COGEMA CANADA LIMITED
KAYORUM PROJECT

DIAMOND DRILL PROGRAM
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SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

The most significant analytical result received during the summer 1992 drill program was intersected in hole KAY-2 at 295.5-298.5m. It assayed 6.17 g/t Au. In this interval of core we observe thin (cm scale) quartz veinlets trending at low angle to the core axis and a thin clayey fault with a small patch of 15% pyrite in the adjacent altered basalt. This zone occurs in a broader section of lithogeochemically anomalous altered basalt averaging 20 ppb Au over 15m uphole and averaging 52 ppb Au over 15m downhole. This same zone is intersected some 100m updip in hole KAY-1 where it averages 20 ppb Au over 26m (maximum 119 ppb Au over 1.5m). This anomalous zone is interpreted to occur on the southern flank of the northwest-southeast trending anticline and geophysical anomaly which was the target of the drilling program. It occurs at and adjacent to the contact between V8 variolitic and V10A uniform basalts of the Vipond sub-group of the Tisdale Group. No other samples taken during the drilling program gave results >1 g/t Au.

Also of interest, though, are lithogeochemically anomalous intervals on the section KAY-4/KAY-5 which have a structural association with a clayey fault cutting across the northwest-southeast trending anticline and geophysical anomaly; or, in one case, occurring in the axial plane of the anticline. These include: in KAY-4, 79 ppb Au over 21m at 114-135m and 79 ppb Au over 6m at 168-174m; and in KAY-5, 44 ppb Au over 25.5m at 351-376.5m, 54 ppb Au over 27m at 420-447m and 43 ppb Au over 12m at 465-477m.

I interpret that these results may be indicative of nearby economic Au mineralization, i.e. that we have intersected an halo of alteration and weak lithogeochemical response. The Fe-carbonate and sericite alteration, along with the structural context within which the alteration occurs and presence of weak to moderately intense quartz veining and pyrite mineralization are all positive factors used to arrive at this interpretation. However, based on less encouraging results from the other drill holes, it is further suggested that best potential may lie at depth: in the case of section KAY-1/KAY-2, below 300m, and for section KAY-4/KAY-5, below 400m from surface. Alternatively, the results from KAY-4/KAY-5 may suggest presence of mineralization on the adjoining claims to the southeast, known as the Vedron property, north Romfield zone.

Additional diamond drilling along this target is certainly warranted, and is therefore recommended.

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1. INTRODUCTION

The Kayorum project lies in the heart of the Porcupine mining camp, bounded to the north by the Hollinger-McIntyre-Coniaurum deposits and to the south by the deposits closely associated with the Porcupine-Destor fault: the Delnite, Aunor and Buffalo Ankerite deposits. See Figure 1.

In October 1990, Cogema Canada Ltd. signed an option agreement with Moneta Porcupine Mines Ltd. to explore the property. Work commenced in December of the same year and so far has included extensive ground geophysical surveys and a detailed surface mapping program.

From July 23 to September 11, 1992 we performed a diamond drill program totalling 4369 meters in 11 boreholes. Drilling was contracted to Bradley Bros. Limited of Timmins, Ont. Core logging and sampling was performed by Cogema personnel; analytical work was done by Bondar-Clegg and Co. Ltd. of Ottawa, Ont.

The objective of the program was to test for gold mineralization along a northwest-southeast trending structure and geophysical anomaly (shown on Figure 2) which was interpreted to be the most promising target on the property based on all of our previous exploration work. The various surveys which led to this interpretation will not be reviewed here; however, a complete bibliography of Cogema reports is given at the end of this report.

Drill hole locations are given in Figure 3. A diamond drill summary is given in Table 1.

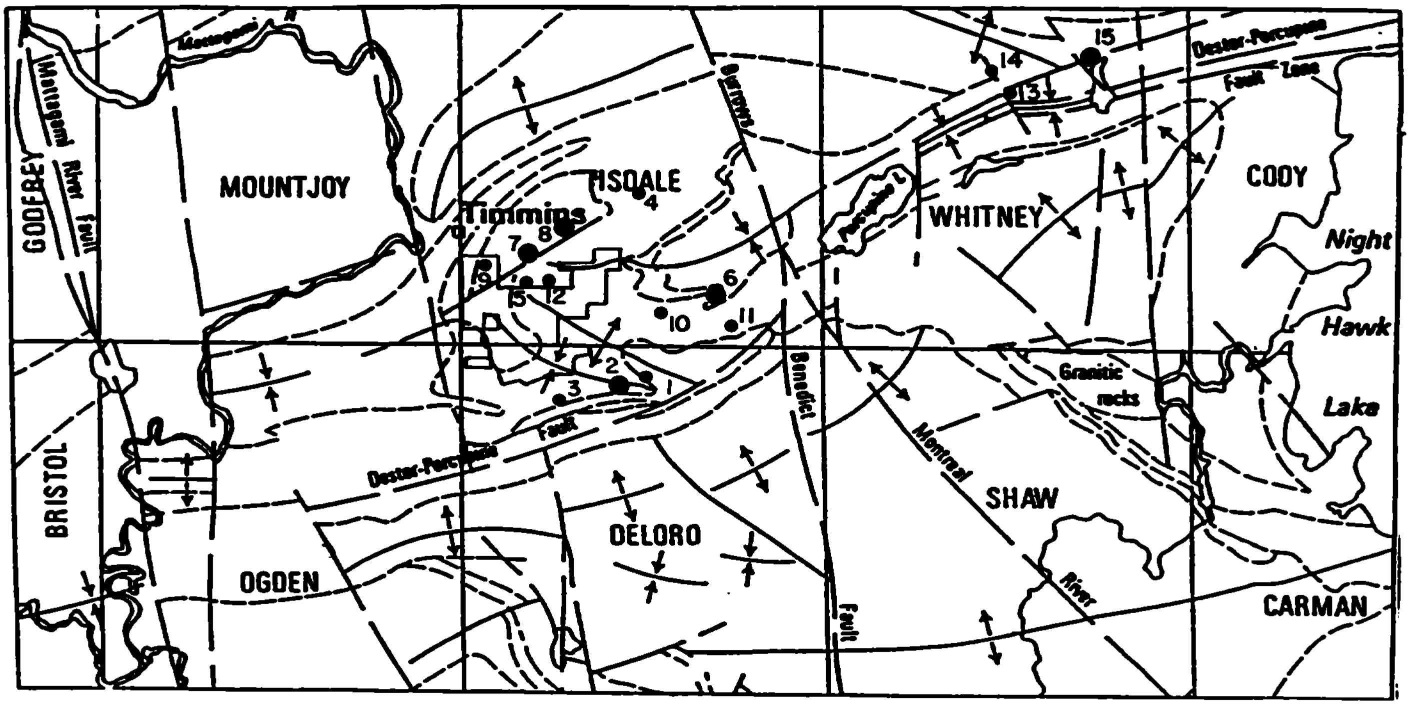


FIGURE 1: Gold mines of the Timmins camp
(Scale 1:200 000)

INDEX TO MINES
(metric tonnes of Au produced)

DELORO TOWNSHIP

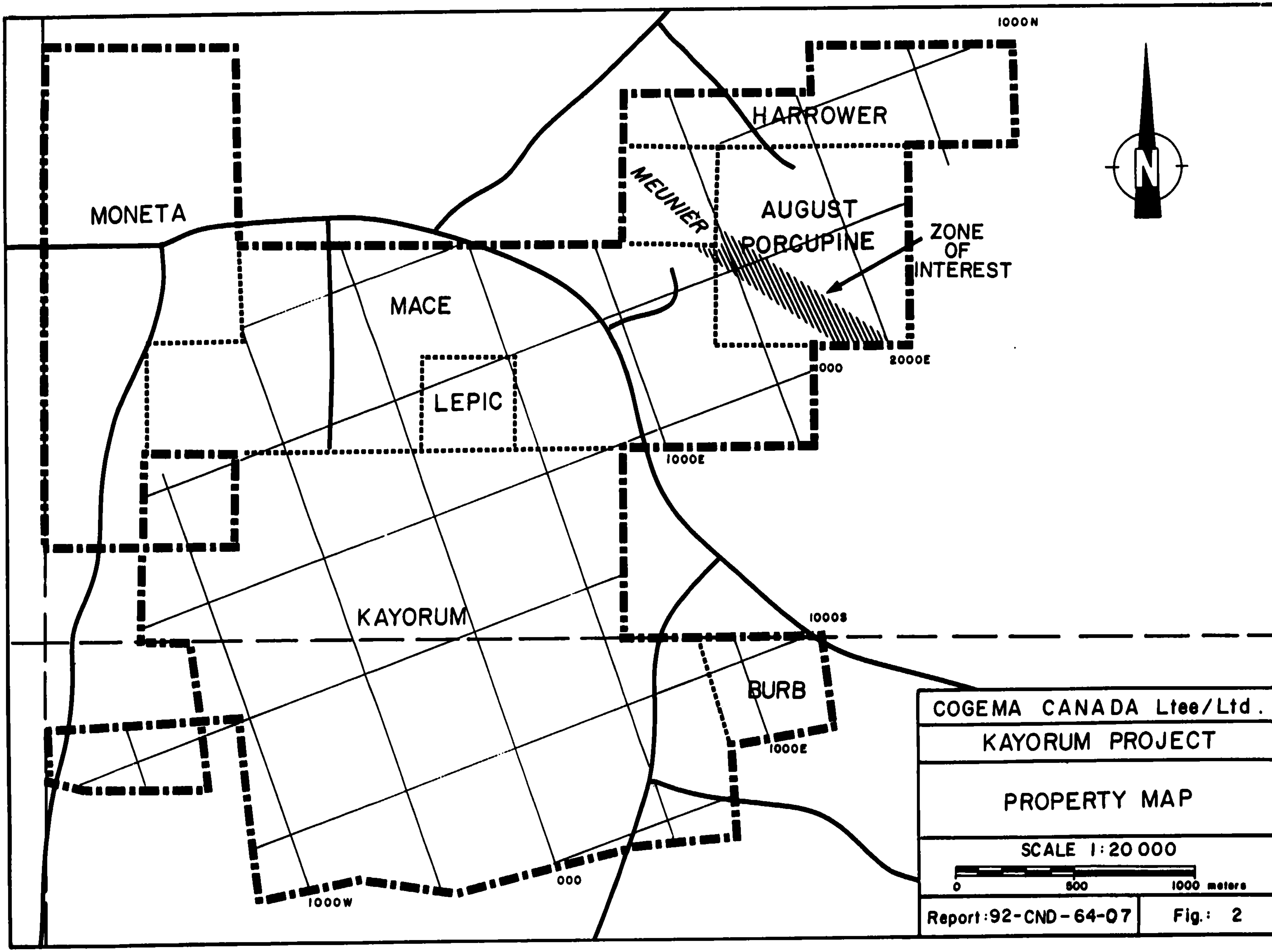
1. Buffalo Ankerite (30t)
2. Aunor (61t)
3. Delnite (29t)

TISDALE TOWNSHIP

4. Coniaurum (35t)
5. Crown (4t)
6. Dome (300t)*
7. Hollinger (602t)
8. McIntyre (310t)
9. Moneta (5t)
10. Paymaster (37t)
11. Preston (48t)
12. Vipond (13t)

WHITNEY TOWNSHIP

13. Broulan (8t)
14. Hallnor (46t)
15. Pamour (60t)*



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KAYORUM PROJECT

PROPERTY MAP

SCALE 1:20 000

0 500 1000 meters

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Fig.: 2

Table 1 Drill Summary

HOLE #	DATES	GRID CO-ORDINATES	AZIMUTH INCLINATION	OVERBURDEN BEDROCK	TOTAL
KAY-1	23/07- 26/07/92	L000 170 NE	205/-45	4.0 340.0	344
KAY-2	26/07- 31/07/92	L000 170 NE	205/-70	4.0 484.0	488
KAY-3	1/08- 3/08/92	L404 NW 196 NE	210/-45	7.0 295.0	302
KAY-4	4/08- 6/08/92	L500 SE 090 NE	205/-45	13.0 286.0	299
KAY-5	6/08- 14/08/92	L500 SE 300 NE	205/-65	16.0 625.0	641
KAY-6	14/08- 18/08/92	L250 SE 225 NE	205/-45	4.0 409.0	413
KAY-7	24/08- 29/08/92	L250 SE 225 NE	210/-70	4.0 500.0	504
KAY-8	29/08- 30/09/92	L/100SE 150 SW	025/-50	4.0 500.0	504
KAY-9	3/09- 8/09/92	L170SE 012 SW	330/-55	4.0 542.0	546
KAY-10	9/09- 10/09/92	L065SE 080 SW	330/-55	4.0 232.0	236
KAY-11	11/09/92	L370NW 050 NE	330/-45	4.0 88.0	92
				Total:	1 378m
				Cumulative Total	4369m

2. REGIONAL AND LOCAL GEOLOGY

The geology of the Timmins area, and more particularly, the geology at Kayorum, has been presented in previous Cogema reports. Only a very brief review is presented here.

On the property, metavolcanic rocks of the Tisdale Group are the only rocks exposed. The mafic rocks of the Tisdale Group in this area are subdivided by Ferguson et. al. (1968) into four sub-groups: Northern, Central, Vipond and Gold Centre (see Figure 4). These sub-groups have been further subdivided into flow units based mainly on their textural features: massive flows, variolitic pillowed flows and amygdaloidal pillowed flows. There are also several thin horizons of interflow argillites. These mafic metavolcanic units are in turn overlain by a thin carbonaceous argillite and a felsic agglomeratic tuff referred to as the Krist Formation.

In the immediate vicinity of the target area, mafic metavolcanics of the Vipond sub-group are the only rocks exposed (principally V10A and V10B, see Figure 4). The target itself is interpreted to represent an anticlinal axis (immediately to the east of, and of the same age as the south Tisdale anticline), which has been refolded by a younger east-west (Porcupine) deformation event. Where east-west anticlinal axes cross the northwest-southeast trend, the oldest rocks are exposed at the surface; the youngest rocks along this trend are exposed where (east-west) synclinal axes cross it. Since numerous small scale (parasitic) folds are present, the overall geometry is a complex overturned dome and basin pattern. Interpretation of the geology is further complicated by the presence of numerous (presumed) faults of unknown displacements and by the repetition of massive (or uniform) units which are indistinguishable from one another except where bounded on both contacts by two different variolitic or amygdaloidal units.

We expected, therefore, in the drilling program, to intersect flow units deeper in the Vipond stratigraphy and perhaps also to intersect flow units of the Central sub-group (since the drill target is an anticlinal structure).

3. DIAMOND DRILL RESULTS

Summary logs are presented in Table 2 (pages 17 to 24). A summary of sampling and analytical results is then given in Table 3 (pages 25 to 30). Drill sections are presented on MAPS 1 to 6. Detailed field logs and all analytical results are given in the Appendix (volume 2).

3.1 Section KAY-1/KAY-2

Holes KAY-1/KAY-2 were collared at L000/170NE (KAY-92 grid) and drilled at an azimuth of 205°. KAY-1 was drilled at -45° whereas KAY-2 was drilled at -70°. The direction of drilling is approximately perpendicular to the northwest-southeast trend of the geophysical anomaly, but is oblique to the east-west (subvertical) foliation.

The section KAY-1/KAY-2 can be subdivided into three lithodomains, all of which show moderate to strong Fe-carbonate alteration:

- at the top of the two holes, a section of weak alteration:

V10A uniform basalt intersected at the top of the two holes is a relatively straightforward interpretation based on the surface mapping. In both cases the unit is fractured and moderately sericitic.

V8 variolitic basalt intersected after the V10A is also a relatively straightforward interpretation, if it is accepted that the area occurs in an anticlinal area as interpreted from the surface mapping. The texture observed in this unit is quite consistent with this interpretation. The unit is less deformed and less altered than the V10A uphole. Presence of the V8 this close to the surface suggests that it outcrops just southwest of the collar location and that it was missed during the surface mapping.

In KAY-1, the uniform basalt which follows the V8 is probably the 99 flow, again assuming that we are drilling an anticlinal area. The problematic unit which occurs afterwards (originally logged as C15/C14) most probably represents a fault with sericitic alteration and pyrite mineralization and faulted-in wedges of amygdaloidal basalt (C15 or V12).

On the other hand, in KAY-2, there are short (10cm) variolitic sections in the uniform section which would correspond to the 99 flow in KAY-1. It is therefore possible that the unit is in fact V8C (uniform sub-unit of the V8). Given the contrast in thickness of this unit in the two drill holes, it might be preferable to assign the V8C designation.

* a zone of alteration and anomalous Au:

V8 variolitic basalt is next intersected in both drill holes. In KAY-1, pyrite mineralization and quartz veining is observed in the lower part of this unit. This continues for about 230m (from 180 - 310m) through another problematic unit which is probably the V10A. In KAY-2, this zone starts approximately at the V8/V10A contact and continues for about 105m (from 225 - 320m).

In KAY-1, Au averages 20 ppb and As averages 62 ppm over 36m (from 243 - 279m). In KAY-2, from 280.5 - 295.5m, Au averages 19 ppb and As averages 63 ppm (over 15.0m). From 295.5 - 298.5 Au averages 6.17 g/t over 3m (As averages 71 ppm). From 298.5 - 313.5m Au averages 52 ppb and As averages 52 ppm (over 15m).

The 3m section in KAY-2 which is strongly anomalous consists of a zone of thin quartz veining at low angle to the core axis. The true thickness of the interval may therefore be just a few cm. No visible gold was observed.

* at the bottom of the two holes, a zone of weak alteration:

The bottom of KAY-1 is characterized by variolitic basalt which appears by its texture to be V10B, suggesting presence nearby of a synclinal axis. This is better observed in KAY-2 since the units intersected after the anomalous zone appear to represent a nice section down the stratigraphy: V10B, V10A, V8, 99, C15.

In conclusion, it is interpreted that first an anticlinal axis was crossed, then a synclinal axis was crossed. The anticlinal axis corresponds to the northwest-southeast geophysical anomaly (enough pyrite was intersected to easily account for the IP response). The synclinal axis could represent either a northwest-southeast trending hinge zone or an east-west trending hinge zone, however, I believe that the C15 unit represents the northeast flank of the south Tisdale anticline.

The zone of anomalous Au results appears to occur on the southwest flank of the first anticline which was crossed by the drill holes near the V8/V10A contact. The alteration is not restricted to a single stratigraphic unit but Au values seem to be strongest near the stratigraphic hangingwall of the V10A uniform basalt.

3.2 Section KAY-3

Hole KAY-3 was collared on L404NW at 196NE and drilled at -45° at an azimuth of 210°.

Once again the V10A uniform basalt was intersected first, followed very quickly by the V8 variolitic basalt. At 229.2m the V10A reappears and it is followed by the V10B variolitic basalt and the V11 uniform basalt.

The anticlinal axis crossed in this drill hole (defined by the progression V10A/V8/V10A is interpreted from the surface mapping to be the northwest-southeast trending structure which is the cause of the main geophysical anomaly. The synclinal axis which occurs near (or beyond) the end of the hole is interpreted from the surface mapping to be an east-west syncline.

The most interesting section in this hole (in terms of alteration and deformation/structure) occurs at the contact between the V8 and V10A at 172 - 194m. This would appear to be the same setting as the anomalous zone described in KAY-1/KAY-2 (southwest flank of the northwest-southeast trending anticline). Sampling in KAY-3 is not as anomalous in Au as for the previous holes, the maximum Au result here is 71 ppb Au/ 1.5m.

Closer to surface there are two additional weakly anomalous zones again associated with contacts between the V8 variolitic basalt and uniform basalt (V10A or V8C). These two zones have high As content relative to the anomalous zones on the south flank of the anticline.

Near the end of the hole a much weaker zone of alteration and veining gives a maximum of 106 ppb Au. This result occurs in a thin section of graphitic argillite. Results from the surface mapping program suggested that Au background values in the interflow sediments were higher than in the basalts so this result is not considered to be significant.

Fe-carbonate alteration in hole KAY-3 is restricted to the anomalous zones close to the top of the hole and on the south flank of the anticline. There is no Fe-carbonate through most of the thick section of V8 or in the V10B/V11 units near the end of the hole.

3.3 Section KAY-4/KAY-5

Hole KAY-4 was spotted on L500SE at 90NE and drilled at -45° at an azimuth of 205°. Hole KAY-5 was spotted on the same line at 300NE and drilled at -65°, also at an azimuth of 205°.

Interpretation of this section is more or less based on the assumption that the clayey faults intersected at 171.6 in KAY-4 and at 466.3 in KAY-5 are one and the same. This is possibly true based on the observation that, of all the clayey faults observed during the drilling program, only these two occur at lithological contacts.

First, a description of lithologies encountered in the hangingwall of this fault:

In KAY-4, a short interval of V10A uniform basalt is followed by a short interval of V10B variolitic basalt, which is in turn followed by a longer core interval of V10A uniform basalt. This section would suggest presence of a synclinal structure with its axis passing through the V10B unit.

This assemblage is followed by V8 variolitic basalt whose lower contact marks the clayey fault referred to above.

In KAY-5, the drill hole collars into a substantial section of V10B variolitic basalt before intersecting a sequence similar to that described for KAY-4: V10A, V10B, V10A, followed by V8 variolitic basalt. In this case the second V10A unit differs from the KAY-4 section in that two short intervals of interflow sediment are present.

In KAY-5, the V8 section in the hangingwall of the clayey fault is much thicker than in KAY-4 and is followed by short sections of V10A uniform basalt (which again is characterized by a thin interflow sediment) and V10B variolitic basalt. The lower contact of this V10B unit is marked by the fault.

An anticlinal axis is interpreted to pass through the thick unit of V8 variolitic basalt in KAY-5. Presence of interflow sediment in both units of V10A which bound the V8 here is a strong supporting argument.

The best Au anomalies in KAY-4 occur right at the clayey fault (79 ppb Au/6.0m) and in the hangingwall of the fault in the V10A uniform basalt close to the contact with the V8 variolitic basalt (79 ppb Au/21.0m). The best Au anomalies in KAY-5 occur right at the clayey fault (43 ppb Au/12.0m), and in the hangingwall of the fault in three places:

* in the V10A unit which occurs just uphole from the fault (54 ppb Au/27.0m);
* in the approximate centre (hinge zone) of the thick section of V8 (44 ppb Au/25.5m);
* and in the V10A unit uphole from the thick section of V8 (55 ppb Au/4.5m and 19 ppb Au/6.0m).

I have therefore interpreted the location of the anticlinal axis (mentioned above) in the centre of the V8 unit where the anomalous Au values (along with quartz veining and pyrite mineralization) are found. This hinge zone has presumably been offset by the clayey fault and is not seen in KAY-4.

The anomalous Au right in the clayey fault may constitute additional evidence that the fault does in fact occur as drawn.

With respect to the Au anomalies in the V10A units, it is possible that there is a structurally controlled zone just uphole from the fault, alternatively one could correlate the anomalous zone in the first V10A unit of KAY-5 with the anomaly in KAY-4 and call it stratabound. However, intensity of the Au values would suggest the former hypothesis to be correct.

In the footwall of the clayey fault there are no significant Au anomalies. Additionally, the lithologies encountered are quite different:

* in KAY-4, V8 variolitic basalt alternates with uniform basalt. It should be noted that V8 was mapped at the surface here (based on texture) but that the designation of these variolitic basalts was then changed to V10B because of a magnetic response similar to that seen in the hinge zone of the south Tisdale anticline where the V10B was mapped.

* in KAY-5, lithologies interpreted to represent the northeast limb of the south Tisdale anticline are observed (similar to KAY-2). Note the strong As content of the massive pyrite breccia at the base of the Vipond sub-group.

In addition to the description above, it is necessary to remark on the strong bleaching observed in the first V10B unit encountered in KAY-5. This alteration is strongest at 114.5 - 151.2 and imparts a very light green to light yellowish colour to the otherwise dark green chloritic (or, on other fences, dark greyish colour due to Fe-carbonate) colour of the basalts. The lower contact of this zone is very abrupt and occurs at the lower contact of a zone of moderate to strong quartz veining. This bleaching is likely due to either a fault (could it be located at the abrupt change in colour at 151.2?) or presence nearby of quartz-feldspar porphyry.

During the surface mapping program undertaken in 1991, an outcrop exposing a breccia dyke was described and this was presented as possible evidence for a nearby porphyry. The geophysics results, on the other hand, strongly suggest presence of a fault or oblique structure passing through this area at a 45° angle to the main anomaly and joining the main anomaly in the vicinity of the area drilled on the next section (holes KAY-6/KAY-7; see Figure 5).

Fe-carbonate alteration on this section is very weak; the basalts are very chloritic (excepting the zone of bleaching in KAY-5).

3.4 Section KAY-6/KAY-7

Holes KAY-6 and KAY-7 were spotted on L250SE at 225NE. KAY-6 was drilled at -45° at an azimuth of 205°. KAY-7 was drilled at -70° at 210° (in an attempt to compensate for deviation of KAY-6).

KAY-6 collared into V10B variolitic basalt, followed by V10A uniform basalt and V8 variolitic basalt. The uniform basalts at 203.0 - 259.9 and 321.3 - 365.0 might be V8C or alternatively, might be V10A or 99, since they are bounded on both sides by V8 variolitic basalt. At the end of the hole the V8 is in contact with an amygdaloidal basalt. The contact is marked by a thin brecciated quartz-pyrite veinlet which is interpreted as a fault on the section.

KAY-7 also collared into V10B variolitic basalt, followed by V10A uniform basalt and V8 variolitic basalt. The V10A units from the two holes, however, do not correlate well on the section. If they are correlated, a westerly dip is suggested which is not consistent with the local structure. Furthermore, in KAY-7, there is 7.1m of interflow sediment between the V8 and V10A not seen in KAY-6 (there is minor argillite in KAY-6 near the KAY-7 argillite but it is hosted in the V10B variolitic basalt not far from the V10A contact).

Deeper in hole KAY-7, V10B variolitic basalt is described, followed by an interflow sediment and a massive uniform basalt which strongly resembles the V11 in KAY-3 (except that it is less chloritic). This section goes up-stratigraphy in contrast to the interpretation presented for KAY-6 which goes down-stratigraphy.

I have therefore not attempted an interpretation on this section. A few ideas are nonetheless worthy of mention:

* the amygdaloidal basalt at the end of hole KAY-6 may be the V8A unit of the McIntyre section on Figure 4;

* the fault interpreted from the geophysics results shown in Figure 5 may cause some of the difficulty in interpreting the KAY-6/KAY-7 profile.

Au results on this section are much lower than for either of the two sections located to the northwest (KAY-1/KAY-2) and southeast (KAY-4/KAY-5). The only two intervals which may be of interest occur in the V8 and V10B variolitic basalts in KAY-7 at 211.5 - 222.0 (26 ppb Au/10.5m) and 319.5 - 327.0 (108 ppb Au/7.5m) but there is no significant alteration associated with these zones. Two additional zones of higher Au results occur with interflow sediments. One of these may be of interest since it averages 212 ppb Au/3.0m or 52 ppb Au/15.0m (in KAY-7).

Fe-carbonate alteration on this fence is locally strong near the collar of both holes but is weak to non-existent below 100m depth.

3.5 Section KAY-8

KAY-8 was collared on L100SE at 150SW and drilled at -50° at an azimuth of 025°. The direction of drilling is opposite that of all previous holes in an attempt to intersect veining not tested by holes drilled southwest and to confirm the dip direction of the geophysical anomaly.

The section I have drawn for KAY-8 looks crazy but illustrates the fact that we have drilled down-dip. In addition, the drill hole deviates to within about 50m of the section KAY-1/KAY-2. The folding shown in the interpretation for KAY-8 is consistent with that section.

The lithologies intersected move down the stratigraphy quite nicely starting with the V10A and continuing through the V8, 99 and C15 units. The lower contact of the C15 amygdaloidal basalt is strongly faulted and subsequently silicified, so the last unit in the drill hole, designated C14 uniform basalt, may be any one of the uniform basalt units, depending, of course, on the magnitude of offset associated with the fault.

Au results in KAY-8 are low. The hole is unaltered and uninteresting except for the fault breccia referred to above. It nonetheless confirms the northeasterly dip direction of the IP anomalies.

There is very weak to no Fe-carbonate alteration in hole KAY-8.

3.6 Section KAY-9/KAY-10

KAY-9 was spotted on L170SE at 12SW and drilled at -55° at an azimuth of 330°. This direction is approximately orthogonal to the directions of holes KAY-1 through KAY-7 and is also approximately orthogonal to the lineations measured during the surface mapping. It should therefore intersect any vein directions not tested by all of the other holes. KAY-10 was collared on L065SE at 80SW and drilled at -55° at 330°. The two holes can be plotted as a section since KAY-9 is down-plunge from KAY-10.

KAY-9 intersected alternating short intervals of V10B variolitic basalt and V10A uniform basalt down to 89.8m where a thin graphitic argillite was encountered. I have correlated this argillite with graphitic argillite intersected at the collar of KAY-10. The two holes are similar thereafter and progress down-stratigraphy into the V8 variolitic basalt. KAY-9 is the deeper of the two holes and crossed a 16.8m section of fault breccia before being stopped in uniform basalt.

Au values in the two holes are weak; KAY-9 does cut a 9m thick anomalous zone (31 ppb Au) in the uniform basalt section just uphole from the graphitic argillite, the maximum value in KAY-10 is 37 ppb Au and was taken in the graphitic argillite.

Fe-carbonate alteration in KAY-9 is moderate to strong throughout; in KAY-10 it is weak to moderate in the first 100m and virtually non-existent thereafter.

It should be noted that KAY-9 was spotted to intersect the vicinity of KAY-2 where the 3m interval grading 6.17 g/t Au was encountered. Of course, there was no control attempted after the hole was started. The two holes come to within about 22m of each other; here, KAY-9 is above KAY-2 at a depth of about 292m (at about 245m in hole KAY-2). KAY-9 is in a thick section of V8 variolitic basalt in a zone of moderate quartz veining; the veins are strongly deformed but are not anomalous in Au. KAY-2 is in uniform basalt here, but just uphole is the V8 contact, and it is strongly veined near the contact; this veining too is not anomalous in Au. It would seem that KAY-9 failed to intersect the uniform basalt which hosts the anomalous section in KAY-2, having overshot by some 50m this target.

3.7 Section KAY-11

Hole KAY-11 was spotted on L370NW at 50NE and drilled at -45° at an azimuth of 330° to test the area between the Meunier trench and the area of stripping in the northwest corner of the Meunier claim. In fact the hole was spotted to intersect the down-plunge extension of the anomalous results sampled at surface in the area of stripping.

The hole collared into uniform basalt followed by V8 variolitic basalt. The contact between the two lithologies is altered and brecciated but was not anomalous in Au.

Fe-carbonate alteration in KAY-11 is weak.

TABLE 3: SUMMARY LOGS

KAY-1:

0 - 4.0m:	casing;
4.0 - 8.0 :	uniform basalt interpreted to be V10A based on surface mapping;
8.0 - 61.8 :	variolitic basalt interpreted to be V8 (deformed but not shattered varioles and well defined pillow selvages);
61.8 - 107.7 :	uniform basalt interpreted to be 99 flow based on interpreted east-west anticlinal axis passing near here;
107.7 - 123.5 :	problematic unit originally logged as: 107.7 - 110.5: C15 amygdaloidal basalt 110.5 - 119.0: C14 uniform basalt 119.0 - 123.5: C15 amygdaloidal basalt;
123.5 - 130.8 :	uniform basalt with breccia texture nearly identical to 110.5-119.0 but less well developed, I believe that the 99 flow may extend from 61.8-130.8 and that the problematic unit above may represent a fault;
130.8 - 245.8 :	variolitic basalt interpreted to be V8 based on texture, strong fracture zone (brittle fault) occurs at 137-141m;
245.8 - 262.2 :	problematic unit, very altered and veined (logged as uniform basalt);
262.2 - 328.5 :	variolitic unit originally logged as V10B (based on shattered and shardy texture of most varioles) but later assigned to V8;
328.5 - 339.3 :	uniform basalt; designation difficult due to uncertainty regarding variolitic units at upper and lower contacts;
339.3 - 344.0 :	variolitic basalt; perhaps V10B based on texture, but only about 5m of core available for inspection;
344.0	END OF HOLE

KAY-2:

0 - 4.0m:	casing;
4.0 - 12.8 :	uniform basalt interpreted to be V10A based on surface mapping;
12.8 - 96.6 :	V8 variolitic basalt;
96.6 - 121.3 :	problematic unit; probably uniform basalt but strongly brecciated;
121.3 - 233.1 :	V8 variolitic basalt, possibly a quartz-feldspar porphyry dyke at 231.5-231.7;
233.1 - 307.7 :	uniform basalt interpreted to be V10A since V8 uphole and V10B downhole;
307.7 - 330.6 :	V10B variolitic basalt;
330.6 - 348.3 :	uniform basalt interpreted to be V10A since V10B uphole and V8 downhole;
348.3 - 392.6 :	V8 variolitic basalt;
392.6 - 418.1 :	uniform basalt interpreted to be 99 flow based on V8 uphole and C15 downhole;
418.1 - 488.0 :	amygdaloidal basalt interpreted to be C15 based on texture;
488.0	END OF HOLE

KAY-3:

0 - 7.0m:	casing;
7.0 - 23.7 :	uniform basalt interpreted to be V10A based on surface mapping;
23.7 - 42.6 :	V8 variolitic basalt;
42.6 - 57.8 :	uniform basalt logged V10A (but could easily be V8C);
57.8 - 67.3 :	V8 variolitic basalt:
67.3 - 77.9 :	uniform basalt logged as V10A (but could easily be V8C);
77.9 - 189.6 :	V8 variolitic basalt;
189.6 - 229.2 :	uniform basalt interpreted to be V10A based on interpretation of variolitic units bounding it;
229.2 - 254.1 :	V10B variolitic basalt;
254.1 - 302.0 :	very massive unfoliated uniform basalt designated V11 based on structural interpretation (synclinal axis interpreted from surface mapping);
302.0	END OF HOLE

KAY-4:

0 - 13.0m:	casing;
13.0 - 36.7 :	V10A uniform basalt;
36.7 - 58.0 :	V10B variolitic basalt;
58.0 - 135.9 :	uniform basalt interpreted to be V10A based on presence of two different variolitic units at contacts;
135.9 - 171.6 :	V8 variolitic basalt, lower contact is a clayey fault;
171.6 - 181.8 :	uniform basalt interpreted to be V8C mainly due to short core length of unit;
181.8 - 202.3 :	V8 variolitic basalt;
202.3 - 210.0 :	uniform basalt interpreted to be V8C based on short core length of interval;
210.0 - 220.5 :	V8 variolitic basalt;
220.5 - 242.3 :	uniform basalt designated V10A during logging but could easily again be V8C;
242.3 - 256.2 :	V8 variolitic basalt;
256.2 - 281.6 :	uniform basalt designated V10A as was done at 220.5-242.3;
281.6 - 299.0 :	V8 variolitic basalt;
299.0	END OF HOLE

KAY-5:

0 - 16.0m:	casing;
16.0 - 174.4 :	V10B variolitic basalt;
174.4 - 205.9 :	uniform basalt interpreted to be V10A based on surface mapping - there is no V11 in this vicinity;
205.9 - 220.4 :	V10B variolitic basalt;
220.4 - 231.2 :	uniform basalt interpreted to be V10A;
231.2 - 234.2 :	argillite (probably V9);
234.2 - 240.7 :	uniform basalt interpreted to be V10A;
240.7 - 245.5 :	(weakly) graphitic argillite (V9);
245.5 - 259.0 :	V8 variolitic basalt;
259.0 - 272.9 :	uniform basalt designated V8C but could just as easily be V10A;
272.9 - 430.7 :	V8 variolitic basalt;
430.7 - 432.4 :	graphitic argillite (probably V9);
432.4 - 441.4 :	uniform basalt interpreted to be V10A since V8 uphole and V10B downhole;
441.4 - 466.3 :	V10B variolitic basalt, lower contact with 99 flow is a clayey fault;
466.3 - 520.9 :	uniform basalt interpreted to be 99 flow
520.9 - 525.5 :	massive pyrite breccia interpreted to be interflow sediment at base of Vipond subgroup;
525.5 - 560.9 :	problematic unit which might correspond to C15 amygdaloidal basalt, or alternatively might correspond to the C16 and V6 units mapped at surface on the southern part of the northeast flank of the south Tisdale anticline;
560.9 - 562.8 :	fine-grained argillite;
562.8 - 641.0 :	C15 amygdaloidal basalt;
641.0	END OF HOLE

KAY-6:

0 - 4.0m:	casing;
4.0 - 115.9 :	V10B variolitic basalt;
115.9 - 184.8 :	V10A uniform basalt;
184.8 - 203.0 :	V8 variolitic basalt;
203.0 - 259.9 :	uniform basalt designated V10A on log but could be V8C or even 99 flow;
259.9 - 321.3 :	V8 variolitic basalt, with argillite at 307.5-309.9;
321.3 - 365.0 :	uniform basalt designated V10A on log but could be V8C or 99 flow;
365.0 - 391.0 :	V8 variolitic basalt;
391.0 - 413.0 :	C15 amygdaloidal basalt;
413.0	END OF HOLE

KAY-7:

0 - 4.0m:	casing;
4.0 - 47.0 :	V10B variolitic basalt, lower contact is a fracture zone (brittle fault);
47.0 - 128.0 :	V10A uniform basalt;
128.0 - 135.1 :	interflow sediment (V9);
135.1 - 292.9 :	V8 variolitic basalt;
292.9 - 302.6 :	uniform basalt, logged as V10A but there is uncertainty as to which variolitic basalt occurs at the lower contact;
302.6 - 391.1 :	variolitic basalt which appears to be V10B;
391,1 - 401.8 :	argillite and sericitic interflow sediment;
401.8 - 504.0 :	massive uniform basalt logged as V11;
504.0	END OF HOLE

KAY-8:

0 - 4.0m:	casing;
4.0 - 95.2 :	V10A uniform basalt;
95.2 - 138.0 :	V8 variolitic basalt;
138.0 - 151.1 :	uniform basalt designated V8C but could easily be V10A;
151.1 - 320.3 :	V8 variolitic basalt;
320.3 - 341.7 :	uniform basalt (V10A or V8C);
341.7 - 366.2 :	V8 variolitic basalt;
366.2 - 440.5 :	uniform basalt, 99 flow;
440.5 - 477.7 :	C15 amygdaloidal basalt;
477.7 - 485.2 :	silicified, sericitic fault breccia;
485.2 - 507.0 :	uniform basalt designated C14, but could be any of the uniform basalt flows depending on magnitude of bounding fault;
507.0	END OF HOLE

KAY-9:

0 - 4.0m:	casing;
4.0 - 6.9 :	V10B variolitic basalt;
6.9 - 40.0 :	V10A uniform basalt;
40.0 - 71.0 :	V10B variolitic basalt;
71.0 - 89.8 :	V10A uniform basalt;
89.8 - 92.0 :	graphitic argillite;
92.0 - 98.3 :	variolitic basalt, probably V10B but there is brecciation and numerous pyrite stringers;
98.3 - 185.0 :	V10A uniform basalt, brecciation described above is strong to 113.3 making location of the contact rather imprecise;
185.0 - 229.0 :	V8 variolitic basalt;

229.0 - 277.6 :	V10A uniform basalt so strongly resembles 98.3-185.0 that V8 should be anticlinal hinge zone;
277.6 - 326.0 :	this may be uniform or variolitic basalt but is logged as V8 variolitic basalt;
326.0 - 441.2 :	V8 variolitic basalt;
441.2 - 458.0 :	fault breccia, very heterogeneous;
458.0 - 546.0 :	uniform basalt continues to end of hole, since upper contact is faulted, no stratigraphic designation is given;
546.0	END OF HOLE

<u>KAY-10:</u>

0 - 4.0m:	casing;
4.0 - 9.7 :	graphitic argillite;
9.7 - 52.0 :	this unit looks like uniform basalt but with a few varioles, based on surface mapping could be V10A or V10B;
52.0 - 76.5 :	V10A uniform basalt;
76.5 - 137.0 :	V8 variolitic basalt;
137.0 - 162.5 :	V8C uniform basalt, this designation based on presence of a few rare varioles;
162.5 - 225.5 :	V8 variolitic basalt;
225.5 - 236.0 :	uniform basalt, V10A or V8C?
236.0	END OF HOLE

<u>KAY-11:</u>

0 - 4.0m:	casing;
4.0 - 53.5 :	V10A uniform basalt;
53.5 - 92.0 :	V8 variolitic basalt;
92.0	END OF HOLE

TABLE 4: Summary of sampling and analytical results:

Hole	Interval		Au	As	Length
KAY-1:	12.0 - 16.5	max	11 ppb Au/	45 ppm As	
	18.5 - 20.5	max	9 ppb Au/	27 ppm As	
	39.0 - 43.5	max	11 ppb Au/	61 ppm As	
	69.0 - 79.5	max	22 ppb Au/	155 ppm As	
	including:		20 ppb Au/	118 ppm As/	4.5m
	81.5 - 82.5		18 ppb Au/	71 ppm As	
	85.5 - 88.5	max	11 ppb Au/	89 ppm As	
	106.5 - 137.0	max	19 ppb Au/	75 ppm As	
	153.0 - 154.5		<5 ppb Au/	51 ppm As	
	166.5 - 169.5	max	<5 ppb Au/	64 ppm As	
	180.0 - 195.0	max	14 ppb Au/	66 ppm As	
	198.0 - 231.0	max	157 ppb Au/	60 ppm As	
	including:		79 ppb Au/	30 ppm As/	4.5m
	(trace to 20% pyrite, weak sericite alteration in V8 variolitic basalt at 210.0-214.5)				
	237.0 - 282.0	max	119 ppb Au/	131 ppm As	
	including:		20 ppb Au/	63 ppm As/	36.0m
	(generally 5-10% pyrite, weak sericite alteration and weak to moderate quartz veining at 243.0-279.0 in problematic uniform and variolitic basalt units)				
	294.0 - 309.0	max	10 ppb Au/	60 ppm As	
	316.0 - 318.0	max	13 ppb Au/	22 ppm As	
	321.0 - 327.0	max	8 ppb Au/	167 ppm As	
KAY-2:	4.0 - 10.0	max	8 ppb Au/	49 ppm As	
	99.0 - 108.0	max	11 ppb Au/	67 ppm As	
	141.0 - 148.5	max	7 ppb Au/	9 ppm As	
	153.0 - 159.0	max	7 ppb Au/	7 ppm As	
	207.0 - 214.5	max	8 ppb Au/	33 ppm As	
	217.0 - 217.5		6 ppb Au/	150 ppm As	
	226.5 - 237.0	max	20 ppb Au/	44 ppm As	
	241.5 - 280.5	max	125 ppb Au/	75 ppm As/	1.5m
	(all remaining samples <20 ppb Au)				
	280.5 - 295.5	avg	20 ppb Au/	62 ppm As/	15.0m
	(2-5% pyrite, weak to moderate quartz veining in V10A uniform basalt)				
	295.5 - 298.5	avg	6.17 g/t Au/	71 ppm As/	3.0m
	(2-15% pyrite, few thin quartz veinlets at low angle to core axis in V10A uniform basalt, clayey fault at 297.4m)				
	298.5 - 313.5	avg	52 ppb Au/	52 ppm As/	15.0m
	(on both sides of the V10A/V10B contact, trace to 15% pyrite, weak quartz veining, moderate sericite alteration)				
	313.5 - 318.0	max	25 ppb Au/	56 ppm As	
	360.0 - 366.0	max	16 ppb Au/	89 ppm As	
	408.0 - 409.5		<5 ppb Au/	42 ppm As	
	439.5 - 441.0		7 ppb Au/	46 ppm As	

KAY-3:

24.0 - 27.0 max 9 ppb Au/ 88 ppm As
31.5 - 57.0 max 25 ppb Au/ 117 ppm As
63.0 - 93.0 max 48 ppb Au/ 125 ppm As
including: 25 ppb Au/ 103 ppm As/ 6.0m
(trace to 5% pyrite, weak quartz veining, weak sericite alteration in uniform basalt at 70.5-76.5, clayey fault at 77.05-77.3);
136.5 - 153.0 max 17 ppb Au/ 17 ppm As
159.0 - 160.5 15 ppb Au/ 11 ppm As
166.5 - 173.5 max 14 ppb Au/ 36 ppm As
176.0 - 211.5 max 71 ppb Au/ 111 ppm As/ 1.5m
(trace to 3% pyrite, trace chalcopyrite in moderate to strong quartz veining at 172.5-193.2, moderate to strong sericite alteration, brittle fault at 173.6 - 176.0, graphitic slips along vein contacts);
252.0 - 270.0 max 106 ppb Au/ 40 ppm As/ 1.5m
(generally 2-5% pyrite, moderate quartz veining with graphitic argillite and brecciation in V11 uniform basalt at 265.6-268.2)

note: due to anomalous Au values received from some control samples in this drill hole, reanalysis of some samples was requested; the reanalysis confirmed contamination by the laboratory.

