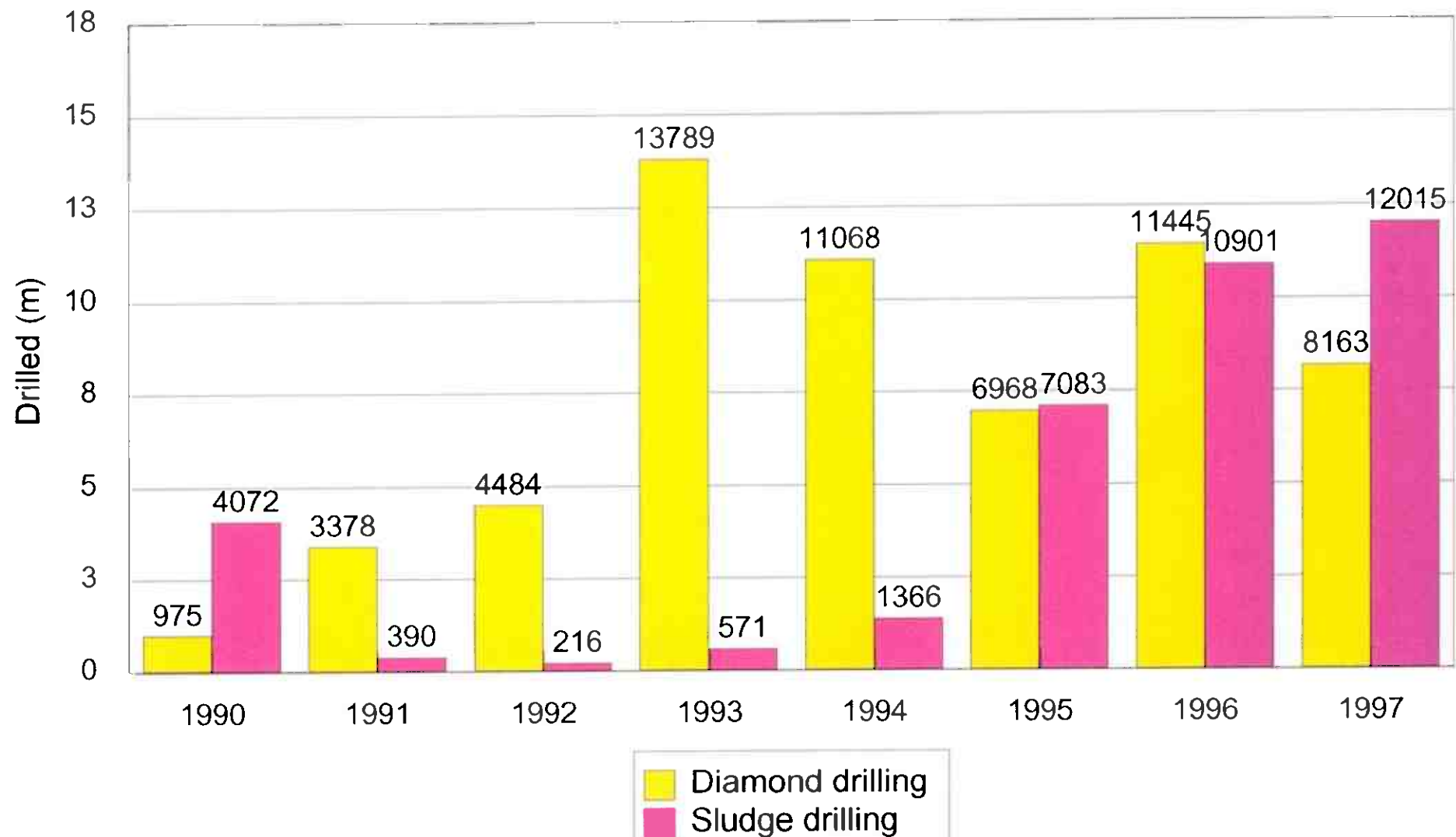
var	samples	w sum	min	max	mean
ni	10019	17278.02	0.000000	5.870000	0.351203
var	variance	skewness	kurtosis	std.dev.	std.error
ni	0.044974	1.586501	14.199116	0.212070	0.001613
var	geom.mean	f25	f50	f75	rel.dev.
ni	0.276971	0.190000	0.340000	0.500000	0.603838

