

INTEROFFICE MEMORANDUM

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FROM: Lee Pigage
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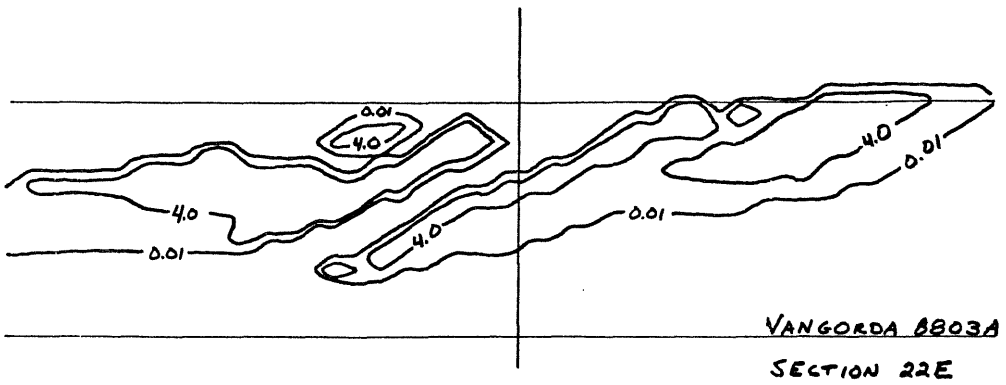
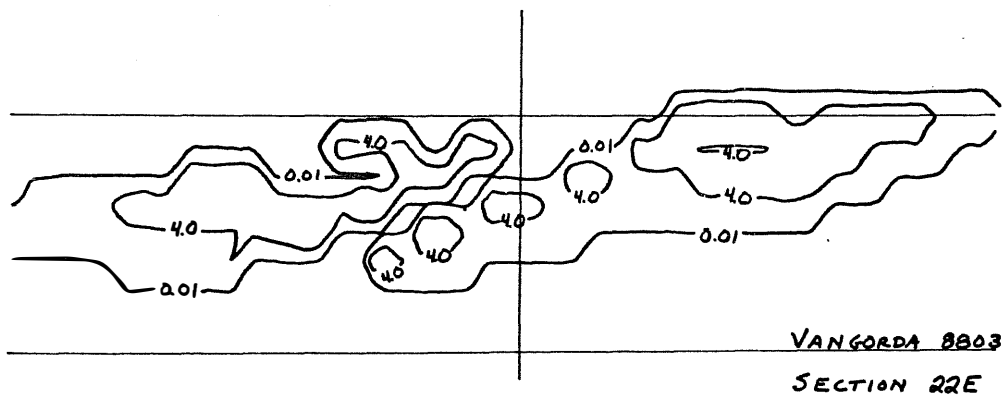
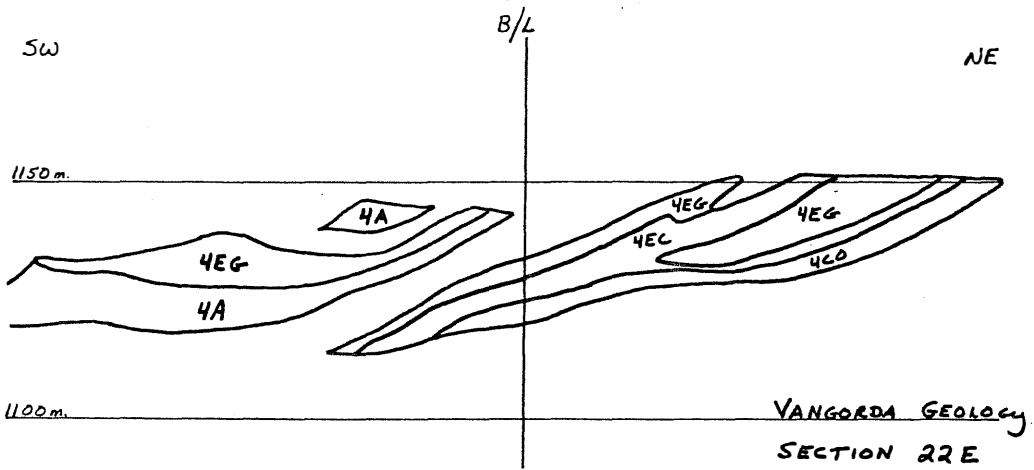
DATE: 1988 12 14

SUBJECT: VANGORDA 8803A GEOLOGICAL MODEL (3-METER HIGH BLOCKS)