KAY-4:

13.0 - 145.5 max 149 ppb Au/ 200 ppm As
including: 54 ppb Au/ 91 ppm As/ 3.0m
(2-10% pyrite, weak quartz-breccia veining in chloritic V10A uniform basalt at 105.0-108.0)
and including: 79 ppb Au/ 92 ppm As/ 21.0m
(generally 15% pyrite, trace quartz veining in bleached V10A uniform basalt at 114.0-135.0 just uphole from contact with V8 variolitic basalt; thin graphitic argillite units at 132.25-132.6 and 133.3-133.5)
165.0 - 183.0 max 194 ppb Au/ 100 ppm As
including: 79 ppb Au/ 58 ppm As/ 6.0m
(10% pyrite and weak quartz veining at clayey fault contact between V8 variolitic and V8C uniform basalt at 168.0-174.0)
and including: 77 ppb Au/ 33 ppm As/ 4.5m
(2-10% pyrite and weak quartz veining at contact between V8C uniform basalt and V8 variolitic basalt at 178.5-183.0)
219.0 - 237.0 max 38 ppb Au/ 70 ppm As/ 1.5m
297.5 - 299.0 7 ppb Au/ 12 ppm As

KAY-5: 16.0 - 21.0 max 37 ppb Au/ 110 ppm As/ 2.0m
(10% pyrite in bleached V10B variolitic basalt with 1m quartz vein at 16.0-18.0)
25.5 - 27.0 <5 ppb Au/ 15 ppm As
40.5 - 46.5 max 62 ppb Au/ 30 ppm As/ 1.5m
(trace to 20% pyrite, trace quartz veining in bleached V10B variolitic basalt at 43.5-45.0)
51.0 - 57.0 max 13 ppb Au/ 64 ppm As
66.0 - 84.0 max 24 ppb Au/ 164 ppm As
including: 24 ppb Au/ 127 ppm As/ 3.0m
(5% pyrite and trace chalcopyrite in strong quartz veining in V10B variolitic basalt with associated moderate to strong sericite alteration at 73.5-76.5)
88.5 - 103.5 max 47 ppb Au/ 120 ppm As/ 1.5m
114.0 - 133.5 max 88 ppb Au/ 61 ppm As/ 1.5m
(trace to 5% pyrite and moderate quartz veining in very strongly bleached V10B variolitic basalt at 114.0-115.5)
139.5 - 162.0 max 64 ppb Au/ 32 ppm As/ 1.5m
(trace pyrite and weak brecciated quartz veining in chloritic V10B variolitic basalt at 157.5-159.0)
195.0 - 201.0 max 24 ppb Au/ 23 ppm As
216.0 - 249.0 max 107 ppb Au/ 575 ppm As
including: 55 ppb Au/ 50 ppm As/ 4.5m
(2-5% pyrite, weak brecciated quartz veining in thin argillite unit between two sections of V10A uniform basalt at 231.0-235.5; however there is some evidence of contamination here)
and including: 19 ppb Au/ 297 ppm As/ 6.0m
(5% pyrite and trace quartz veining in thin graphitic argillite unit between the V10A uniform basalt and the V8 variolitic basalt at 240.0-246.0)
267.0 - 273.0 max 11 ppb Au/ 22 ppm As
322.5 - 324.0 11 ppb Au/ 17 ppm As
328.5 - 331.5 max 29 ppb Au/ 13 ppm As
339.0 - 378.0 max 114 ppb Au/ 111 ppm As
including: 44 ppb Au/ 58 ppm As/ 25.5m
(pyrite breccia about 5% pyrite and moderate brecciated quartz veining in chloritic V8 variolitic basalt at interpreted anticlinal hinge zone with moderate sericite alteration at 351.0-376.5)
418.5 - 459.0 max 144 ppb Au/ 405 ppm As
including: 54 ppb Au/ 97 ppm As/ 27.0m
(trace to 10% pyrite, weak quartz veining in V8 variolitic basalt, a thin graphitic argillite, V10A uniform basalt and V10B variolitic basalt with weak sericite alteration at 420.0-447.0; there is a clayey fault at 446.0)

465.0 - 483.0 max 107 ppb Au/ 196 ppm As
including: 43 ppb Au/ 102 ppm As/ 12.0m
(3-5% pyrite, weak quartz veining with weak sericite alteration in the 99 flow at clayey fault contact with the V10B variolitic basalt at 465.0-477.0)

492.0 - 499.5 max 96 ppb Au/ 263 ppm As
including: 51 ppb Au/ 147 ppm As/ 4.5m
(2-3% pyrite and trace arsenopyrite in thin brecciated quartz veinlets with weak sericite alteration in the 99 flow at 493.5-498.0)

513.0 - 546.0 max 42 ppb Au/ 428 ppm As
including: 18 ppb Au/ 240 ppm As/ 7.5m
(20-50% pyrite as a massive breccia at 519.0-526.5 interpreted to be the interflow sediment at the base of the Vipond sub-group)

561.0 - 567.0 max 96 ppb Au/ 10 ppm As
(trace to 5% pyrite, weak quartz veining at contact between thin argillite and C15 amygdaloidal basalt)

615.0 - 627.0 max 13 ppb Au/ 15 ppm As
639.0 - 641.0 21 ppb Au/ 23 ppm As

<u>KAY-6:</u>

28.5 - 31.5 max <5 ppb Au/ 8 ppm As
36.0 - 40.5 max <5 ppb Au/ 5 ppm As
58.5 - 75.0 max <5 ppb Au/ 14 ppm As
87.0 - 93.0 max <5 ppb Au/ 9 ppm As
99.0 - 102.0 max 113 ppb Au/ 37 ppm As
(patch of 30% pyrite, thin quartz veinlet in V10B with minor interflow sediment)

133.5 - 135.0 <5 ppb Au/ 17 ppm As
139.5 - 141.0 <5 ppb Au/ 20 ppm As
162.0 - 217.5 max 31 ppb Au/ 81 ppm As
222.0 - 230.0 max 21 ppb Au/ 66 ppm As
234.0 - 238.5 max 17 ppb Au/ 48 ppm As
241.5 - 252.0 max 15 ppb Au/ 48 ppm As
258.0 - 268.5 max 20 ppb Au/ 33 ppm As
279.0 - 289.5 max <5 ppb Au/ 32 ppm As
306.0 - 340.5 max 19 ppb Au/ 104 ppm As
345.0 - 346.5 <5 ppb Au/ 31 ppm As
355.5 - 370.5 max 9 ppb Au/ 32 ppm As
388.5 - 413.0 max 21 ppb Au/ 395 ppm As
including: an average of 156 ppm As/ 24.5m

KAY-7:

4.5 - 10.5 max <5 ppb Au/ 19 ppm As
13.5 - 18.0 max 10 ppb Au/ 47 ppm As
27.0 - 30.0 max 75 ppb Au/ 17 ppm As
(trace pyrite, moderate quartz veining in V10B variolitic basalt)
34.5 - 36.0 <5 ppb Au/ 9 ppm As
72.0 - 79.5 max 10 ppb Au/ 33 ppm As
117.0 - 136.5 max 30 ppb Au/ 64 ppm As
165.0 - 177.0 max 8 ppb Au/ 19 ppm As
207.0 - 270.0 max 50 ppb Au/ 64 ppm As
including: 26 ppb Au/ 14 ppm As/ 10.5m
(trace to 5% pyrite, weak quartz veining in V8 variolitic basalt at 211.5-222.0)
280.5 - 303.0 max 105 ppb Au/ 26 ppm As/ 1.5m
310.0 - 330.0 max 168 ppb Au/ 38 ppm As
including: 108 ppb Au/ 27 ppm As/ 7.5m
(3% pyrite, weak quartz veining in V10B variolitic basalt at 319.5-327.0)
336.0 - 345.0 max 32 ppb Au/ 41 ppm As
367.5 - 372.0 max <5 ppb Au/ 5 ppm As
375.0 - 385.5 max 78 ppb Au/ 62 ppm As/ 1.5m
390.0 - 409.5 max 328 ppb Au/ 380 ppm As
including: 212 ppb Au/ 290 ppm As/ 3.0m
or: 52 ppb Au/ 181 ppm As/ 15.0m
(3-5% pyrite, weak quartz veining at contact between interflow sediment and uniform flow logged V11)
429.0 - 438.0 max 19 ppb Au/ 9 ppm As
441.0 - 442.5 19 ppb Au/ 10 ppm As
448.5 - 465.0 max 64 ppb Au/ 61 ppm As/ 1.5m
472.5 - 474.0 <5 ppb Au/ 12 ppm As
492.0 - 498.0 max 21 ppb Au/ 110 ppm As

KAY-8:

30.0 - 36.0 max <5 ppb Au/ 10 ppm As
52.5 - 55.5 <5 ppb Au/ 18 ppm As
63.0 - 79.5 max <5 ppb Au/ 33 ppm As
144.0 - 162.0 max <5 ppb Au/ 75 ppm As
171.0 - 183.0 max <5 ppb Au/ 68 ppm As
219.0 - 222.0 max <5 ppb Au/ 9 ppm As
241.5 - 258.0 max <5 ppb Au/ 20 ppm As
262.5 - 264.0 <5 ppb Au/ 13 ppm As
315.0 - 378.0 max 45 ppb Au/ 76 ppm As/ 1.5m
381.0 - 385.5 max 9 ppb Au/ 48 ppm As
390.0 - 432.0 max 6 ppb Au/ 81 ppm As
450.0 - 486.0 max 90 ppb Au/ 202 ppm As/ 1.5m
(10% pyrite, trace quartz veining in C15 amygdaloidal basalt)
490.5 - 501.0 max <5 ppb Au/ 38 ppm As

KAY-9:	7.5 - 33.0	max	10 ppb Au/	60 ppm As	
	36.0 - 42.0	max	9 ppb Au/	32 ppm As	
	57.0 - 61.5	max	6 ppb Au/	23 ppm As	
	66.0 - 120.0	max	90 ppb Au/	195 ppm As	
	including:		31 ppb Au/	86 ppm As/	9.0m
	(3-5% pyrite, trace quartz veining in brecciated V10A uniform basalt with very weak sericite alteration at 70.5-79.5)				
	150.0 - 171.0	max	14 ppb Au/	88 ppm As	
	181.5 - 184.5	max	<5 ppb Au/	33 ppm As	
	189.0 - 205.5	max	45 ppb Au/	45 ppm As	
	225.0 - 366.0	max	49 ppb Au/	92 ppm As	
	including:		34 ppb Au/	76 ppm As/	4.5m
	(10% pyrite, weak quartz veining and moderate to strong sericite alteration in V8 variolitic basalt at 348.0-352.5)				
	391,5 - 397.5	max	<5 ppb Au/	18 ppm As	
	403.5 - 421.5	max	6 ppb Au/	25 ppm As	
	424.5 - 430.5	max	20 ppb Au/	24 ppm As	
	433.5 - 457.5	max	9 ppb Au/	105 ppm As	
	475.5 - 478.5	max	<5 ppb Au/	5 ppm As	
	483.0 - 486.0	max	<5 ppb Au/	1 ppm As	
	498.0 - 499.5		<5 ppb Au/	<1 ppm As	
	508.5 - 512.0	max	<5 ppb Au/	8 ppm As	
	532.5 - 534.0		<5 ppb Au/	18 ppm As	
	541.5 - 546.0	max	<5 ppb Au/	11 ppm As	
KAY-10:	4.0 - 46.5	max	37 ppb Au/	284 ppm As/	3.0m
	(in graphitic argillite with 15% pyrite)				
	51.0 - 58.5	max	<5 ppb Au/	55 ppm As	
	63.5 - 65.0		<5 ppb Au/	22 ppm As	
	69.0 - 70.5		7 ppb Au/	42 ppm As	
	100.5 - 105.0	max	<5 ppb Au/	25 ppm As	
	109.5 - 112.5	max	<5 ppb Au/	32 ppm As	
	123.0 - 127.5	max	<5 ppb Au/	32 ppm As	
	132.0 - 139.5	max	<5 ppb Au/	35 ppm As	
	144.0 - 150.0	max	<5 ppb Au/	52 ppm As	
KAY-11:	4.0 - 5.0		33 ppb Au/	53 ppm As	
	10.5 - 12.0		<5 ppb Au/	35 ppm As	
	36.0 - 42.0	max	<5 ppb Au/	54 ppm As	
	52.5 - 58.5	max	12 ppb Au/	52 ppm As	
	67.5 - 72.0	max	<5 ppb Au/	31 ppm As	
	81.0 - 82.5		<5 ppb Au/	16 ppm As	
	90.0 - 92.0		<5 ppb Au/	23 ppm As	

4. DISCUSSION

Holes KAY-1/KAY-2 may suggest presence of a zone of potential economic Au mineralization along the south flank of the northwest-southeast trending anticline tested by our drill program. I suspect that best potential is at depth (given negative results from sections KAY-3 and KAY-6/KAY-7). Hole KAY-3 intersects this zone of alteration but Au values are much lower there, perhaps suggesting that the zone is not an anomalous extension of economic mineralization already mined at the Hollinger. Arsenic lithogeochemical response is, however, stronger in KAY-3.

Section KAY-4/KAY-5 intersects a number of weakly anomalous zones which appear to be related to a clayey fault which cuts across the south flank (at depth) and the hinge zone (closer to the surface) of the anticline. Once again, this may suggest potential Au mineralization, either at depth, or along strike to the southeast off the property boundary (negative results from KAY-6/KAY-7 do not eliminate, but certainly reduce the potential for an economic zone along strike to the northwest).

There is a major difference between the sections KAY-1/KAY-2 and KAY-4/KAY-5 in that the more northerly section shows good Fe-carbonate alteration, whereas the basalts in KAY-4/KAY-5 are chloritic. On the other hand, pyrite mineralization in drill holes KAY-4/KAY-5 is stronger, resulting in similar gravity response over the two lines. As a general statement, for the Timmins camp, the area with Fe-carbonate mineralization would be the preferred target.

Section KAY-6/KAY-7 does not intersect this zone of alteration and shows very weak lithogeochemical response. This, I believe, may be due to presence of an east-west trending syncline along the section, whereas in the sections to the northwest and southeast, east-west anticlinal structures occur. It has already been suggested by us that zones where anticlinal structures intersect may have best potential. The geological interpretation along section KAY-6/KAY-7 may be further complicated by presence of a fault obliquely cross-cutting the geophysical anomaly and trending towards the collar of KAY-5.

All subsequent drill holes (KAY-8 through KAY-11), although useful from a geologic point of view, did not intersect any zones worthy of follow-up. It is unfortunate that KAY-9 deviated away from the anomalous zone intersected in KAY-2.

5. RECOMMENDATIONS

Further drilling of the trend is warranted. Results from this program suggest that best potential would be in the vicinity of sections KAY-1/KAY-2 and KAY-4/KAY-5 at depth.

6. REFERENCE CITED

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91-CND-64-03 : Koch, Rodney and Learn, John R.L., Feb 1992, Report on Gravity and Induced Polarization Surveys over the Kayorum Property, Timmins, Ontario

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92-CND-64-03 : Logistics report on IP survey by Val d'Or Geophysique, Oct 1991

92-CND-64-04 : Learn, John R.L., Nov 1992, Rock Geochemistry Studies: Au, As, Sb, Cu, Pb, Zn

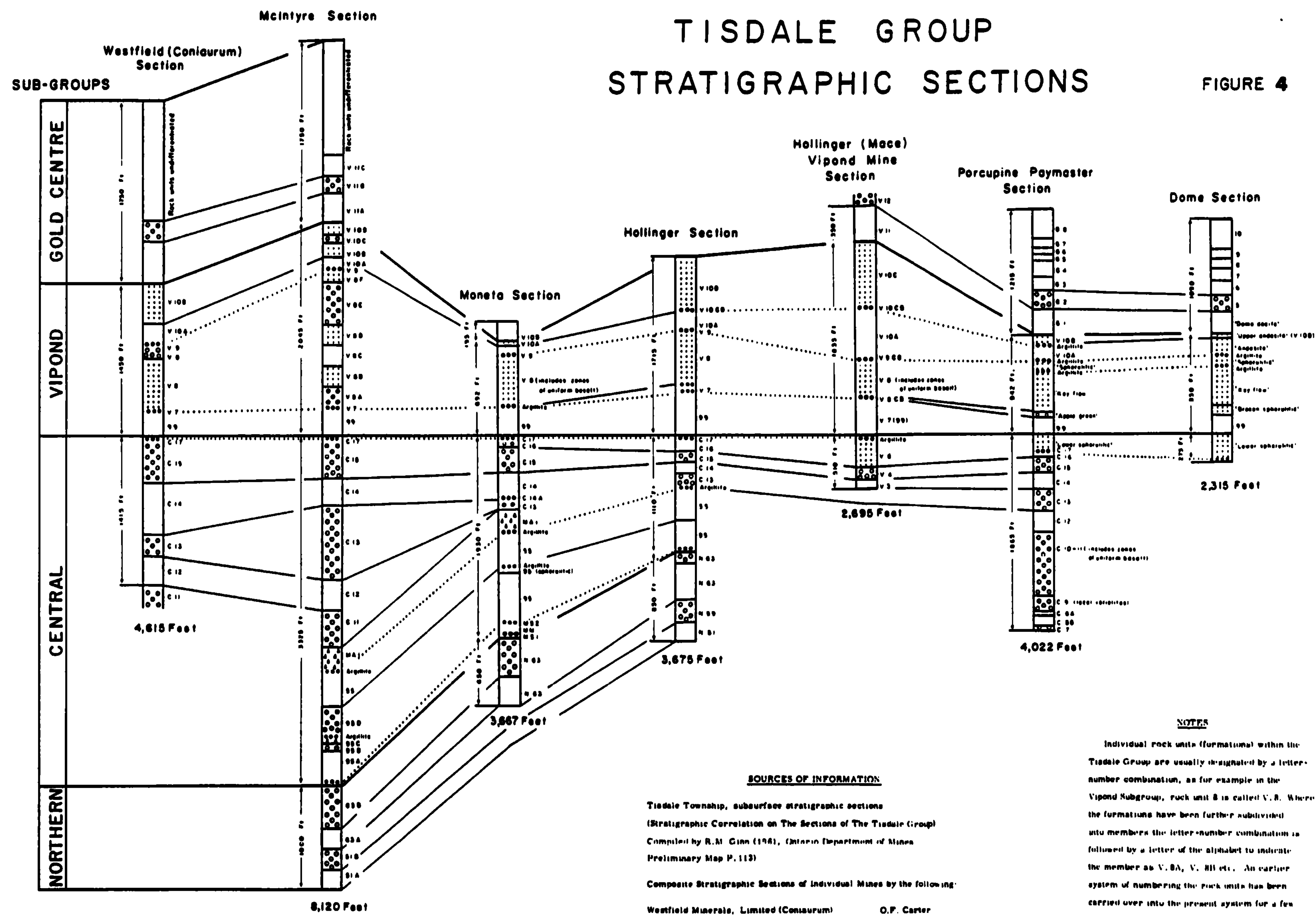
92-CND-64-05 : Learn, John R.L., Dec 1992, Structure and Alteration Studies: Surface Mapping

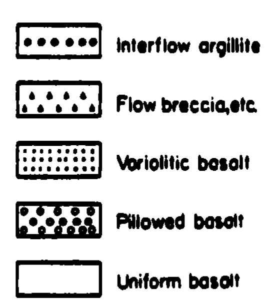
92-CND-64-06 : Koch, Rodney, Geophysics surveys over the KAY-92 grid, in preparation

92-CND-64-07 : Learn, John, R.L., Jan 1993, Diamond Drill Program, Summer 1992

TISDALE GROUP STRATIGRAPHIC SECTIONS

FIGURE 4





SOURCES OF INFORMATION

Tisdale Township, subsurface stratigraphic sections (Stratigraphic Correlation on The Sections of The Tisdale Group) Compiled by R.M. Ginn (1961), Ontario Department of Mines Preliminary Map P.113)

Composite Stratigraphic Sections of Individual Mines by the following:

Westfield Minerals, Limited (Coniaurum)	O.F. Carter
McIntyre Porcupine Mines, Limited	A.T. Griffis
Moneta Porcupine Mines, Limited	B.S. Buffam
Hollinger Consolidated Gold Mines, Limited	L.C. Graton & associates W.A. Jones, H. Michie
Hollinger Consolidated Gold Mines, Limited (Mace Section, Vipond mine)	L.C. Graton & associates
Porcupine Paymaster Mines, Limited	C.S. Langley
Dome Mines, Limited	T.C. Holmes, C. Meldrum

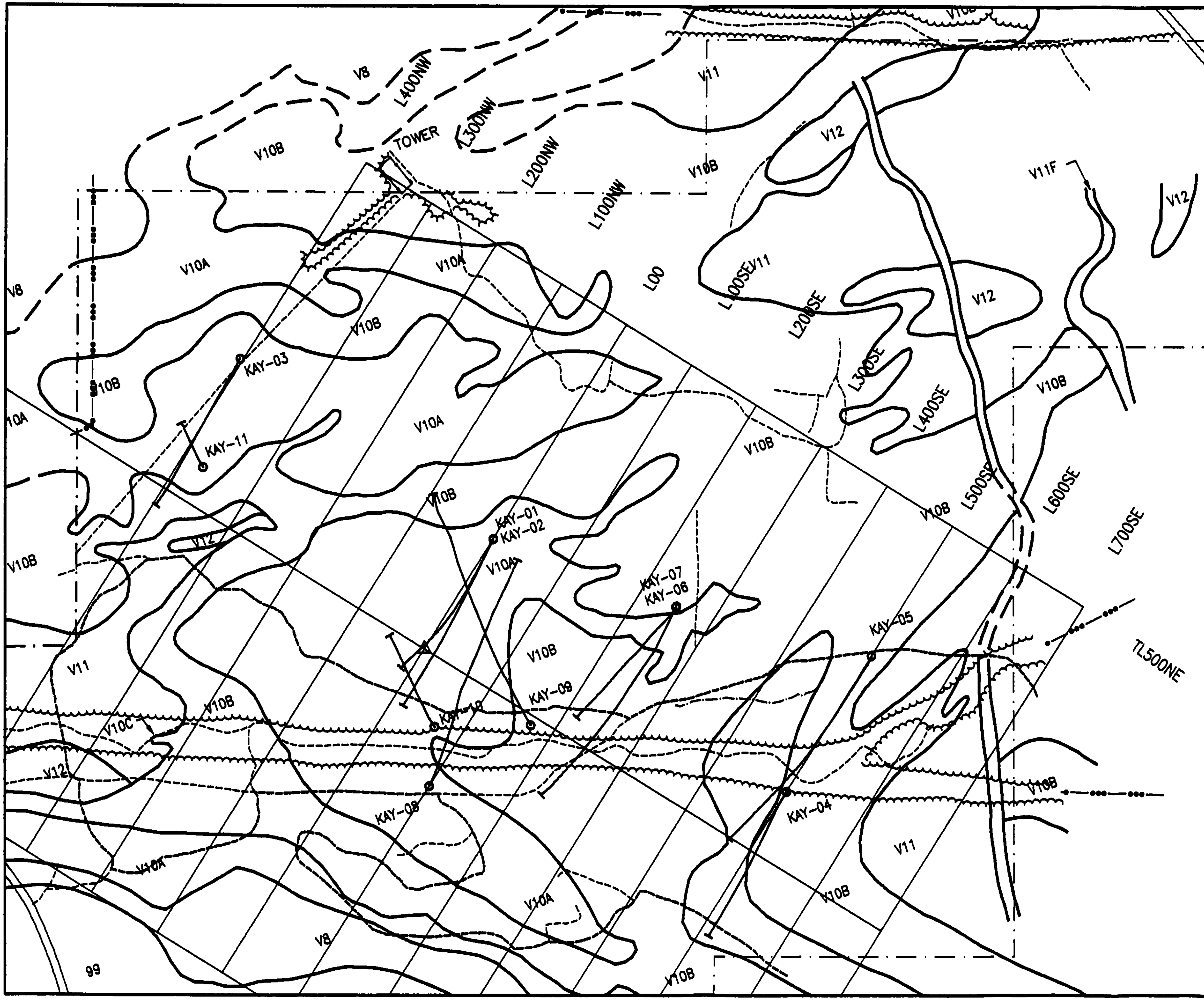
The maximum thickness of rock units was used in plotting the sections.

Drawing and correlation of sections by K.A. Ferguson, 1964.

NOTES

Individual rock units (formations) within the Tisdale Group are usually designated by a letter-number combination, as for example in the Vipond Subgroup, rock unit 8 is called V.8. Where the formations have been further subdivided into members the letter-number combination is followed by a letter of the alphabet to indicate the member as V.8A, V. 8B etc. An earlier system of numbering the rock units has been carried over into the present system for a few rock units as 51, 59, 63, 95, 55, 99 etc. Some rock units at McIntyre and Moneta were at one time assigned to the "McIntyre Formation" and are called M S 1 (McIntyre shale No. 1), M M (McIntyre massive basalt), M S 2 (McIntyre shale No. 2) and M A 1 (McIntyre agglomerate No. 1). Also some interflow sedimentary beds are designated C B (carbonaceous bed) indicating a sedimentary bed which contains carbonaceous material and some rock units have a descriptive name. For further information see report.

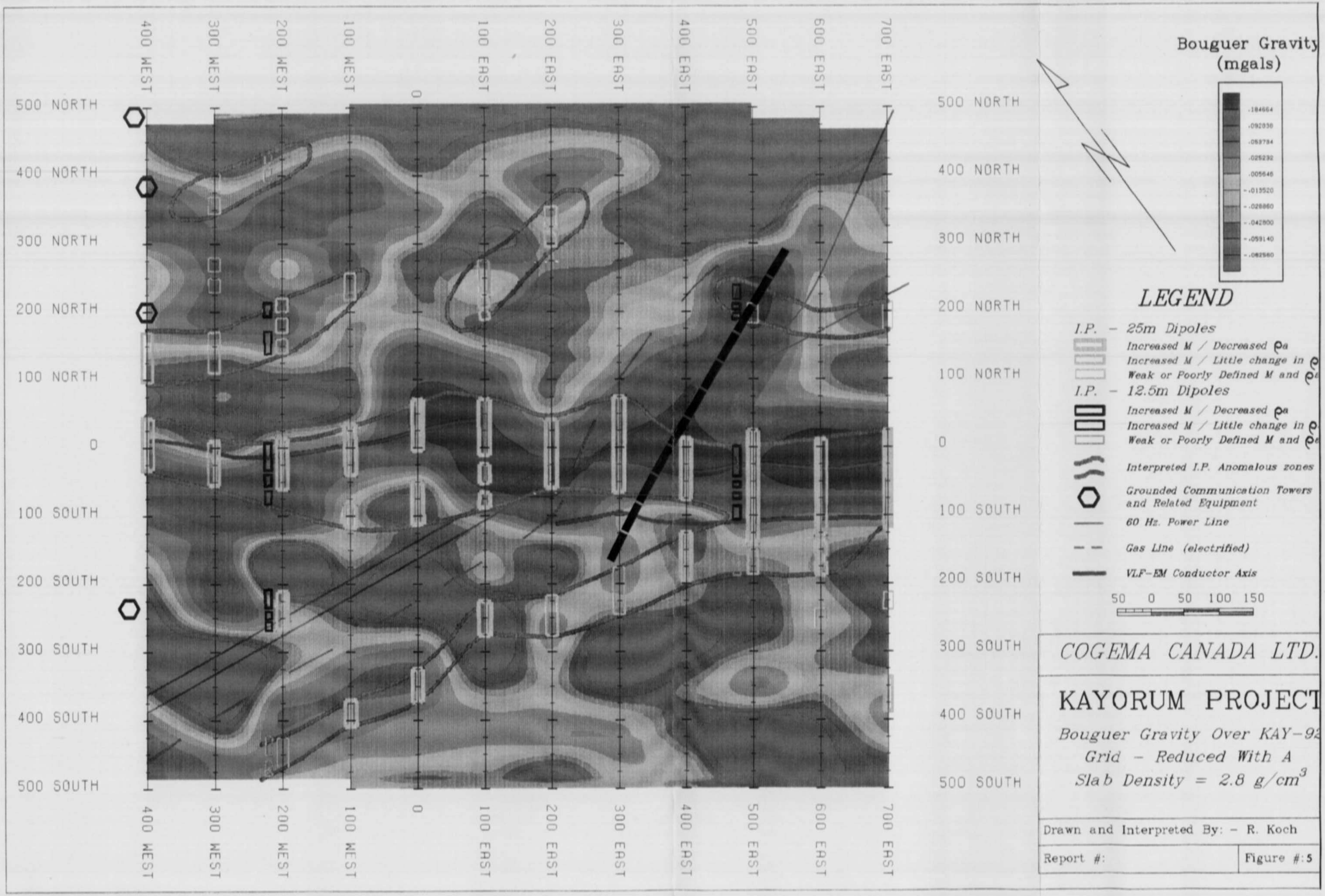
ODM 3163



COGEMA Canada Ltee/Ltd.

Diamond Drill Hole Location Map
Figure: 3

0 50 100 200 300
Scale 1 : 5000



400 WEST
300 WEST
200 WEST
100 WEST
0
100 EAST
200 EAST
300 EAST
400 EAST
500 EAST
600 EAST
700 EAST
500 NORTH
400 NORTH
300 NORTH
200 NORTH
100 NORTH
0
100 SOUTH
200 SOUTH
300 SOUTH
400 SOUTH
500 SOUTH
Bouguer Gravity (mgals)
LEGEND
I.P. - 25m Dipoles
Increased M / Decreased ρa
Increased M / Little change in ρ
Weak or Poorly Defined M and ρ
I.P. - 12.5m Dipoles
Increased M / Decreased ρa
Increased M / Little change in ρ
Weak or Poorly Defined M and ρ
Interpreted I.P. Anomalous zones
Grounded Communication Towers and Related Equipment
60 Hz. Power Line
Gas Line (electrified)
VLF-EM Conductor Axis
50 0 50 100 150
COGEMA CANADA LTD.
KAYORUM PROJECT
Bouguer Gravity Over KAY-92 Grid - Reduced With A Slab Density = 2.8 g/cm3
Drawn and Interpreted By: - R. Koch
Report #:
Figure #:5

COGEMA CANADA LIMITED
KAYORUM PROJECT

SUMMARY REPORT
DENSITY MEASURES ON SURFACE SAMPLES

Ref.no. 92-CND-64-01

by: John Learn
May 1992

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List of density measures by geologic unit

1. INTRODUCTION

When it was proposed that a test gravity survey be performed on the Kayorum grid, it was also decided to measure some of the surface samples for density. The gravity surveys were performed in October, 1991 (see Cogema Ref. no. 91-CND-64-03) and the results were encouraging enough that a systematic ground survey over a portion of the property was recommended.

The density measures were performed in January, 1992 by the Unité de Recherche et de Service en Technologie Minérale de l'Abitibi-Témiscamingue in Rouyn-Noranda under the supervision of M. Denis Bois. In total, 174 samples were tested.

2. PROCEDURES

Samples were first slabbed with a rock saw (as described in Cogema Ref. no. 91-CND-64-02). Only those samples with a minimum of surface alteration (weathering) were chosen; however this became more and more difficult as the degree of Fe-carbonate alteration increased. Samples representing all of the units mapped on the property from all parts of the property are included in this study. Additionally, samples ranging in degree of alteration (as described in Cogema Ref. no. 91-CND-64-02) are included.

Wet density is desired for comparison with ground measurements, so samples were immersed in water overnight. The wet density was then measured by determining the mass of samples in air and in water using the relation:

$$\text{density} = \frac{\text{mass in air}}{\text{mass in air} - \text{mass in water}}$$

We performed one test to evaluate the order of magnitude of error of the measures due to presence of a weathered rind on the samples. This test was performed on sample K-68A (Krist Formation) since it was one of the larger samples tested (607 cm^3; thus it was easier to remove the weathered rind):

> After having measured K-68A (in the same manner as all other samples), all weathered rind material from the sample was removed and its density was redetermined. The new result, based on about 75% of the original sample, showed an increase from 2.67 g/cm^3 to 2.70 g/cm^3.

This suggests that all density measures under-estimate true values by a minimum (since the test was performed on a proportionately large sample) of about 1%.

3. RESULTS

Results are given in the Appendix and are summarized in Table 1.

For the Krist Formation, 22 samples were tested and these give a mean value of 2.66 ± 0.05 g/cm^3.

For mafic volcanic rocks, 152 samples were tested and these give a mean value of 2.77 ± 0.07 g/cm^3. Table 1 also shows mean values for the various stratigraphic units within the total population of samples. Data for individual units are commented on below:

V12 amygdaloidal pillow lavas and pillow breccia:

d = 2.80 ± 0.08 (n=20) A = 1.2

the high standard deviation may in part be due to presence of two rock types (pillows, pillow breccia) and also to presence or absence of amygdales in the pillows;

also note that weakly altered samples (A = 0,1) give a mean value of 2.78 (n=13) compared to altered samples (A = 2,3) which give a mean value of 2.84 (n=7);

furthermore, samples from the area between lines 900E and 1500E are well represented in this "altered" subset, showing a mean value of 2.85 (n=6), relative to other parts of the property where the mean value is 2.78 (n=14).

V11 massive flows:

d = 2.74 ± 0.05 (n=28) A = 0.9

the mean result of 2.74 ± 0.05 is similar to results for the other massive units;

results for weakly altered samples (d = 2.74; n=21) are identical to the altered samples (d = 2.73; n=7); however, samples from west of line 900E show very low alteration index (A = 0.5) and slightly higher mean density of 2.78 (n=6).

V10B variolitic pillowed unit:

d = 2.79 ± 0.06 (n=38) A = 1.8

results are nearly identical to the V8 variolitic unit;

weakly altered samples give d = 2.80 (n=15) compared to d = 2.78 (n=23) for altered samples; results are uniform across the property; note that A = 2.2 east of line 1500E compared to result of 1.3 west of line 1500E.

V10A massive flows:

d = 2.75 ± 0.07 (n=23) A = 2.0

weakly altered samples have mean result of 2.78 (n=6) compared to 2.74 (n=17) for altered samples.

V8 variolitic pillowed unit:

d = 2.79 ± 0.05 (n=13) A = 1.1

weakly altered samples have mean result of 2.80 (n=10) compared to 2.76 (n=3) for altered samples.

99 flow (massive unit):

d = 2.75 ± 0.06 (n=15) A = 1.1

weakly altered samples have mean result of 2.76 (n=9) compared to 2.74 (n=6) for altered samples.

V6 variolitic pillowed unit:

d = 2.74 ± 0.07 (n=7) A = 0.9

all of the samples are weakly altered.

C15 amygdaloidal pillow lavas:

d = 2.74 ± 0.12 (n=8) A = 0.9

the high standard deviation may in part be due to presence or absence of amygdales in the samples; also note that weakly altered samples give a mean value of 2.72 (n=6) compared to 2.80 (n=2) for altered samples.

also, it is appreciated that the standard deviation is not particularly meaningful given the number of samples measured; this applies equally to most other units; it is however included to aid the reader in estimating variance within the various units.

TABLE 1: SUMMARY TABLE OF DENSITY MEASURES

Stratigraphic unit	mean d ± σ_1 (g/cm^3)	(n)	alteration index (mean value)
KRIST FORMATION	2.66 ± 0.05	(22)	n/a
MAFIC VOLCANIC ROCKS			
GOLD CENTRE subgroup			
V12	2.80 ± 0.08	(20)	1.2
V11	2.74 ± 0.05	(25)	0.9
VIPOND subgroup			
V10B	2.79 ± 0.06	(38)	1.8
V10A	2.75 ± 0.07	(23)	2.0
V8	2.79 ± 0.05	(13)	1.1
99	2.75 ± 0.06	(15)	1.1
CENTRAL subgroup			
V6	2.71 ± 0.07	(7)	0.9
C15	2.74 ± 0.12	(8)	0.9
ALL MAFIC ROCKS	2.77 ± 0.07	(152)	1.3
V12+V10B+V8	2.79 ± 0.06	(71)	1.4
V11+V10A+99	2.75 ± 0.06	(63)	1.4

4. DISCUSSION OF RESULTS

Density estimated for the Krist Formation seems appropriate given its mineralogy (predominantly plagioclase and quartz).

Density estimated for the mafic rocks also seems appropriate given their mineralogy: a rock composed of 35% actinolite + chlorite and 65% plagioclase + quartz + calcite would have a theoretical density of about 2.80 g/cm^3.

It is apparent that the V8, V10B and V12 units show slightly higher mean density than the other mafic units. Mean result for the sum of samples from the V12, V10B and V8 units is 2.79 ± 0.06 g/cm^3. Mean density for the V11, V10A and 99 massive units: 2.75 ± 0.06 g/cm^3.

Although this density contrast appears to be real, it is emphasized that the standard deviations of the two groups overlap significantly. Results for the V6 and C15 units are not really pertinent since there are few data, and more importantly, these units do not occur in the area to be surveyed in detail.

Density of altered samples from the V12 and C15 units (both amygdaloidal pillowed units) appears to be higher than for unaltered samples, whereas for all other units the opposite is true. This is not easily explained; perhaps surface weathering of most altered samples is more penetrative.

5. CONCLUSIONS

There is a density contrast of about 0.11 g/cm^3 between the Krist Formation and the mafic metavolcanic rocks on the Kayorum property. For geophysical modelling, it is suggested that density of the Krist Formation be estimated at 2.69 g/cm^3, and that density of the mafic metavolcanic rocks be estimated at 2.80 g/cm^3 (or about 1% higher than the mean values determined from the surface samples).

Detailed evaluation of data within the various mafic units shows that the variolitic units of the Vipond subgroup (V8, V10B) and the pillow lavas (and pillow breccias) of the Gold Centre subgroup (V12) may have higher density (eg. 2.82 g/cm^3) compared to the massive basalts (99, V10A, V11; eg. 2.78 g/cm^3).

Evaluation of the samples based on their (qualitatively determined) alteration index gives inconclusive results.

6. PROPOSED FOLLOW-UP WORK

We have interpreted presence of a discordant zone of Fe-carbonate and pyrite alteration based on widely spaced gravity and IP surveys centred at about 1600E/400N on the Kayorum property. This area also shows anomalous Au lithogeochemistry relative to most of the rest of the property and may also show anomalous As lithogeochemistry based on a small selection of samples.

The bedrock units exposed at surface in this area are the V10A massive basalt and the V10B variolitic pillow lavas. The gravity anomaly here cannot seemingly be explained by the apparent small difference in density of these two units.

Interpretation of the profiles generated by the detailed ground survey should use a value of about 2.80 g/cm^3 for unaltered rocks. Addition of Fe-carbonate and pyrite along with quartz veining could increase this result, depending on the intensity of alteration and mineralization: for example, addition of 8% Fe-carbonate along with 2% pyrite and 10% quartz veining might increase density to about 2.88 g/cm^3; addition of 12% Fe-carbonate along with 3% pyrite and 10% quartz veining might increase density to about 2.92 g/cm^3; addition of 15% Fe-carbonate along with 5% pyrite and 10% quartz veining might increase density to about 2.97 g/cm^3.

Density measures should be systematically measured on the core samples drilled in this area. In the event that a mineralized zone is intersected, we may be able to estimate its volume using the profiles and these measures. In the event that we do not intersect a mineralized zone, we may be able to determine whether or not the rocks intersected have sufficient density to explain the anomaly. Possibility that a mineralized zone occurs at depths greater than the drilling may be inferred if the measured densities cannot explain the gravity profiles.