DENSITIES OF THE SAMPLES, WESTERN ORE BODY

Drill hole	Depth	Pol.section	Core sample	Ni HNO3	Density	Sample
R-7-93	142,5	X		0,58	3,41	93-31045
R-7-93	155,0	X		0,68	3,42	93-31052
R-7-93	169,0		X	0,61	3,44	93-31059
R-8-93	137,0	X		0,54	3,39	93-31114
R-8-93	143,2	X		0,54	3,41	93-31118
R-8-93	138,0		X	0,60	3,39	93-31115
R-9-93	95,0	X		0,64	3,40	93-31127
R-9-93	101,5	X		0,67	3,41	93-31131
R-9-93	106,5		X	0,42	err (2.85)	93-31133
R-9-93	117,6	X		0,66	3,38	93-31138
R-10-93	125,0		X	0,50	3,44	93-31176
R-10-93	126,3	X		0,48	3,44	93-31177
R-10-93	141,0		X	0,52	3,41	93-31184
R-10-93	150,5	X		0,62	3,38	93-31189
R-10-93	163,0		X	0,78	3,41	93-31195
R-10-93	164,5	X		0,69	3,43	93-31196
R-11-93	169,0		X	0,56	3,29	93-31259
R-11-93	183,0		X	0,64	err (3.12)	93-31266
R-11-93	207,0		X	0,59	3,38	93-31278
R-12-93	103,0		X	0,55	3,32	93-31300
R-12-93	109,0		X	0,71	3,42	93-31303
R-13-93	105,0		X	0,54	3,31	93-31330
R-13-93	113,0		X	0,58	3,32	93-31334
R-13-93	127,0		X	0,56	3,41	93-31341
R-14-93	57,6		X	0,39	3,44	93-31348
R-14-93	94,0		X	0,45	3,39	93-31360
R-14-93	110,0		X	0,59	3,47	93-31364
R-15-93	112,0		X	0,67	3,41	93-31394
R-15-93	120,0		X	0,38	3,29	93-31398
R-15-93	132,0		X	0,56	3,40	93-31404
R-15-93	142,0		X	0,65	3,43	93-31409
R-16-93	120,0		X	0,44	3,39	93-31433
R-16-93	148,0		X	0,63	3,42	93-31477
R-16-93	157,0		X	0,58	3,40	93-31451
R-18-93	114,0		X	0,55	3,34	93-31493
R-18-93	126,0		X	0,56	3,36	93-31499
R-19-93	106,0		X	0,39	3,37	93-31591
R-19-93	118,0		X	0,54	3,38	93-31597
R-20-93	142,0		X	0,48	3,34	93-31630
R-20-93	151,0		X	0,56	3,37	93-31635
40				0,567	3,390	

Investigations 1990-97

Nikkel og Olivin AS



[illegible]

Prod prog 12mänd	Nä-%	0.561
Utvinnning 75.0%	Nat	2072
Nä-kons 13.0%	Kons-E	23628

Markus Gleason

Hans Hansen, anleggsleder LNS

Markus Ekberg, gruvsjef N&O

For more information, contact the author at terry@terrymccall.com.