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1. Ion Vintila raised concerns about the lack of continuity of the ore horizons in the southeast portion of the Vangorda deposit using the 8803 model. The patchy nature of the horizons in both section and plan is directly correlated to the 6-metre block height in the model.
 2. Consequently a new model (Vangorda 8803A) was generated using a 3-metre block height. All other parameters were kept constant. Length-weighted geological composites were used to interpolate grades into the model blocks. The model was easily created over a single weekend.
 3. The Vangorda 8803A model is a distinct improvement over the 8803 model in terms of continuity of the ore horizons in cross section (Figure 1). Table 2 compares the mining reserves (Ion Vintila's final pit) for the two models using a +4% (Pb+Zn) cut off grade. Differences in reserve totals are related partly to small

differences in interpolated grades and partly to slightly different numbers of ore blocks created from the geology cross sections.

4. The smaller block size does not have a significant effect on global reserves. It does, however, improve continuity of the ore horizons both in section and plan. The new model presently being generated using the 1988 drilling results should therefore use a 3-metre block height. This height is a practical compromise between thin ore horizons and the expressed desire for 6-metre benches. Some method should be found (a Symphony spreadsheet?) for reporting reserves using bench heights which are multiples of the model block height.



Vangorda 8803 Mining Reserves (6 metre high blocks)
no dilution
Length-weighted geological composites

PLUS 4 Z (Pb + Zn)

rock type	vol bcm#1000	vol %	tonnes (#1000)	density (tn/bcm)	Pb+Zn %	Pb %	Zn %	Ag g/t	Au g/t
4ACD	297.89	18.4%	869.40	2.919	5.660	2.200	3.460	30.640	0.511
4CO	11.52	0.7%	40.60	3.524	4.371	2.635	1.737	29.342	0.996
4EC	30.04	1.9%	118.55	3.946	5.869	3.159	2.710	43.377	0.911
4E	1.23	0.1%	5.97	4.854	4.558	3.884	0.674	0.000	0.000
4EB	1255.24	77.5%	5226.56	4.164	9.698	4.256	5.443	60.612	0.784
4EH	7.82	0.5%	30.46	3.895	12.286	6.284	6.002	83.079	0.330
4DJ	16.87	1.0%	68.56	4.064	10.388	4.481	5.907	61.049	0.632
TOTAL	1,620.61	100.0%	6,360.10	3.925	9.056	3.956	5.100	56.049	0.746

Vangorda 8803A Mining Reserves (3 metre high blocks)
no dilution
length-weighted geological composites

PLUS 4 Z (Pb + Zn)

rock type	vol bcm#1000	vol %	tonnes (#1000)	density (tn/bcm)	Pb+Zn %	Pb %	Zn %	Ag g/t	Au g/t
4ACD	316.12	19.7%	921.44	2.915	5.64	2.20	3.44	30.78	0.51
4CO	12.24	0.8%	43.08	3.520	4.56	2.69	1.86	30.34	0.95
4EC	27.60	1.7%	108.88	3.945	5.54	2.80	2.74	39.23	0.91
4E	1.85	0.1%	8.97	4.849	4.57	3.90	0.67	0.00	0.00
4EB	1212.40	75.6%	5043.76	4.160	9.64	4.23	5.41	60.26	0.78
4EH	10.49	0.7%	41.73	3.978	12.40	6.32	6.08	82.40	0.39
4DJ	23.45	1.5%	95.73	4.082	10.21	4.47	5.74	59.60	0.73
TOTAL	1,604.15	100.0%	6,263.59	3.905	8.966	3.916	5.051	55.406	0.743

MODEL COMPARISON

Model	cut-off	vol bcm#1000	vol %	tonnes (#1000)	density (tn/bcm)	Pb+Zn %	Pb %	Zn %	Ag g/t	Au g/t	Tonnes Pb	Tonnes Zn	kg Ag	kg Au
8803	> 4Z	1,620.61	100.0%	6,360.10	3.93	9.06	3.96	5.10	56.05	0.75	251,606	324,365	356,477	4,745
8803A	> 4Z	1,604.15	100.0%	6,263.59	3.91	8.97	3.92	5.05	55.41	0.74	245,282	316,374	347,040	4,654
Difference		16.46		96.51	0.02	0.09	0.04	0.05	0.64	0.00	6,323	7,991	9,437	91
Coef Var		1%		2%	1%	1%	1%	1%	1%	0%	3%	3%	3%	2%