APPENDIX

List of density measures by geologic unit

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
KRIST	K-13B	332.8	204.4	128.4	2.59	0	2
KRIST	K-15A	148.8	91.3	57.5	2.59	0	-2
KRIST	K-15B	198.1	122.8	75.3	2.63	0	-2
KRIST	K-16B	241.5	148.2	93.3	2.59	0	2
KRIST	K-42	535.0	337.8	197.2	2.71	0	3
KRIST	K-45B	374.3	232.0	142.3	2.63	0	5
KRIST	K-45E	220.4	137.0	83.4	2.64	0	3
KRIST	K-68A	1622.4	1015.1	607.3	2.67	0	11
KRIST	K-68B	1448.4	906.6	541.8	2.67	0	-2
KRIST	K-68D	200.5	122.1	78.4	2.56	0	-2
KRIST	K-68E	239.9	150.2	89.7	2.67	0	-2
KRIST	K-68F	443.2	278.4	164.8	2.69	0	-2
KRIST	K-69A	861.6	537.3	324.3	2.66	0	9
KRIST	K-71A	448.3	280.3	168.0	2.67	0	-2
KRIST	K-71C	638.3	401.4	236.9	2.69	0	-2
KRIST	K-71D	910.2	573.4	336.8	2.70	0	-2
KRIST	K-71G	302.0	190.6	111.4	2.71	0	17
KRIST	K-71J	287.9	179.5	108.4	2.66	0	3
KRIST	K-72A	317.1	199.5	117.6	2.70	0	11
KRIST	K-72B	494.9	307.4	187.5	2.64	0	3
KRIST	K-72C	476.0	303.1	172.9	2.75	0	4
KRIST	K-72D	326.5	204.3	122.2	2.67	0	7
				Mean:	2.658	0	
Number of samples: 22				Std dev:	0.050		

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
V12	K-20B	1363.9	886.5	477.4	2.86	2	-2
V12	K-30	333.4	214.4	119.0	2.80	1	-2
V12	K-39A	383.1	246.5	136.6	2.80	2	2
V12	K-48A	1470.3	925.0	545.3	2.70	0	3
V12	K-48B	432.8	277.3	155.5	2.78	1	4
V12	K-82	551.3	345.8	205.5	2.68	0	-2
V12	K-83A	438.9	281.5	157.4	2.79	3	-2
V12	K-158C	101.3	64.2	37.1	2.73	1	2
V12	K-159A	264.8	173.3	91.5	2.89	3	2
V12	K-166A	680.0	441.9	238.1	2.86	0	3
V12	K-166B	1719.7	1128.9	590.8	2.91	0	3
V12	K-187	249.6	160.7	88.9	2.81	1	-2
V12	K-200	287.2	188.2	99.0	2.90	1	3
V12	K-430	382.1	238.4	143.7	2.66	1	-2
V12	K-431	288.2	183.9	104.3	2.76	0	2
V12	K-433	536.2	339.1	197.1	2.72	1	2
V12	K-782	953.0	620.6	332.4	2.87	2	18
V12	K-789	802.3	517.4	284.9	2.82	0	6
V12	K-791	522.0	342.7	179.3	2.91	2	4
V12	K-805	364.8	232.6	132.2	2.76	2	4
				Mean:	2.800	1.2	
				Std dev:	0.080		

Number of samples: 20

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
V11	K-9B	354.2	226.9	127.3	2.78	1	-2
V11	K-27C	779.9	498.4	281.5	2.77	0	2
V11	K-32A	420.3	271.8	148.5	2.83	0	2
V11	K-55	256.9	165.8	91.1	2.82	1	-2
V11	K-56A	566.1	357.8	208.3	2.72	1	-2
V11	K-65C	216.0	138.9	77.1	2.80	0	-2
V11	K-73	496.0	315.2	180.8	2.74	1	-2
V11	K-106	198.4	126.9	71.5	2.77	1	-2
V11	K-112	241.5	149.3	92.2	2.62	2	-2
V11	K-157B	254.7	161.5	93.2	2.73	1	2
V11	K-158D	321.6	206.0	115.6	2.78	2	-2
V11	K-162B	406.6	253.2	153.4	2.65	0	-2
V11	K-162D	344.2	216.8	127.4	2.70	0	-2
V11	K-167B	436.7	276.6	160.1	2.73	1	5
V11	K-167C	336.6	210.2	126.4	2.66	0	4
V11	K-173A	300.8	194.2	106.6	2.82	3	7
V11	K-451	579.2	365.3	213.9	2.71	2	3
V11	K-455	485.6	302.6	183.0	2.65	1	-2
V11	K-458	161.6	103.5	58.1	2.78	0	-2
V11	K-465	378.7	238.7	140.0	2.71	1	3
V11	K-583	447.8	282.0	165.8	2.70	1	2
V11	K-755	365.3	230.3	135.0	2.71	1	12
V11	K-769	590.2	376.5	213.7	2.76	0	-2
V11	K-771	497.3	312.9	184.4	2.70	2	-2
V11	K-793	1405.1	893.8	511.3	2.75	1	7
V11	K-796	416.6	265.8	150.8	2.76	3	5
V11	K-852	514.8	324.9	189.9	2.71	2	-2
V11	K-861	397.0	252.8	144.2	2.75	1	3
				Mean:	2.736	0.9	
Number of samples: 28				Std dev:	0.050		

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
V10B	K-29B	883.8	571.6	312.2	2.83	1	-2
V10B	K-50A	922.4	589.9	332.5	2.77	2	5
V10B	K-56B	375.0	241.3	133.7	2.80	0	-2
V10B	K-76B	349.9	223.1	126.8	2.76	2	-2
V10B	K-95B	678.4	436.2	242.2	2.80	1	-2
V10B	K-96A	412.4	265.0	147.4	2.80	1	-2
V10B	K-139	1236.3	801.1	435.2	2.84	3	-2
V10B	K-169A	241.1	154.2	86.9	2.77	1	-2
V10B	K-170	949.1	611.2	337.9	2.81	1	-2
V10B	K-173B	530.8	340.5	190.3	2.79	2	3
V10B	K-173C	451.9	283.5	168.4	2.68	3	-2
V10B	K-173D	329.9	212.5	117.4	2.81	1	-2
V10B	K-182	272.6	173.0	99.6	2.74	1	-2
V10B	K-185	388.8	249.3	139.5	2.79	1	4
V10B	K-186	664.7	431.5	233.2	2.85	0	2
V10B	K-248	445.1	284.7	160.4	2.77	1	-2
V10B	K-252	510.6	331.6	179.0	2.85	1	-2
V10B	K-349A	713.0	464.9	248.1	2.87	2	36
V10B	K-396	389.0	241.5	147.5	2.64	3	-2
V10B	K-410	514.8	334.8	180.0	2.86	1	3
V10B	K-415	455.3	292.5	162.8	2.80	3	5
V10B	K-417E	461.5	294.3	167.2	2.76	1	-2
V10B	K-493	398.4	252.2	146.2	2.73	2	-2
V10B	K-509A	1030.8	665.0	365.8	2.82	2	-2
V10B	K-552	600.2	392.4	207.8	2.89	2	2
V10B	K-569	707.8	451.4	256.4	2.76	3	-2
V10B	K-571	274.9	176.0	98.9	2.78	2	-2
V10B	K-593	769.7	478.0	291.7	2.64	2	2
V10B	K-601	373.0	234.7	138.3	2.70	2	2
V10B	K-681	498.7	322.9	175.8	2.84	2	20
V10B	K-684	371.9	240.5	131.4	2.83	3	26
V10B	K-686	948.4	611.5	336.9	2.82	2	3
V10B	K-691	388.7	246.8	141.9	2.74	3	14
V10B	K-734	850.1	541.5	308.6	2.75	1	-2
V10B	K-736	1509.3	983.0	526.3	2.87	3	8
V10B	K-740	536.0	346.6	189.4	2.83	2	-2
V10B	K-754	785.1	503.4	281.7	2.79	3	-2
V10B	K-807	418.0	264.9	153.1	2.73	2	2
				Mean:	2.787	1.8	
Number of samples: 38				Std dev:	0.060		

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
V10A	K-49A	142.4	90.3	52.1	2.73	2	3
V10A	K-49C	1085.6	688.7	396.9	2.74	2	-2
V10A	K-91C	440.3	282.6	157.7	2.79	1	-2
V10A	K-177	548.6	345.1	203.5	2.70	3	2
V10A	K-178	1647.6	1027.1	620.5	2.66	3	-2
V10A	K-181	345.0	219.7	125.3	2.75	3	2
V10A	K-189	494.6	317.8	176.8	2.80	2	5
V10A	K-193	264.5	166.1	98.4	2.69	2	2
V10A	K-225	391.8	247.1	144.7	2.71	0	2
V10A	K-236	561.9	363.8	198.1	2.84	2	-2
V10A	K-336A	236.8	153.0	83.8	2.83	1	3
V10A	K-340	262.8	162.8	100.0	2.63	2	-2
V10A	K-357	279.3	178.9	100.4	2.78	1	2
V10A	K-361	466.2	303.5	162.7	2.87	2	7
V10A	K-385	328.0	207.1	120.9	2.71	2	-2
V10A	K-399A	658.0	419.1	238.9	2.75	3	3
V10A	K-486	437.7	278.0	159.7	2.74	2	22
V10A	K-487	611.8	395.4	216.4	2.83	2	8
V10A	K-519	818.2	506.4	311.8	2.62	3	4
V10A	K-624	684.9	434.6	250.3	2.74	1	-2
V10A	K-632	372.3	237.1	135.2	2.75	3	-2
V10A	K-693B	542.2	348.2	194.0	2.79	2	-2
V10A	K-708	558.6	362.2	196.4	2.84	1	-2
				Mean:	2.751	2.0	
Number of samples: 23				Std dev:	0.070		

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
V8	K-50C	318.5	203.2	115.3	2.76	2	2
V8	K-63B	382.1	242.8	139.3	2.74	2	5
V8	K-91A	216.7	139.9	76.8	2.82	1	-2
V8	K-92	170.6	110.4	60.2	2.83	1	-2
V8	K-134	403.5	259.8	143.7	2.81	1	-2
V8	K-145B	102.9	66.2	36.7	2.80	1	3
V8	K-148	297.6	194.8	102.8	2.89	1	3
V8	K-191	311.9	200.0	111.9	2.79	2	3
V8	K-192	267.3	170.5	96.8	2.76	1	-2
V8	K-237	328.4	206.2	122.2	2.69	1	-2
V8	K-239	221.6	143.6	78.0	2.84	0	6020
V8	K-257C	339.4	218.1	121.3	2.80	1	-2
V8	K-266	531.7	339.2	192.5	2.76	0	-2
				Mean:	2.791	1.1	
Number of samples: 13				Std dev:	0.050		

Unit	Sample #	mass (air)	mass (H2O)	Volume (cm3)	Density	Alteration index	Au (ppb)
99	K-84	289.7	182.7	107.0	2.71	0	-2
99	K-88	210.2	133.1	77.1	2.73	0	-2
99	K-90A	198.4	126.1	72.3	2.74	2	-2
99	K-90B	149.2	94.0	55.2	2.70	2	4
99	K-90C	320.2	202.7	117.5	2.73	0	-2
99	K-151B	687.7	448.3	239.4	2.87	1	-2
99	K-220	537.3	348.2	189.1	2.84	1	4
99	K-242	471.0	298.7	172.3	2.73	1	-2
99	K-243	530.1	336.7	193.4	2.74	2	-2
99	K-244	283.7	177.4	106.3	2.67	1	8
99	K-267	1050.4	666.0	384.4	2.73	1	3
99	K-269	245.9	158.1	87.8	2.80	2	4
99	K-274	168.1	108.1	60.0	2.80	3	3
99	K-309	194.9	121.8	73.1	2.67	2	-2
99	K-315	761.6	492.5	269.1	2.83	0	-2
				Mean:	2.752	1.1	
Number of samples: 15				Std dev:	0.060		
V6	K-278	612.4	389.7	222.7	2.75	1	3
V6	K-282	478.3	293.2	185.1	2.58	1	11
V6	K-283	333.6	210.1	123.5	2.70	1	3
V6	K-284	500.0	322.3	177.7	2.81	1	6
V6	K-286	572.4	357.5	214.9	2.66	1	4
V6	K-305	137.0	87.4	49.6	2.76	0	6
V6	K-306	314.5	199.9	114.6	2.74	1	3
				Mean:	2.714	0.9	
Number of samples: 7				Std dev:	0.070		
C15	K-129	1836.5	1192.5	644.0	2.85	3	6
C15	K-281	359.8	222.3	137.5	2.62	1	10
C15	K-291	353.6	219.5	134.1	2.64	1	10
C15	K-298	171.0	113.6	57.4	2.98	0	3
C15	K-300A	241.4	154.1	87.3	2.77	0	6
C15	K-301	330.1	209.5	120.6	2.74	2	5
C15	K-319	158.7	99.4	59.3	2.68	0	7
C15	K-329	257.7	160.3	97.4	2.65	0	2
				Mean:	2.741	0.9	
Number of samples: 8				Std dev:	0.120		

COGEMA CANADA LIMITED
KAYORUM PROJECT

STRUCTURE AND ALTERATION STUDIES: SURFACE MAPPING

Ref. no. 92-CND-64-05

by: John Learn
Dec 1992

SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

The property is subdivided into two structural domains: a southwest domain with northwest-southeast trending fabric, and a northern domain with east-west fabric. The axial trace of the south Tisdale anticline is the approximate boundary between the two domains.

The southwest domain has foliations trending about 115°/80° NE which corresponds to the oldest deformation recognized on the property. Lineations in this domain were recorded only in the southernmost portion of the property (Burb) and these plunge about 10° E.

The northern domain has foliations trending about 085°/80° N in the western part and trending about 105°/80° N in the eastern part. Lineations plunge 40° to 50° E.

Quartz veining is less common in the southern domain; in the northern domain two main families of quartz veins are recognized: these have mean orientations of about 140°/60° SW, 025°/75° W.

Zones of high strain are much more common in the northern domain and trend approximately east-west. Within the northern domain we have identified a northwest-southeast corridor with a high density of high strain zones (faults).

Fe-carbonate alteration on the Kayorum property is strongest in the vicinity of this northwest-southeast trending corridor. Calcite is strongest to the northeast of this corridor and on the Burb claim.

Based on these results and on results of geophysical surveys and lithogeochemistry studies, this northwest-southeast trending corridor was chosen as the only high priority drill target. The possible southern extension of the Vipond fault may also warrant drill testing.

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MAP 5: Alteration map - calcite................ 1:10 000

1. INTRODUCTION

The Kayorum project lies in the heart of the Porcupine mining camp, bounded to the north by the Hollinger-McIntyre-Coniaurum deposits and to the south by the deposits closely associated with the Porcupine-Destor fault: the Delnite, Aunor and Buffalo Ankerite deposits. See Figure 1.

In October 1990, Cogema Canada Ltd. signed an option agreement with Moneta Porcupine Mines Ltd. to explore the property. Work commenced in December of the same year and so far has included extensive ground geophysical surveys and a detailed surface mapping program.

The purpose of this report is to present some additional details and comments to supplement and to complement remarks and interpretations already presented in earlier geological reports. Most of the data presented here were compiled in early 1992 (before mapping of the Meunier claim; see Figure 2). Therefore, data from the Meunier claim is excluded from most figures. However, structural measurements and zones of high strain (faults) from the Meunier claim have been presented on MAP 2 (see later).

A general description of the property is given in 91-CND-64-02 and includes a summary of the major structures crossing the property: the northwest-southeast trending south Tisdale anticline and Kayorum syncline; the east-west trending Porcupine syncline (main axis); and the Vipond fault. In addition, a more detailed presentation of the structure in the vicinity of the August Porcupine claims was given. That interpretation was refined after mapping of the Meunier claim (see 92-CND-64-02).

Also given was a generalized summary of foliation and lineation measures taken during the mapping program along with the main vein orientations. This report will not change any of the earlier interpretations presented; it is intended only to give a more detailed picture of the local structure.

This report also includes, for the first time, the location of high strain zones (faults) identified during the surface mapping.

Similarly, general statements concerning alteration of the surface samples were given in the previous reports. It was stated, for example, in 91-CND-64-02, that Fe-carbonate alteration was widespread over the August Porcupine claims (in the vicinity of the Kay-92 grid). The presentation given here is only intended to give a better picture of the data behind these comments.

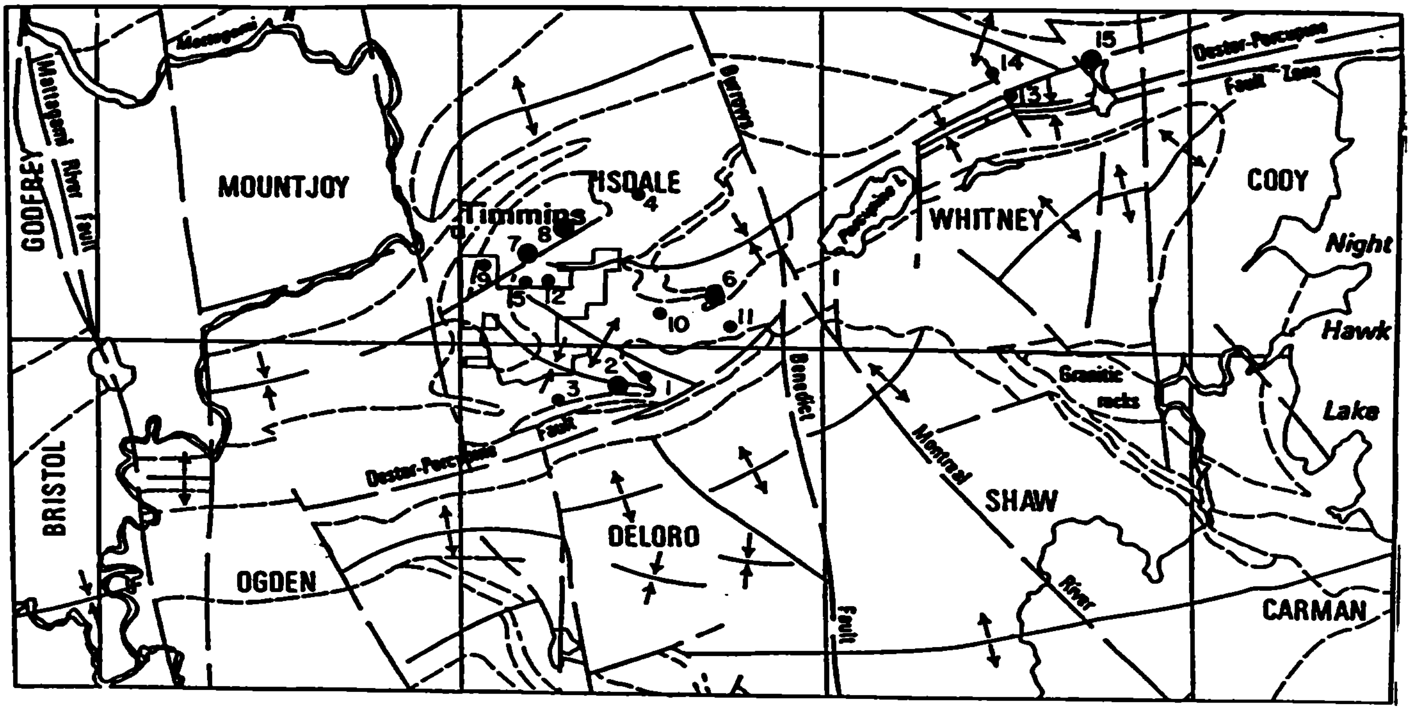


FIGURE 1: Gold mines of the Timmins camp
(Scale 1:200 000)

INDEX TO MINES
(metric tonnes of Au produced)

DELORO TOWNSHIP

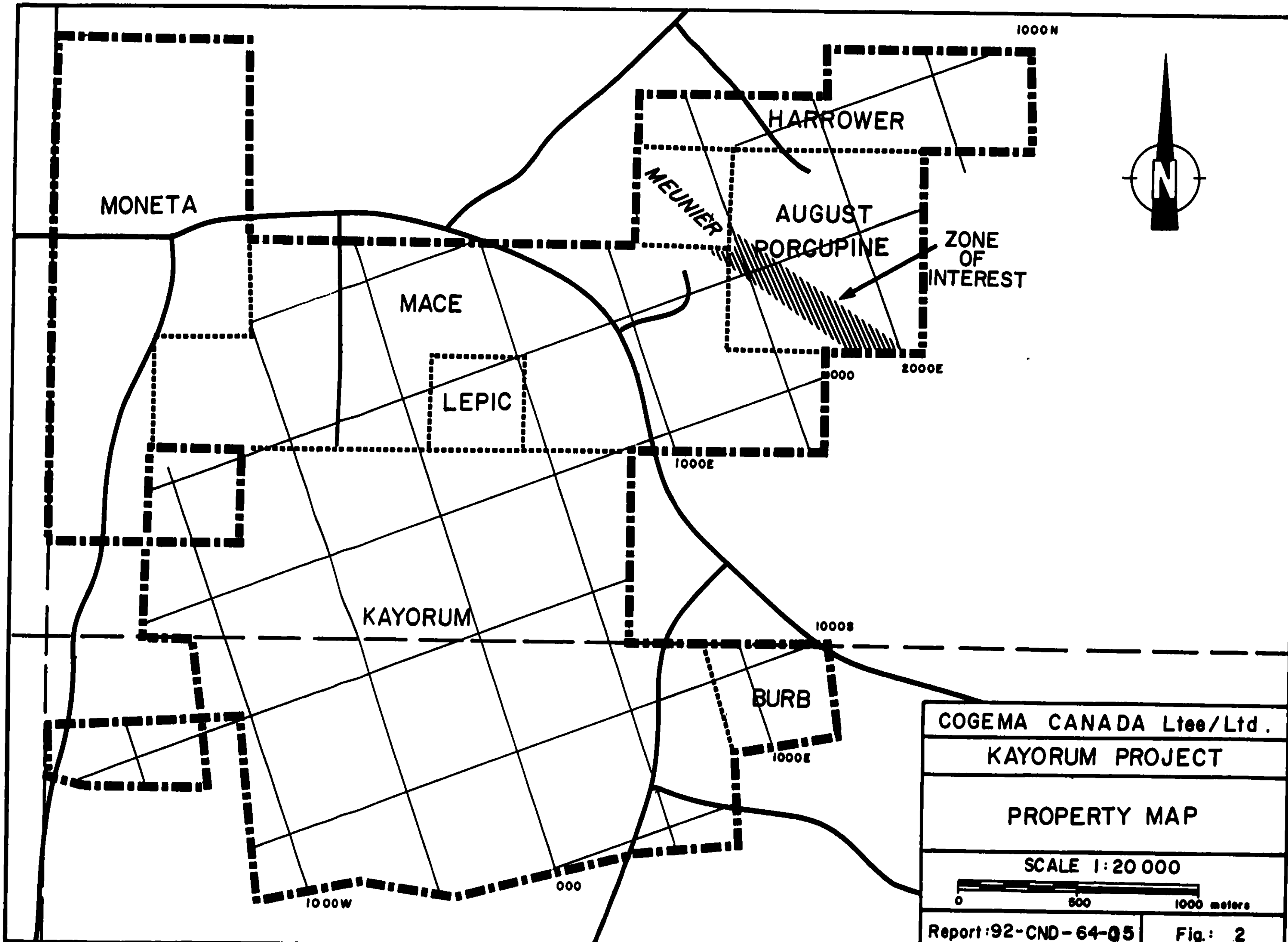
1. Buffalo Ankerite (30t)
2. Aunor (61t)
3. Delnite (29t)

TISDALE TOWNSHIP

4. Coniaurum (35t)
5. Crown (4t)
6. Dome (300t)*
7. Hollinger (602t)
8. McIntyre (310t)
9. Moneta (5t)
10. Paymaster (37t)
11. Preston (48t)
12. Vipond (13t)

WHITNEY TOWNSHIP

13. Broulan (8t)
14. Hallnor (46t)
15. Pamour (60t)*



COGEMA CANADA Ltee/Ltd.

KAYORUM PROJECT

PROPERTY MAP

SCALE 1:20 000

0 500 1000 meters

Report:92-CND-64-05

Fig.: 2

2. REGIONAL AND LOCAL GEOLOGY

The geology of the Timmins area, and more particularly, the geology at Kayorum, has been presented in previous Cogema reports (see above). Only a very brief review is presented here.

On the property, metavolcanic rocks of the Tisdale Group are the only rocks exposed. The mafic rocks of the Tisdale Group in this area are subdivided by Ferguson et. al. (1968) into four sub-groups: Northern, Central, Vipond and Gold Centre. These sub-groups have been further subdivided into flow units based mainly on their textural features: massive flows, variolitic pillowed flows and amygdaloidal pillowed flows. There are also several thin horizons of interflow argillites. These mafic metavolcanic units are in turn overlain by a thin carbonaceous argillite and a felsic agglomeratic tuff referred to as the Krist Formation.

3. PREVIOUS WORK

Previous exploration work is summarized in 91-CND-64-02.

Structure in the immediate vicinity of the Kayorum property has been studied by Piroshco and Kettles (1991) as part of a regional analysis of Tisdale and Whitney townships. Only the main structural features of the Kayorum property are shown on their map. These include the main axis of the Porcupine syncline, the south Tisdale anticline and the south Tisdale syncline (more commonly referred to as the Kayorum syncline). Also shown is the Vipond fault, and to the east of the property (at the Paymaster mine) they show the Dome fault. All of these structures (with the possible exception of the Dome fault) are well known in the area.

Brisbin (1992) shows only the Vipond fault on the preliminary map which I have in my possession, but I am sure he agrees with Piroshco and Kettles on the location of the south Tisdale anticline and the south Tisdale (Kayorum) syncline. On the other hand, I am not sure if he agrees with their positioning of the Porcupine syncline main axis as passing through the Krist Formation.

Alteration in the immediate vicinity of the Kayorum property was studied by Brisbin (1992) as part of a regional mapping project. He recognized erratic moderate to strong Fe-carbonate and sericite alteration in the vicinity of the August Porcupine and Meunier claims along with local strong pyrite mineralization. He also recognized that the southeast corner of the Meunier claim is part of an anticlinal structure, based on his mapping of the V10A uniform basalt being virtually surrounded by the V10B variolitic unit (pers. comm. 1991).

4. STRUCTURAL NOTES

4.1 Introduction

The detailed geologic maps presented at 1:2000 in 91-CND-64-02 and in 92-CND-64-02 are presented again here (see MAPS 1,2,3) with foliation, lineation and vein orientations measured during the mapping programs. In addition, zones of strong schistosity (high strain) have been interpreted from the outcrop exposures; these are plotted as faults.

Two main structural domains occur on the Kayorum property:

* an area of predominantly northwest-southeast foliations approximately bounded to the east by the south Tisdale anticline (southwest domain);
* and an area of predominantly east-west foliations which includes most of the northern part of the Mace claims and the August Porcupine, Meunier and Harrower claims (north domain).

I interpret that the northwest-southeast trending folds (south Tisdale anticline and Kayorum syncline) pre-date the east-west trending folds (Porcupine syncline), and that the area of predominantly northwest-southeast trending foliations represents a "window" protected from the later deformation by the massive nature of the C15 unit exposed in the core of the south Tisdale anticline and by the very massive nature of the Krist fragmental.

4.2 Structure of the southwest domain

Figure 3 shows foliation measures taken on the Burb claim. Mean result is about 115°/80° NE. Lineations in this area are subhorizontal; I was not able to take a precise measure but I would guess that it is in the order of 10° E.

Figure 4 shows foliation measures for the western part of the property (west sheet, west of L1000E). Measures here fall into two subsets, one corresponding to the northwest-southeast orientation, the other corresponding to the east-west trend. Mean value for the southwest domain is about 110°/70° NE. There may be some overlap between the two subsets which has affected the mean value; alternatively, there may be some rotation by the later east-west deformation accounting for the slight difference between the mean values here and at Burb. Lineations measured west of L1000E appear to all correspond to the east-west subset of foliations.

Figure 5 is a sketch showing crenulations observed on the Burb claim and localized on the structural map (1:2000). The significance of this late structural fabric is not known, but it appears to be local.

(EQUAL AREA PROJECTIONS)

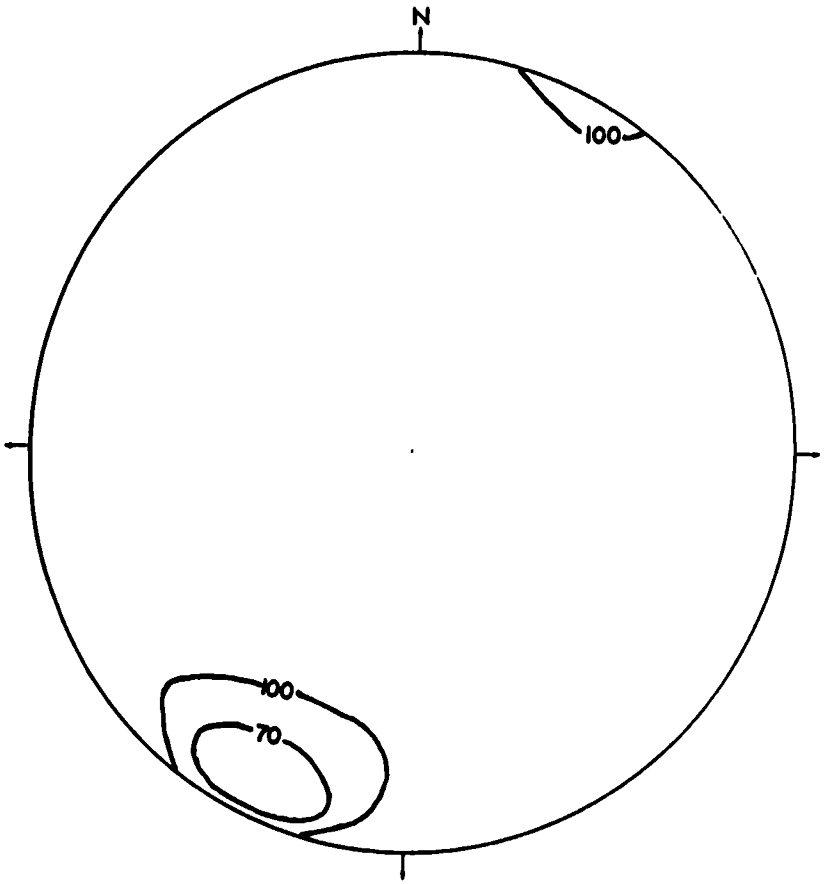


Figure: 3

**Foliation measures (poles to S_1);
Burb claim ; n=35**

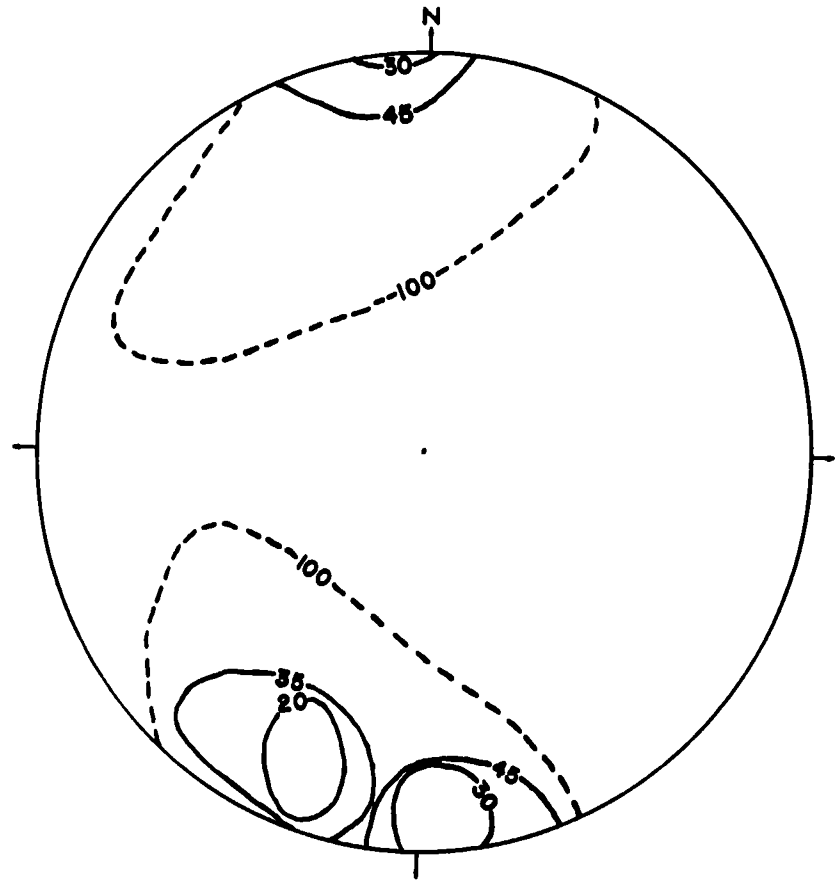


Figure: 4

**Foliation measures (poles to S_1);
central part of property
(west of L1000E);
n=136**

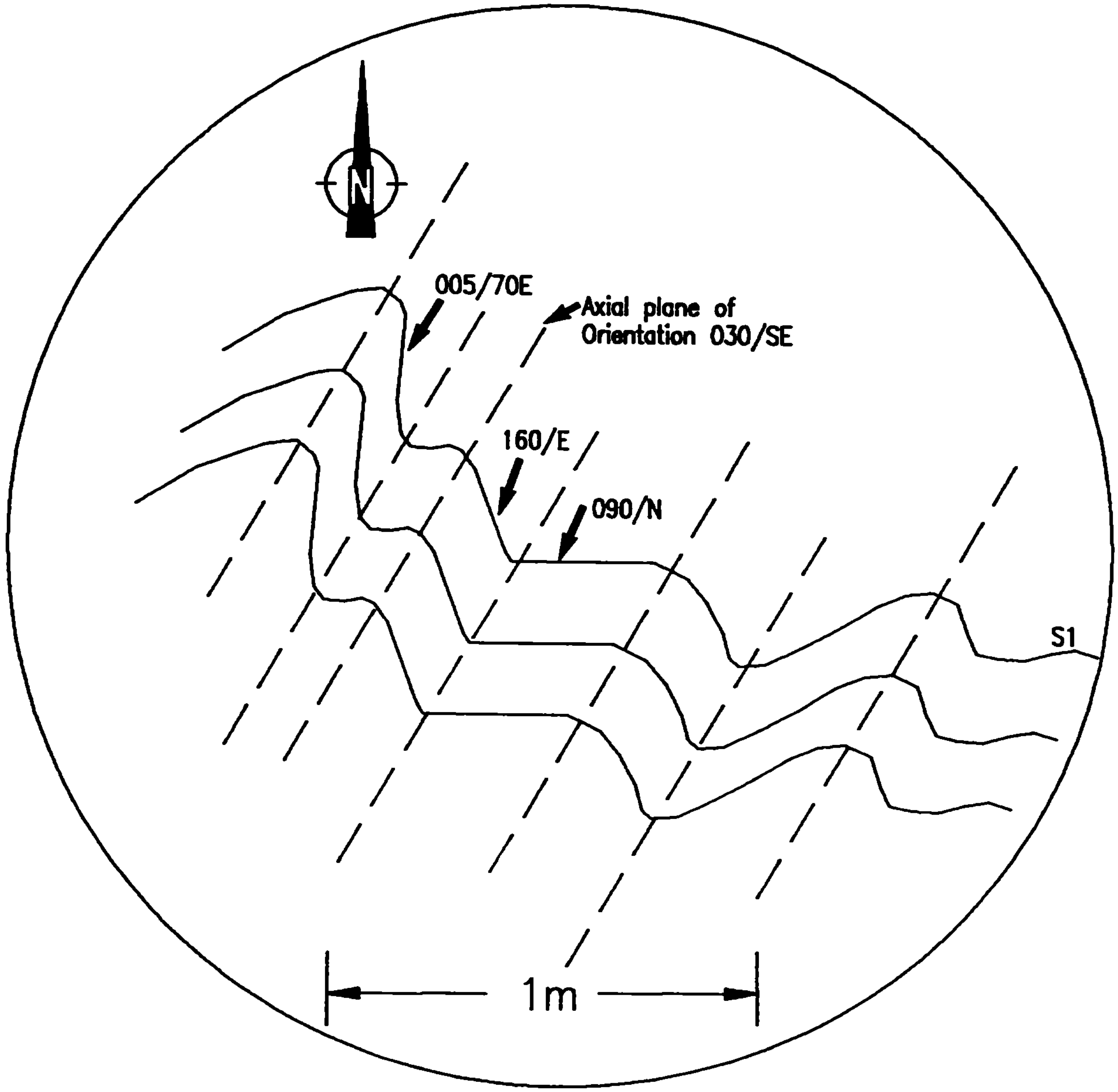


Figure 5: Orientation of foliation (S1) observed at sample K-878 on Burb claim; see MAP 3 for location

4.3 Structure of the north domain

Figure 6 shows foliation measures for the east sheet (east of L1000E). Note that the compilation presented here excludes results from the Meunier claim. But, inclusion of the Meunier claim data would not significantly change the results. Mean result is about 105°/80° N. There may be some influence here also from the northwest-southeast subset; however, there is no strong evidence for two populations on the stereonet. On the other hand, mean value for the east-west family of foliations on Figure 4 is closer to 085°/80° N.

Note that the mean result above is estimated from all data. But foliations dipping both north and south are present. South dips were measured less commonly than north dips and appear to occur principally in the north part of the east sheet. Using these data, it might be possible to better locate synclinal and anticlinal axes in the north part of the property. Fold axial planes to the south are overturned, hence most dip measures dip north. This also suggests that further subdivision of the data shown in Figure 6 might be a worthwhile undertaking.

Figure 7 shows lineation measures from both the west and east sheets. These appear to me to all be related to the east-west deformation and not to the northwest-southeast deformation. Mean result is about 45° at 085°. Minimum plunge measured is 20°; maximum plunge measured is 60°. Areas of steeply plunging lineation may be of interest since Hollinger ore zones tended to be more commonly localized there (D. Brisbin, pers. comm. 1991).

4.4 Quartz veining

At Burb, only four quartz vein orientations were measured. Three of these are concordant to weakly discordant to the foliations measured. The fourth result has similar strike to the foliation but has an opposing (southwest) dip.

For the west sheet, only fourteen measures were taken, and these are scattered across the stereonet with no apparent grouping. Quartz veins from Burb and the west sheet are presented together on Figure 8.

For the east sheet (Meunier claim is again excluded), there are numerous quartz veins, and these fall into two main subsets (see Figure 9), although there are again numerous other measures scattered across the stereonet. The two predominant groups have mean orientations of about 140°/60° SW and 025°/75° W. These two families of quartz veins correspond to the most common families of quartz veins described in 91-CND-64-02.

(EQUAL AREA PROJECTIONS)

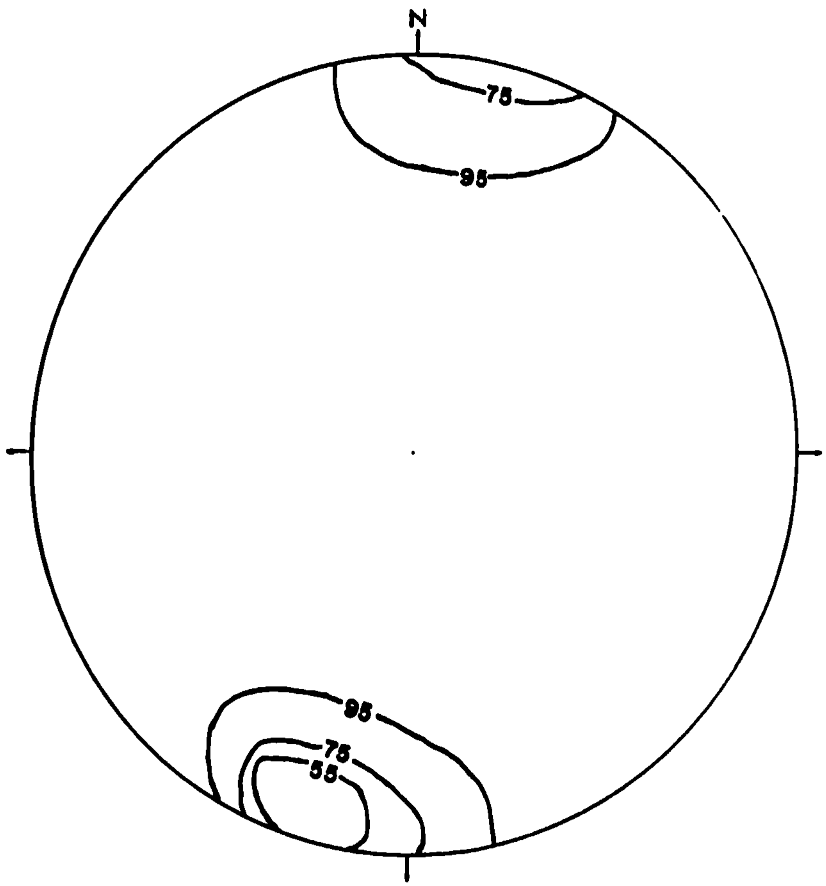


Figure: 6

Foliation measures (poles to S_1); northeastern part of property (east of L·1000E); n=173

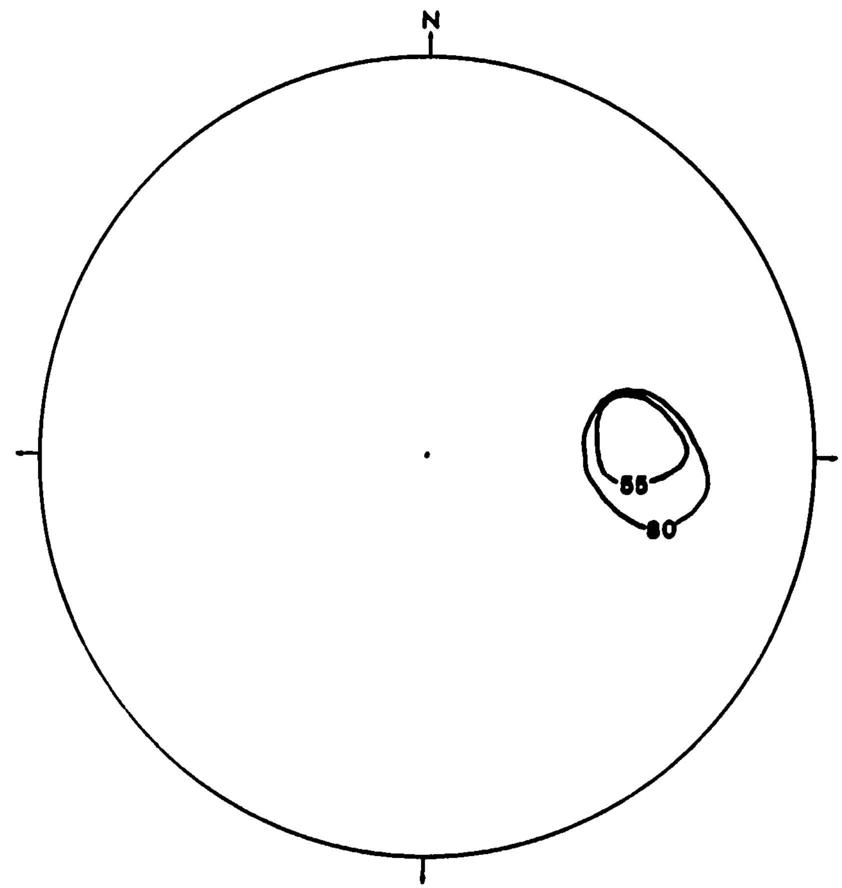


Figure: 7

Lineation measures; n=44

(EQUAL AREA PROJECTIONS)

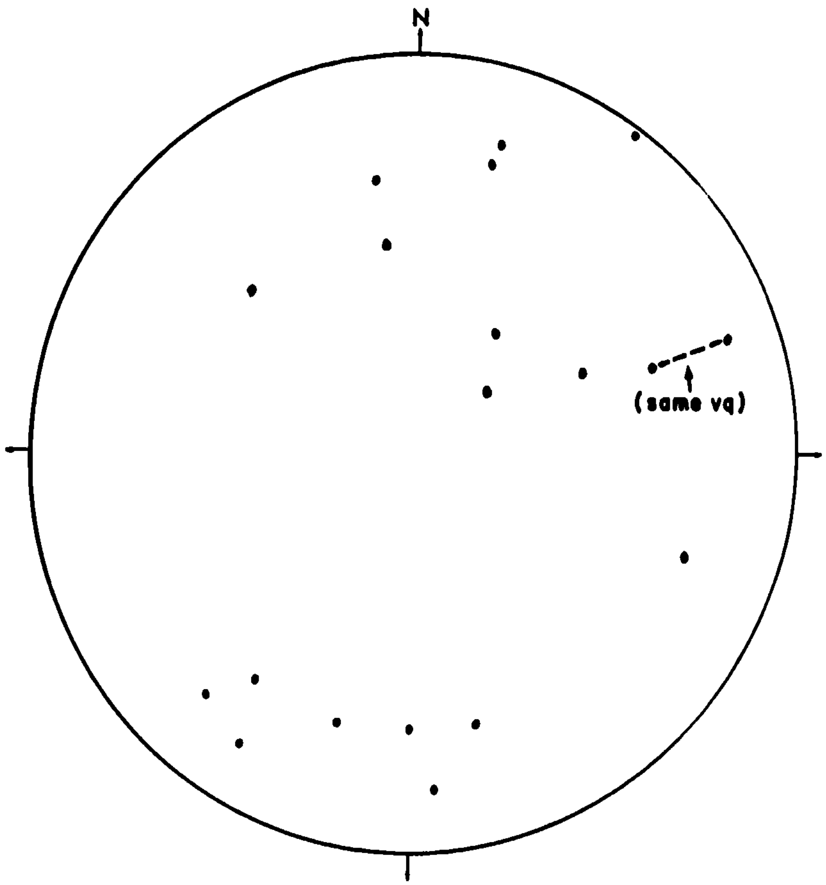


Figure: 8

Quartz veins (poles to vq);
Burb claim and central part of property (west of L1000E);
n=18

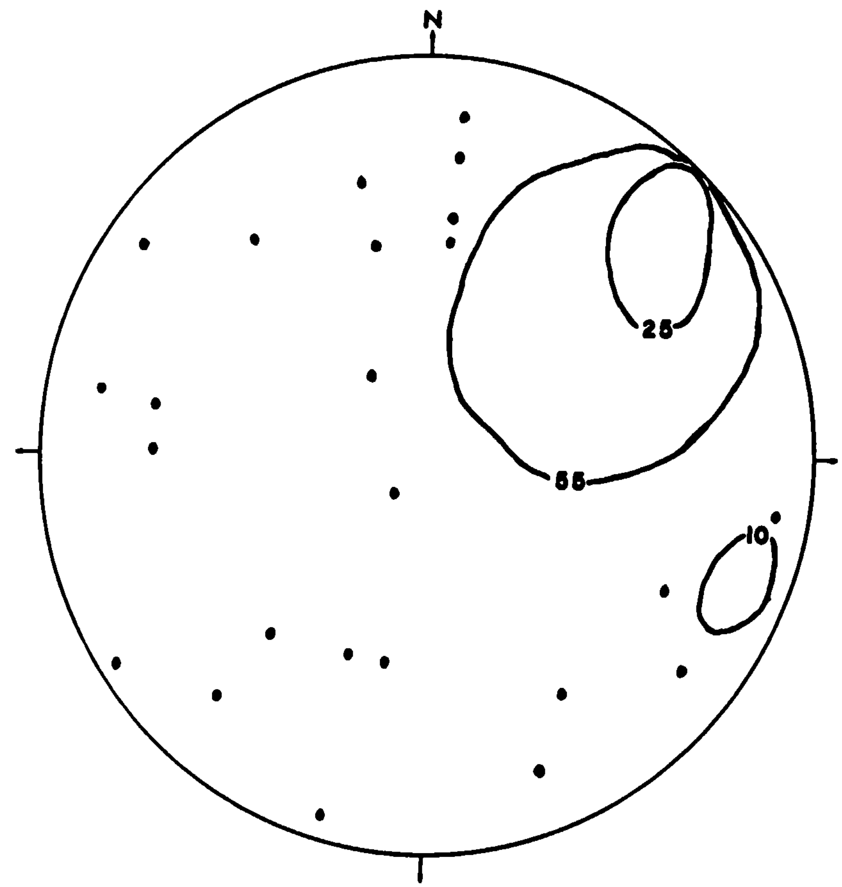


Figure: 9

Quartz veins (poles to vq);
notheastern part of property (est of L1000E);
n=76

4.5 Faulting

Zones of strong schistosity have been plotted as faults on the 1:2000 map sheets. Most of the faults drawn have east-west orientation corresponding to the latest deformation event. A few northwest-southeast trending faults are nonetheless noted just east of the Krist fragmental.

The most important observation is the presence of numerous east-west faults along the northwest-southeast trending corridor over which the Kay-92 grid was located.

I interpret this to indicate that the northwest-southeast trending corridor was more easily deformed by the east-west deformation; the corridor was already faulted by the earlier deformation and was therefore less competent than rocks to the northeast and southwest. This explains why the faults do not extend very far beyond the limits of this pre-existing zone.

5. ALTERATION STUDIES

5.1 Introduction

During the mapping program, numerous hand specimens were taken (as previously described; see 91-CND-64-02 and 92-CND-64-02 for sample location maps). Each hand sample was carefully described and data were digitized so that alteration maps could be prepared. Only two maps are presented here; these maps are most illustrative of the comments previously made.

5.2 Fe-carbonate

Fe-carbonate alteration index was given to each sample based on intensity of the brownish/reddish weathered rind. Samples were coded as follows:

- 0 no brownish colour whatsoever
- 1 very weak alteration
- 2 obvious weak to moderate alteration
- 3 strong alteration
- 4 very strong alteration
- 5 total obliteration of primary texture

MAP 4 shows that the relative density of altered samples is much higher in the vicinity of the Kay-92 grid than elsewhere on the property (note that Meunier grid samples have not been plotted).

5.3 Calcite content

Calcite content is an indication of distal alteration in the Timmins camp. That is to say, zones of Fe-carbonate alteration within a broader calcite halo are the high priority exploration targets (from a lithogeochemical point of view: other factors such as intensity of strain and proximity to porphyry are also important). Calcite content for the samples was indexed in a manner similar to that performed for Fe-carbonate using the HCl test:

- 0 no reaction whatsoever to HCl
- 1 very weak reaction, generally observed in the cleavage
- 2 weak reaction, generally observed in the cleavage
- 3 moderate reaction
- 4 moderate reaction across the entire sample (groundmass and cleavage plane) or strong reaction in the cleavage
- 5 strong to very strong reaction to HCl

MAP 5 shows that rocks taken from the Burb claim and from the northeast corner of the Harrower claims have the highest calcite content. The area of the Kay-92 grid and most of the central part of the property have low to moderate calcite. The area between the south Tisdale anticline and the Kay-92 baseline may also be interpreted to have high calcite.

6. CONCLUDING REMARKS

Structure in the southwest domain of the Kayorum property is relatively simple; one predominant structural event is recorded. Later modifications are of relatively minor importance including a strong crenulation cleavage observed locally on the Burb claim. Foliations trend about 115°/80° NE. A pervasive lineation plunging about 10° E was observed at Burb; no lineation related to this deformation event was observed in the northern half of the property. This portion of the property is also characterized by relatively simple stratigraphy as described in 91-CND-64-02.