CUT-OFF GRADES FOR DIFFERENT DECISION MAKING SITUATIONS

COSTS	LONGHOLE-PRODUCTION	50.0	NOK/TONNE		50.0	50.0	50.0	
	DRIFTING	90.0	NOK/TONNE					
	MINE TOTAL AVG	90.1	NOK/TONNE					90.1
	MILL	41.4	NOK/TONNE	15.0	15.0	41.4	41.4	41.4
	ADMIN+SAFETY+ENVIR	9.8	NOK/TONNE	9.8			9.8	9.8
	TAILING DEPOSIT	7.6	NOK/TONNE	7.6		7.6	7.6	7.6
	CONC. FREIGHT	6.8	NOK/TONNE	6.8	6.8	6.8	6.8	6.8
	N&O TOTAL	155.7	NOK/TONNE	39.2	71.8	105.8	115.6	155.7
NICKEL PRICE	(BUDGET 300 US\$/LB	33.00	NOK/KG					
NICKEL RECOVERY WITH GRADE 0.55% NI		75	%					

NSR OF THE ORE

Ni%	Rec%	Paym%Ni in conc	Ni-price	NSR/tonne	Cu-Coextra	Right NSR	Covers cost items:
0.60	77.0	75	33.00	114	1.00	114	Long hole + all others
0.55	75.0	75	33.00	102	1.00	102	
0.50	73.0	75	33.00	90	1.00	90	
0.45	71.0	75	33.00	79	1.00	79	
0.40	69.0	75	33.00	68	1.00	68	Lh/flywaste+mill variable+conc freight
0.35	67.0	75	33.00	58	1.00	58	
0.30	65.0	75	33.00	48	1.00	48	
0.25	63.0	75	33.00	39	1.00	39	

Note: Payment 75% of nickel in concentrate is given by Harjavalta officials and excludes Cu-Co extra payment



CUT-OFF GRADES FOR DIFFERENT DECISION MAKING SITUATIONS

COSTS	LONGHOLE-PRODUCTION	50,0	NOK/TONNE		50,0	50,0	50,0	
	DRIFTING	90,0	NOK/TONNE					
	MINE TOTAL AVG	90,1	NOK/TONNE					90,1
	MILL	41,4	NOK/TONN	15,0	15,0	41,4	41,4	41,4
	ADMIN+SAFETY+ENVIR	9,8	NOK/TONN	9,8			9,8	9,8
	TAILING DEPOSIT	7,6	NOK/TONN	7,6		7,6	7,6	7,6
	CONC. FREIGHT	6,8	NOK/TONN	6,8	6,8	6,8	6,8	6,8
	N&O TOTAL	155,7	NOK/TONN	39,2	71,8	105,8	115,6	155,7