Structure in the north domain of the property is more complex; it is evident that the pre-existing northwest-southeast fabric has been transposed into an approximately east-west trending orientation by the younger Porcupine event. Most of the foliation measures range between about 085° and 105° and dip steeply north. Lineations plunge 40° to 50° E. Zones of high strain are approximately parallel to the foliation and occur throughout the property but are best developed within a northwest-southeast trending corridor. This corridor corresponds to an anticlinal zone coeval with the south Tisdale anticline and Kayorum syncline (see 91-CND-64-02 and 92-CND-64-02) which was a zone of high strain before being again deformed by the east-west Porcupine deformation. This portion of the property is therefore also characterized by complex stratigraphy as described in 91-CND-64-02.

Quartz veins are present throughout the property but are more common in the northern domain. Two of the predominant families of quartz veins trend about 140°/60° SW and 025°/75° W.

Fe-carbonate alteration is strongest in the northern domain, in the vicinity of the August Porcupine claims. Calcite content is strongest in the Gold Centre sub-group in the eastern part of the Harrower claims (northern domain), on the Burb claim, and also perhaps on the east flank of the south Tisdale anticline (in the southwestern corner of the northern domain).

Target areas for diamond drill testing were prioritized as follows:

* highest priority given to the northwest-southeast trending corridor where the Kay-92 grid was established; this target is characterized by:

  - complex structure and stratigraphy; strong deformation and abundance of quartz veins;
  - best Fe-carbonate alteration and weak calcite;
  - presence of a northwest-southeast trending coincident gravity-IP anomaly (see 91-CND-64-04, 92-CND-64-06);
  - weakly to locally strong lithogeochemistry results (see 92-CND-64-04).

* the only second priority target envisaged at this time is the possible southern extension of the Vipond fault; this target is characterized by:

  - weak calcite content;
  - presence of a north-south trending IP anomaly which occurs along a lithologic contact (interflow sediment); note that this interflow sediment may or may not correspond to the southern extension of the Vipond fault - no deformation related to a north-south fault was observed during the field mapping (see 91-CND-64-04);
  - weak to moderate lithogeochemical response was noted at the northern claim boundary (see 91-CND-64-02).

7. REFERENCES CITED

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COGEMA CANADA LIMITED
KAYORUM PROJECT

SURFACE MAPPING OF THE MEUNIER CLAIM

Ref. no. 92-CND-64-02

by: John Learn
July, 1992

SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

The Meunier claim is underlain mostly by massive and variolitic basalts of the Vipond sub-group of the Tisdale Group (V10A and V10B). Alteration and shearing of these rocks is moderate to intense as a general statement. Minor exposure of the Gold Centre sub-group (V11 massive unit and V12 pillow breccia) was also mapped.

A series of east-west trending fold axes, approximately parallel to the Porcupine syncline, extend across the claim. This folding event post-dates, and largely obliterates evidence of, a pre-existing northwest-southeast trending feature which is characterized by anomalous density/IP response identified by ground geophysical surveys. It is interpreted that this feature - the Meunier fault - represents a sheared anticlinal axis coeval with the south Tisdale anticline, located a few hundred meters to the west.

Maximum Au result obtained from bedrock samples on the Meunier claim is 2.20 g/t, but a sample of fly rock from an area of trenching and blasting gave 12.59 g/t Au. These samples were taken close to the intersection of the northwest-southeast trending Meunier fault and an east-west anticlinal axis.

Samples anomalous in gold taken during the summer 1991 program are located in a similar setting, i.e., close to east-west anticlinal axes generally along either the Meunier fault or along a weaker, parallel trend - the Harrower fault - at about 300m to the northeast. It is therefore recommended that diamond drill testing of the Meunier fault be performed first where it intersects (east-west) anticlinal axes, in preference to areas where synclinal axes are present.

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1. INTRODUCTION

The Kayorum project lies in the heart of the Porcupine mining camp, bounded to the north by the Hollinger-McIntyre-Coniaurum deposits and to the south by the deposits closely associated with the Porcupine-Destor fault: the Delnite, Aunor and Buffalo Ankerite deposits. See Figure 1.

In October 1990, Cogema Canada Ltd. signed an option agreement with Moneta Porcupine Mines Ltd. to explore the property. Work commenced in December of the same year and so far has included extensive ground geophysical surveys and a detailed surface mapping program.

The purpose of this report is to present results of surface mapping on a newly acquired claim which has been added to the project. This claim is referred to as the Meunier claim. It was purchased in May, 1992 and overlies the northwest extension of a coincident IP/gravity anomaly as shown in Figure 2.

2. REGIONAL AND LOCAL GEOLOGY

The geology of the Timmins area, and more particularly, the geology at Kayorum, are discussed in Cogema Reference no. 91-CND-64-02, which summarizes the results of the surface mapping program undertaken from August to October of 1991. Only a very brief review is presented here.

On the property, metavolcanic rocks of the Tisdale Group are the only rocks exposed. The mafic metavolcanic rocks in this area are subdivided by Ferguson et. al. (1968) into four sub-groups: Northern, Central, Vipond and Gold Centre. These sub-groups have been further subdivided into flow units based mainly on their textural features: massive flows, variolitic pillowed flows and amygdaloidal pillowed flows. There are also several thin horizons of interflow argillites. These mafic metavolcanic units are in turn overlain by a thin carbonaceous argillite and a felsic agglomeratic tuff referred to as the Krist Formation. On the Meunier claim, only rocks of the Vipond and Gold Centre sub-groups are exposed.

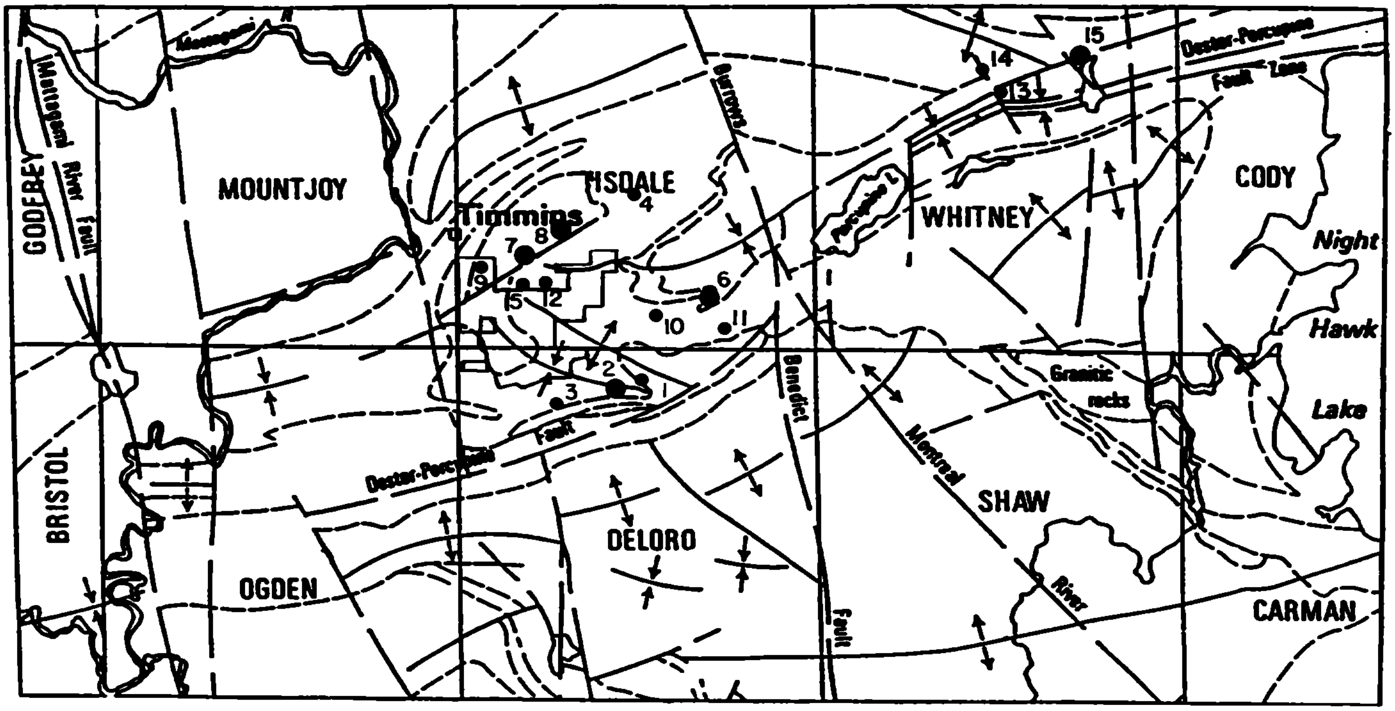


FIGURE 1: Gold mines of the Timmins camp
(Scale 1:200 000)

INDEX TO MINES
(metric tonnes of Au produced)

DELORO TOWNSHIP

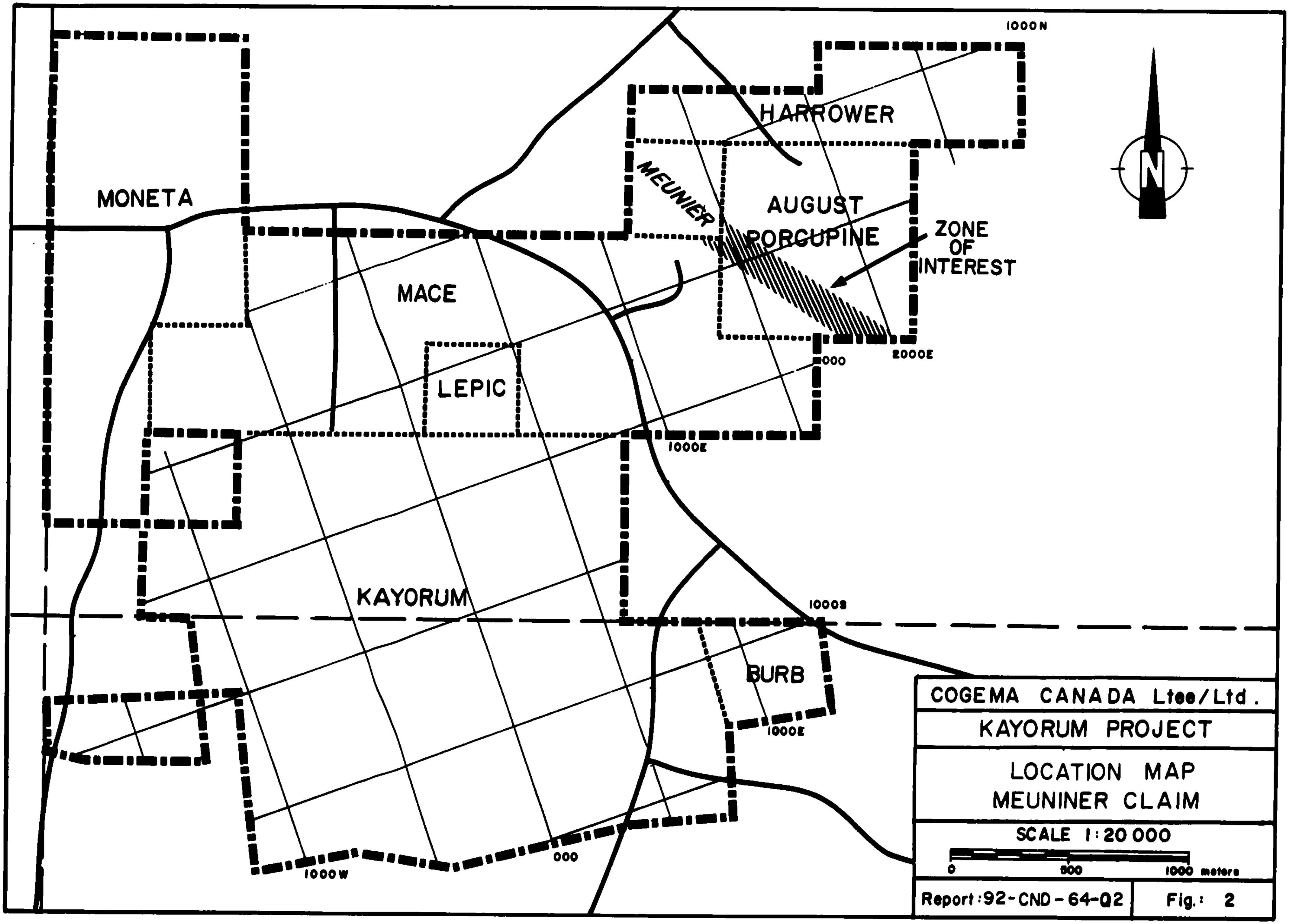
1.	Buffalo Ankerite	(30t)
2.	Aunor	(61t)
3.	Delnite	(29t)

TISDALE TOWNSHIP

4.	Coniaurum	(35t)
5.	Crown	(4t)
6.	Dome	(300t)*
7.	Hollinger	(602t)
8.	McIntyre	(310t)
9.	Moneta	(5t)
10.	Paymaster	(37t)
11.	Preston	(48t)
12.	Vipond	(13t)

WHITNEY TOWNSHIP

13.	Broulan	(8t)
14.	Hallnor	(46t)
15.	Pamour	(60t)*



COGEMA CANADA Ltee/Ltd.

KAYORUM PROJECT

LOCATION MAP
MEUNINER CLAIM

SCALE 1:20 000

0 500 1000 meters

Report: 92-CND-64-02 | Fig.: 2

3. PREVIOUS EXPLORATION WORK

The property has most certainly been intensively prospected since the time of the first discoveries of the Timmins camp. Trenches and exploration pits are everywhere present.

On the Meunier claim, Ferguson et. al. (1968) describe early work consisting of trenching and some drilling. A shaft was apparently sunk to an estimated depth of 100 feet. Details of this work are nowhere to be found. Exact location of the shaft is not known but probably corresponds to the area of outcrop stripping in the northwest part of the claim (see later).

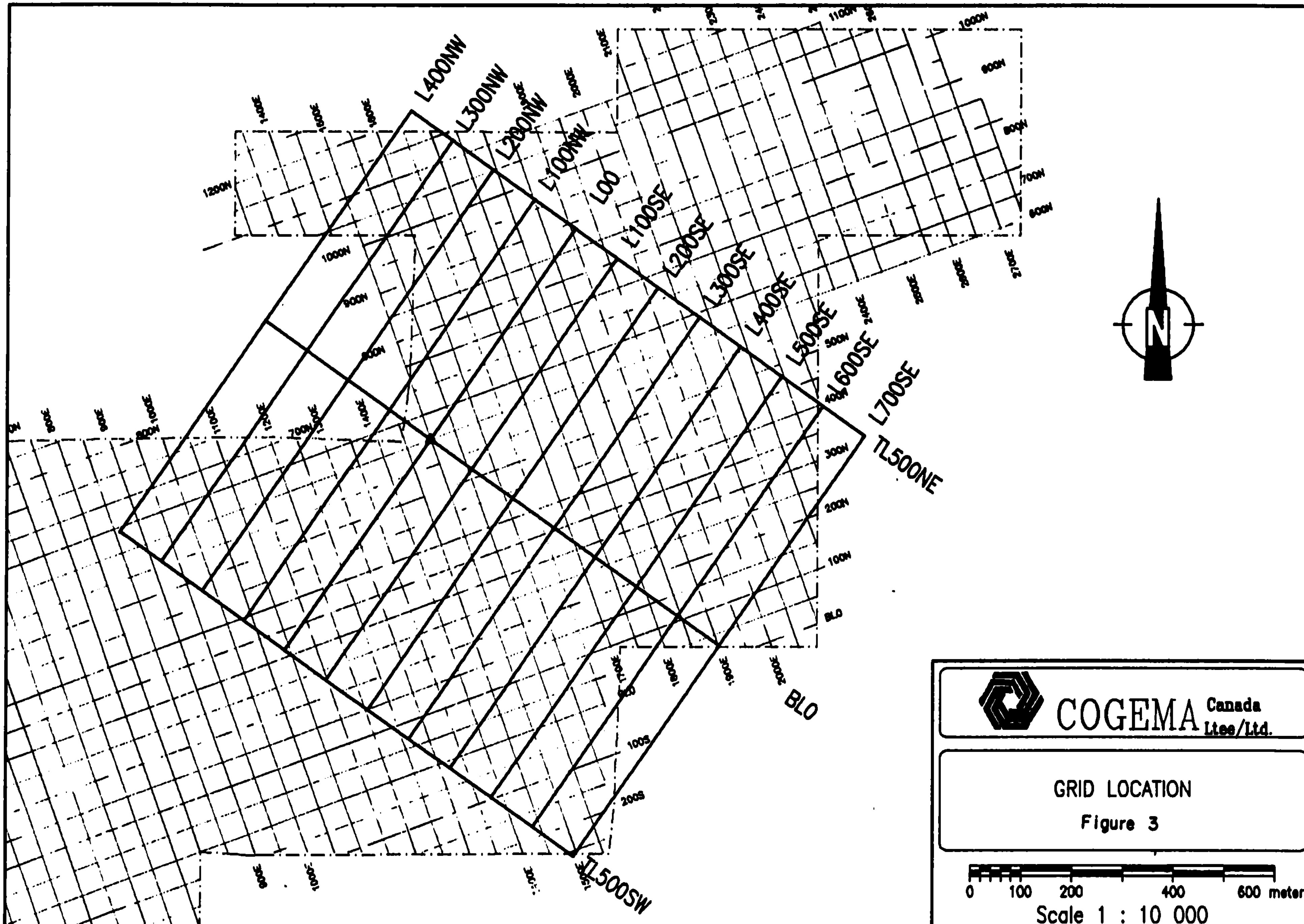
4. WORK PERFORMED

A new grid was established in June, 1992. This grid is oriented to better cross the interpreted IP/gravity anomaly which trends at about 125° (see Figure 3). Line spacing is 100m and these lines were used for mapping control, along with reference points on the established 50m X 50m grid.

Mapping and sampling was undertaken in much the same manner as was done in 1991. Geophysical surveys performed on the new grid will be presented in a separate report, but preliminary plots confirm the occurrence of the interpreted IP/gravity anomaly approximately following the baseline (see Figure 4).

5. PRESENTATION OF RESULTS

The main results presented include a property geological map at 1:5000 scale (MAP 1). This map shows highlights of the Au lithogeochemistry results from the two mapping programs. A detailed geologic map which includes the Meunier claim at 1:2000 scale is also given (MAP 2). Note that we also mapped the hydro line extending north from the Meunier claim into the westernmost part of the Harrower claims (the 1990 50m X 50m grid erroneously omitted this part of the property). New sample locations are given in the Appendix with the Au lithogeochemistry results.

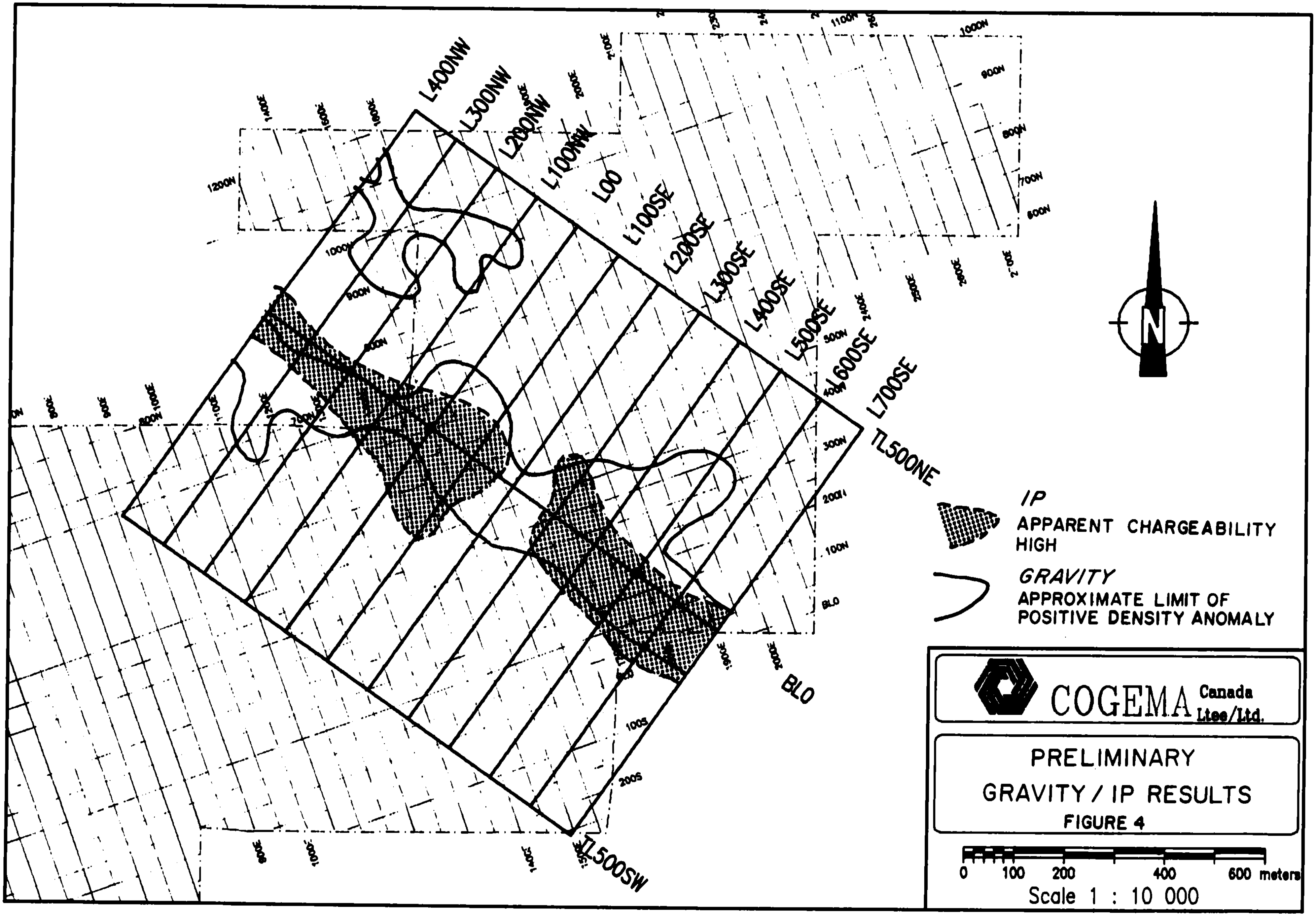


COGEMA Canada Ltee/Ltd.

GRID LOCATION

Figure 3

Scale 1 : 10 000


L400NW
L300NW
L200NW
L100NW
L00
L100SE
L200SE
L300SE
L400SE
L500SE
L600SE
L700SE
TL500NE
TL500SW
BL0
N
IP
APPARENT CHARGEABILITY HIGH
GRAVITY
APPROXIMATE LIMIT OF POSITIVE DENSITY ANOMALY
COGEMA Canada Ltee/Ltd.
PRELIMINARY
GRAVITY / IP RESULTS
FIGURE 4
0 100 200 400 600 meters
Scale 1 : 10 000

6. RESULTS

6.1 DESCRIPTION OF GEOLOGIC UNITS

VIPOND SUB-GROUP

The V8 variolitic basalt is the lowermost unit mapped. It occurs only in the northernmost part of the westernmost part of the Harrower claims. In outcrop, the unit shows well formed meter scale pillows with abundant well defined cm scale varioles. The pillows are weakly to moderately well cleaved and the pillow selvages (a few cm wide) are generally very well foliated. One of the outcrops mapped here (sample K-1034) is massive basalt and this is interpreted to belong to the V8C subunit (a subunit of the V8).

The V10A uniform basalt is commonly exposed in the area mapped. It is medium to coarse grained and may be massive and non-foliated. However, it is very commonly altered and well cleaved.

The V10B variolitic pillowed basalt shows widespread distribution. It is easily distinguished from the V8 flow since pillow selvages are thicker, pillow forms may be less well defined and varioles are almost always shattered and shardy.

GOLD CENTRE SUB-GROUP

Metavolcanic rocks of the Gold Centre sub-group have been mapped as a thin band extending into the Meunier claim from the southwest corner. Two main units are distinguished: a massive leucoxene-bearing lava (V11) and a pillow breccia (V12).

6.2 VEINING

Quartz veining was observed in all of the main rock units. Most veins are < 5cm thick but some examples of veins up to about 2m thick occur. On occasion, veins were not observed in place (due to thin overburden cover), but presence is inferred due to abundant rubble lying about (eg. in and around trenches, pits etc.). Occurrence of quartz rubble was noted and plotted on the field sheets and some of these occurrences were sampled.

Quartz vein orientations were systematically measured in the field. Three main families of veins are present, corresponding to the most common orientations measured during the previous mapping. These are:

* northwest-southeast trending veins with gentle to moderate southwest dips;
* north-south trending veins with steep westerly to subvertical dips;
* east-west trending veins with moderate to steep dips; commonly these have the same strike as the enclosing mafic rocks but with discordant dips.

In most cases, the veins are comprised of quartz (98 to 100%). However, Fe-carbonates are very common in the thicker veins (eg. >0.5m), and calcite is a common minor constituent. Chlorite masses and wall rock fragments are not uncommon, and I suspect that some of the veins contain minor tourmaline, but no positive identification has been made (very fine grained black mineral masses in some of the veins is tentatively considered to be tourmaline). Sulfide minerals were observed locally in quartz veins; more commonly sulfide minerals were observed associated with veining in the adjacent wall rock. Pyrite is the most common sulfide mineral associated with quartz veining; chalcopyrite was rarely observed.

6.3 ALTERATIONS AND MINERALIZATION

A detailed presentation of alteration intensity on the Kayorum property is in preparation. Results from the Meunier claim will be incorporated into that study and will be presented later. As a general statement, it can be said that extensive Fe-carbonate, and to a lesser extent, sericite alteration, was observed on the Meunier claim. Intensity of alteration, is in general, comparable to that observed to the east and southeast on the August Porcupine claims.

Pyrite is an ubiquitous minor constituent of the mafic metavolcanic rocks. Most of the pyrite is primary and occurs as mm anhedral grains disseminated in the groundmass.

Secondary and/or remobilized pyrite is commonly associated with Fe-carbonate and sericite altered samples (in addition to the association with quartz veining, see above). It occurs as disseminations in more significant amounts relative to pyrite interpreted to be primary (eg. 3 to 20%) and as mm stringers or stockworks.

6.4 STRUCTURE AND DEFORMATION

Main structures previously documented on the property include the Kayorum syncline and south Tisdale anticline which are major northwest-southeast trending features prominent on the Kayorum, Mace and Burb claims. The August Porcupine, Harrower and Meunier claims are more influenced by east-west trending folds including the axis of the Porcupine syncline.

Foliation and lineation measures on the Meunier claim are therefore generally parallel to the axial plane of the Porcupine syncline. In many cases, dips were difficult to measure due to slight frost heave in the outcrops and due to the massive nature of the rock types. Difficulties in measuring dips also arise from the fact that some outcrops show two or more cross-cutting foliations on the horizontal (or should I say sub-horizontal) plane. When viewed on a vertical face it can be very frustrating trying to determine which foliation (strike measure) corresponds to the dip measure being taken.

Dip measures range from about 65° north to about 80° south. Lineation plunges range from about 40° to 50° east.

Deformation (shearing) is relatively common on the Meunier claim as manifested in the rocks by development of schistosity. This is not difficult to see in the field since primary rock types are massive and pillowed lavas.

6.5 GOLD LITHOGEOCHEMISTRY

In total, 129 samples were analyzed for their gold content. Of these, 54 gave results ≥ 10 ppb Au and of these, 6 gave results ≥ 100 ppb Au. Samples which gave results ≥ 10 ppb Au are shown on MAP 1 (and on Figure 6) and a full listing of results is given in the Appendix. A summary of the results is given here:

The highest gold value reported by the analytical results is from sample K-947D at 12.59 g/t. This sample was taken in an area stripped by a previous operator (probably within the last 20 years) and is seemingly located where Ferguson et. al. (1968) report sinking of a 100 foot shaft. There is much evidence of trenching and blasting, but no obvious shaft location apparent in the field. The sample itself is described as fly rock from the blasting and is not a true bedrock sample. It is composed of massive basalt and quartz vein material with strong pyrite (about 20%) mineralization. A second sample taken only a few meters away gave 320 ppb Au: sample K-947B (bedrock) is composed entirely of quartz vein material of a conspicuous greyish colour with very minor pyrite.

Only one other sample gave > 1 g/t Au. K-1003D (2.20 g/t) was taken from an old trench (probably more than 50 years old) located at 70m east of the stripped area referred to above. It is composed of about 75% quartz vein in sheared massive basalt with trace pyrite. In the same trench:

* K-1005A gave 768 ppb Au; it is a boulder of quartz-Fe-carbonate vein material on the floor of the trench which shows locally rich pyrite and weaker chalcopyrite mineralization;
* K-1009B gave 386 ppb Au; it is composed of quartz-Fe-carbonate vein material with trace pyrite;
* K-1006E gave 127 ppb Au; it consists of massive basalt with perhaps 10% quartz veining and about 7% pyrite.

Thus, the six samples which gave greater than 100 ppb Au were all taken either in the area of stripping or in the old trench only about 70m away.

The weaker Au anomalies present on the Meunier claim occur mostly along the western boundary and may be related to mineralization at the Vipond mine. Other weak Au anomalies are located mostly in the southeast quadrant of the claim, in the V10A and, to a lesser extent, in the V10B units.

7. INTERPRETATION

Structural Interpretation

Figure 5 shows my preliminary structural interpretation taken from Cogema Reference no. 91-CND-64-02 for the August Porcupine-Harrower area. Figure 6 shows the modified interpretation incorporating results from the new mapping on the Meunier claim. Comparison of the two figures shows that:

* generally east-west trending faults have been deleted and replaced by two northwest-southeast trending faults, hereafter referred to as the Meunier fault and the Harrower fault (drawn in red on Figure 6);

  the Meunier fault is characterized by a density/IP anomaly and semi-continuous Au anomalies along its length. It pre-dates the Porcupine deformation; this deformation event has caused transposition of a pre-existing shear fabric to east-west orientation which explains the earlier interpretation that faulting was east-west;

  the Harrower fault is characterized mainly by a density anomaly and semi-continuous Au anomalies along its length. It also pre-dates the Porcupine deformation; however, it may not extend as far to the southeast as the Meunier fault;

* the south Tisdale anticline has been redrawn and now extends north into the east portion of the Vipond property. Fold closures and stratigraphic units exposed in the south part of Figure 6 indicate a north plunging structure; fold closures and stratigraphic units on the Vipond property indicate a south plunging structure;

* opposing plunges described above, along with due consideration of the stratigraphic units exposed, necessitate presence of an east-west trending synclinal axis near the centre of Figure 6. This synclinal axis is coeval with the Porcupine deformation and post-dates the south Tisdale anticline;

* fold closures near the Vipond shaft therefore indicate presence of a synclinal axis coeval with the south Tisdale anticline;

* presence of previously undocumented exposure of the Gold Centre sub-group (units V11 and V12) in the southwest part of the Meunier claim suggest presence of a synclinal axis coeval with the south Tisdale anticline there;

* east-west anticlinal axes drawn on Figure 5 remain essentially unchanged on the August Porcupine and Harrower claims. (Anticlinal axes are drawn on Figure 6 in blue, synclinal axes are drawn in green.) But detailed mapping on the Meunier claim has enabled a clarification of the structure there:

  these axes retain their general east-west orientation and are not deflected or truncated to the west-northwest;

  however, there may be some deformation of these east-west axes in the northeast quadrant of the Meunier claim, in the area between the Meunier and Harrower faults. This may indicate some late dextral movement along one or both of these faults;

* fold closures and distribution of stratigraphic units exposed in the eastern part of Figure 6 indicate south plunging axes for the east-west anticlines and synclines (as was drawn on Figure 5);

* the reader's attention is now directed to the southwest quadrant of the Meunier claim (on Figure 6). At this location I have drawn:

  an older synclinal axis (in black);
  an east-west anticlinal axis (in blue);
  an east-west synclinal axis (in green);

  the fold closures and stratigraphic units exposed indicate, for the area east of the older synclinal axis, westerly plunges; and for the area west of this axis, easterly plunges;

* this in turn results in the interpretation that the Meunier fault trace occurs along an anticlinal axis which is coeval with the south Tisdale anticline and which predates the Porcupine deformation event (since I have interpreted easterly plunges to the east and westerly plunges to the west, exactly as drawn for the south Tisdale anticline);

* that the Harrower fault may also exist in a similar setting has not yet been evaluated;

Finally, it is interesting to point out that all lineation measures taken plunge easterly and reflect the plunge of the Porcupine syncline. There is no evidence that plunges of the east-west folds change across the interpreted older fold axial traces except for the younging directions of the rock units and the shape of the fold closures. This would have been impossible to deduce without having mapped the property in such detail.

Au Lithogeochemistry

It is perhaps worth reiterating part of the text written under this sub-heading in Cogema Reference no. 91-CND-64-02 (see Figure 5):

"Most of the outcropping areas found to be anomalous in gold appear to have similar structural settings. Anomalous results in the Gold Centre sub-group (east Harrower) seem to lie along the same (minor) anticlinal axis as anomalies near the old Triumph shaft... Although Au values are not as strong in the south part of the August Porcupine claims, they again appear to be related to a minor axial plane which may in fact be even more structurally complex than the areas described above."

On the Meunier claim, the best gold anomalies are also located close to an (east-west) anticlinal axis. On the other hand, there are semi-continuous Au anomalies all along the Meunier fault towards the southeast, and these may be strongest at the <u>intersection of the discordant trend and the anticlinal axes.</u> This is perhaps less evident along the Meunier fault southeast of the Meunier claim, where Au anomalies might show a spatial relation with the V10A/V10B contact. (These anomalies do show lower Au values than anomalies located close to the intersection of the Meunier fault with east-west anticlinal axes to the northwest).

Based on this interpretation, and exclusive of the density anomaly which defines the Harrower fault, existence of the Harrower fault was postulated by the northwest-southeast alignment of Au anomalies there.

Integration with geophysical data

It is interpreted that the main density/IP anomaly occurs along an anticlinal axis that pre-dates the Porcupine deformation. The density/IP anomaly is due to Fe-carbonate alteration and pyrite mineralization which commonly accompany vein-type Au mineralization in the Timmins camp. The trend therefore represents a high priority drill target. Presence of Au anomalies along the trend only add to its attractiveness.

8. CONCLUSIONS

Surface mapping shows that the Meunier claim is underlain by massive and variolitic basalt of the Vipond sub-group (V10A and V10B units) and by massive basalt and pillow breccia of the Gold Centre sub-group (V11 and V12 units). Foliations trend approximately east-west (parallel to the axis of the Porcupine syncline) and have subvertical dips. A strong stretching lineation plunges 40° to 50° east.

The mapping confirms the interpretation that several minor anticlinal (and synclinal) axes with (east-west) trends approximately parallel to the main Porcupine syncline pass through the northeastern part of the Kayorum property. But, the detailed mapping has added to the previous interpretation the presence of newly recognized northwest-southeast trending folds which pre-date the Porcupine deformation (in addition to the previously recognized, and coeval, south Tisdale anticline).

One of these folds corresponds to the main density/IP anomaly detected in ground geophysical surveys and is interpreted to be a shear zone (Meunier fault) of some significance within which early northwest-southeast trending shear fabric has been transposed to east-west orientation by the Porcupine deformation. This shear zone approximately follows an early anticlinal axial trace.

The density/IP anomaly is due to alteration which typically accompanies vein-type Au mineralization in the Timmins camp.

9. RECOMMENDATIONS

It is recommended that follow-up drilling of the Meunier fault be undertaken first in areas where (east-west) anticlinal axes are present. We should be prepared to drill deep enough to penetrate the stratigraphy below the 99 flow (this was discussed in Cogema Reference no. 91-CND-64-02). However, drilling along the trend southeast of the Meunier claim (where presence of east-west anticlinal axes is not evident) is also warranted.

Follow-up drilling of the weaker, parallel anomaly (Harrower fault) at about 300m to the northeast is not recommended at this time. But, if the main anomaly can be shown to host significant gold mineralization, I would most certainly hypothesize that additional reserves could be found in this area.

10. REFERENCE CITED

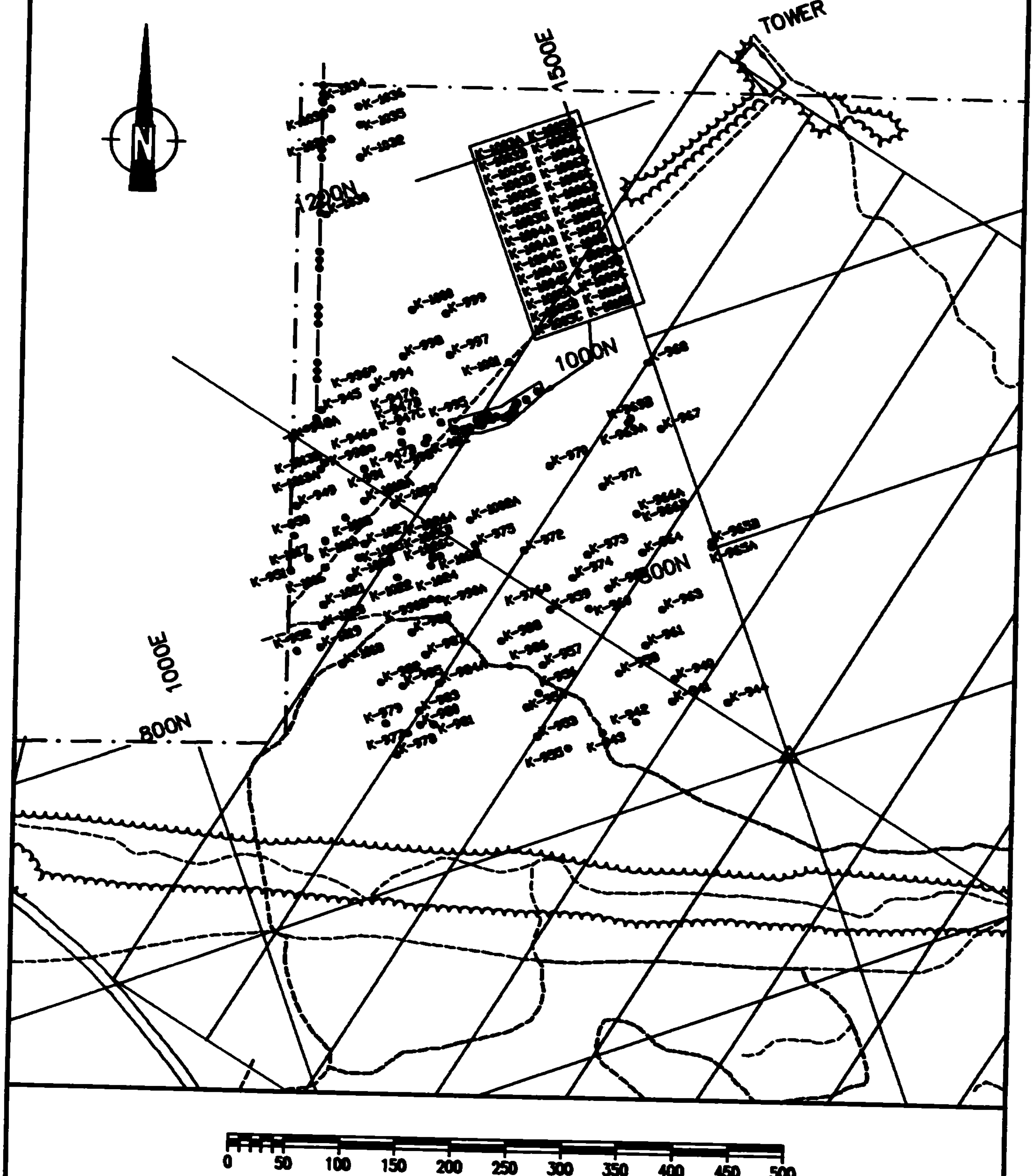
1. Ferguson, S.A., Buffam, B.S.W., Carter, O.F., Griffis, A.T., Holmes, T.C., Hurst, M.E., Jones, W.A., Lane, H.C., and Longley, C.S., 1968, Geology and Ore Deposits of Tisdale Township, District of Cochrane, Ont. Dept. Mines Geol. Report 58, 177p.; accompanied by Map 2075, scale 1 inch to 1000 feet and 12 charts

APPENDIX I

IA: Sample location maps

IB: Description of analytical procedures

IC: Listing of analytical results



SCALE 1 : 5000

FIGURE IA-1: SAMPLE LOCATIONS

IB: Description of analytical procedures

i) control samples (barren quartzite) were inserted at regular intervals (every twenty to thirty samples) into the shipments sent for analysis and analyzed; this confirms that no contamination goes unnoticed;

ii) Accurassay Laboratories in Kirkland Lake performed all the work;

iii) specifications:

fraction	: -150 mesh
extraction	: aqua regia
method	: fire assay - atomic absorption
detection limit	: 5 ppb

iv) rejects stored in Rouyn for about 3 years before being discarded; 470g pulps (30g was analyzed) kept indefinitely.

APPENDIX IC: Listing of analytical results

Note: The coordinates are from the 1991 grid

SAMPLE #	Au (ppb)	GRID COORDINATES EAST (x)	NORTH (y)
K-940	30	1426	700
K-941	3	1417	681
K-942	16	1381	674
K-943	6	1349	675
K-944	3	1464	664
K-945	4	1203	1032
K-946	48	1240	998
K-947A	11	1265	991
K-947B	320	1265	991
K-947C	7	1265	991
K-947D	12589	1262	981
K-948A	11	1169	1016
K-949	6	1153	957
K-950	49	1143	932
K-951	11	1130	903
K-952	19	1112	833
K-953	21	1292	690
K-954	2	1292	718
K-955	21	1315	671
K-956	7	1306	727
K-957	9	1318	750
K-958	4	1380	721
K-959	57	1340	795
K-960	2	1373	784
K-961	8	1411	737
K-962	7	1396	796
K-963	5	1435	762
K-964	2	1435	817
K-965A	13	1495	801
K-965B	-2	1497	806
K-966A	-2	1441	852
K-966B	-2	1441	852
K-967	-2	1487	917
K-968	-2	1495	978
K-969A	6	1461	932
K-969B	10	1464	935
K-970	-2	1381	918
K-971	-2	1420	885
K-972	-2	1335	853
K-973	-2	1388	831
K-974	3	1368	815
K-975	2	1295	872
K-976	-2	1343	815
K-977	-2	1182	731
K-978	-2	1167	716
K-979	-2	1166	745

SAMPLE #	Au (ppb)	GRID COORDINATES EAST (x)	NORTH (y)
K-980	-2	1196	734
K-981	-2	1207	731
K-982	-2	1174	782
K-983	-2	1199	746
K-984A	-2	1224	765
K-985	-2	1192	773
K-986	2	1289	759
K-987	2	1220	793
K-988	-2	1289	782
K-989	-2	1215	816
K-990A	-2	1248	836
K-990B	19	1241	838
K-991	2	1222	969
K-992	15	1234	985
K-993	-2	1281	974
K-994	-2	1253	1036
K-995	-2	1301	987
K-996	-2	1258	1052
K-997	-2	1328	1042
K-998	2	1288	1054
K-999	-2	1337	1078
K-1000	4	1309	1091
K-1001	-2	1377	1018
K-1002A	-2	1298	895
K-1003A	12	1333	974
K-1003B	42	1336	973
K-1003C	25	1334	977
K-1003D	2205	1333	979
K-1003E	4	1337	979
K-1003F	5	1338	976
K-1003G	11	1339	977
K-1004A	7	1344	980
K-1004B	32	1346	975
K-1004C	37	1340	976
K-1004D	10	1340	979
K-1004E	2	1341	979
K-1005A	768	1351	976
K-1005B	32	1357	973
K-1005C	4	1358	973
K-1005D	2	1360	972
K-1005E	13	1361	974
K-1006A	12	1365	975
K-1006B	40	1362	974
K-1006C	18	1368	978
K-1006D	21	1367	975
K-1006E	127	1371	981
K-1006F	58	1372	982
K-1007	35	1381	982

SAMPLE #	Au (ppb)	GRID COORDINATES EAST (x)	NORTH (y)
K-1008	7	1393	986
K-1009A	11	1325	975
K-1009B	386	1323	973
K-1009C	20	1322	974
K-1010A	-2	1319	975
K-1010B	16	1311	977
K-1011	3	1285	978
K-1012A	14	1213	942
K-1013A	19	1185	982
K-1013B	4	1190	986
K-1014	19	1168	919
K-1015	17	1192	933
K-1016	2	1160	896
K-1017	47	1149	909
K-1018	17	1147	809
K-1019	13	1133	830
K-1020	10	1141	847
K-1021	6	1148	865
K-1022	2	1219	867
K-1023	3	1179	880
K-1024	10	1251	867
K-1025	10	1192	895
K-1026A	3	1255	873
K-1026B	16	1255	874
K-1026C	3	1256	874
K-1027	6	1201	905
K-1028	4	1262	873
K-1029	4	1237	930
K-1030	2	1264	1198
K-1031	8	1290	1261
K-1032	10	1310	1237
K-1033	10	1299	1287
K-1034	8	1294	1297
K-1035	12	1319	1265
K-1036	19	1323	1281

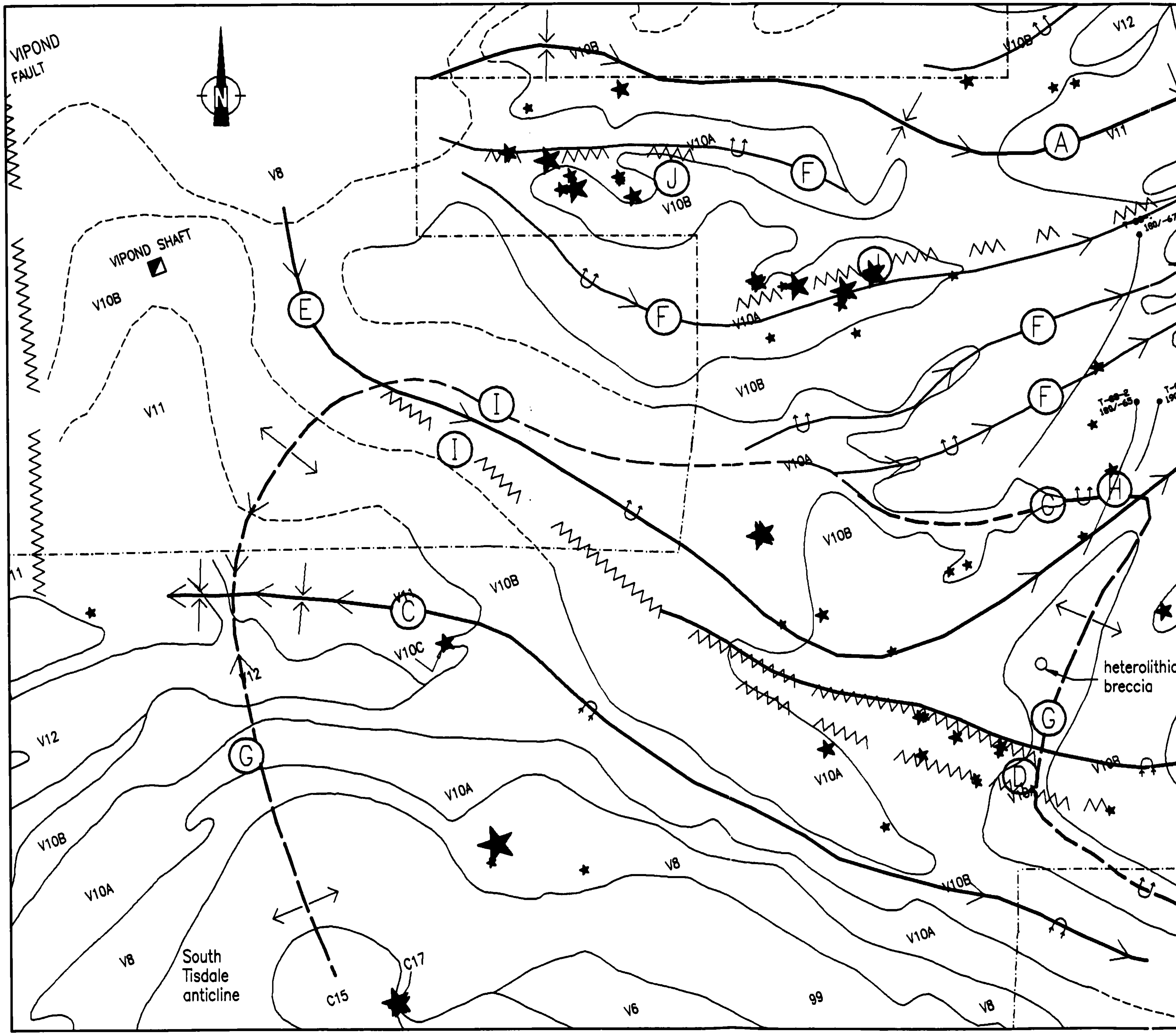


FIGURE 5: Structural interpretation, August Porcupine and Harrower claims (from 91-CND-64-02)
SCALE 1 : 5000

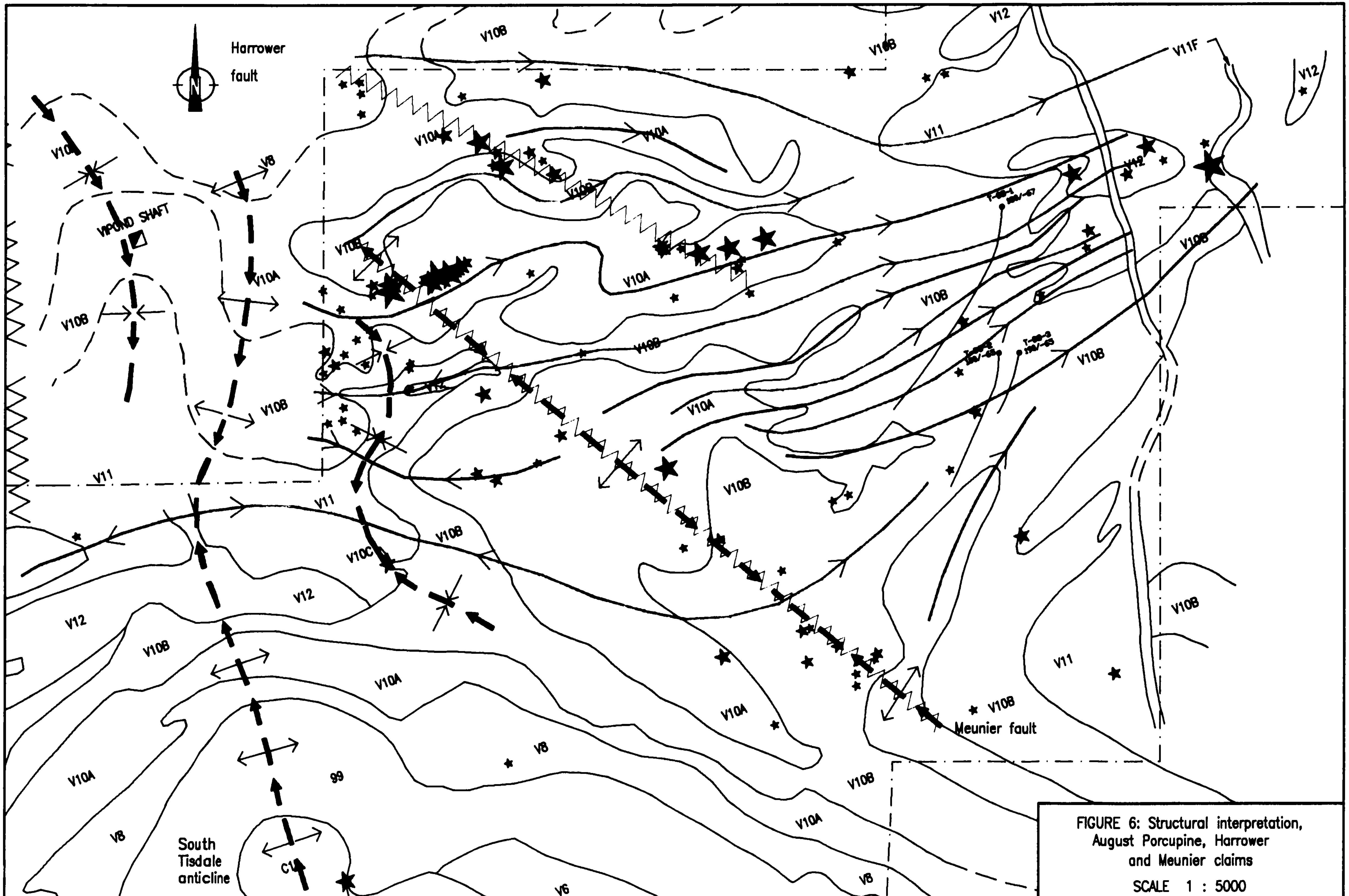
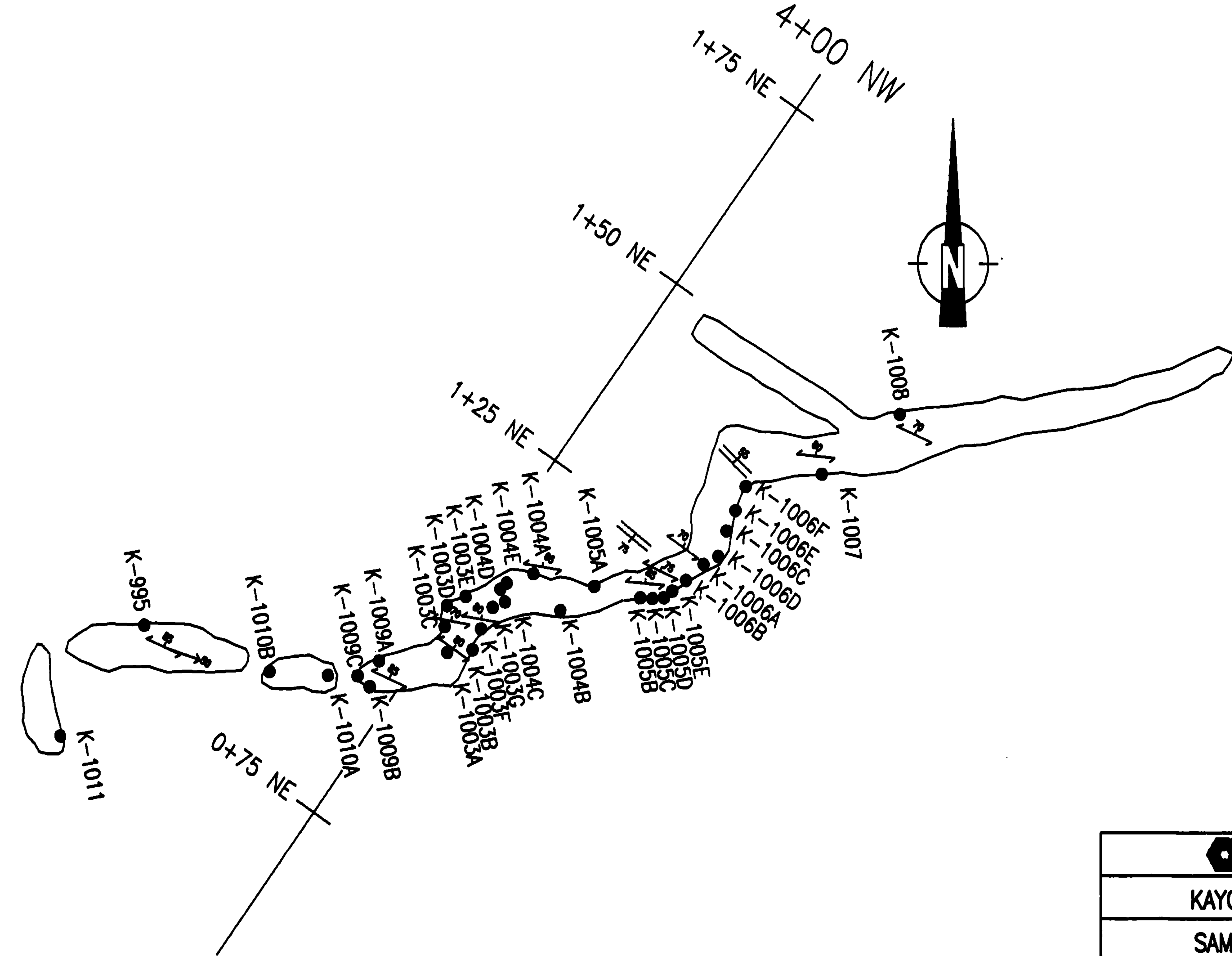


FIGURE 6: Structural interpretation, August Porcupine, Harrower and Meunier claims

SCALE 1 : 5000



COGEMA Canada Limited/Ltd.

KAYORUM PROJECT

SAMPLE LOCATIONS
MEUNIER TRENCH

Scale 1 : 50

0 5 10 15 20 25 meters

Report : 92-CND-84-02 | Figure: IA-2

COGEMA CANADA LIMITED

KAYORUM PROJECT

ROCK GEOCHEMISTRY STUDIES: Au, As, Sb, Cu, Pb, Zn

Ref. no. 92-CND-64-04

by: John Learn
Nov 1992

SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

A total of 278 surface samples taken during the summer 1991 mapping program from the area of the northwest trending target zone (axis of the KAY-92 grid) were analyzed for As, Sb, Cu, Pb, Zn to complement and supplement our previous exploration results.

Results for As, Sb, Zn and to a lesser extent Cu, Pb compare favourably with the Au lithogeochemistry results.

The As data show very good statistical and spatial correlation with the Au results. Threshold values in the order of 60 and/or 120 ppm appear to be appropriate for this area.

The use of Sb as a pathfinder element at Kayorum is rejected only because there is very strong correlation with As; the expense would appear to be redundant.

Results for the base metal elements are interesting. Perhaps the most useful element will be Zn; however, further work to define threshold values for these elements in the Timmins area may be warranted before systematic analysis is undertaken.

The results described above encouraged us to assay for As on all remaining surface samples. The total number of analyses performed was 1233 (including the 278 samples described above).

Once again, the As results compare favourably with the Au data. It is suggested that the As results highlight a zone parallel to the main target area at a few hundred meters to the northeast. The As results may also suggest presence of an oblique structure or splay off the main trend in the southeast part of the grid.

42A06NW0040 OM92-075 TISDALE

050C

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Appendix II: analytical procedures and listing of results

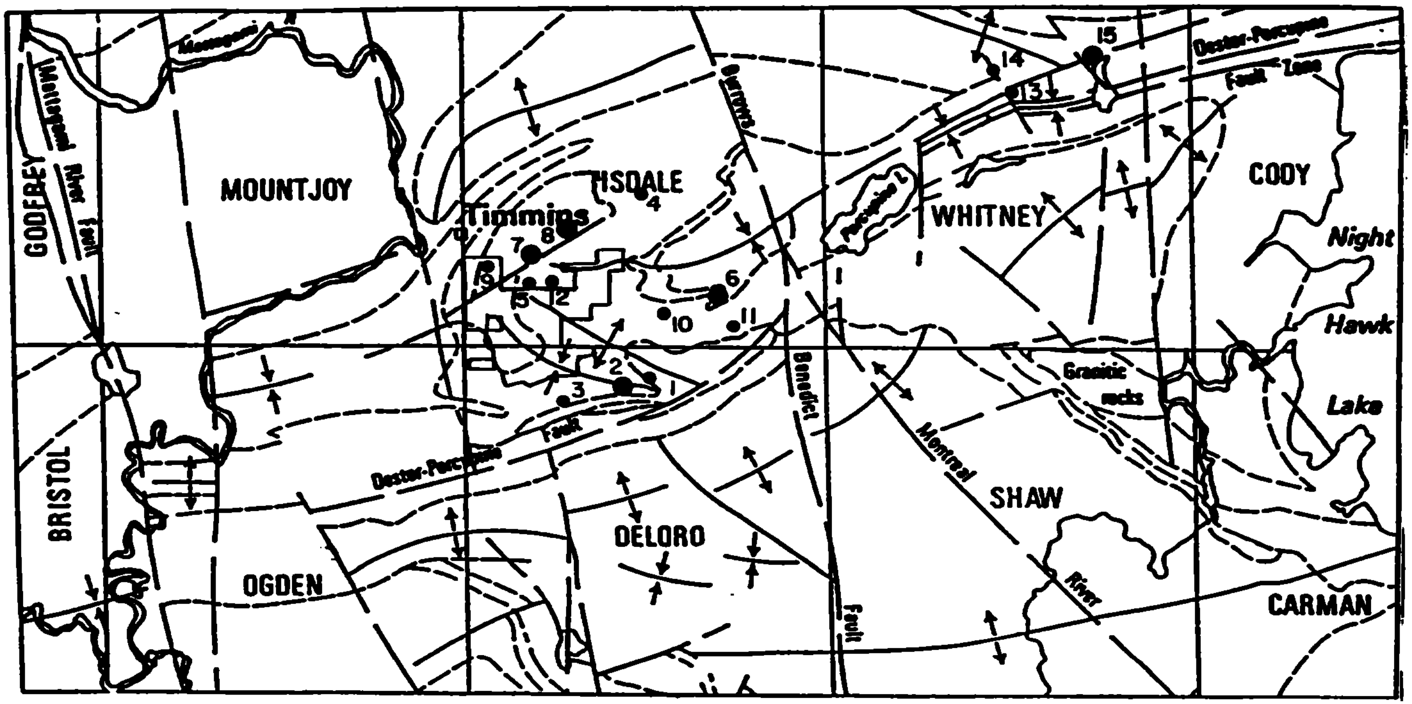


FIGURE 1: Gold mines of the Timmins camp
(Scale 1:200 000)

INDEX TO MINES
(metric tonnes of Au produced)

DELORO TOWNSHIP

1.	Buffalo Ankerite	(30t)
2.	Aunor	(61t)
3.	Delnite	(29t)

TISDALE TOWNSHIP

4.	Coniaurum	(35t)
5.	Crown	(4t)
6.	Dome	(300t)*
7.	Hollinger	(602t)
8.	McIntyre	(310t)
9.	Moneta	(5t)
10.	Paymaster	(37t)
11.	Preston	(48t)
12.	Vipond	(13t)

WHITNEY TOWNSHIP

13.	Broulan	(8t)
14.	Hallnor	(46t)
15.	Pamour	(60t)*

3. PREVIOUS EXPLORATION WORK

Previous exploration work is summarized in 91-CND-64-02.

Previous work addressing the subject of pathfinder element geochemistry in the Timmins camp is summarized in Appendix I; the document presented therein is an internal monthly report which was presented as this work was being initiated.

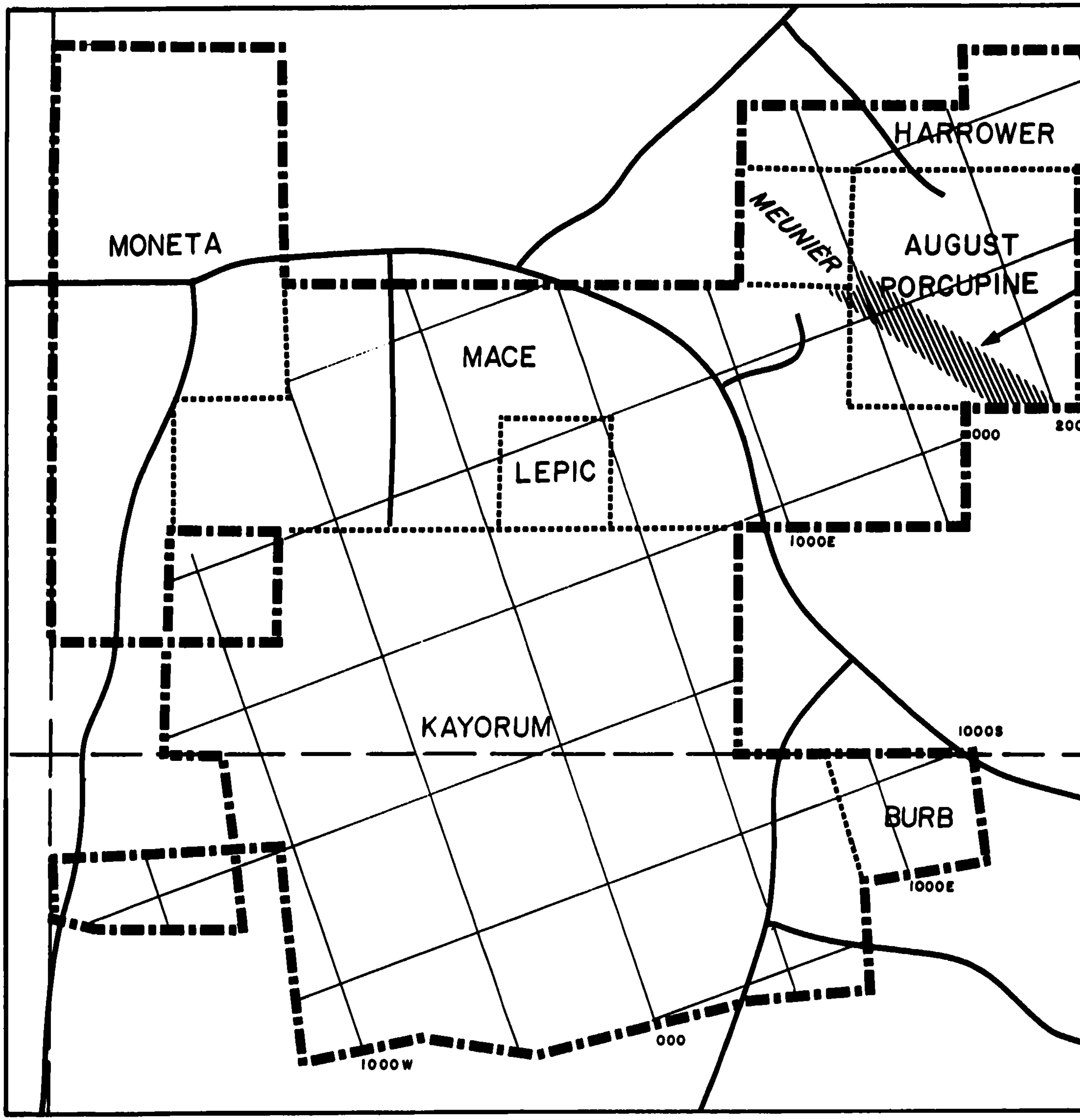
4. WORK PERFORMED

The report can be subdivided into two parts corresponding to:

* an orientation survey performed in the vicinity of the Meunier and August Porcupine claims. See Figure 2. A total of 278 samples from this area were analyzed for As, Sb, Cu, Pb, Zn in addition to Au which had already been performed;

* a property survey performed on all remaining surface samples. These samples were tested for As in addition to Au which had already been done. This work was performed on 1233 samples including the 278 samples mentioned above.

See the previous geological reports (91-CND-64-02, 92-CND-64-02) for detailed sample location maps. Sample descriptions are given in Appendix II; see Appendix III for a listing of analytical results.



COGEMA CANADA Ltee/Ltd.

KAYORUM PROJECT

PROPERTY MAP

SCALE 1:20 000

0 500 1000 meters

Report: 92-CND-64-04

Fig.: 2

5. ORIENTATION SURVEY

5.1 Results

Surface rock samples taken in 1991 which fall within a band about 700m wide along and across the target area shown in Figure 2 were tested for As, Sb, Cu, Pb, Zn to complement the Au data base. This target area was defined as a high priority drill target based on our previous geological and geophysical interpretations.

Some very basic statistical analysis was performed on these data. Correlations between the various elements are given in Table 1. The best correlations are found between Au/As/Sb. Note that the correlation coefficients generally increase if samples assaying below 2 ppb Au (detection limit for Au) are excluded. Weaker but interesting correlations link Cu with Zn and Au/As/Sb with Pb/Zn.

Frequency histograms for these data are given in Figures 3 to 8. The mean (or median) value and standard deviations for each element are given as well. A brief statement describing each of these figures is given here:

* Au: both histograms are strongly skewed; the mean result is about 5 ppb, whereas the median is about 2 ppb;

* As: the arithmetic histogram is strongly skewed, but the logarithmic histogram suggests a population which has something close to a lognormal distribution; there is perhaps a hint of a bimodal or trimodal distribution; the mean result is about 20 ppm, whereas the median is about 8 ppm;

* Sb: the histograms are both strongly skewed, however the mean and median values are quite similar (0.5 and 0.3 ppm); this reflects the narrow range in values for Sb;

* Cu: the Cu histograms have a shape similar to the As histograms; this includes a well defined bimodality of the logarithmic presentation; the mean result is about 60 ppm, the median is about 43 ppm;

* Pb: these histograms are similar to the Sb presentations; mean result is about 3 ppm, the median is about 2 ppm;

* Zn: these presentations suggest something close to a lognormal distribution similar to the As and Cu results; once again there may be a hint of a bimodal distribution of the results; mean result is about 170 ppm, the median is about 130 ppm.

Table 1: Correlations, orientation survey

All data, math values n = 278

	Au	As	Sb	Cu	Pb
Au	1.000				
As	0.409	1.000			
Sb	0.185	0.883	1.000		
Cu	0.006	0.147	0.110	1.000	
Pb	0.075	0.067	0.078	0.011	1.000
Zn	0.016	0.147	0.158	0.227	0.105

Au > or = 2 ppb, math values n = 146

	Au	As	Sb	Cu	Pb
Au	1.000				
As	0.659	1.000			
Sb	0.383	0.757	1.000		
Cu	0.014	0.271	0.312	1.000	
Pb	0.054	0.067	0.122	0.015	1.000
Zn	0.015	0.248	0.344	0.367	0.091

All data, Ln values n = 278

	Au	As	Sb	Cu	Pb
Au	1.000				
As	0.344	1.000			
Sb	0.316	0.324	1.000		
Cu	0.048	0.077	0.048	1.000	
Pb	0.349	0.232	0.220	0.007	1.000
Zn	0.196	0.203	0.153	0.055	0.217

Au > or = 2 ppb, Ln values n = 146

	Au	As	Sb	Cu	Pb
Au	1.000				
As	0.443	1.000			
Sb	0.432	0.431	1.000		
Cu	0.066	0.034	0.024	1.000	
Pb	0.352	0.251	0.338	0.024	1.000
Zn	0.090	0.257	0.197	0.165	0.245

Figure 3:

FREQUENCY HISTOGRAMS: Au(ppb); ALL DATA; n=278

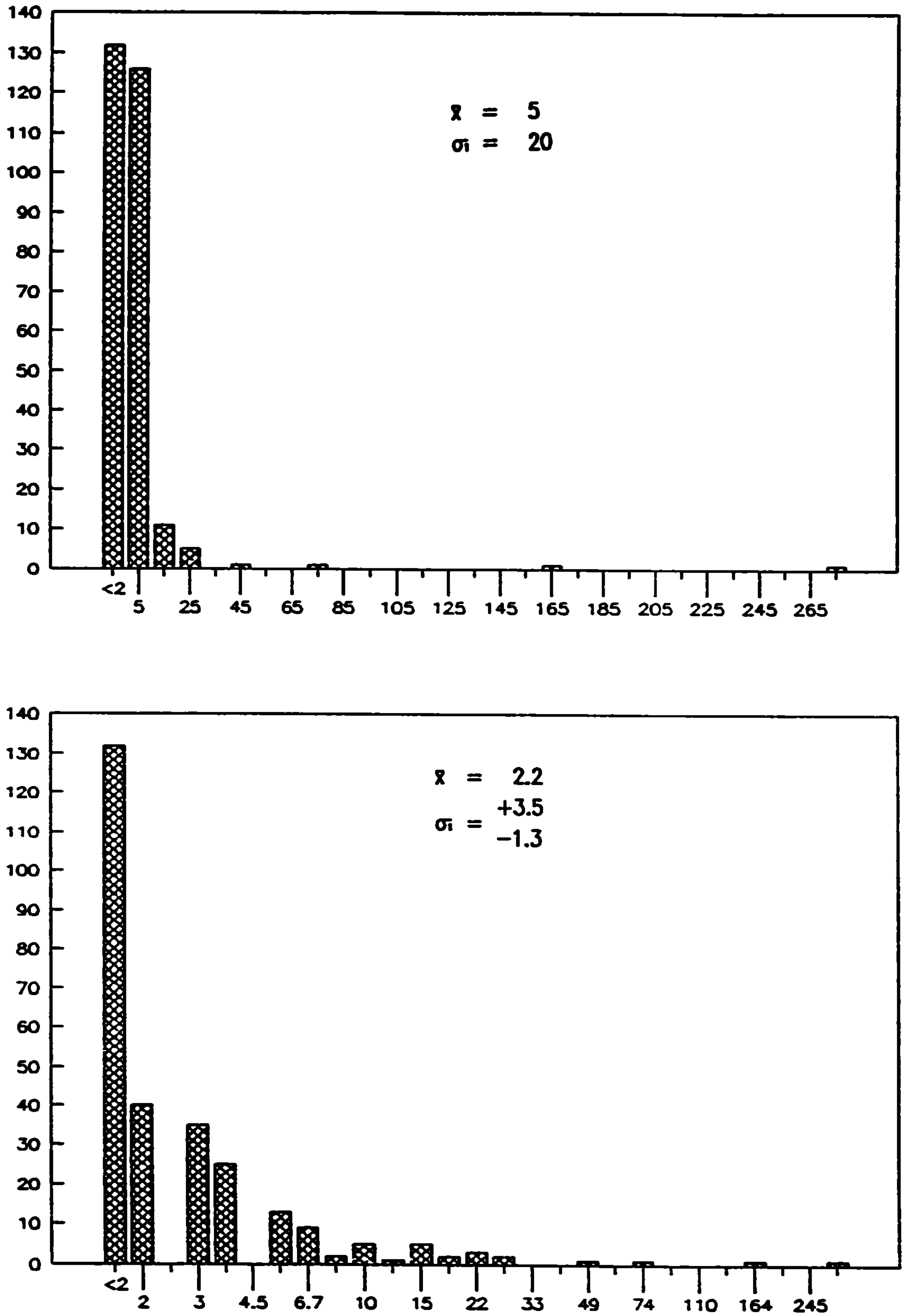


Figure 4:

FREQUENCY HISTOGRAM: As(ppm); ALL DATA; n=278

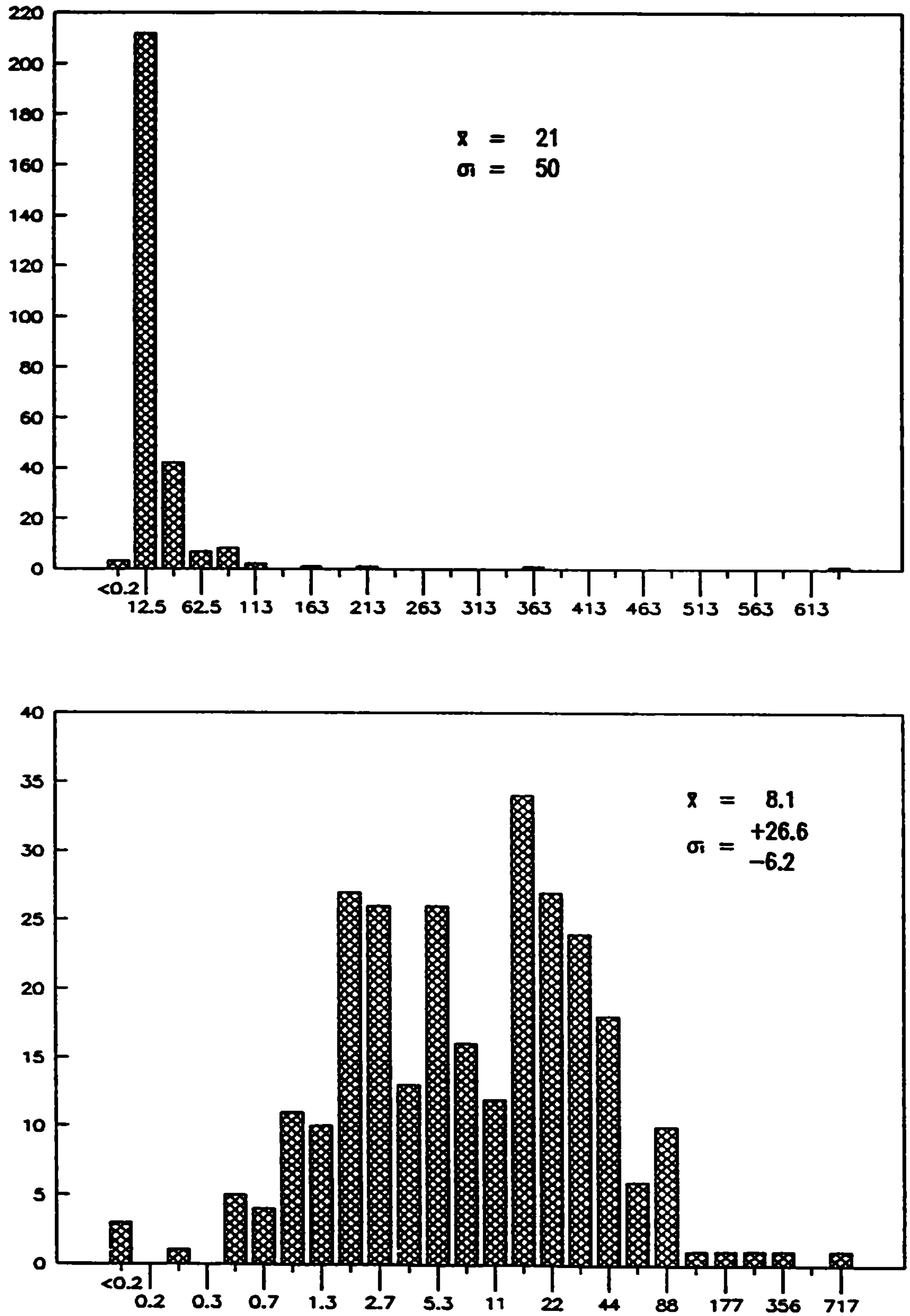
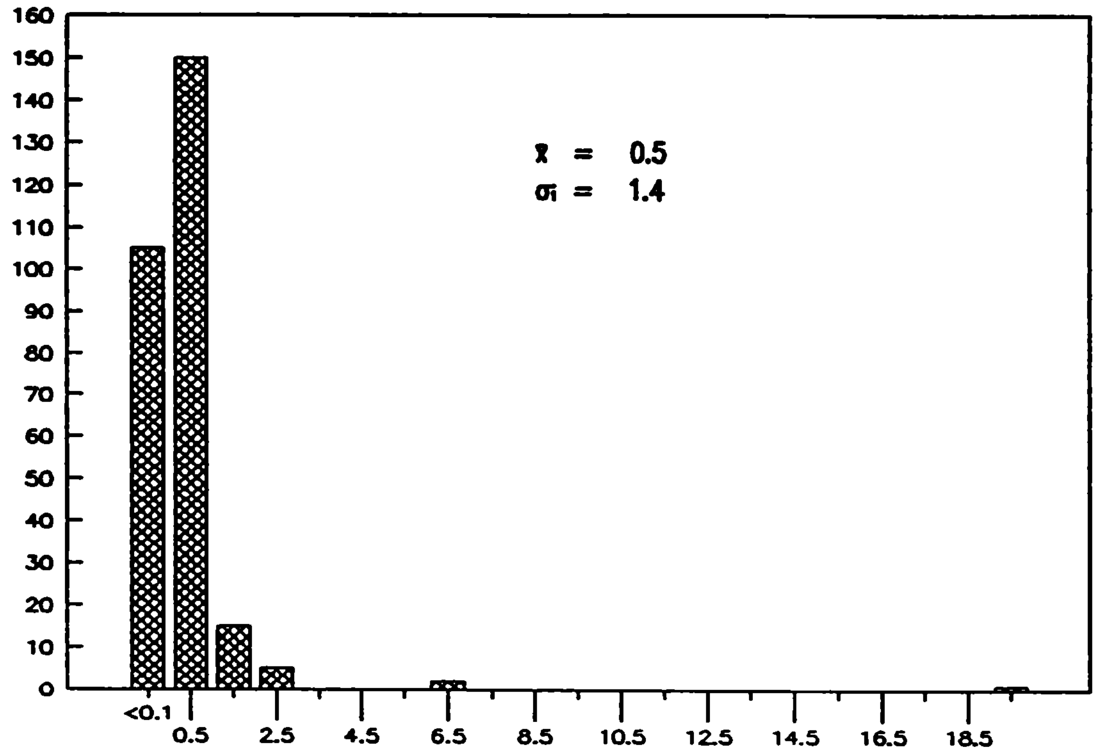


Figure 5:

FREQUENCY HISTOGRAM: Sb(ppm); ALL DATA; n=278



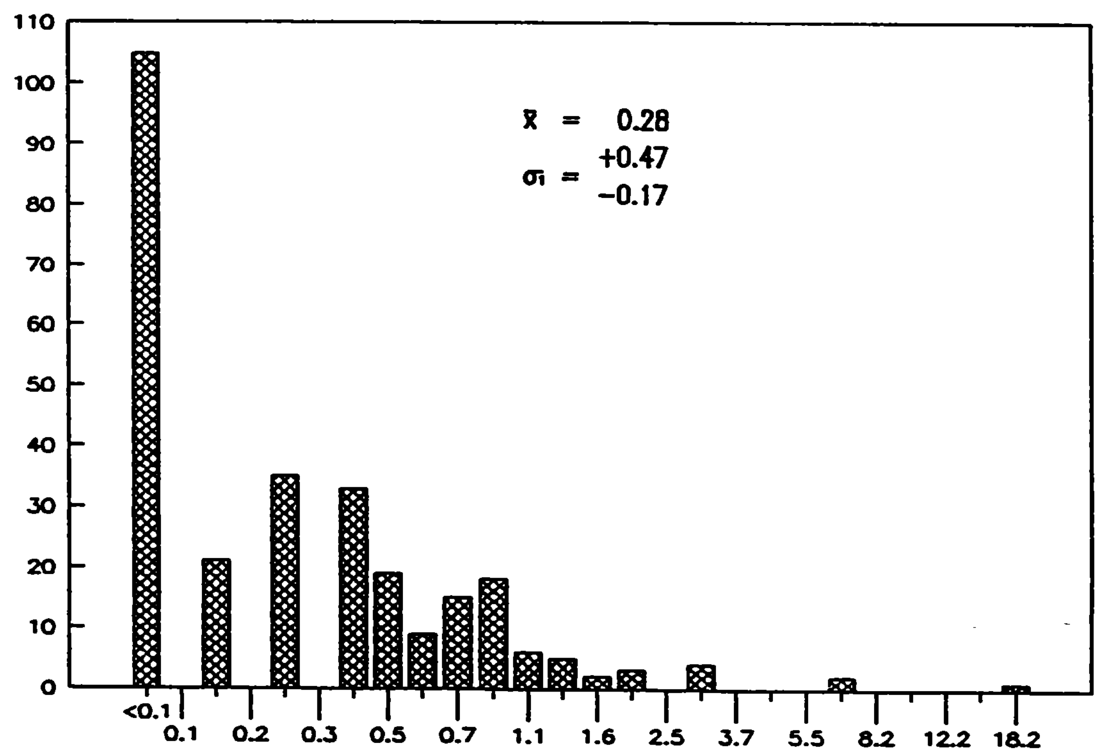
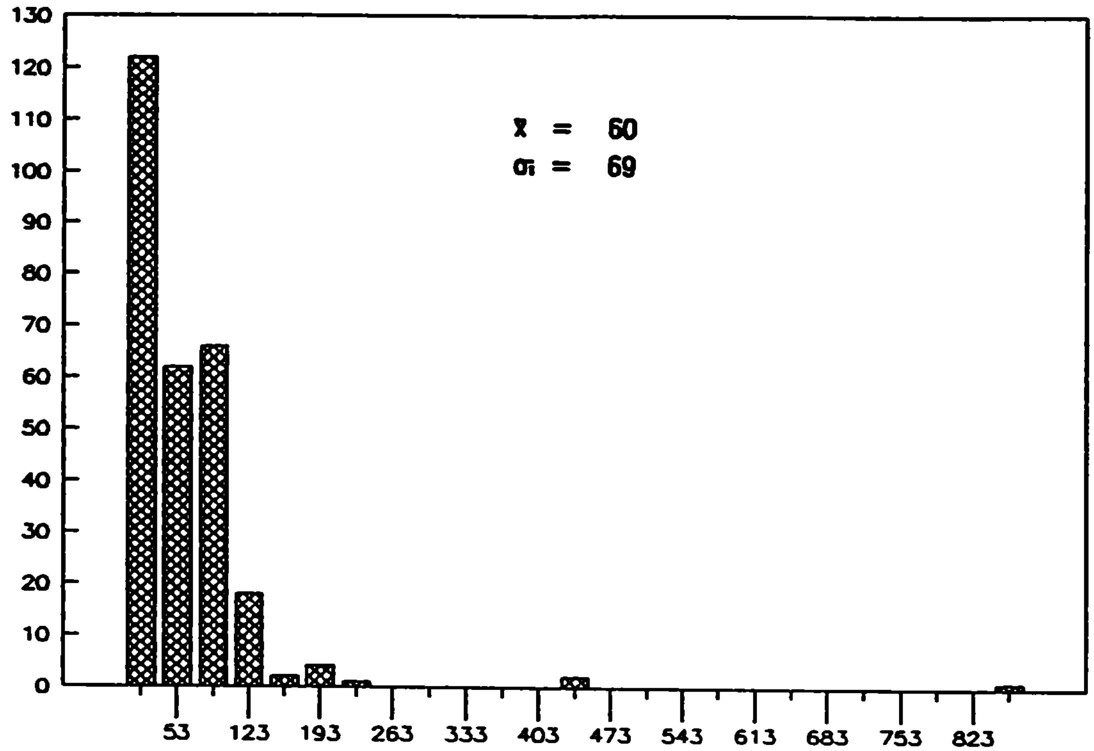


Figure 6:

FREQUENCY HISTOGRAM: Cu(ppm); ALL DATA; n=278



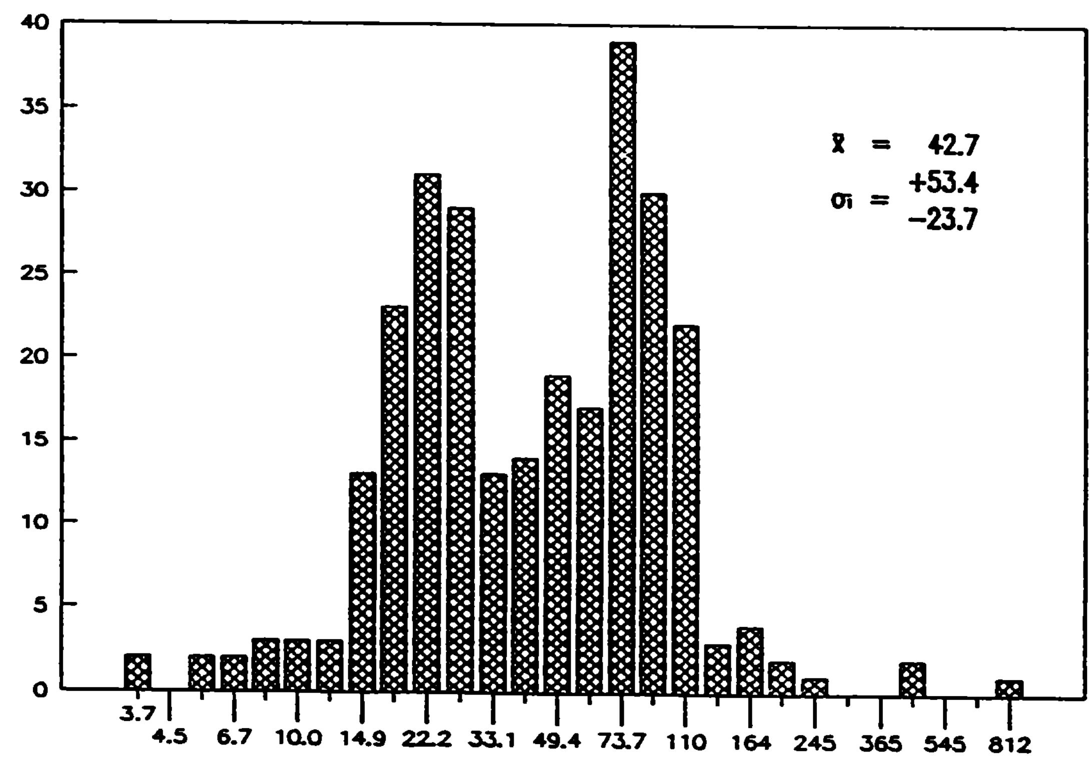


Figure 7:

FREQUENCY HISTOGRAM: Pb(ppm); ALL DATA; n=278

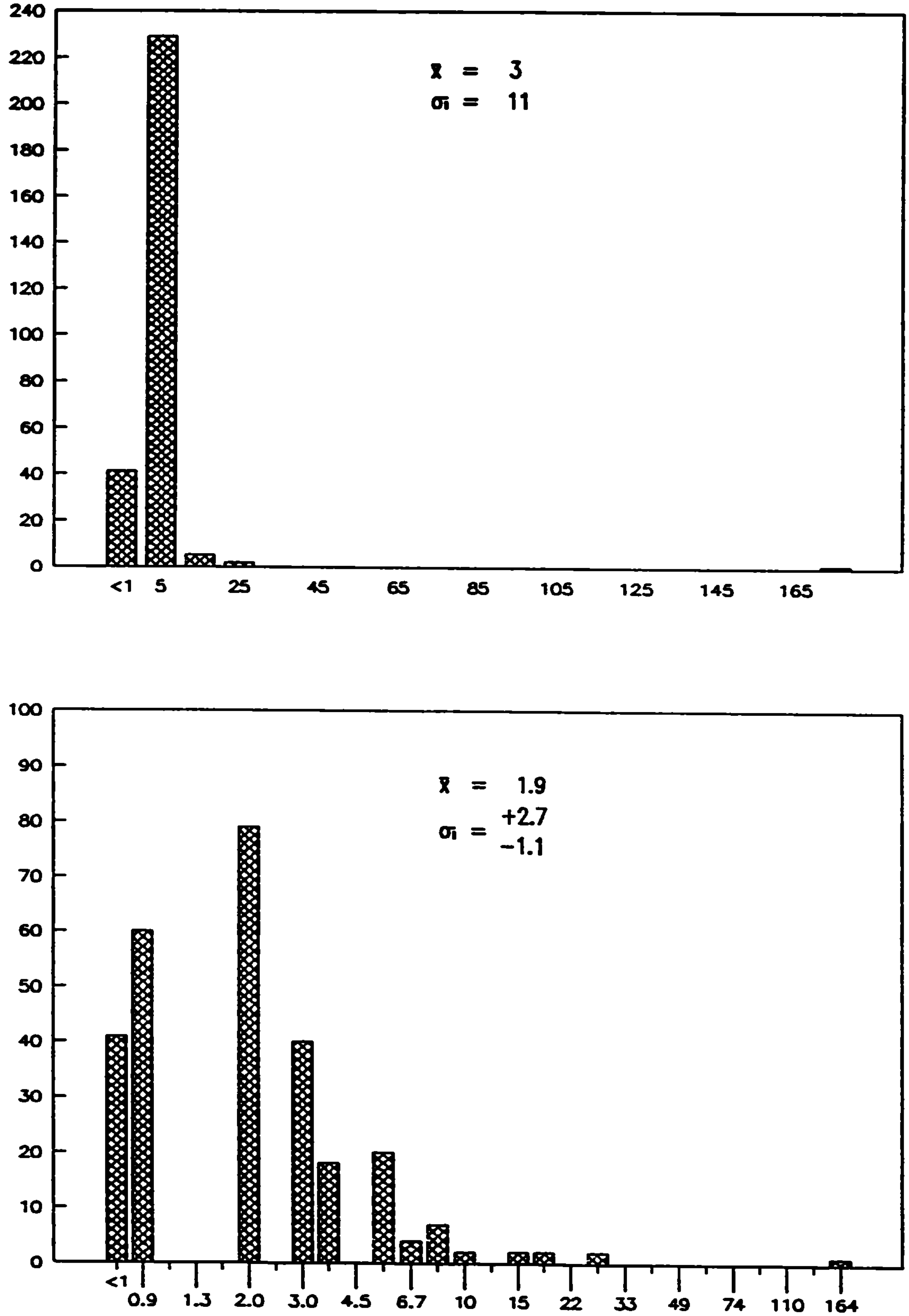
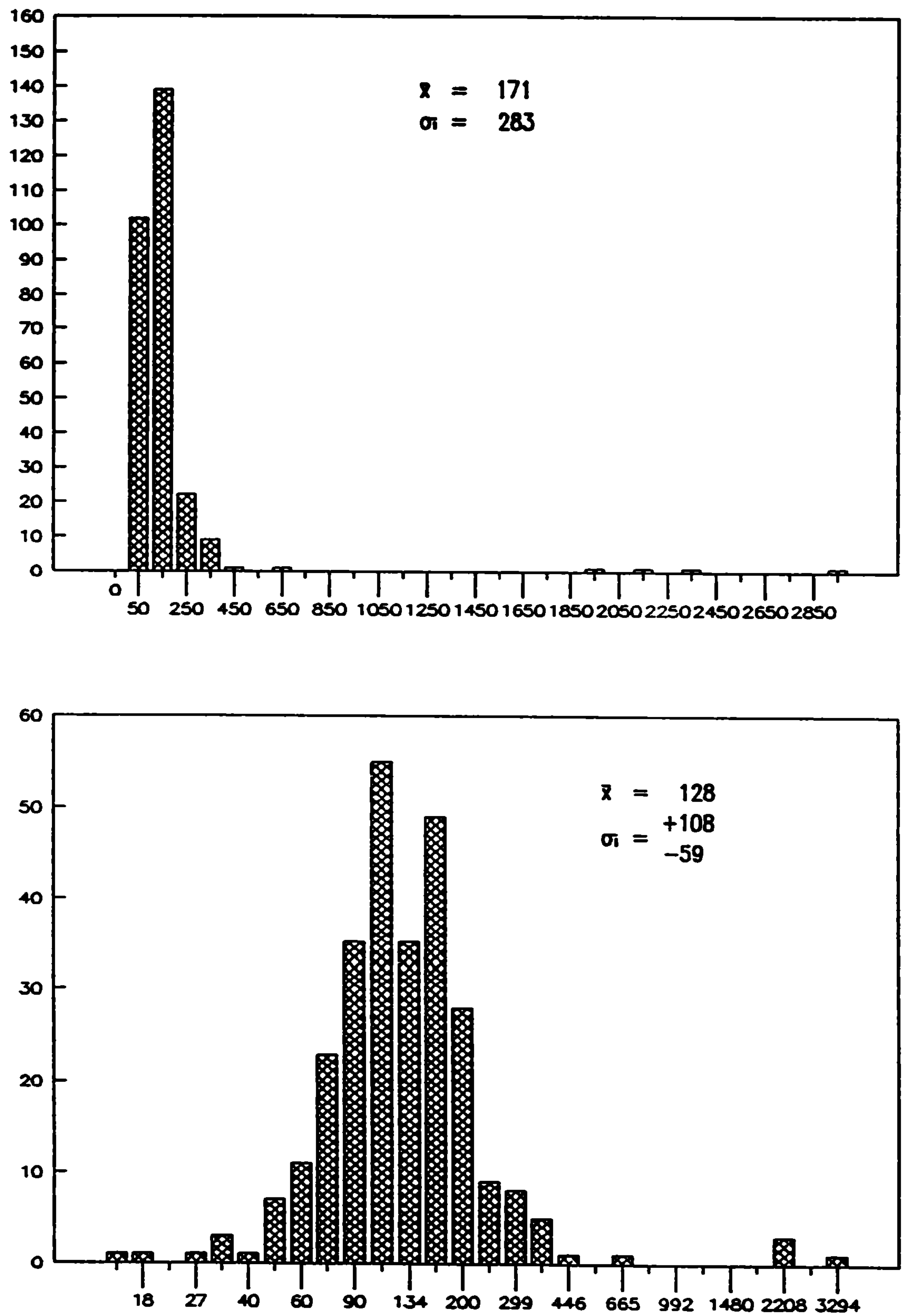


Figure 8:

FREQUENCY HISTOGRAM: Zn(ppm); ALL DATA; n=278



Finally, we have prepared elemental maps over the survey area using threshold values defined from the basic statistics analysis. These are given in Figures 9 to 14 at 1:5000 scale. A brief statement describing each of these figures is given below:

* Au: these data have been presented before; the better Au values cluster along the baseline (of the KAY-92 grid) but there are a few additional results of interest to the northeast and southwest;

* As: the As map resembles the Au map; this is not surprising given the results of the correlations; there are, however, much fewer samples assaying below the detection limit;

* Sb: the Sb map again is quite similar to the Au and As maps; similar to the Au map, there are numerous data assaying below the detection limit;

* Cu: there are a few high values along the baseline near the southeast corner of the grid, but most of the better results occur away from the axis of the target area;

* Pb: the better Pb values cluster in the southeast part of the grid close to the baseline (this area is also outlined by the Au/As/Sb/Cu data; but, higher results seen in the Au/As/Sb data to the northwest and on the flanks of the target zone are not seen in the Pb results);

* Zn: these data compare favourably to Au/As/Sb results; there is perhaps a lack of Zn response in the northernmost part of the grid.