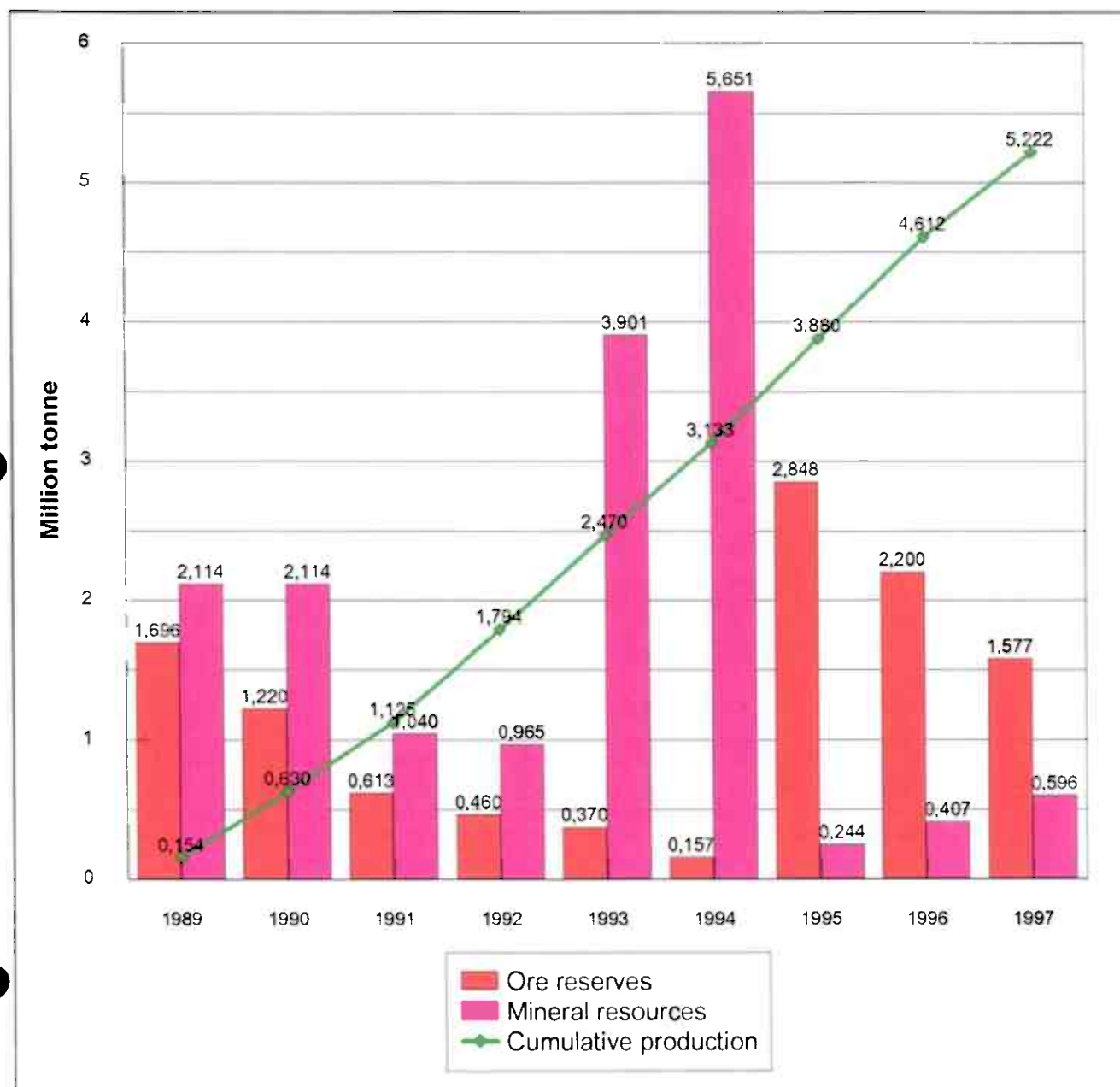
NICKEL PRICE (BUDJSJETT 47,5 KR/KG) 47,50 NOK/KG

NICKEL RECOVERY WITH GRADE 0,55% NI 75 %

NSR OF THE ORE

Ni%	Rec%	Paym%Ni in conc	Ni-price	NSR/tonne	Cu-Coextra	Right NSR	Covers cost items:
0,60	77	75	47,50	165	1,00	165	All costs
0,55	75	75	47,50	147	1,00	147	
0,50	73	75	47,50	130	1,00	130	
0,45	71	75	47,50	114	1,00	114	Long hole production + all others
0,40	69	75	47,50	98	1,00	98	Lh+mill+tailing+ conc.freight
0,35	67	75	47,50	84	1,00	84	
0,30	65	75	47,50	69	1,00	69	Lh+mill variable+conc. freight
0,25	63	75	47,50	56	1,00	56	"Flywaste"+mill variable+conc freight+ others

Ore reserves and mineral resources at the end of the year



	Ore reserves Mt	Mineral resources Mt	Total	Ni %	Prepared by	Cumulative production Mt
1989	1,696	2,114	3,810	0,62	M Motys	0,154
1990	1,220	2,114	3,334	0,50	1989-prod	0,630
1991	0,613	1,040	1,653	0,50	Ø. Pettersen	1,125
1992	0,460	0,965	1,425	0,55	Ø. Pettersen	1,794
1993	0,370	3,901	4,271	0,59	M. Ekberg (incl Vestmalm)	2,470
1994	0,157	5,651	5,808	0,55	M. Ekberg (incl Vestmalm)	3,133
1995	2,848	0,244	3,092	0,52	M.Ekberg/L.Storhaug	3,880
1996	2,200	0,407	2,607	0,55	M.Ekberg/L.Storhaug	4,612
1997	1,577	0,596	2,173	0,54	M.Ekberg/L.Storhaug	5,222

Production 1989 - 1997 Nikkel og Olivin AS