5.2 Discussion

The As and Sb results show about the best correlation coefficients of all the elements tested. This suggests that only one of these need be assayed for. As is preferred over Sb because it gives fewer results below the detection limit and a wider range of values. Additionally, the Au/As correlation coefficients are somewhat better than for Au/Sb.

Statistics done on the As data suggest that threshold values of about 60 ppm to 120 ppm may be useful. This is in strong contradiction to a threshold value of 10 ppm interpreted by Whitehead et. al. (1979,1981) and Davies et. al. (1982), but is similar to a value of 70 ppm interpreted by Fyon and Crocket (1979, 1980, 1982). See Appendix I. In fact, using a threshold of 10 ppm, the entire grid would probably be evaluated as anomalous.

The second group of workers (Whitehead et. al., 1979, 1981, Davies et. al., 1982) have studied an area much larger in scope, but they have evaluated fewer pathfinder elements and have not discriminated between different stratigraphic units within the Tisdale Group. Sampling density in the Hollinger-McIntyre-Coniaurum-Dome-Paymaster-Buffalo Ankerite-Aunor-Delnite-Kayorum areas is quite uniform. Sampling was also performed to the north and northeast of these areas (including the Davidson-Tisdale and Pamour Mine areas) but sample density is much less uniform.

These workers have concluded that the following parameters define favourable carbonate alteration haloes:

* $CO_2/CaO > 1.5$ (molar ratio)
* As > 10 ppm
* $K_2O > 0.75$ %

Note that CO_2/CaO is in effect an indirect measure of Fe-carbonate alteration, since excessive carbonate not chemically associated with calcite is assumed to be associated with iron. Note also that it is stated that a minimum of two out of the three above criteria be met.

Contour maps of CO_2/CaO and As from Whitehead et. al. (1981) are given in Figure KAY-1. Based on their sampling, high CO_2/CaO molar ratios are present along the Hollinger-McIntyre-Coniaurum trend, at the Dome Mine and at the Paymaster Mine. On the Kayorum property, small bulls-eye anomalies are reported close to the Vipond Mine, at the eastern part of the Harrower option and in the southwest part of the August Porcupine claims. Note that the Alma zone is marked by low CO_2/CaO molar ratios. As anomalies are reported along much of the Hollinger-McIntyre-Coniaurum trend, at the Dome and Paymaster Mines and close to the Delnite and Aunor headframes. On the Kayorum property, a small bulls-eye anomaly is indicated in the southwest part of the August Porcupine claims. Although I have not presented their K_2O contour map, note that all K_2O anomalies have very restricted aerial extent. All reported K_2O anomalies are bulls-eye type and are similar in size to the As anomaly on the Kayorum property. One of these occurs in the southeast part of the August Porcupine claims.

3. KAYORUM

To begin with, it was decided to test 278 samples from the area of the IP-VLF-density anomaly (see Figure KAY-2) to see if any anomalous results using the applicable criteria above were present. Full computer aided compilation of the data will be reported later; at this time we present a brief reporting of the As results (see Figure KAY-3).

Most of the samples in the area of the geophysical anomaly give As values > 10 ppm. High As results (> 70 ppm) are locally present in the southern and northern sections of the geophysical anomaly. These data spatially correspond to Au anomalies. But it appears that As values are still relatively strong at the eastern edge of the survey. To the west there are two areas with elevated As, but in general the results are low. Similarly, As results are low in the extreme southeast corner of the survey.

4. REMARKS

Before drawing conclusions or recommending additional work, the results will be more rigorously compiled. For example, it may be of interest to separately treat vein samples vs. the metavolcanics, and perhaps also to separate strongly altered from weakly or unaltered samples. But it may be prudent to enlarge the data base to include presently interpreted "barren" areas to more appropriately define background and threshold values. It may also be interesting to extend the area surveyed to the northeast, where it appears that As results remain above a 10 ppm limit.

It is clear that increased sampling density performed by us has greatly enlarged the area encompassed by a 10 ppm As contour relative to Figure KAY-3. On the other hand there is no clear trend within the 10 ppm contour. Perhaps results appear more favourable at the northern and southern extremities of the geophysical response; on the other hand, the central area is mapped as a synclinal axis. Remember that I have already suggested that our target may lie deeper in the stratigraphy than the V10B variolites exposed in this area.

At the present time, I do not intend to check for Li or B as suggested by Fyon and Crocket (1979, 1980, 1982), nor do I intend to quantify the degree of iron carbonate alteration (CO_2/CaO) or sericite alteration (K_2O). However, these might be considered during the upcoming diamond drill program.

5. REFERENCES CITED

1. Davies, J.F., Whitehead, R.E.S., Cameron, R.A. and Duff, D., 1982, Regional and Local Patterns of CO_2-K-Rb-As Alteration: a guide to gold in the Timmins area, in Geology of Canadian Gold Deposits, Proceedings of the CIM Gold Symposium, Sept 1980, Hodder R.W. and Petruk, W. eds., Can. Inst. Min. Metall. Spec. Vol. 24, p. 130-143.

2. Fyon, J.A. and Crocket, J.H., 1979, Geological and geochemical guides to gold mineralization of the Porcupine camp, Timmins area; in Milne, V.G., White, O.L., Barlow, R.B. and Kustra, C.R. eds., Summary of Field Work, 1979: Ont. Geol. Surv. Misc. Pap. 90, p. 192-198.

3. Fyon, J.A. and Crocket, J.H., 1980, Volcanic environment of carbonate alteration and stratiform gold mineralization, Timmins area; in Roberts, R.G. ed., Genesis of Archean, volcanic-hosted gold deposits; eleven papers submitted to a symposium held at University of Waterloo, March 7, 1980; Ont. Geol. Surv. Open File Rept. 5293, p. 44-65.

4. Fyon, J.A. and Crocket, J.H., 1982, Gold Exploration in the Timmins District Using Field and Lithogeochemical Characteristics of Carbonate Alteration Zones, in Geology of Canadian Gold Deposits, Proceedings of the CIM Gold Symposium, Sept 1980, Hodder R.W. and Petruk, W. eds., Can. Inst. Min. Metall. Spec. Vol. 24, p. 113-129.

5. Whitehead, R.E.S., Cameron, R.A. and Davies, J.F., 1979, The relation of gold deposits to concentration of CO_2 in volcanic rocks; Grant 30, in Pye, E.G., ed., Geoscience Research Grant Programs, Summary of Research, 1978-1979, Ont. Geol. Surv. Misc. Pap. 87, p. 108-116.

6. Whitehead, R.E.S., Davies, J.F., Cameron, R.A. and Duff, D., 1981, Carbonate, Alkali and Arsenic Anomalies Associated with Gold Mineralization, Timmins Area; Grant 30, in Pye, E.G., ed., Geoscience Research Grant Programs, Summary of Research, 1980-1981, Ont. Geol. Surv. Misc. Pap. 98, p. 318-333.

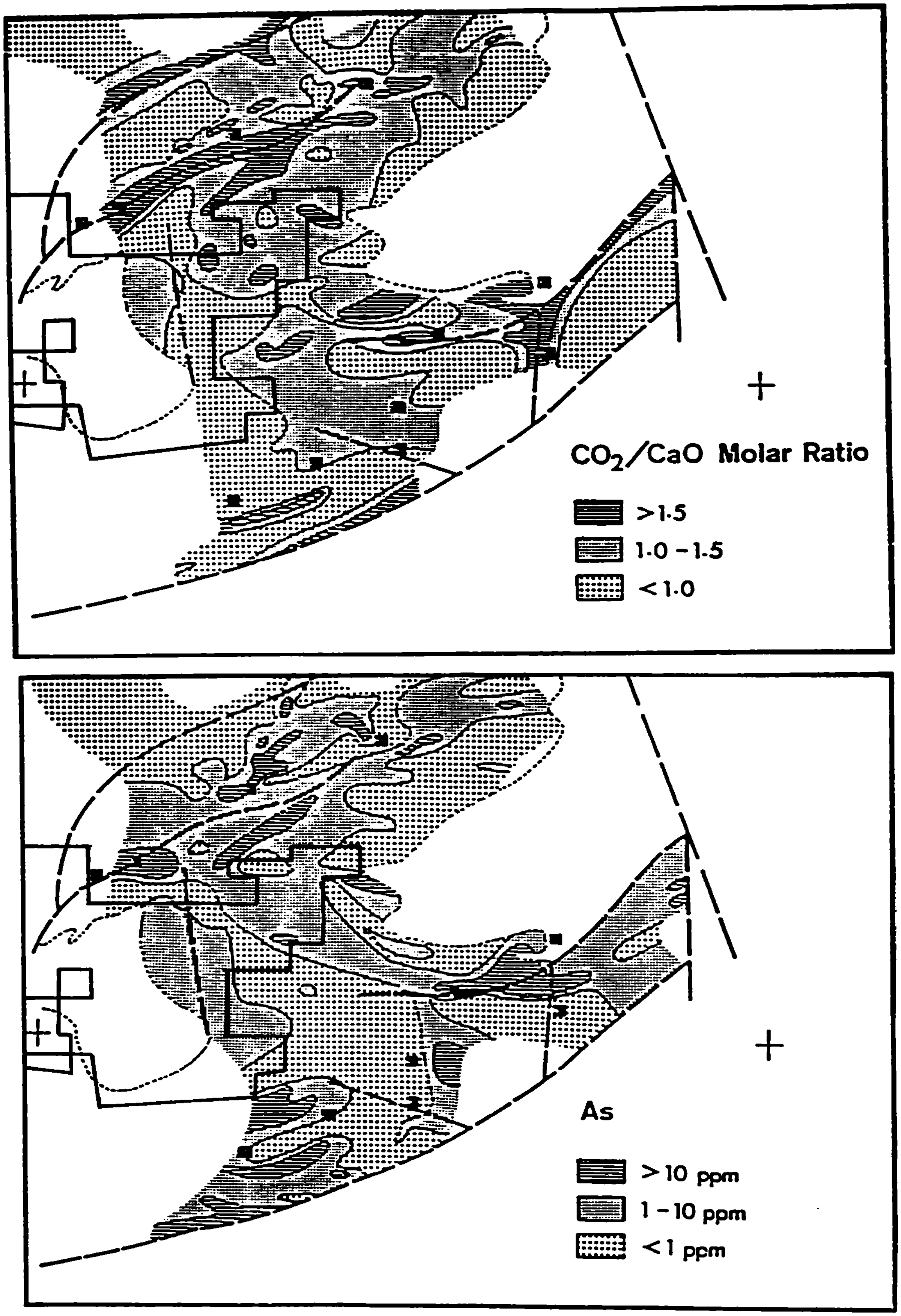


Figure KAY-1: Contour maps of the CO_2/CaO molar ratio and As for the Timmins area reproduced from Whitehead <u>et. al.</u> (1981)

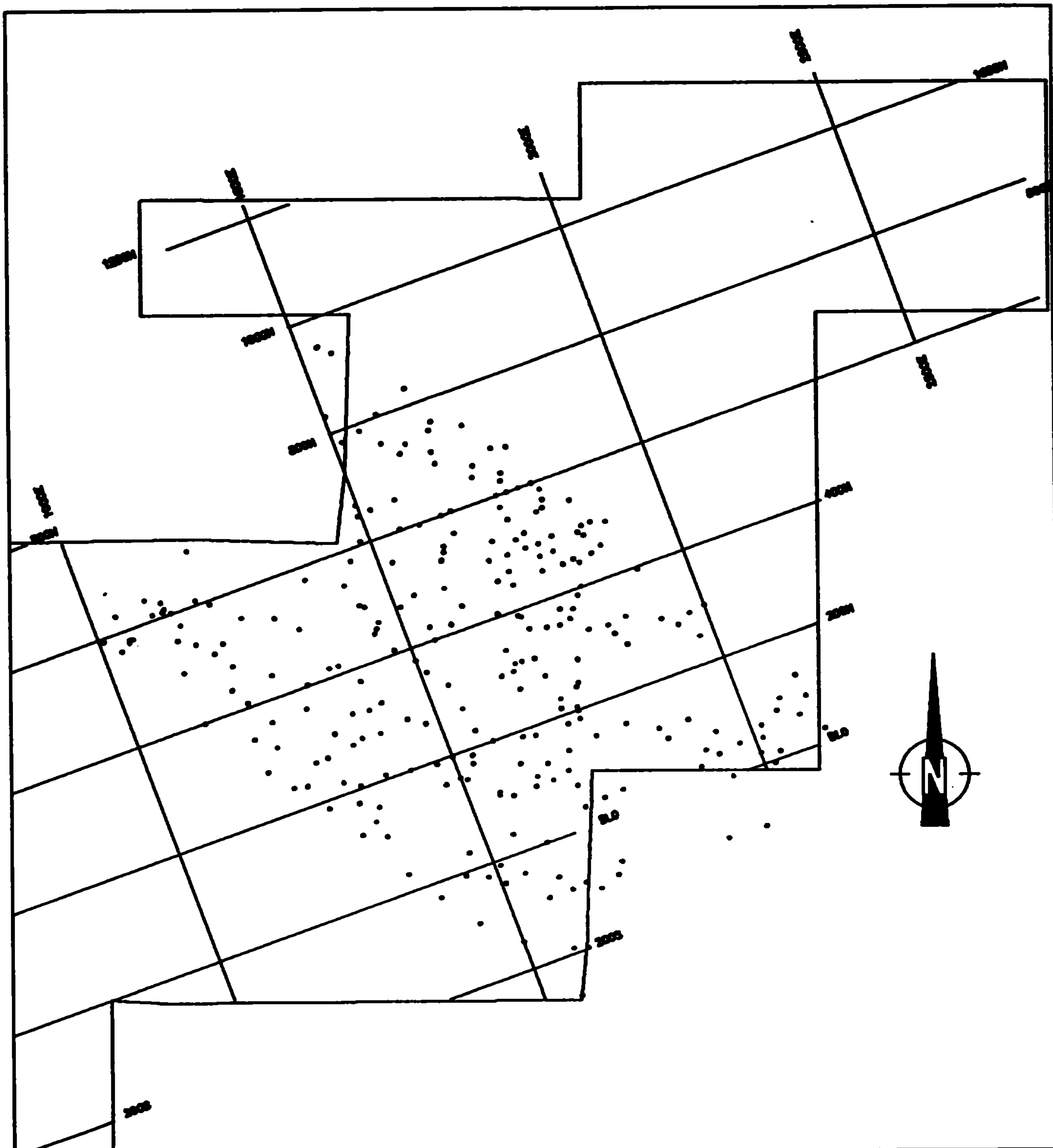


Figure KAY–2: Sample Location Map

SCALE 1 : 10 000

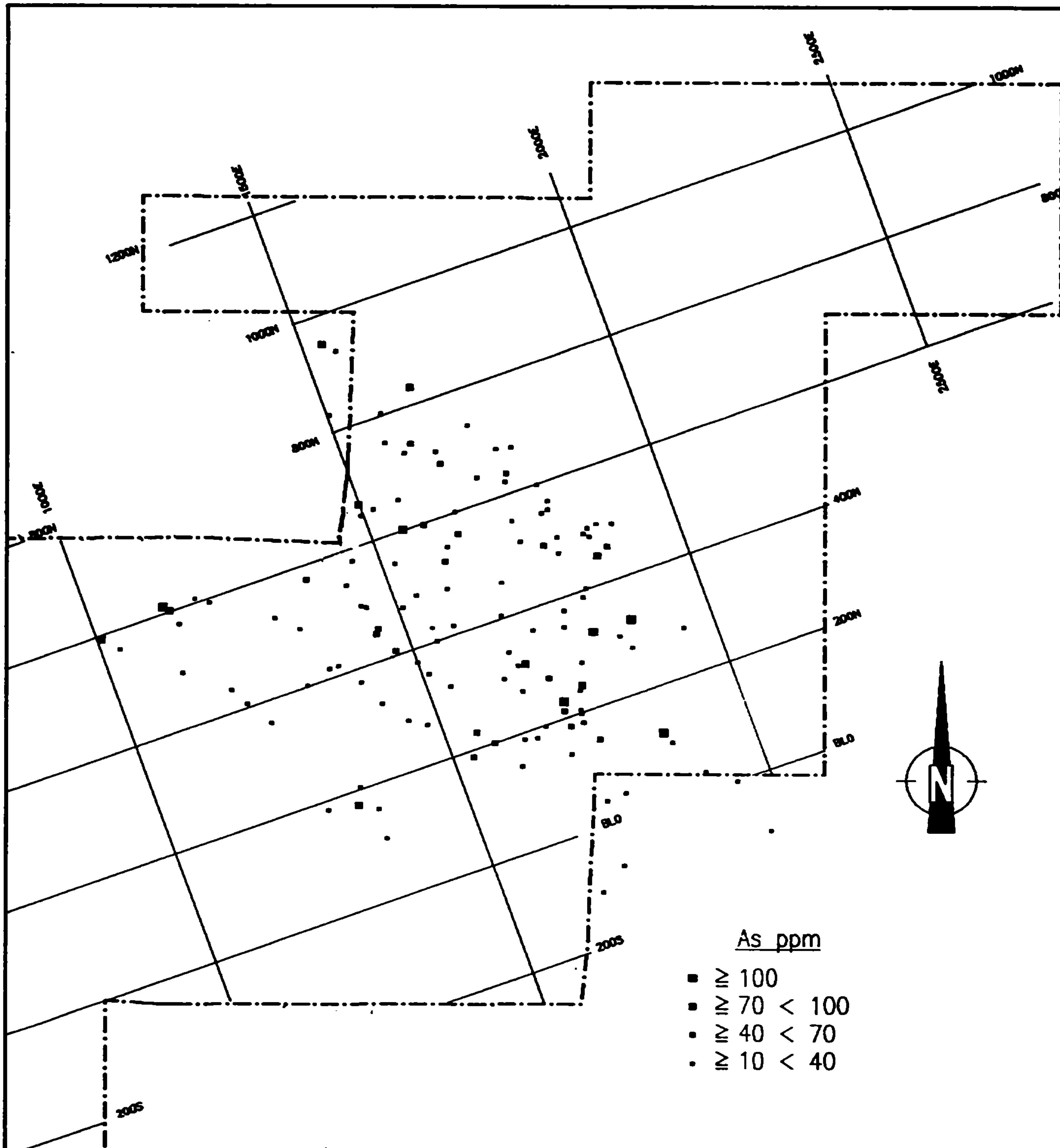


Figure KAY–3: Preliminary arsenic results

APPENDIX II

IIA: Description of analytical procedures

IIB: Listing of analytical results

IIA: Description of analytical procedures

i) control samples (barren quartzite) were inserted at regular intervals (every twenty to thirty samples) into the shipments sent for analysis and analyzed; this confirms that no contamination goes unnoticed;

ii) Accurassay Laboratories in Kirkland Lake performed all the work;

iii) specifications:

note that we pulverized 500g splits to -150 mesh whereas standard laboratory procedure in most cases yields only 250g

Au:	fraction	: -150 mesh (30g)
	extraction	: aqua regia
	method	: fire assay - atomic absorption
	detection limit:	2 ppb
As:	fraction	: -150 mesh (250mg)
	extraction	: aqua regia
	method	: atomic absorption - hydride
	detection limit:	0.2 ppm
Sb:	fraction	: -150 mesh (250mg)
	extraction	: aqua regia
	method	: atomic absorption - hydride
	detection limit:	0.2 ppm
Cu:	fraction	: -150 mesh (250mg)
	extraction	: aqua regia
	method	: atomic absorption
	detection limit:	1 ppm
Pb:	fraction	: -150 mesh (250mg)
	extraction	: aqua regia
	method	: atomic absorption
	detection limit:	1 ppm
Zn:	fraction	: -150 mesh (250mg)
	extraction	: aqua regia
	method	: atomic absorption
	detection limit:	1 ppm

iv) rejects stored in Rouyn for about 3 years before being discarded; 470g pulps (30g was analyzed) kept indefinitely.

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-1	4	2.0	- -	- -	- -	- -
K-2	3	2.0	- -	- -	- -	- -
K-3A	34	240.0	- -	- -	- -	- -
K-3B	58	20.0	- -	- -	- -	- -
K-3C	15	20.0	- -	- -	- -	- -
K-3D	2	3.0	- -	- -	- -	- -
K-3E	2	3.0	- -	- -	- -	- -
K-3F	10	91.0	- -	- -	- -	- -
K-5	3	10.0	- -	- -	- -	- -
K-6A	-2	0.6	- -	- -	- -	- -
K-6B	4	3.0	- -	- -	- -	- -
K-6C	3	1.2	- -	- -	- -	- -
K-7A	-2	5.0	- -	- -	- -	- -
K-7B	-2	10.0	- -	- -	- -	- -
K-8A	-2	1.3	- -	- -	- -	- -
K-8B	2	0.7	- -	- -	- -	- -
K-8C	-2	11.0	- -	- -	- -	- -
K-9A	2	5.0	- -	- -	- -	- -
K-9B	-2	7.0	- -	- -	- -	- -
K-9C	-2	0.6	- -	- -	- -	- -
K-10	3	0.7	- -	- -	- -	- -
K-11A	-2	0.6	- -	- -	- -	- -
K-11B	2	0.5	- -	- -	- -	- -
K-12A	-2	-0.2	- -	- -	- -	- -
K-12B	2	2.0	- -	- -	- -	- -
K-12C	3	0.6	- -	- -	- -	- -
K-13A	5	1.7	- -	- -	- -	- -
K-13B	2	0.6	- -	- -	- -	- -
K-14A	-2	0.3	- -	- -	- -	- -
K-14B	2	0.4	- -	- -	- -	- -
K-15A	-2	3.0	- -	- -	- -	- -
K-15B	-2	5.0	- -	- -	- -	- -
K-16A	3	1.2	- -	- -	- -	- -
K-16B	2	1.1	- -	- -	- -	- -
K-17A	-2	0.2	- -	- -	- -	- -
K-17B	4	0.7	- -	- -	- -	- -
K-18A	-2	7.0	- -	- -	- -	- -
K-18B	-2	16.0	- -	- -	- -	- -
K-19A	-2	2.0	- -	- -	- -	- -
K-19B	2	12.0	- -	- -	- -	- -
K-19C	-2	0.4	- -	- -	- -	- -
K-20A	-2	0.8	- -	- -	- -	- -
K-20B	-2	10.0	- -	- -	- -	- -
K-21A	-2	1.2	- -	- -	- -	- -
K-21B	3	0.8	- -	- -	- -	- -
K-22A	2	0.2	- -	- -	- -	- -
K-23A	-2	0.4	- -	- -	- -	- -
K-24A	-2	4.0	- -	- -	- -	- -
K-25A	2	0.7	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-26A	6	0.6	- -	- -	- -	- -
K-27A	-2	0.4	- -	- -	- -	- -
K-27B	4	0.6	- -	- -	- -	- -
K-27C	2	0.7	- -	- -	- -	- -
K-28A	3	0.4	- -	- -	- -	- -
K-28B	5	0.3	- -	- -	- -	- -
K-29A	-2	0.5	- -	- -	- -	- -
K-29B	-2	9.0	- -	- -	- -	- -
K-30	-2	4.0	- -	- -	- -	- -
K-31A	3	3.0	- -	- -	- -	- -
K-31B	5	1.1	- -	- -	- -	- -
K-32A	2	0.7	- -	- -	- -	- -
K-32B	2	75.0	- -	- -	- -	- -
K-32C	2	24.0	- -	- -	- -	- -
K-32D	3	30.0	- -	- -	- -	- -
K-32E	4	1.0	- -	- -	- -	- -
K-33A	-2	-0.2	- -	- -	- -	- -
K-33B	-2	0.9	- -	- -	- -	- -
K-33C	-2	-0.2	- -	- -	- -	- -
K-33D	-2	0.7	- -	- -	- -	- -
K-34A	3	6.0	- -	- -	- -	- -
K-34B	2	0.3	- -	- -	- -	- -
K-34C	4	8.0	- -	- -	- -	- -
K-34D	5	1.2	- -	- -	- -	- -
K-34E	2	22.0	- -	- -	- -	- -
K-35A	2	0.8	- -	- -	- -	- -
K-35B	6	0.4	- -	- -	- -	- -
K-36A	5	0.3	- -	- -	- -	- -
K-36B	2	4.0	- -	- -	- -	- -
K-37A	2	8.0	- -	- -	- -	- -
K-37B	4	8.0	- -	- -	- -	- -
K-38A	4	0.7	- -	- -	- -	- -
K-39A	2	0.7	- -	- -	- -	- -
K-39B	4	9.0	- -	- -	- -	- -
K-39C	3	1.1	- -	- -	- -	- -
K-39D	3	13.0	- -	- -	- -	- -
K-40A	3	0.4	- -	- -	- -	- -
K-40B	-2	9.0	- -	- -	- -	- -
K-41A	2	9.0	- -	- -	- -	- -
K-41B	-2	50.0	- -	- -	- -	- -
K-42	3	0.7	- -	- -	- -	- -
K-43	4	1.2	- -	- -	- -	- -
K-44	3	0.5	- -	- -	- -	- -
K-45A	4	5.0	- -	- -	- -	- -
K-45B	5	0.7	- -	- -	- -	- -
K-45C	3	1.2	- -	- -	- -	- -
K-45D	3	1.4	- -	- -	- -	- -
K-45E	3	1.4	- -	- -	- -	- -
K-45F	5	1.2	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-46A	-2	1.1	- -	- -	- -	- -
K-46B	-2	4.0	- -	- -	- -	- -
K-47A	-2	0.7	- -	- -	- -	- -
K-47B	2	0.5	- -	- -	- -	- -
K-48A	3	0.8	- -	- -	- -	- -
K-48B	4	13.0	- -	- -	- -	- -
K-49A	3	62.0	- -	- -	- -	- -
K-49B	-2	0.4	- -	- -	- -	- -
K-49C	-2	1.6	- -	- -	- -	- -
K-50A	5	0.5	- -	- -	- -	- -
K-50B	-2	0.5	- -	- -	- -	- -
K-50C	2	9.0	- -	- -	- -	- -
K-51	4	4.0	- -	- -	- -	- -
K-52	-2	0.3	- -	- -	- -	- -
K-53	2	0.6	- -	- -	- -	- -
K-54	4	0.6	- -	- -	- -	- -
K-55	-2	0.3	- -	- -	- -	- -
K-56A	-2	0.7	- -	- -	- -	- -
K-56B	-2	0.9	- -	- -	- -	- -
K-56C	2	1.0	- -	- -	- -	- -
K-57	3	-0.2	- -	- -	- -	- -
K-58A	-2	1.4	- -	- -	- -	- -
K-58B	3	1.4	- -	- -	- -	- -
K-59	-2	21.0	- -	- -	- -	- -
K-60	3	5.0	- -	- -	- -	- -
K-61	-2	0.5	- -	- -	- -	- -
K-62	-2	0.3	- -	- -	- -	- -
K-63A	3	0.4	- -	- -	- -	- -
K-63B	5	0.3	- -	- -	- -	- -
K-64A	10	4.0	- -	- -	- -	- -
K-64B	2	1.4	- -	- -	- -	- -
K-64C	-2	-0.2	- -	- -	- -	- -
K-64D	-2	0.2	- -	- -	- -	- -
K-64E	-2	0.3	- -	- -	- -	- -
K-64F	-2	1.4	- -	- -	- -	- -
K-65A	-2	0.6	- -	- -	- -	- -
K-65B	-2	0.4	- -	- -	- -	- -
K-65C	-2	0.6	- -	- -	- -	- -
K-65D	-2	-0.2	- -	- -	- -	- -
K-66A	-2	0.5	- -	- -	- -	- -
K-66B	7	0.6	- -	- -	- -	- -
K-66C	-2	0.3	- -	- -	- -	- -
K-66D	-2	8.0	- -	- -	- -	- -
K-67	-2	0.6	- -	- -	- -	- -
K-68A	11	5.0	- -	- -	- -	- -
K-68B	-2	1.1	- -	- -	- -	- -
K-68C	4	0.8	- -	- -	- -	- -
K-68D	-2	0.6	- -	- -	- -	- -
K-68E	-2	1.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-68F	-2	3.0	- -	- -	- -	- -
K-68H	-2	0.5	- -	- -	- -	- -
K-69A	9	8.0	- -	- -	- -	- -
K-70	-2	-0.2	- -	- -	- -	- -
K-71A	-2	0.9	- -	- -	- -	- -
K-71B	-2	3.0	- -	- -	- -	- -
K-71C	-2	0.5	- -	- -	- -	- -
K-71D	-2	0.7	- -	- -	- -	- -
K-71E	2	3.0	- -	- -	- -	- -
K-71F	-2	0.7	- -	- -	- -	- -
K-71G	17	7.0	- -	- -	- -	- -
K-71H	3	0.7	- -	- -	- -	- -
K-71J	3	0.4	- -	- -	- -	- -
K-71K	2	0.4	- -	- -	- -	- -
K-72A	11	4.0	- -	- -	- -	- -
K-72B	3	3.0	- -	- -	- -	- -
K-72C	4	4.0	- -	- -	- -	- -
K-72D	7	5.0	- -	- -	- -	- -
K-73	-2	1.4	- -	- -	- -	- -
K-74A	-2	0.6	- -	- -	- -	- -
K-74B	-2	7.0	- -	- -	- -	- -
K-75	-2	-0.2	- -	- -	- -	- -
K-76A	-2	0.2	- -	- -	- -	- -
K-76B	-2	0.7	- -	- -	- -	- -
K-77A	-2	0.4	- -	- -	- -	- -
K-77B	-2	0.4	- -	- -	- -	- -
K-77C	-2	0.2	- -	- -	- -	- -
K-77D	11	0.5	- -	- -	- -	- -
K-78A	-2	0.2	- -	- -	- -	- -
K-78B	-2	0.4	- -	- -	- -	- -
K-79	-2	0.8	- -	- -	- -	- -
K-80	-2	0.3	- -	- -	- -	- -
K-81	-2	0.7	- -	- -	- -	- -
K-82	-2	-0.2	- -	- -	- -	- -
K-83A	-2	18.0	- -	- -	- -	- -
K-83B	-2	5.0	- -	- -	- -	- -
K-83C	-2	0.2	- -	- -	- -	- -
K-83D	-2	0.2	- -	- -	- -	- -
K-84	-2	-0.2	- -	- -	- -	- -
K-85	-2	0.7	- -	- -	- -	- -
K-86	-2	23.0	- -	- -	- -	- -
K-87A	-2	0.5	- -	- -	- -	- -
K-87B	-2	0.5	- -	- -	- -	- -
K-87C	5	-0.2	- -	- -	- -	- -
K-88	-2	0.4	- -	- -	- -	- -
K-89A	-2	0.9	- -	- -	- -	- -
K-89B	-2	8.0	- -	- -	- -	- -
K-89C	-2	14.0	- -	- -	- -	- -
K-90A	-2	0.3	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-90B	4	0.9	--	--	--	--
K-90C	-2	1.0	--	--	--	--
K-90D	-2	1.2	--	--	--	--
K-91A	-2	0.3	--	--	--	--
K-91B	-2	0.4	--	--	--	--
K-91C	-2	14.0	--	--	--	--
K-91D	-2	0.5	--	--	--	--
K-92	-2	0.7	--	--	--	--
K-93	-2	0.4	--	--	--	--
K-94A	-2	0.2	--	--	--	--
K-94B	-2	0.9	--	--	--	--
K-95A	-2	8.0	--	--	--	--
K-95B	-2	3.0	--	--	--	--
K-96A	-2	4.0	--	--	--	--
K-96B	-2	1.6	--	--	--	--
K-97A	-2	3.0	--	--	--	--
K-97B	-2	2.0	--	--	--	--
K-98	-2	3.0	--	--	--	--
K-99	-2	1.3	--	--	--	--
K-100	-2	3.0	--	--	--	--
K-101	2	3.0	--	--	--	--
K-102	-2	7.0	--	--	--	--
K-103	-2	4.0	--	--	--	--
K-104	-2	11.0	--	--	--	--
K-105	-2	1.5	--	--	--	--
K-106	-2	5.0	--	--	--	--
K-107	-2	1.5	--	--	--	--
K-108	-2	0.3	--	--	--	--
K-109A	3	6.0	--	--	--	--
K-110	-2	12.0	--	--	--	--
K-111	-2	0.7	--	--	--	--
K-112	-2	0.7	--	--	--	--
K-113	-2	1.0	--	--	--	--
K-114	-2	18.0	--	--	--	--
K-115	-2	1.0	--	--	--	--
K-116	-2	1.2	--	--	--	--
K-117	-2	7.0	--	--	--	--
K-118	-2	6.0	--	--	--	--
K-121	-2	16.0	1.4	24	1	190
K-122	-2	15.0	1.0	16	2	92
K-123	-2	0.1	0.3	7	2	59
K-124	-2	650.0	20.0	110	6	73
K-125	13	75.0	0.9	100	18	200
K-127	2	8.0	--	--	--	--
K-128	-2	0.3	--	--	--	--
K-129	6	91.0	--	--	--	--
K-130	-2	1.1	--	--	--	--
K-131	2	0.8	--	--	--	--
K-132	2	0.6	--	--	--	--

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-133	3	0.2	- -	- -	- -	- -
K-134	-2	2.0	- -	- -	- -	- -
K-135	-2	3.0	- -	- -	- -	- -
K-136	-2	2.0	- -	- -	- -	- -
K-137	2	1.2	- -	- -	- -	- -
K-138	-2	7.0	- -	- -	- -	- -
K-139	-2	2.0	- -	- -	- -	- -
K-140	9	0.6	- -	- -	- -	- -
K-141	-2	1.7	- -	- -	- -	- -
K-142	3	1.4	- -	- -	- -	- -
K-143A	3	45.0	- -	- -	- -	- -
K-143B	4	9.0	- -	- -	- -	- -
K-144	5	0.4	- -	- -	- -	- -
K-145A	-2	-0.2	- -	- -	- -	- -
K-145B	3	3.0	- -	- -	- -	- -
K-145C	-2	0.5	- -	- -	- -	- -
K-146	3	8.0	- -	- -	- -	- -
K-147	-2	1.3	- -	- -	- -	- -
K-148	3	2.0	- -	- -	- -	- -
K-149	-2	0.7	- -	- -	- -	- -
K-150A	-2	3.0	- -	- -	- -	- -
K-150B	6	1.1	- -	- -	- -	- -
K-151A	3	150.0	- -	- -	- -	- -
K-151B	-2	0.8	- -	- -	- -	- -
K-152	2	12.0	- -	- -	- -	- -
K-153	2	10.0	- -	- -	- -	- -
K-154	3	0.6	- -	- -	- -	- -
K-155A	6	0.4	- -	- -	- -	- -
K-156A	4	0.5	- -	- -	- -	- -
K-156B	3	0.2	- -	- -	- -	- -
K-157A	11	22.0	- -	- -	- -	- -
K-157B	2	41.0	- -	- -	- -	- -
K-157C	2	14.0	- -	- -	- -	- -
K-158A	-2	1.2	- -	- -	- -	- -
K-158B	2	0.3	- -	- -	- -	- -
K-158C	2	2.3	- -	- -	- -	- -
K-158D	-2	0.9	- -	- -	- -	- -
K-159A	2	1.2	- -	- -	- -	- -
K-159B	2	0.4	- -	- -	- -	- -
K-160A	-2	0.3	- -	- -	- -	- -
K-160B	-2	1.0	- -	- -	- -	- -
K-160C	2	1.4	- -	- -	- -	- -
K-160D	4	1.1	- -	- -	- -	- -
K-161A	-2	1.5	- -	- -	- -	- -
K-161B	2	2.0	- -	- -	- -	- -
K-161C	-2	2.0	- -	- -	- -	- -
K-162A	-2	0.8	- -	- -	- -	- -
K-162B	-2	1.2	- -	- -	- -	- -
K-162C	-2	0.6	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-162D	-2	0.5	- -	- -	- -	- -
K-163A	4	8.0	- -	- -	- -	- -
K-163B	2	7.0	- -	- -	- -	- -
K-164A	2	1.8	- -	- -	- -	- -
K-164B	-2	1.6	- -	- -	- -	- -
K-164C	6	1.6	- -	- -	- -	- -
K-165A	3	3.0	- -	- -	- -	- -
K-165B	2	0.8	- -	- -	- -	- -
K-166A	3	3.0	- -	- -	- -	- -
K-166B	3	77.0	0.4	430	1	120
K-167A	3	0.8	- -	- -	- -	- -
K-167B	5	1.0	- -	- -	- -	- -
K-167C	4	1.0	-0.2	61	-1	110
K-167D	-2	1.1	- -	- -	- -	- -
K-167E	-2	1.0	-0.2	93	1	85
K-168A	3	5.0	-0.2	140	6	140
K-168B	-2	8.0	-0.2	24	1	160
K-169A	-2	6.0	- -	- -	- -	- -
K-169B	-2	5.0	- -	- -	- -	- -
K-170	-2	4.0	0.8	28	-1	180
K-171A	5	0.6	- -	- -	- -	- -
K-171B	2	0.4	- -	- -	- -	- -
K-171C	-2	0.4	- -	- -	- -	- -
K-172	-2	3.0	- -	- -	- -	- -
K-173A	7	70.0	0.9	100	1	110
K-173B	3	37.0	0.5	92	-1	78
K-173C	-2	23.0	-0.2	77	2	94
K-173D	-2	6.0	-0.2	91	6	170
K-173E	-2	35.0	-0.2	57	2	72
K-173F	-2	34.0	-0.2	65	1	89
K-174A	3	15.0	0.7	28	-1	150
K-174B	3	7.0	-0.2	40	2	130
K-175	3	18.0	0.5	12	2	120
K-176A	2	40.0	-0.2	28	2	100
K-177	2	24.0	-0.2	29	1	64
K-178	-2	48.0	0.6	110	-1	83
K-179	-2	40.0	-0.2	88	1	80
K-180	4	8.0	-0.2	20	-1	210
K-181	2	41.0	-0.2	110	2	70
K-182	-2	3.0	-0.2	76	2	140
K-183	-2	3.0	-0.2	24	2	160
K-184	2	34.0	-0.2	15	3	86
K-185	4	0.8	-0.2	15	1	150
K-186	2	3.0	-0.2	25	1	140
K-187	-2	4.0	-0.2	110	-1	140
K-188	4	17.0	-0.2	110	-1	140
K-189	5	1.2	- -	- -	- -	- -
K-190	3	9.0	- -	- -	- -	- -
K-191	3	1.1	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-192	-2	1.0	- -	- -	- -	- -
K-193	2	10.0	- -	- -	- -	- -
K-194	2	0.5	-0.2	130	-1	160
K-195A	2	5.0	0.2	20	-1	160
K-195B	5	18.0	-0.2	31	-1	63
K-195C	4	22.0	-0.2	17	-1	99
K-195D	-2	0.5	-0.2	74	1	110
K-196A	-2	16.0	-0.2	73	1	100
K-196B	-2	13.0	-0.2	76	1	85
K-197	-2	23.0	-0.2	80	2	72
K-198	4	22.0	-0.2	82	5	100
K-199A	4	5.0	-0.2	170	1	610
K-199B	72	220.0	2.9	240	8	320
K-200	3	0.8	-0.2	88	1	62
K-201	-2	3.0	-0.2	81	1	280
K-202	3	13.0	- -	- -	- -	- -
K-203	135	27.0	- -	- -	- -	- -
K-203A	245	- -	- -	- -	- -	- -
K-203B	72	- -	- -	- -	- -	- -
K-203C	9	- -	- -	- -	- -	- -
K-204	2	5.0	- -	- -	- -	- -
K-205	-2	1.2	- -	- -	- -	- -
K-206	-2	2.0	- -	- -	- -	- -
K-207	4	1.4	- -	- -	- -	- -
K-208	-2	7.0	- -	- -	- -	- -
K-209A	6	57.0	- -	- -	- -	- -
K-209B	10	6.0	0.6	48	6	260
K-210	3	21.0	- -	- -	- -	- -
K-211	5	0.7	- -	- -	- -	- -
K-212	6	4.0	0.4	70	1	97
K-213	2	1.2	-0.2	70	2	120
K-214	-2	22.0	-0.2	84	-1	90
K-215	-2	2.0	-0.2	76	5	91
K-216	-2	27.0	-0.2	48	2	60
K-217	3	0.7	0.4	50	1	140
K-218	5	0.9	- -	- -	- -	- -
K-219	3	5.0	-0.2	83	5	130
K-220	4	1.7	-0.2	50	2	61
K-221	-2	3.0	0.3	110	14	120
K-222	4	29.0	-0.2	83	2	120
K-223	-2	0.1	-0.2	20	-1	130
K-224A	4	23.0	0.9	170	2	190
K-224B	3	16.0	-0.2	86	1	130
K-225	2	1.6	0.3	82	1	89
K-226	6	8.0	-0.2	180	4	310
K-227	2	0.6	0.8	61	2	110
K-228	2	0.4	0.6	71	25	120
K-229	2	3.0	-0.2	66	3	120
K-230	-2	1.6	0.3	87	2	83

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-231	-2	26.0	0.5	80	1	94
K-232	-2	21.0	-0.2	70	5	100
K-233	5	8.0	- -	- -	- -	- -
K-234	-2	5.0	-0.2	70	2	130
K-235	-2	4.0	0.6	66	-1	130
K-236	-2	21.0	0.2	73	1	76
K-237	-2	2.0	0.3	64	2	110
K-238A	-2	1.8	- -	- -	- -	- -
K-239	6020	0.8	- -	- -	- -	- -
K-239A	-2	- -	- -	- -	- -	- -
K-239B	-2	- -	- -	- -	- -	- -
K-239C	-2	- -	- -	- -	- -	- -
K-239D	-2	- -	- -	- -	- -	- -
K-239E	-2	- -	- -	- -	- -	- -
K-239F	-2	- -	- -	- -	- -	- -
K-239G	-2	- -	- -	- -	- -	- -
K-239H	-2	- -	- -	- -	- -	- -
K-239J	-2	- -	- -	- -	- -	- -
K-239K	3	- -	- -	- -	- -	- -
K-239L	3	- -	- -	- -	- -	- -
K-239M	-2	- -	- -	- -	- -	- -
K-239N	-2	- -	- -	- -	- -	- -
K-239P	-2	- -	- -	- -	- -	- -
K-239Q	16	- -	- -	- -	- -	- -
K-239R	2	- -	- -	- -	- -	- -
K-239S	2	- -	- -	- -	- -	- -
K-240	-2	4.0	- -	- -	- -	- -
K-241	-2	0.5	- -	- -	- -	- -
K-242	-2	0.9	- -	- -	- -	- -
K-243	-2	1.8	- -	- -	- -	- -
K-244	8	0.6	- -	- -	- -	- -
K-245	-2	0.8	- -	- -	- -	- -
K-246	4	1.8	0.3	80	9	99
K-247	-2	4.0	0.2	70	4	100
K-248	-2	3.0	0.2	74	2	120
K-249	6	3.0	0.5	62	2	140
K-250	-2	2.0	0.9	69	-1	110
K-251	-2	2.0	0.6	36	1	48
K-252	-2	1.5	0.3	85	2	120
K-253	-2	0.5	0.3	100	3	84
K-254	-2	31.0	0.5	74	10	110
K-255	3	0.9	0.3	74	2	130
K-256	-2	2.0	0.5	91	1	86
K-257A	4	76.0	1.3	39	2	2200
K-257B	2	58.0	0.3	34	-1	2000
K-257C	-2	0.2	0.6	42	-1	120
K-258	-2	1.7	0.6	70	1	100
K-259	3	3.0	0.3	79	-1	120
K-260	2	2.0	0.3	76	5	150

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-261	2	20.0	0.4	140	4	160
K-262	3	1.4	-0.2	78	1	91
K-263	-2	35.0	0.5	83	2	110
K-264	-2	5.0	0.9	54	-1	80
K-265	-2	1.5	0.4	66	-1	83
K-266	-2	0.9	0.2	90	-1	74
K-267	3	9.0	0.4	26	1	50
K-268	4	2.0	0.4	54	1	87
K-269	4	5.0	- -	- -	- -	- -
K-270	-2	17.0	- -	- -	- -	- -
K-271	4	6.0	- -	- -	- -	- -
K-272	4	1.2	0.4	41	3	84
K-273	2	1.0	- -	- -	- -	- -
K-274	3	49.0	- -	- -	- -	- -
K-275	-2	5.0	- -	- -	- -	- -
K-276	-2	20.0	- -	- -	- -	- -
K-277	3	0.5	- -	- -	- -	- -
K-278	3	1.2	- -	- -	- -	- -
K-279A	37781	1100.0	- -	- -	- -	- -
K-280	3192	16.0	- -	- -	- -	- -
K-281	10	1.1	- -	- -	- -	- -
K-282	11	32.0	- -	- -	- -	- -
K-283	3	4.0	- -	- -	- -	- -
K-284	6	23.0	- -	- -	- -	- -
K-285	- -	- -	- -	- -	- -	- -
K-286	4	2.0	- -	- -	- -	- -
K-287	4	0.9	- -	- -	- -	- -
K-288	8	1.6	- -	- -	- -	- -
K-289	3	1.2	- -	- -	- -	- -
K-290	3	0.8	- -	- -	- -	- -
K-291	10	1.4	- -	- -	- -	- -
K-292	2	35.0	- -	- -	- -	- -
K-293	3	1.9	- -	- -	- -	- -
K-294	-2	0.6	- -	- -	- -	- -
K-295	3	0.3	- -	- -	- -	- -
K-296	5	2.0	- -	- -	- -	- -
K-297	3	0.7	- -	- -	- -	- -
K-298	3	0.4	- -	- -	- -	- -
K-299	2	24.0	- -	- -	- -	- -
K-300A	6	32.0	- -	- -	- -	- -
K-300B	5	67.0	- -	- -	- -	- -
K-300C	3	40.0	- -	- -	- -	- -
K-301	5	6.0	- -	- -	- -	- -
K-302	2	9.0	- -	- -	- -	- -
K-303	5	17.0	- -	- -	- -	- -
K-304	-2	2.0	- -	- -	- -	- -
K-305	6	3.0	- -	- -	- -	- -
K-306	3	4.0	0.2	52	-1	130
K-307	3	1.2	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-308	3	0.7	- -	- -	- -	- -
K-309	-2	6.0	0.4	60	-1	93
K-310	3	1.0	0.6	66	-1	79
K-311	3	3.0	0.7	46	1	110
K-312	-2	3.0	0.7	100	-1	69
K-313	-2	20.0	0.3	69	1	110
K-314	-2	0.5	0.4	52	1	78
K-315	-2	5.0	0.3	82	1	82
K-316	2	2.0	0.2	56	2	95
K-317	4	1.5	0.5	54	-1	200
K-318	8	15.0	- -	- -	- -	- -
K-319	7	7.0	0.4	110	1	67
K-320	4	0.7	-0.2	66	1	100
K-321	2	1.8	-0.2	52	2	120
K-322	2	5.0	- -	- -	- -	- -
K-323	3	22.0	- -	- -	- -	- -
K-324	4	13.0	- -	- -	- -	- -
K-325	3	3.0	- -	- -	- -	- -
K-326	2	10.0	- -	- -	- -	- -
K-327	10	21.0	- -	- -	- -	- -
K-328	3	4.0	- -	- -	- -	- -
K-329	2	3.0	- -	- -	- -	- -
K-330	-2	6.0	- -	- -	- -	- -
K-331	-2	3.0	- -	- -	- -	- -
K-332	97	4.0	- -	- -	- -	- -
K-333A	-2	22.0	- -	- -	- -	- -
K-333B	6	46.0	- -	- -	- -	- -
K-334	4	49.0	- -	- -	- -	- -
K-335	4	69.0	- -	- -	- -	- -
K-336A	3	86.0	- -	- -	- -	- -
K-336B	15	110.0	- -	- -	- -	- -
K-337	66	310.0	- -	- -	- -	- -
K-338	4	39.0	- -	- -	- -	- -
K-339	2	7.0	- -	- -	- -	- -
K-340	-2	0.7	- -	- -	- -	- -
K-341	3	140.0	- -	- -	- -	- -
K-342	2	63.0	- -	- -	- -	- -
K-343	-2	25.0	- -	- -	- -	- -
K-344	4	64.0	- -	- -	- -	- -
K-345	21	220.0	- -	- -	- -	- -
K-346	2	55.0	- -	- -	- -	- -
K-347A	2	61.0	- -	- -	- -	- -
K-347B	331	5.0	- -	- -	- -	- -
K-348	-2	65.0	- -	- -	- -	- -
K-349A	36	53.0	- -	- -	- -	- -
K-349B	9	26.0	- -	- -	- -	- -
K-350	5	69.0	- -	- -	- -	- -
K-351	200	570.0	- -	- -	- -	- -
K-352	21	110.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-353A	6	27.0	- -	- -	- -	- -
K-353B	-2	3.0	- -	- -	- -	- -
K-354	17	96.0	- -	- -	- -	- -
K-355	5	180.0	- -	- -	- -	- -
K-356	2	0.8	- -	- -	- -	- -
K-357	2	18.0	- -	- -	- -	- -
K-358	2	20.0	- -	- -	- -	- -
K-359	-2	2.0	- -	- -	- -	- -
K-360	3	18.0	- -	- -	- -	- -
K-361	7	130.0	- -	- -	- -	- -
K-362A	56	190.0	- -	- -	- -	- -
K-362B	2	10.0	- -	- -	- -	- -
K-363	5	140.0	- -	- -	- -	- -
K-364	-2	11.0	- -	- -	- -	- -
K-365	6	48.0	- -	- -	- -	- -
K-366	-2	1.5	-0.2	25	2	210
K-367	-2	1.9	0.2	10	1	180
K-368	3	31.0	1.0	18	-1	130
K-369	-2	8.0	0.3	15	-1	140
K-370	-2	9.0	1.1	23	1	320
K-371	-2	60.0	2.8	18	1	130
K-372	-2	5.0	1.2	24	1	150
K-373A	-2	3.0	0.4	4	2	16
K-373B	7	43.0	0.9	16	2	180
K-374	5	16.0	0.4	29	2	230
K-375	-2	48.0	0.5	23	-1	78
K-376	-2	11.0	0.3	22	2	210
K-377A	162	360.0	7.0	53	9	80
K-377B	273	160.0	0.7	16	3	49
K-378	2	28.0	0.4	22	2	250
K-379	-2	26.0	-0.2	44	2	54
K-380	-2	25.0	-0.2	16	1	72
K-381	2	85.0	0.9	37	2	170
K-382	2	7.0	0.3	58	2	100
K-383	-2	2.1	0.5	83	1	56
K-384	-2	18.0	-0.2	74	1	70
K-385	-2	43.0	-0.2	75	1	110
K-386	-2	32.0	-0.2	23	-1	100
K-387	9	20.0	0.4	87	1	94
K-388	-2	3.0	0.4	82	-1	110
K-389	-2	35.0	0.4	87	2	68
K-390	-2	1.0	0.5	94	-1	190
K-391A	2	18.0	0.4	60	1	120
K-391B	-2	5.0	-0.2	77	-1	130
K-392	16	98.0	1.2	88	3	49
K-393A	43	180.0	- -	- -	- -	- -
K-393B	411	21.0	- -	- -	- -	- -
K-394	5	56.0	- -	- -	- -	- -
K-395	2	150.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-396	-2	54.0	-0.2	76	7	130
K-397	2	26.0	-0.2	120	-1	130
K-398	2	38.0	-0.2	100	1	190
K-399A	3	78.0	0.2	110	-1	100
K-399B	6	16.0	2.0	18	-1	25
K-400	7	30.0	- -	- -	- -	- -
K-401	-2	0.9	- -	- -	- -	- -
K-402A	8	20.0	- -	- -	- -	- -
K-402B	17	- -	- -	- -	- -	- -
K-403	2	24.0	- -	- -	- -	- -
K-404	-2	2.0	- -	- -	- -	- -
K-405	-2	6.0	- -	- -	- -	- -
K-406	5	10.0	- -	- -	- -	- -
K-407	-2	180.0	- -	- -	- -	- -
K-408	2	92.0	- -	- -	- -	- -
K-409	3	48.0	- -	- -	- -	- -
K-410	3	21.0	- -	- -	- -	- -
K-411	8	10.0	- -	- -	- -	- -
K-412	3	10.0	- -	- -	- -	- -
K-413	-2	3.0	- -	- -	- -	- -
K-414	3	4.0	- -	- -	- -	- -
K-415	5	120.0	- -	- -	- -	- -
K-416A	89	330.0	- -	- -	- -	- -
K-416B	75	99.0	- -	- -	- -	- -
K-416D	11	270.0	- -	- -	- -	- -
K-417A	-2	0.9	- -	- -	- -	- -
K-417B	6	2.0	- -	- -	- -	- -
K-417C	-2	2.0	- -	- -	- -	- -
K-417D	6	0.8	- -	- -	- -	- -
K-417E	-2	34.0	- -	- -	- -	- -
K-417F	27	54.0	- -	- -	- -	- -
K-418	-2	15.0	- -	- -	- -	- -
K-419A	3	33.0	- -	- -	- -	- -
K-419B	-2	22.0	- -	- -	- -	- -
K-420	3	28.0	- -	- -	- -	- -
K-421	12	68.0	- -	- -	- -	- -
K-422	10	44.0	- -	- -	- -	- -
K-423	8	9.0	- -	- -	- -	- -
K-424	-2	2.0	- -	- -	- -	- -
K-425	-2	0.8	- -	- -	- -	- -
K-426	2	0.8	- -	- -	- -	- -
K-427	3	1.4	- -	- -	- -	- -
K-428	4	6.0	- -	- -	- -	- -
K-429	5	94.0	- -	- -	- -	- -
K-430	-2	31.0	- -	- -	- -	- -
K-431	2	3.0	- -	- -	- -	- -
K-432	-2	1.1	- -	- -	- -	- -
K-433	2	1.0	- -	- -	- -	- -
K-434	-2	4.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-435	3	3.0	- -	- -	- -	- -
K-436	4	11.0	- -	- -	- -	- -
K-437	-2	6.0	- -	- -	- -	- -
K-438	-2	4.0	- -	- -	- -	- -
K-439A	2	1.9	- -	- -	- -	- -
K-440	6	0.7	- -	- -	- -	- -
K-441	5	12.0	- -	- -	- -	- -
K-442	-2	0.8	- -	- -	- -	- -
K-443	3	1.5	- -	- -	- -	- -
K-444	-2	5.0	- -	- -	- -	- -
K-445	-2	1.3	- -	- -	- -	- -
K-446	5	3.0	- -	- -	- -	- -
K-447	5	0.8	- -	- -	- -	- -
K-448	2	4.0	- -	- -	- -	- -
K-449	-2	0.9	- -	- -	- -	- -
K-450	-2	4.0	- -	- -	- -	- -
K-451	3	3.0	- -	- -	- -	- -
K-452	3	1.5	- -	- -	- -	- -
K-453	-2	0.8	- -	- -	- -	- -
K-454	4	11.0	- -	- -	- -	- -
K-455	-2	1.7	- -	- -	- -	- -
K-456A	2	1.6	- -	- -	- -	- -
K-457	3	1.1	- -	- -	- -	- -
K-458	-2	0.7	- -	- -	- -	- -
K-459	-2	0.3	- -	- -	- -	- -
K-460	3	0.4	- -	- -	- -	- -
K-461	2	1.1	- -	- -	- -	- -
K-462	7	1.0	- -	- -	- -	- -
K-463	-2	3.0	- -	- -	- -	- -
K-464	-2	0.9	- -	- -	- -	- -
K-465	3	0.9	- -	- -	- -	- -
K-466	2	0.9	- -	- -	- -	- -
K-467	-2	1.4	- -	- -	- -	- -
K-468	-2	2.6	- -	- -	- -	- -
K-469	3	1.3	- -	- -	- -	- -
K-470	3	91.0	- -	- -	- -	- -
K-471	-2	5.0	- -	- -	- -	- -
K-472	-2	18.0	- -	- -	- -	- -
K-473	5	37.0	- -	- -	- -	- -
K-474	4	34.0	- -	- -	- -	- -
K-475	-2	120.0	- -	- -	- -	- -
K-476	5	25.0	- -	- -	- -	- -
K-477	19	56.0	- -	- -	- -	- -
K-478	5	12.0	- -	- -	- -	- -
K-479A	72	46.0	- -	- -	- -	- -
K-479B	234	10.0	- -	- -	- -	- -
K-480	5	3.0	- -	- -	- -	- -
K-481	-2	6.0	- -	- -	- -	- -
K-482	-2	14.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-483	-2	15.0	- -	- -	- -	- -
K-484	14	100.0	- -	- -	- -	- -
K-485	362	120.0	- -	- -	- -	- -
K-486	22	28.0	- -	- -	- -	- -
K-487	8	120.0	- -	- -	- -	- -
K-488	11	150.0	- -	- -	- -	- -
K-489	-2	6.0	-0.2	30	-1	170
K-490A	4	14.0	-0.2	20	1	160
K-490B	3	2.0	0.7	5	4	20
K-491	-2	14.0	0.2	20	2	210
K-492	-2	1.8	0.4	27	2	200
K-493	-2	3.0	0.2	24	1	170
K-494	-2	40.0	1.1	24	2	120
K-495	-2	11.0	-0.2	24	3	190
K-496	-2	13.0	-0.2	20	1	220
K-497	-2	15.0	-0.2	14	2	180
K-498	-2	5.0	0.5	31	2	190
K-499	-2	30.0	-0.2	19	4	140
K-500	2	47.0	- -	- -	- -	- -
K-501	2	10.0	0.5	22	1	150
K-502	2	26.0	- -	- -	- -	- -
K-503	-2	44.0	- -	- -	- -	- -
K-504	-2	15.0	- -	- -	- -	- -
K-505	-2	12.0	- -	- -	- -	- -
K-506	2	13.0	- -	- -	- -	- -
K-507	-2	6.0	- -	- -	- -	- -
K-508	-2	11.0	0.9	18	3	180
K-509A	-2	38.0	- -	- -	- -	- -
K-510	2	16.0	0.4	17	8	310
K-511	-2	15.0	0.3	26	3	110
K-512	-2	23.0	-0.2	860	1	300
K-513	4	27.0	0.4	24	4	180
K-514	2	5.0	0.3	20	3	170
K-515	-2	30.0	- -	- -	- -	- -
K-516	6	85.0	- -	- -	- -	- -
K-517	-2	13.0	0.2	26	2	160
K-518	5	47.0	-0.2	39	4	180
K-519	4	20.0	-0.2	22	4	110
K-520	-2	3.0	-0.2	29	1	140
K-521	-2	3.0	-0.2	27	3	140
K-522	-2	3.0	0.3	14	2	200
K-523	-2	6.0	-0.2	27	2	100
K-524	-2	41.0	- -	- -	- -	- -
K-525	-2	27.0	- -	- -	- -	- -
K-526	2	62.0	- -	- -	- -	- -
K-527	-2	11.0	-0.2	22	2	150
K-528A	2	5.0	- -	- -	- -	- -
K-528B	-2	0.6	- -	- -	- -	- -
K-528C	3	5.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-529	-2	51.0	- -	- -	- -	- -
K-530	-2	36.0	- -	- -	- -	- -
K-531	-2	95.0	- -	- -	- -	- -
K-532	2	54.0	- -	- -	- -	- -
K-533	2	13.0	- -	- -	- -	- -
K-534A	-2	3.0	- -	- -	- -	- -
K-535	-2	5.0	- -	- -	- -	- -
K-536	2	42.0	- -	- -	- -	- -
K-537	-2	3.0	- -	- -	- -	- -
K-538	3	7.0	- -	- -	- -	- -
K-539	4	31.0	- -	- -	- -	- -
K-540	2	7.0	- -	- -	- -	- -
K-541	-2	4.0	- -	- -	- -	- -
K-542	-2	6.0	- -	- -	- -	- -
K-543	28	14.0	- -	- -	- -	- -
K-544	3	11.0	- -	- -	- -	- -
K-545	12	7.0	- -	- -	- -	- -
K-546	2	13.0	- -	- -	- -	- -
K-547	2	7.0	- -	- -	- -	- -
K-548	5	23.0	- -	- -	- -	- -
K-549	8	94.0	- -	- -	- -	- -
K-550A	6	6.0	- -	- -	- -	- -
K-551	-2	1.0	- -	- -	- -	- -
K-552	2	10.0	-0.2	80	1	140
K-553	3	20.0	- -	- -	- -	- -
K-554	4	11.0	- -	- -	- -	- -
K-555	5	16.0	- -	- -	- -	- -
K-556	5	15.0	- -	- -	- -	- -
K-557A	-2	6.0	- -	- -	- -	- -
K-558	6	8.0	- -	- -	- -	- -
K-559	5	35.0	- -	- -	- -	- -
K-560	2	1.2	- -	- -	- -	- -
K-561	2	2.9	- -	- -	- -	- -
K-562	2	7.0	- -	- -	- -	- -
K-563	-2	4.0	- -	- -	- -	- -
K-564	3	3.0	- -	- -	- -	- -
K-565	3	7.0	- -	- -	- -	- -
K-566	4	6.0	- -	- -	- -	- -
K-567	2	1.7	- -	- -	- -	- -
K-568	2	16.0	- -	- -	- -	- -
K-569	-2	9.0	- -	- -	- -	- -
K-570A	2	16.0	- -	- -	- -	- -
K-571	-2	3.0	- -	- -	- -	- -
K-572	38	100.0	- -	- -	- -	- -
K-573	2	6.0	- -	- -	- -	- -
K-574	2	9.0	- -	- -	- -	- -
K-575	-2	16.0	- -	- -	- -	- -
K-576	2	29.0	- -	- -	- -	- -
K-577	5	10.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-578	-2	4.0	- -	- -	- -	- -
K-579	3	0.5	- -	- -	- -	- -
K-580	2	1.9	- -	- -	- -	- -
K-581	3	1.3	- -	- -	- -	- -
K-582	3	1.1	- -	- -	- -	- -
K-583	2	0.6	- -	- -	- -	- -
K-584	2	6.0	-0.2	85	2	85
K-585	-2	4.0	-0.2	68	3	120
K-586	5	5.0	0.3	110	2	100
K-587	2	13.0	- -	- -	- -	- -
K-588	-2	2.0	0.2	180	2	110
K-589	-2	6.0	0.2	82	2	110
K-590	21	4.0	0.3	100	2	100
K-591	-2	5.0	-0.2	120	2	69
K-592	-2	1.1	- -	- -	- -	- -
K-593	2	2.0	-0.2	25	2	150
K-594	-2	1.6	-0.2	11	3	140
K-595	-2	1.0	-0.2	120	4	95
K-596	-2	2.0	1.2	120	5	130
K-597A	-2	1.6	1.5	7	3	53
K-597B	7	79.0	2.2	53	9	390
K-597C	15	111.0	6.8	430	16	2400
K-598A	3	5.0	0.4	21	4	200
K-598B	-2	1.5	-0.2	5	4	36
K-599	5	5.0	-0.2	32	5	160
K-600	3	15.0	0.4	27	5	160
K-601	2	3.0	0.4	24	3	110
K-602	3	3.0	0.4	25	4	130
K-603	2	17.0	0.6	27	2	150
K-604	2	3.0	0.3	26	2	160
K-605	3	7.0	- -	- -	- -	- -
K-606A	5	4.0	- -	- -	- -	- -
K-606B	-2	2.0	- -	- -	- -	- -
K-607	4	10.0	- -	- -	- -	- -
K-608	-2	4.0	- -	- -	- -	- -
K-609	-2	20.0	- -	- -	- -	- -
K-610	4	4.0	- -	- -	- -	- -
K-611	-2	12.0	0.4	19	-1	220
K-612	-2	0.1	-0.2	71	2	120
K-613	3	16.0	0.2	26	2	200
K-614	3	10.0	- -	- -	- -	- -
K-615	3	16.0	0.3	96	2	150
K-616	7	31.0	-0.2	100	5	73
K-617	-2	5.0	-0.2	46	-1	50
K-618	-2	62.0	-0.2	110	2	93
K-619	10	44.0	-0.2	66	3	110
K-620	-2	50.0	0.7	52	1	85
K-621	2	2.0	-0.2	76	4	95
K-622	-2	1.5	-0.2	69	3	100

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-623	-2	1.5	-0.2	82	2	97
K-624	-2	11.0	0.2	54	2	42
K-625	-2	17.0	-0.2	88	2	100
K-626	-2	15.0	-0.2	61	2	100
K-627	-2	3.0	0.3	89	3	100
K-628	-2	31.0	0.9	120	3	64
K-629	5	47.0	0.7	79	7	240
K-630	-2	20.0	1.0	19	2	110
K-631	2	33.0	0.7	26	5	140
K-632	-2	23.0	0.4	14	2	160
K-633	3	44.0	1.3	13	5	62
K-634	4	7.0	0.4	28	5	290
K-635A	4	21.0	- -	- -	- -	- -
K-635B	-2	100.0	- -	- -	- -	- -
K-635C	-2	8.0	- -	- -	- -	- -
K-636	-2	5.0	- -	- -	- -	- -
K-637	-2	22.0	- -	- -	- -	- -
K-638	2	14.0	- -	- -	- -	- -
K-639	-2	1.0	- -	- -	- -	- -
K-640	-2	1.0	- -	- -	- -	- -
K-641A	2	2.0	- -	- -	- -	- -
K-641B	5	8.0	- -	- -	- -	- -
K-642	-2	11.0	- -	- -	- -	- -
K-643	2	0.7	- -	- -	- -	- -
K-644	4	1.1	- -	- -	- -	- -
K-645	2	1.7	- -	- -	- -	- -
K-646	5	0.3	- -	- -	- -	- -
K-647	-2	0.6	- -	- -	- -	- -
K-648	-2	5.0	- -	- -	- -	- -
K-649	-2	0.7	- -	- -	- -	- -
K-650	-2	13.0	- -	- -	- -	- -
K-651	-2	3.0	- -	- -	- -	- -
K-652	-2	0.8	-0.2	190	2	57
K-653	-2	0.9	- -	- -	- -	- -
K-654	2	4.0	-0.2	20	3	150
K-655	2	26.0	1.0	31	6	88
K-656	2	5.0	-0.2	24	4	170
K-657	-2	2.0	0.3	28	3	160
K-658	4	0.7	- -	- -	- -	- -
K-659	5	0.3	- -	- -	- -	- -
K-660A	182	110.0	- -	- -	- -	- -
K-660B	18	110.0	- -	- -	- -	- -
K-661	-2	62.0	- -	- -	- -	- -
K-662	193	1.7	- -	- -	- -	- -
K-663	-2	9.0	- -	- -	- -	- -
K-664	9	80.0	- -	- -	- -	- -
K-665	4	12.0	- -	- -	- -	- -
K-666	3	15.0	- -	- -	- -	- -
K-667	-2	2.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-668	75	57.0	- -	- -	- -	- -
K-669	96	120.0	- -	- -	- -	- -
K-670	223	140.0	- -	- -	- -	- -
K-671	-2	1.8	- -	- -	- -	- -
K-672A	31	65.0	- -	- -	- -	- -
K-672B	2861	320.0	- -	- -	- -	- -
K-673	1003	1000.0	- -	- -	- -	- -
K-674	2669	860.0	- -	- -	- -	- -
K-675	338	3500.0	- -	- -	- -	- -
K-676A	3715	290.0	- -	- -	- -	- -
K-676B	5457	180.0	- -	- -	- -	- -
K-677	21	15.0	- -	- -	- -	- -
K-678	13	10.0	- -	- -	- -	- -
K-679A	4	37.0	- -	- -	- -	- -
K-679B	54338	1200.0	- -	- -	- -	- -
K-680	50	36.0	0.7	82	2	79
K-681	20	11.0	0.2	29	3	220
K-682	-2	4.0	0.2	20	2	350
K-683	-2	20.0	0.2	29	3	180
K-684	26	28.0	0.3	24	5	250
K-685	5	18.0	0.3	22	4	190
K-686	3	3.0	0.7	23	7	210
K-687	25	41.0	1.3	29	19	190
K-688A	19	47.0	1.1	52	8	180
K-688B	4	23.0	0.5	26	7	190
K-689	11	101.0	1.3	210	11	3000
K-690	23	85.0	1.9	30	28	94
K-691	14	16.0	0.7	42	180	380
K-692A	3	13.0	0.2	22	2	200
K-692B	-2	0.6	-0.2	4	1	32
K-693A	-2	2.0	-0.2	11	1	150
K-693B	-2	7.0	1.6	14	5	210
K-694A	9	11.0	0.5	35	1	340
K-694B	-2	0.9	-0.2	8	-1	55
K-695	3	11.0	0.3	47	2	170
K-696	-2	8.0	1.0	26	3	200
K-697	8	7.0	- -	- -	- -	- -
K-698	55	680.0	- -	- -	- -	- -
K-699	-2	17.0	0.9	12	1	260
K-700	3	21.0	0.3	24	2	140
K-701	7	11.0	0.4	26	2	150
K-702	7	6.0	-0.2	38	4	190
K-703	2	3.0	-0.2	23	3	160
K-704	7	100.0	3.0	30	5	140
K-705	3	13.0	0.4	36	3	150
K-706	4	5.0	0.3	37	3	140
K-707	-2	34.0	0.4	80	3	86
K-708	-2	30.0	-0.2	80	3	94
K-709	3	20.0	-0.2	24	1	240

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-710	7	20.0	-0.2	20	9	100
K-711	-2	3.0	-0.2	9	2	350
K-712A	11	18.0	0.4	39	4	280
K-712B	4	7.0	0.5	15	2	77
K-713	-2	8.0	0.8	24	3	170
K-714A	2	24.0	0.9	44	3	140
K-714B	2	2.0	0.3	38	1	33
K-715	-2	25.0	0.4	20	2	180
K-716	-2	7.0	-0.2	21	3	240
K-717	-2	4.0	-0.2	20	3	140
K-718	3	20.0	0.7	46	3	480
K-719	23	22.0	0.3	21	4	250
K-720	11	15.0	0.5	9	3	160
K-721	3	20.0	0.3	20	3	120
K-722	130	6.0	- -	- -	- -	- -
K-723	10245	180.0	- -	- -	- -	- -
K-724	14	18.0	0.5	30	3	160
K-725	14	4.0	0.5	22	2	170
K-726	5	3.0	0.9	21	1	170
K-727	4	4.0	0.3	16	3	140
K-728	-2	8.0	0.2	18	2	150
K-729	4	3.0	-0.2	78	2	78
K-730	5	71.0	3.0	43	3	190
K-731	3	46.0	0.9	33	3	100
K-732	11	7.0	- -	- -	- -	- -
K-733	-2	1.0	- -	- -	- -	- -
K-734	-2	1.6	- -	- -	- -	- -
K-735	-2	1.6	- -	- -	- -	- -
K-736	8	7.0	- -	- -	- -	- -
K-737	-2	6.0	- -	- -	- -	- -
K-738	2	3.0	- -	- -	- -	- -
K-739	-2	7.0	- -	- -	- -	- -
K-740	-2	1.4	- -	- -	- -	- -
K-741	-2	5.0	- -	- -	- -	- -
K-742	5	3.0	- -	- -	- -	- -
K-743	4	24.0	- -	- -	- -	- -
K-744	2	8.0	- -	- -	- -	- -
K-745	-2	10.0	- -	- -	- -	- -
K-746	18	49.0	- -	- -	- -	- -
K-747	8	3.0	- -	- -	- -	- -
K-748A	-2	6.0	- -	- -	- -	- -
K-748B	-2	2.0	- -	- -	- -	- -
K-749	-2	4.3	- -	- -	- -	- -
K-750A	4	16.0	- -	- -	- -	- -
K-750B	2	5.0	- -	- -	- -	- -
K-751	7	20.0	- -	- -	- -	- -
K-752	2	115.0	- -	- -	- -	- -
K-753	8	47.0	- -	- -	- -	- -
K-754	-2	50.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-755	12	6.0	- -	- -	- -	- -
K-756	2	-0.2	- -	- -	- -	- -
K-757	3	7.0	- -	- -	- -	- -
K-758	3	0.2	- -	- -	- -	- -
K-759	-2	5.0	- -	- -	- -	- -
K-760	-2	3.0	- -	- -	- -	- -
K-761	2	-0.2	- -	- -	- -	- -
K-762	-2	-0.2	- -	- -	- -	- -
K-763	3	-0.2	- -	- -	- -	- -
K-764	-2	-0.2	- -	- -	- -	- -
K-765	-2	8.0	- -	- -	- -	- -
K-766	2	46.0	- -	- -	- -	- -
K-767	9	39.0	- -	- -	- -	- -
K-768	-2	51.0	- -	- -	- -	- -
K-769	-2	5.0	- -	- -	- -	- -
K-770	4	7.0	- -	- -	- -	- -
K-771	-2	6.0	- -	- -	- -	- -
K-772	-2	-0.2	- -	- -	- -	- -
K-773	2	4.0	- -	- -	- -	- -
K-774	-2	1.6	- -	- -	- -	- -
K-775	6	1.1	- -	- -	- -	- -
K-776	-2	5.0	- -	- -	- -	- -
K-777	15	7.0	- -	- -	- -	- -
K-778	2	-0.2	- -	- -	- -	- -
K-779	-2	-0.2	- -	- -	- -	- -
K-780	1285	365.0	- -	- -	- -	- -
K-781	12	8.0	- -	- -	- -	- -
K-782	18	75.0	- -	- -	- -	- -
K-783	4	7.0	- -	- -	- -	- -
K-784	-2	5.0	- -	- -	- -	- -
K-785	-2	2.0	- -	- -	- -	- -
K-786	5	19.0	- -	- -	- -	- -
K-787	-2	23.0	- -	- -	- -	- -
K-788	-2	27.0	- -	- -	- -	- -
K-789	6	17.0	- -	- -	- -	- -
K-790	24	73.0	- -	- -	- -	- -
K-791	4	27.0	- -	- -	- -	- -
K-792	35	58.0	- -	- -	- -	- -
K-793	7	11.0	- -	- -	- -	- -
K-794	11	-0.2	- -	- -	- -	- -
K-795	5	8.0	- -	- -	- -	- -
K-796	5	11.0	- -	- -	- -	- -
K-797	6	13.0	- -	- -	- -	- -
K-798	5	0.7	- -	- -	- -	- -
K-799	2	6.0	- -	- -	- -	- -
K-800	6	6.0	- -	- -	- -	- -
K-801	3	13.0	- -	- -	- -	- -
K-802	6	14.0	- -	- -	- -	- -
K-803	3	32.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-804	2	23.0	- -	- -	- -	- -
K-805	4	18.0	- -	- -	- -	- -
K-806	4	15.0	- -	- -	- -	- -
K-807	2	4.0	- -	- -	- -	- -
K-808	2	13.0	- -	- -	- -	- -
K-809	176	155.0	- -	- -	- -	- -
K-810	7	7.0	- -	- -	- -	- -
K-811	110	6.0	- -	- -	- -	- -
K-812	3	-0.2	- -	- -	- -	- -
K-813	-2	6.0	- -	- -	- -	- -
K-814	-2	11.0	- -	- -	- -	- -
K-815	2	4.0	- -	- -	- -	- -
K-816	5	-0.2	- -	- -	- -	- -
K-817	3	-0.2	- -	- -	- -	- -
K-818	4	14.0	- -	- -	- -	- -
K-819	7	8.0	- -	- -	- -	- -
K-820	2	3.0	- -	- -	- -	- -
K-821A	3	7.0	- -	- -	- -	- -
K-821B	2	7.0	- -	- -	- -	- -
K-822	3	1.8	- -	- -	- -	- -
K-823	-2	-0.2	- -	- -	- -	- -
K-824	3	-0.2	- -	- -	- -	- -
K-825	-2	14.0	- -	- -	- -	- -
K-826	4	2.0	- -	- -	- -	- -
K-827	4	6.0	- -	- -	- -	- -
K-828	4	13.0	- -	- -	- -	- -
K-829	-2	6.0	- -	- -	- -	- -
K-830	2	14.0	- -	- -	- -	- -
K-831	2	9.0	- -	- -	- -	- -
K-832	3	9.0	- -	- -	- -	- -
K-833	3	21.0	- -	- -	- -	- -
K-834	3	4.0	- -	- -	- -	- -
K-835	4	5.0	- -	- -	- -	- -
K-836	2	12.0	- -	- -	- -	- -
K-837	-2	7.0	- -	- -	- -	- -
K-838	-2	1.8	- -	- -	- -	- -
K-839	6	-0.2	- -	- -	- -	- -
K-840	4	-0.2	- -	- -	- -	- -
K-841	2	42.0	- -	- -	- -	- -
K-842	2	34.0	- -	- -	- -	- -
K-843	4	39.0	- -	- -	- -	- -
K-844	-2	68.0	- -	- -	- -	- -
K-845	4	36.0	- -	- -	- -	- -
K-846	2	30.0	- -	- -	- -	- -
K-847	2	6.0	- -	- -	- -	- -
K-848	4	15.0	- -	- -	- -	- -
K-849A	7	-0.2	- -	- -	- -	- -
K-849B	5	13.0	- -	- -	- -	- -
K-850	2	4.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-851	2	4.0	- -	- -	- -	- -
K-852	-2	5.0	- -	- -	- -	- -
K-853	3	5.0	- -	- -	- -	- -
K-854	-2	8.0	- -	- -	- -	- -
K-855	-2	15.0	- -	- -	- -	- -
K-856	2	-0.2	- -	- -	- -	- -
K-857	5	2.0	- -	- -	- -	- -
K-858	-2	-0.2	- -	- -	- -	- -
K-859	2	-0.2	- -	- -	- -	- -
K-860	4	-0.2	- -	- -	- -	- -
K-861	3	-0.2	- -	- -	- -	- -
K-862	6	6.0	- -	- -	- -	- -
K-863	8	-0.2	- -	- -	- -	- -
K-864	4	-0.2	- -	- -	- -	- -
K-865	-2	21.0	- -	- -	- -	- -
K-866	14	-0.2	- -	- -	- -	- -
K-868	56	3.0	- -	- -	- -	- -
K-869	-2	10.0	- -	- -	- -	- -
K-870	8	103.0	- -	- -	- -	- -
K-871	6	135.0	- -	- -	- -	- -
K-872	7	97.0	- -	- -	- -	- -
K-873	-2	22.0	- -	- -	- -	- -
K-874	3	5.0	- -	- -	- -	- -
K-875	4	32.0	- -	- -	- -	- -
K-876	-2	1.5	- -	- -	- -	- -
K-877	-2	18.0	- -	- -	- -	- -
K-878	-2	17.0	- -	- -	- -	- -
K-879	-2	21.0	- -	- -	- -	- -
K-880	3	120.0	- -	- -	- -	- -
K-881	2	29.0	- -	- -	- -	- -
K-882	-2	7.0	- -	- -	- -	- -
K-883	4	4.0	- -	- -	- -	- -
K-884	-2	-0.2	- -	- -	- -	- -
K-885	2	9.0	- -	- -	- -	- -
K-886	3	4.0	- -	- -	- -	- -
K-887	-2	1.6	- -	- -	- -	- -
K-888	2	1.0	- -	- -	- -	- -
K-889	3	18.0	- -	- -	- -	- -
K-890	2	61.0	- -	- -	- -	- -
K-891	-2	37.0	- -	- -	- -	- -
K-892	3	11.0	- -	- -	- -	- -
K-893	-2	84.0	- -	- -	- -	- -
K-894	3	17.0	- -	- -	- -	- -
K-895	15	17.0	- -	- -	- -	- -
K-896	10	10.0	- -	- -	- -	- -
K-897	8	6.0	- -	- -	- -	- -
K-898	3	13.0	- -	- -	- -	- -
K-899	23	6.0	- -	- -	- -	- -
K-900	2	-0.2	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-901	3	7.0	- -	- -	- -	- -
K-902	4	7.0	- -	- -	- -	- -
K-903	3	-0.2	- -	- -	- -	- -
K-904	4	7.0	- -	- -	- -	- -
K-905	5	-0.2	- -	- -	- -	- -
K-906A	3	-0.2	- -	- -	- -	- -
K-906B	-2	-0.2	- -	- -	- -	- -
K-907	2	19.0	- -	- -	- -	- -
K-908	12	3.0	- -	- -	- -	- -
K-909	10	-0.2	- -	- -	- -	- -
K-910	5	-0.2	- -	- -	- -	- -
K-911	6	53.0	- -	- -	- -	- -
K-912	6	-0.2	- -	- -	- -	- -
K-913	4	1.0	- -	- -	- -	- -
K-914	5	2.0	- -	- -	- -	- -
K-915	10	-0.2	- -	- -	- -	- -
K-916	3	6.0	- -	- -	- -	- -
K-917	5	7.0	- -	- -	- -	- -
K-918	3	6.0	- -	- -	- -	- -
K-919	3	21.0	- -	- -	- -	- -
K-920	3	48.0	- -	- -	- -	- -
K-921	4	32.0	- -	- -	- -	- -
K-922	-2	19.0	- -	- -	- -	- -
K-923	3	20.0	- -	- -	- -	- -
K-924	2	26.0	- -	- -	- -	- -
K-925	-2	14.0	- -	- -	- -	- -
K-926	2	38.0	- -	- -	- -	- -
K-927	-2	3.0	- -	- -	- -	- -
K-928	6	-0.2	- -	- -	- -	- -
K-929	3	12.0	- -	- -	- -	- -
K-930	2	9.0	- -	- -	- -	- -
K-931	4	40.0	- -	- -	- -	- -
K-932	6	74.0	- -	- -	- -	- -
K-933	21	124.0	- -	- -	- -	- -
K-934A	1808	10.0	- -	- -	- -	- -
K-934B	3	14.0	- -	- -	- -	- -
K-935	7	36.0	- -	- -	- -	- -
K-936A	1550	735.0	- -	- -	- -	- -
K-936B	341	187.0	- -	- -	- -	- -
K-937	15	28.0	- -	- -	- -	- -
K-938	398	194.0	- -	- -	- -	- -
K-939	6	65.0	- -	- -	- -	- -
K-940	30	66.0	- -	- -	- -	- -
K-941	3	167.0	- -	- -	- -	- -
K-942	16	95.0	- -	- -	- -	- -
K-943	6	31.0	- -	- -	- -	- -
K-944	3	44.0	- -	- -	- -	- -
K-945	4	33.0	- -	- -	- -	- -
K-946	48	14.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-947A	11	15.0	- -	- -	- -	- -
K-947B	320	71.0	- -	- -	- -	- -
K-947C	7	64.0	- -	- -	- -	- -
K-947D	12589	292.0	- -	- -	- -	- -
K-948A	11	83.0	- -	- -	- -	- -
K-949	6	39.0	- -	- -	- -	- -
K-950	49	8.0	- -	- -	- -	- -
K-951	11	0.3	- -	- -	- -	- -
K-952	19	0.2	- -	- -	- -	- -
K-953	21	3.0	- -	- -	- -	- -
K-954	2	13.0	- -	- -	- -	- -
K-955	21	0.8	- -	- -	- -	- -
K-956	7	5.0	- -	- -	- -	- -
K-957	9	7.0	- -	- -	- -	- -
K-958	4	6.0	- -	- -	- -	- -
K-959	57	6.0	- -	- -	- -	- -
K-960	2	15.0	- -	- -	- -	- -
K-961	8	16.0	- -	- -	- -	- -
K-962	7	55.0	- -	- -	- -	- -
K-963	5	25.0	- -	- -	- -	- -
K-964	2	5.0	- -	- -	- -	- -
K-965A	13	5.0	- -	- -	- -	- -
K-965B	-2	22.0	- -	- -	- -	- -
K-966A	-2	43.0	- -	- -	- -	- -
K-966B	-2	60.0	- -	- -	- -	- -
K-967	-2	70.0	- -	- -	- -	- -
K-968	-2	6.0	- -	- -	- -	- -
K-969A	6	36.0	- -	- -	- -	- -
K-969B	10	46.0	- -	- -	- -	- -
K-970	-2	10.0	- -	- -	- -	- -
K-971	-2	12.0	- -	- -	- -	- -
K-972	-2	24.0	- -	- -	- -	- -
K-973	-2	96.0	- -	- -	- -	- -
K-974	3	118.0	- -	- -	- -	- -
K-975	2	9.0	- -	- -	- -	- -
K-976	-2	5.0	- -	- -	- -	- -
K-977	-2	2.0	- -	- -	- -	- -
K-978	-2	8.0	- -	- -	- -	- -
K-979	-2	3.0	- -	- -	- -	- -
K-980	-2	7.0	- -	- -	- -	- -
K-981	-2	12.0	- -	- -	- -	- -
K-982	-2	10.0	- -	- -	- -	- -
K-983	-2	4.0	- -	- -	- -	- -
K-984A	-2	5.0	- -	- -	- -	- -
K-985	-2	15.0	- -	- -	- -	- -
K-986	2	25.0	- -	- -	- -	- -
K-987	2	11.0	- -	- -	- -	- -
K-988	-2	9.0	- -	- -	- -	- -
K-989	-2	14.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-990A	-2	18.0	- -	- -	- -	- -
K-990B	19	60.0	- -	- -	- -	- -
K-991	2	33.0	- -	- -	- -	- -
K-992	15	23.0	- -	- -	- -	- -
K-993	-2	40.0	- -	- -	- -	- -
K-994	-2	5.0	- -	- -	- -	- -
K-995	-2	9.0	- -	- -	- -	- -
K-996	-2	7.0	- -	- -	- -	- -
K-997	-2	61.0	- -	- -	- -	- -
K-998	2	44.0	- -	- -	- -	- -
K-999	-2	33.0	- -	- -	- -	- -
K-1000	4	45.0	- -	- -	- -	- -
K-1001	-2	5.0	- -	- -	- -	- -
K-1002A	-2	3.0	- -	- -	- -	- -
K-1003A	12	48.0	- -	- -	- -	- -
K-1003B	42	85.0	- -	- -	- -	- -
K-1003C	25	54.0	- -	- -	- -	- -
K-1003D	2205	120.0	- -	- -	- -	- -
K-1003E	4	23.0	- -	- -	- -	- -
K-1003F	5	75.0	- -	- -	- -	- -
K-1003G	11	46.0	- -	- -	- -	- -
K-1004A	7	64.0	- -	- -	- -	- -
K-1004B	32	255.0	- -	- -	- -	- -
K-1004C	37	317.0	- -	- -	- -	- -
K-1004D	10	89.0	- -	- -	- -	- -
K-1004E	2	38.0	- -	- -	- -	- -
K-1005A	768	129.0	- -	- -	- -	- -
K-1005B	32	147.0	- -	- -	- -	- -
K-1005C	4	13.0	- -	- -	- -	- -
K-1005D	2	81.0	- -	- -	- -	- -
K-1005E	13	133.0	- -	- -	- -	- -
K-1006A	12	68.0	- -	- -	- -	- -
K-1006B	40	22.0	- -	- -	- -	- -
K-1006C	18	41.0	- -	- -	- -	- -
K-1006D	21	43.0	- -	- -	- -	- -
K-1006E	127	224.0	- -	- -	- -	- -
K-1006F	58	95.0	- -	- -	- -	- -
K-1007	35	70.0	- -	- -	- -	- -
K-1008	7	75.0	- -	- -	- -	- -
K-1009A	11	44.0	- -	- -	- -	- -
K-1009B	386	75.0	- -	- -	- -	- -
K-1009C	20	22.0	- -	- -	- -	- -
K-1010A	-2	28.0	- -	- -	- -	- -
K-1010B	16	22.0	- -	- -	- -	- -
K-1011	3	43.0	- -	- -	- -	- -
K-1012A	14	23.0	- -	- -	- -	- -
K-1013A	19	25.0	- -	- -	- -	- -
K-1013B	4	55.0	- -	- -	- -	- -
K-1014	19	9.0	- -	- -	- -	- -

Appendix II b: Analytical Results

Sample no	Au (ppb)	As (ppm)	Sb (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
K-1015	17	15.0	- -	- -	- -	- -
K-1016	2	8.0	- -	- -	- -	- -
K-1017	47	7.0	- -	- -	- -	- -
K-1018	17	15.0	- -	- -	- -	- -
K-1019	13	9.0	- -	- -	- -	- -
K-1020	10	5.0	- -	- -	- -	- -
K-1021	6	4.0	- -	- -	- -	- -
K-1022	2	17.0	- -	- -	- -	- -
K-1023	3	14.0	- -	- -	- -	- -
K-1024	10	14.0	- -	- -	- -	- -
K-1025	10	16.0	- -	- -	- -	- -
K-1026A	3	35.0	- -	- -	- -	- -
K-1026B	16	10.0	- -	- -	- -	- -
K-1026C	3	11.0	- -	- -	- -	- -
K-1027	6	11.0	- -	- -	- -	- -
K-1028	4	39.0	- -	- -	- -	- -
K-1029	4	14.0	- -	- -	- -	- -
K-1030	2	22.0	- -	- -	- -	- -
K-1031	8	13.0	- -	- -	- -	- -
K-1032	10	27.0	- -	- -	- -	- -
K-1033	10	39.0	- -	- -	- -	- -
K-1034	8	55.0	- -	- -	- -	- -
K-1035	12	31.0	- -	- -	- -	- -
K-1036	19	46.0	- -	- -	- -	- -

Of the base metal elements tested, the Zn map appears to best outline the zones defined by the Au/As/Sb maps. The Zn anomaly along the baseline has a more abrupt southwest boundary (using the threshold values chosen); this may suggest that the target zone has a northeast dip. Note that Zn is not discussed in Appendix I; further work and/or research into potential use of Zn as a pathfinder for Au in the Timmins area is perhaps warranted.

It is interesting that the better Cu results occur on the flanks of the KAY-92 grid since Fyon and Crocket (1979, 1980, 1982) interpret an inverse correlation between Au and Cu.

The Pb results suggest a good correlation with Au only in the southeast part of the baseline area.

5.3 Conclusions

The As results are interesting. The threshold value of 10 ppm is discarded; contouring at 60 and/or 120 ppm is preferred.

The Sb results are also interesting. However, assaying for Sb might be considered redundant due to the high correlation with As. As is preferred over Sb since it correlates better with Au and since more of the Sb data fall below the detection limit.

The Zn results are also interesting. Definition of threshold values for the Timmins area is lacking at this point. Work should be done in the vicinity of known deposits to better evaluate its usefulness.

The Cu results may confirm the interpretation by Fyon and Crocket (1979, 1980, 1982) of an inverse correlation between Cu values and Au mineralization.

The Pb map shows some correspondence with the Au map only in the southeast area of the baseline.

In fact, all of the elements tested show good response in the southeast part of the grid (using the threshold values chosen). This may be an indication of good exploration potential on the Timmins Nickel property to the southeast.

Based on these results, it was decided to test all surface samples and all diamond drill core samples for Au and As. Note, however, that analysis of these samples for Cu and/or Zn should be considered.

6. PROPERTY SURVEY

6.1 Results

Au lithogeochemistry results are given on MAP 1. This is the same presentation as was previously given, except that we have here presented it at 1:10 000 scale. On MAP 2, the corresponding As data are presented.

The two maps compare very well. The main areas of anomalous Au are seen in the As map; no strong As anomalies are observed where there is a lack of response in the Au data. However, the As data appear to less clearly outline the zone along the baseline, and perhaps show a better defined zone of anomalous values along a parallel trend a few hundred meters to the northeast. Furthermore, there is some As response in the southeast part of the grid suggesting an oblique trend or splay off the main target along the baseline. This latter trend is, however, defined mainly on the basis of two very strong results.

6.2 Discussion

The As results confirm the priority given to the main target zone (as shown in Figure 2). They also suggest that drill testing of the parallel trend a few hundred meters to the northeast, and of a possible oblique trend or splay to the southeast is warranted.

6.3 Conclusions

The As data complement the Au results and suggest that drill testing of two trends in close proximity to the main target area is warranted.

7. REFERENCE CITED

Ferguson, S.A., Buffam, B.S.W., Carter, O.F., Griffis, A.T., Holmes, T.C., Hurst, M.E., Jones, W.A., Lane, H.C., and Longley, C.S., 1968, Geology and Ore Deposits of Tisdale Township, District of Cochrane, Ont. Dept. Mines Geol. Report 58, 177p.; accompanied by Map 2075, scale 1 inch to 1000 feet and 12 charts

(see also reference list in Appendix I)

APPENDIX I

Internal monthly report for April 1992

by: John Learn
Apr 1992

III.A.1 KAYORUM PROJECT

1. INTRODUCTION

In order to further characterize the area of anomalous IP, VLF and density results in the southwestern part of the August Porcupine claims, 278 pulps from the summer 1991 surface sampling program have been sent for further analysis. A package deal available from Accurassay Laboratories in Kirkland Lake which consists of As, Sb, Cu, Pb and Zn was chosen. Results have been received but have not yet been compiled in detail. Preliminary results for As are given. But first, a summary of background information available from the published literature is presented.

2. LITERATURE REVIEW

Two groups of workers have published results dealing with lithogeochemistry as an exploration tool for Au mineralization in the Timmins camp. Both groups of workers recognize that all gold deposits in the Timmins camp are accompanied by carbonate alteration haloes, but that not all carbonate alteration zones are host to economic gold mineralization. The objectives of both studies were to better define the lithogeochemical nature of these alteration zones, in order to be able to discriminate between metalliferous and barren carbonate altered areas.

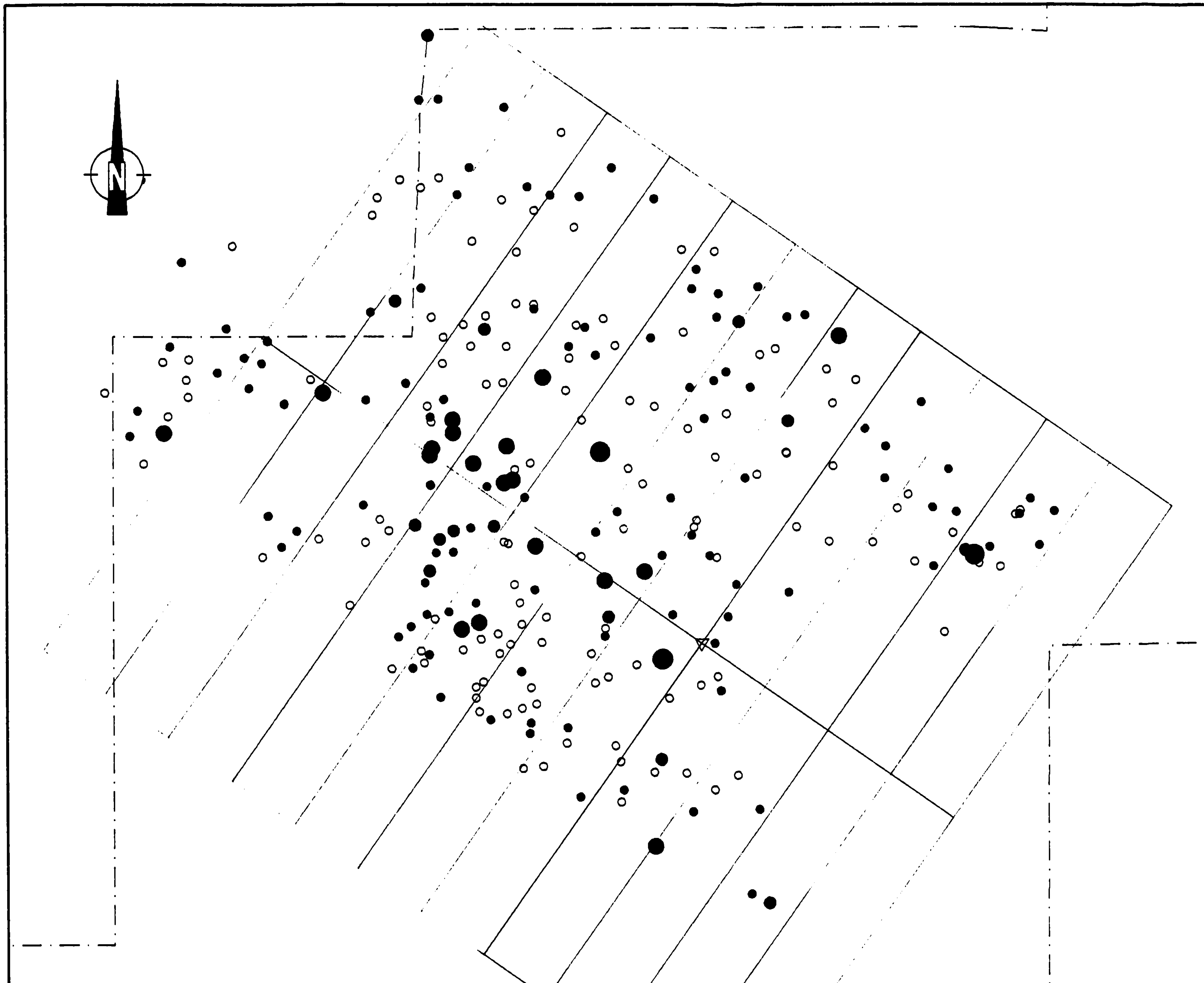
Fyon and Crocket (1979, 1980, 1982) worked primarily in lower Tisdale Group stratigraphy in Mg-tholeiitic basalts and komatiitic rocks spatially associated with the Porcupine-Destor fault (Delnite-Aunor-Buffalo Ankerite system) and in northeastern Tisdale township (Davidson-Tisdale prospect). Their results are therefore not <u>directly</u> applicable to the Kayorum property, since we are higher in the local stratigraphy.

These workers concluded that favourable alteration zones in the Mg-tholeiitic basalts could be characterized by:

* Sb > 0.35 ppm
* B > 30 ppm
* Au > 5 ppb
* Li > 35 ppm
* Cu < 70 ppm

and that favourable alteration zones in the komatiitic rocks could be characterized by:

* Au > 5 ppb
* Pb > 10 ppm
* As > 70 ppm
* Sb > 1 ppm



LEGEND

- ● ≥ 45 ppb Au
- ● ≥ 10 < 45 ppb Au
- ● ≥ 6 < 10 ppb Au
- • ≥ 2 < 6 ppb Au
- ○ < 2 ppb Au (Below detection limit)

COGEMA Canada Ltee/Ltd.

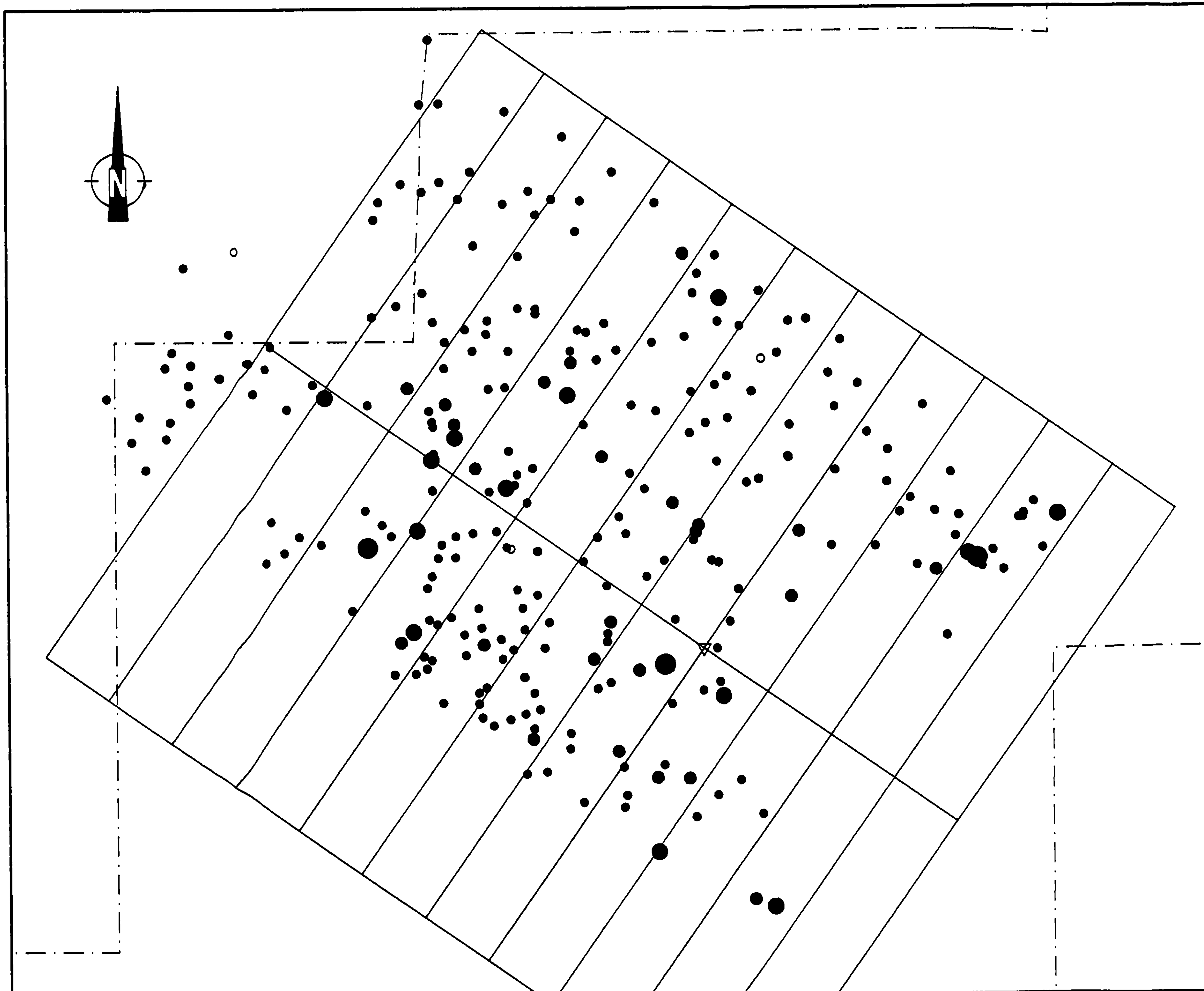
0 50 100 200 300 m

Scale 1 : 5000

Orientation Survey
Au

Report no. 92-CND-64-04

Figure no. 9



LEGEND

● ≥ 120 ppm As
● ≥ 61 < 120 ppm As
● ≥ 35 < 61 ppm As
• ≥ 0.2 < 35 ppm As
○ < 0.2 ppm As (Below detection limit)

COGEMA Canada Ltee/Ltd.

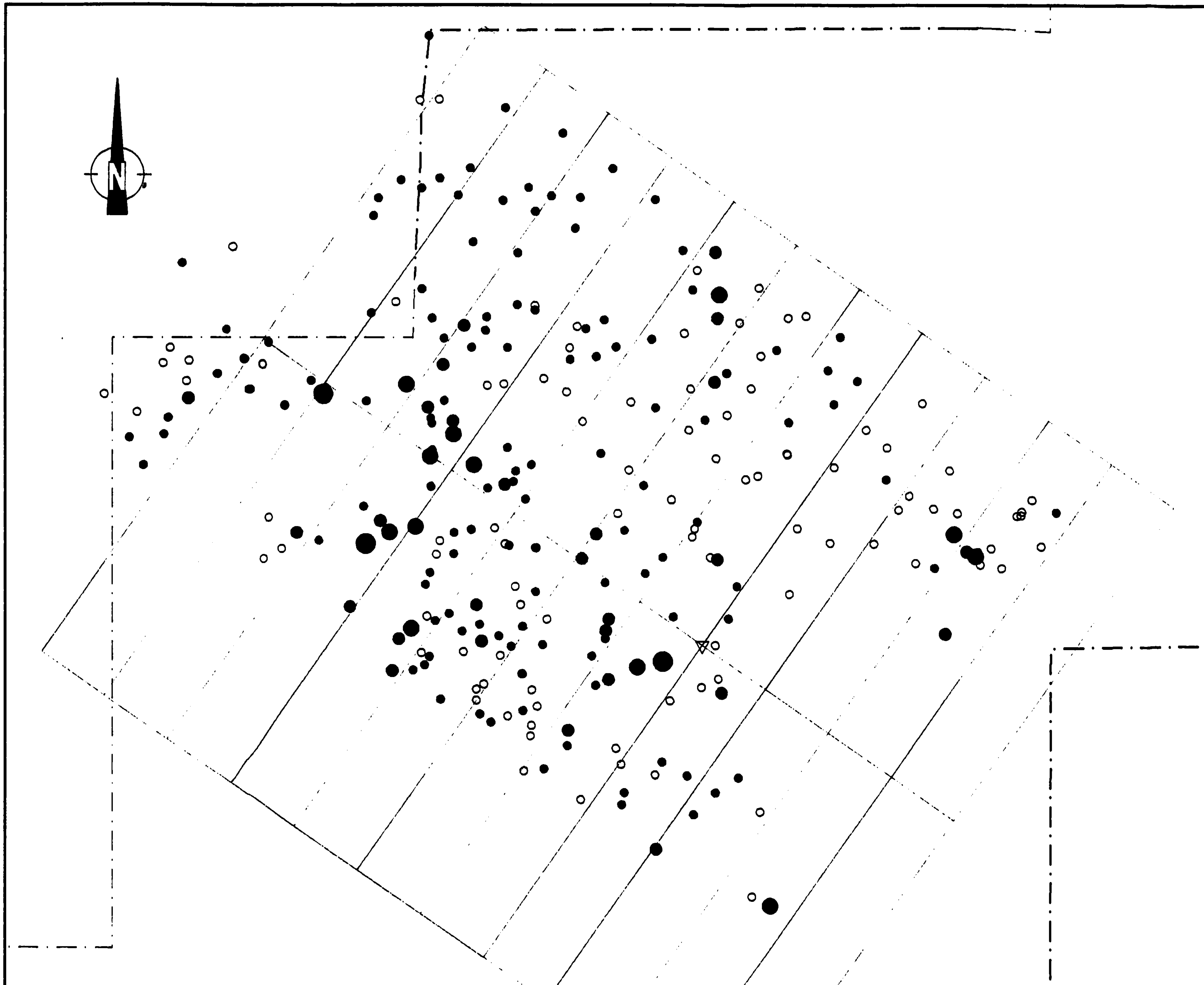
0 50 100 200 300 m

Scale 1 : 5000

Orientation Survey
As

Report no. 92-CND-64-04

Figure no. 10



LEGEND

● ≥ 3.4 ppm Sb
● ≥ 1.3 < 3.4 ppm Sb
● ≥ 0.8 < 1.3 ppm Sb
• ≥ 0.1 < 0.8 ppm Sb
○ < 0.1 ppm Sb (Below detection limit)

COGEMA Canada Ltee/Ltd.

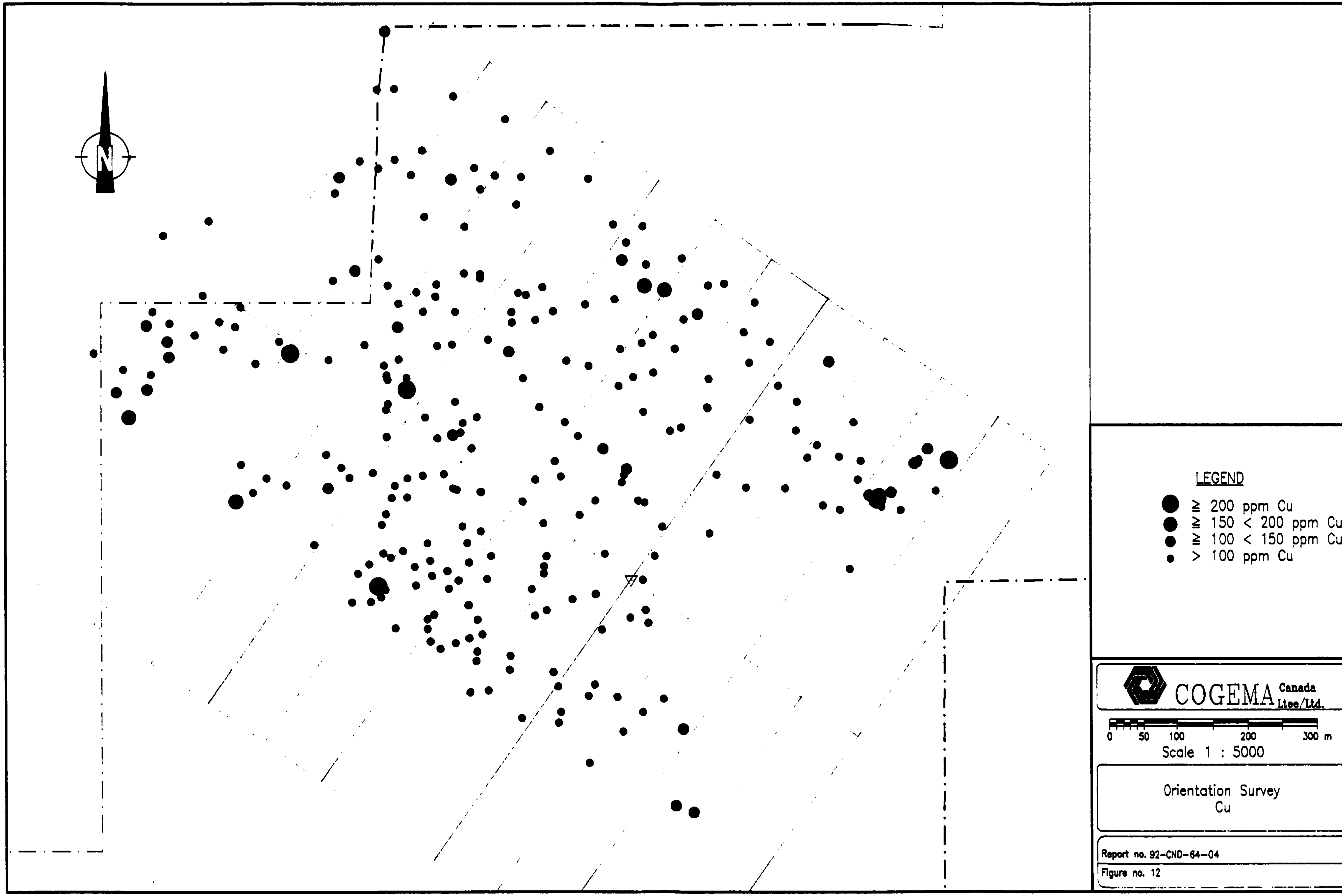
0 50 100 200 300 m

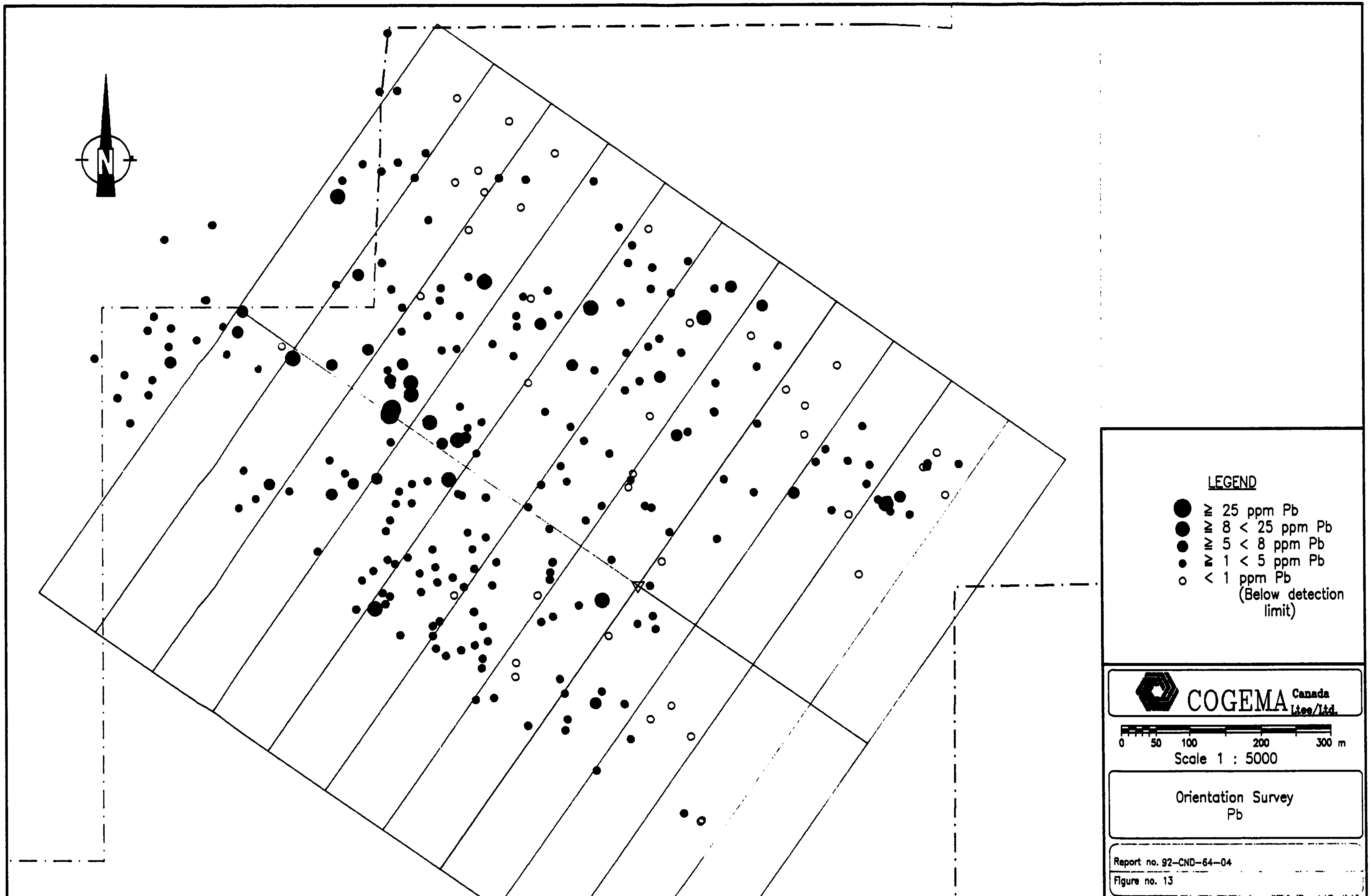
Scale 1 : 5000

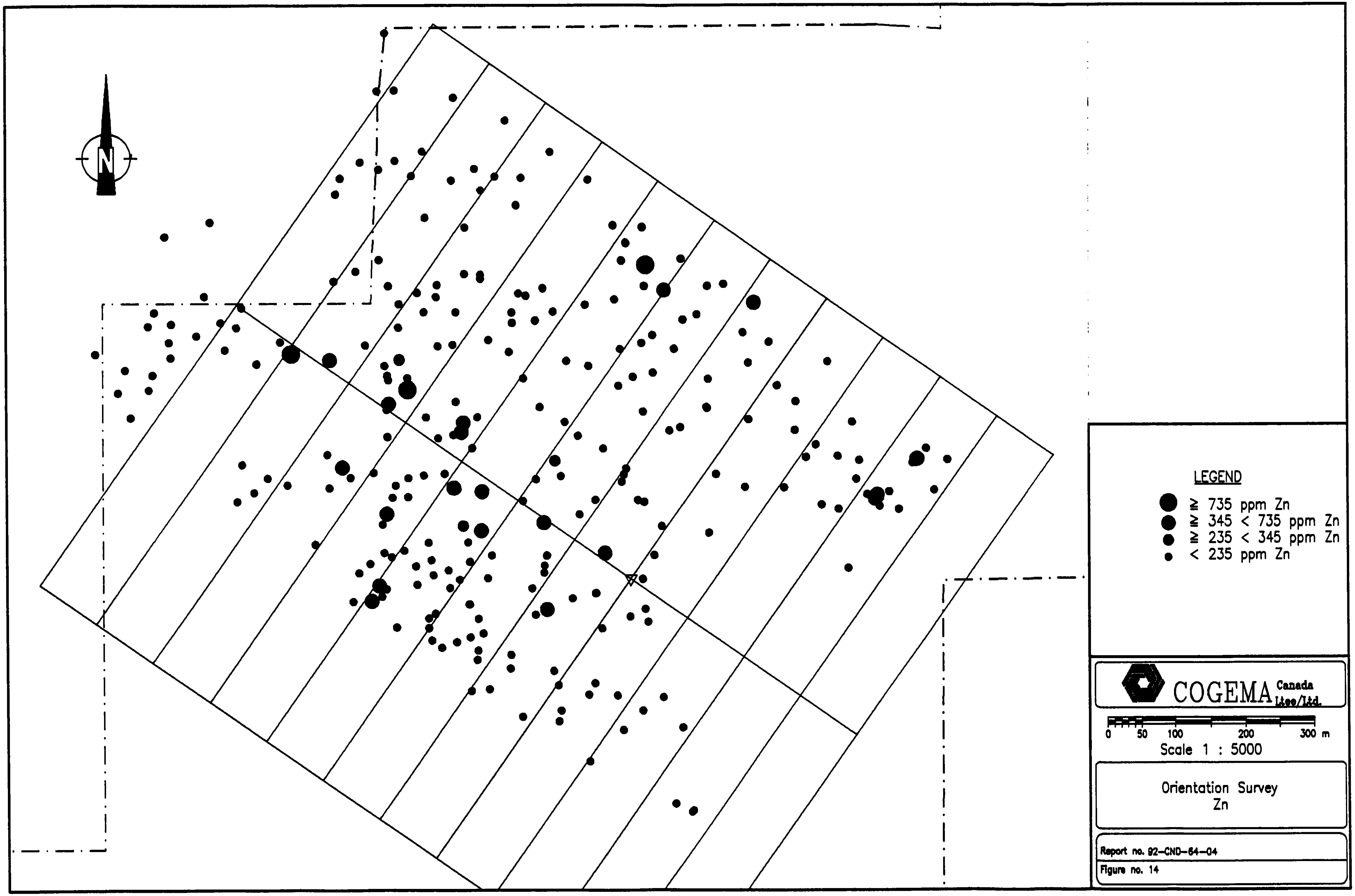
Orientation Survey
Sb

Report no. 92-CND-64-04

Figure no. 11


N
LEGEND
≥ 200 ppm Cu
≥ 150 < 200 ppm Cu
≥ 100 < 150 ppm Cu
> 100 ppm Cu
COGEMA Canada Ltee/Ltd.
0 50 100 200 300 m
Scale 1 : 5000
Orientation Survey
Cu
Report no. 92-CND-64-04
Figure no. 12


N
LEGEND
≥ 25 ppm Pb
≥ 8 < 25 ppm Pb
≥ 5 < 8 ppm Pb
≥ 1 < 5 ppm Pb
< 1 ppm Pb (Below detection limit)
COGEMA Canada Ltee/Ltd.
0 50 100 200 300 m
Scale 1 : 5000
Orientation Survey
Pb
Report no. 92-CND-64-04
Figure no. 13


N
LEGEND
≥ 735 ppm Zn
≥ 345 < 735 ppm Zn
≥ 235 < 345 ppm Zn
< 235 ppm Zn
COGEMA Canada Ltee/Ltd.
0 50 100 200 300 m
Scale 1 : 5000
Orientation Survey
Zn
Report no. 92-CND-64-04
Figure no. 14

42A06NW0040 OM92-075 TISDALE

060

COGEMA CANADA LTD/LTÉE.

REPORT ON MAXMIN 1 HLEM, VLF-EM AND MAGNETIC SURVEYS OVER THE KAYORUM PROPERTY, TIMMINS, ONTARIO.

- Winter, 1991 -

By: - Rodney R. Koch
John Learn
March 1992

Rep.# 91-CND-64-04

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1.0 INTRODUCTION

The Kayorum project lies in the heart of the Porcupine mining camp, bounded to the north by the Hollinger - McIntyre - Coniaurum deposits and to the south by the deposits closely associated with the Porcupine - Destor fault: the Delnite, Aunor and Buffalo Ankerite deposits. (see Figure 1.)

Despite its strategic location, the property has never been thoroughly nor systematically explored due to the fact that all of the claims are patents, most of which date back to the 1930's or earlier.

In October 1990, Cogema Canada Ltd. signed an option agreement with Moneta Porcupine Mines Ltd. to explore the property. Work commenced in December of the same year beginning with the establishment of an orthogonal grid with 50 metre line spacing at 070° and 160°. All of the lines were surveyed with VLF-EM and magnetometer, while a HLEM (Max Min I) survey was completed in both directions with a 100 metre line spacing. The results of these surveys were reported in a document with Cogema's reference number **91-CND-64-01G**.

From August to October 1991, a surface mapping program was undertaken to define the geological units exposed in the areas of outcrop, and to assess the character and intensity of alterations and deformation. Sampling was performed at very close spacing to establish background gold concentrations and to identify anomalous areas.

In addition to the mapping program and as a follow-up to the first geophysical program, IP and gravity surveys were carried out over selected areas during October 1991. This data was presented in a report by **Koch, R., et. al.** 1992, reference number **91-CND-64-03**.

2.0 THE PROPERTY

The property is located in the southwestern part of Tisdale township and crosses over to the northwestern part of Deloro township. It comprises 50 patented claims (see Figure 3) and includes all or part of the properties historically referred to as follows (see Figure 4):

a) Moneta
b) Kayorum
c) Mace
d) August Porcupine
e) Lepic
f) Harrower
g) Burb

The extreme northwest portion of the property, which includes the former producing Moneta mine, corresponds to part of downtown Timmins and for this reason would be very difficult to explore. Much of the southern part of the property is now covered by mine tailings from the former producing Moneta and Hollinger mines. These tailings are not included in the option agreement and will not be tested for any remaining gold content.

3.0 GEOLOGY

3.1 REGIONAL GEOLOGIC SETTING

The geology of the Timmins area has been studied extensively and there are numerous publications dealing with all aspects of the area. It would be virtually impossible to acknowledge all of the workers who have contributed to the present database. For the purposes of this program the most useful publication has been that of Ferguson et. al. (1968). They mapped the townships of Tisdale and Whitney, and Ferguson (1959) also prepared a preliminary map of Deloro township. Brisbin (1992) also mapped the property along with most of the rest of the Porcupine camp and his assistance in orienting us to the local units has been an invaluable aid. An excellent summary of the economic geology of the mines and mining properties is also given by Ferguson et. al. (1968). Pyke (1982) discusses the geology from a more regional viewpoint.

The bedrock in the area consists of Archean metavolcanic, metasedimentary and intrusive rocks (Keewatin Supergroup). The Archean rocks are divided into two volcanic and two sedimentary units. The oldest rocks consist of a thick succession of predominantly mafic metavolcanic rocks which are overlain by a comparatively thin bed of slate and metagreywackes (Deloro Group). This series is overlain in turn by a second metavolcanic unit (Tisdale Group). Overlying the metavolcanic units is a thick turbiditic succession (Porcupine Group) which is in turn unconformably overlain by fluviatile metasediments (Timiskaming Group). Various intrusive rocks occur in the area, among them are the famous porphyries of the largest mines. Proterozoic diabase dykes intrude all of the previously described rock types.

In the Porcupine area, folding is complex and more than one phase of folding has occurred. The most prominent phase strikes in a northeasterly to easterly direction. Major structures include the North Tisdale anticline, the North Tisdale syncline, the Central Tisdale anticline and the Porcupine syncline. Fold axes plunge to the east at 30° to 70°. All the units exhibit a planar structure (cleavage or foliation) striking northeast to east and generally dipping south; schistosity is most pronounced near the fold axes and in shear zones.

Faults with a great variety of displacement, attitude and age are known. The Destor-Porcupine fault passes near the property at about 3 kilometres to the south, while the Hollinger main fault passes just north of the property. Northwest trending faults (e.g. the Burrows-Benedict) sinistrally offset the Destor - Porcupine fault and all the rock units in the Timmins area. A simplified regional geological map of the Timmins area is presented in Figure 2.

3.2 PROPERTY GEOLOGY

Metavolcanic rocks of the Tisdale Group are the only rocks reported to occur on the Kayorum property. The **Tisdale Group** in this area is subdivided by Ferguson et. al. (1968) into **four sub-groups: Northern, Central, Vipond and Gold Centre**. These subgroups have been further subdivided into flow units based mainly on their textural features: massive flows, variolitic pillowed flows and amygdaloidal pillowed flows. There are also several thin horizons of interflow argillites. The detailed stratigraphy shown in Figure 5 is based on several thousands of vertical feet of underground mine workings stretched across several kilometres. Not shown in Figure 5 are rocks of the uppermost Tisdale Group consisting of a graphitic argillite unit and the overlying **felsic** agglomeratic tuff known as the **Krist** Formation.

The property geology taken from Ferguson (1959) and Ferguson et. al. (1968) is shown in Figure 25 and Map 1. The Krist Formation occupies most of the western portion of the property. It forms the core of the northwesterly trending Kayorum syncline. Progressively older stratigraphy is exposed towards the east (northeast) towards a major anticlinal axis with a similar northwesterly trend. The northeastern portion of the property has a more east-west trending stratigraphy influenced by numerous east-west trending fold axes parallel to and including the Porcupine syncline. Most of the mafic metavolcanic rocks on the Kayorum property correspond to the Vipond and Gold Centre sub-groups; there are minor amounts of Central sub-group exposures in the core of the **South Tisdale** anticline (see Figure 2) located on the Mace claim group and, further south, on the western limb of the anticline within the Burb claim group.

3.3 ECONOMIC GEOLOGY

Gold was first discovered in the Porcupine area in 1909 and production from the Dome and Hollinger properties commenced soon thereafter. Gold has been won principally from quartz veins in the basalts of the Tisdale Group in and adjacent to the two major shears in the area. Most of the production comes from the Hollinger-McIntyre-Coniaurum deposit where veining is associated with the Hollinger main fault and numerous felsic porphyry plugs. The Dome-Paymaster system is a major producer related to the Destor-Porcupine fault and local splays emanating from it and is also associated with felsic porphyries. To the west of the Dome - Paymaster system, along the Destor - Porcupine fault, the former producing Buffalo Ankerite, Aunor and Delnite mines all produced significant quantities of gold. In these deposits, thin porphyry dykes occur in place of the plugs referred to for the other deposits. Finally, the Pamour mine continues to produce gold from quartz stockworks in the Porcupine metasediments. (see Figure # 1)

Base metal mineralization is also of great importance to the Timmins area. The Kidd Creek mine is a "typical" volcanogenic massive sulfide deposit located at about 20 kilometres northeast of Timmins. Its discovery in 1968 coincided, approximately, with the closing of several of the gold producers. More recently, production of nickel from komatiites of the Deloro Group from the Langmuir township area at about 25 kilometres southeast of Timmins was initiated.

4.0 GEOLOGICAL MODEL AND OBJECTIVES

Geological processes generally acknowledged as the major contributing or controlling factors associated with gold mineralization on a regional scale in the Timmins mining camp are:

1) the presence of faults;
2) carbonatization; and
3) proximity to carbonate - bearing sedimentary formations.

A variety of mechanisms could be invoked to explain the concentration of gold mineralization into economic deposits, however, it is important from an exploration point of view to recognize the principle physical characteristics of the host - ore relationship in order to detect their presence by geological, geophysical or geochemical methods.

Based on stratigraphic and structural observations, (see Figure 5A) economic gold ore is associated with the following:

1) stratabound and discordant quartz - carbonate "veining" systems with little or no sulphides present;

2) stratabound disseminated sulphides commonly hosted in a siliceous, carbonate - rich mafic volcanic or tuffaceous unit; and

3) vent style "porphyry copper" + gold disseminated sulphide mineralization hosted peripheral to or within intrusive bodies of quartz - feldspar porphyry.

Max Min 1 HLEM surveys were proposed to search for semi-massive or stringer type sulphides associated with quartz - carbonate veining systems. In addition, GEOTEM airborne electromagnetic surveys carried out by the government of Ontario detected several anomalies in the south and central part of the property that required evaluation by ground surveys. VLF-EM surveys were designed to detect the presence and map the extent of major structures (faults), while magnetic surveys were proposed to provide complimentary information concerning the location of possible structures and aid in defining the limits of geological units of contrasting susceptibility underlain by the Kayorum property.

5.0 GEOPHYSICAL SURVEYS

5.1 MAXMIN 1, HLEM SURVEYS

Horizontal Loop **MAX MIN** surveys were undertaken over the Kayorum property in order to locate conductors and to map conductive lithologies that may be associated with gold mineralization in the Timmins area. The work was carried out using the **MAX MIN I-9** unit, manufactured by Apex Parametrics Limited of Uxbridge, Ontario. The frequency range of the equipment covers seven octaves, from **110 Hz.** to **14080 Hz.**, while coil separations may be selected in a range of 12.5 metres to 400 metres. The mode of operation was MAX1 - Horizontal Loop Mode - in which the transmitter and receiver coil planes both are horizontal and coplanar. The received secondary field signals were recorded in a MME digital logger to allow daily dumping and processing of the data.

Test surveys were carried out over the bi-directional grid (70° - ENE, and 340° - NNW) on two lines, 200W and 450S, using two coil separations - 150 metres and 200 metres. Readings were taken and recorded at a 25 metre station interval at frequencies of 220, 440, 1760, 3520, 7040, and 14080 Hz.

Based on the test results from lines 200W and 450S, it was determined that the NNW - SSE trending lines would be measured using a 150 metre coil separation, while ENE - WSW lines would be measured with a 200 metre coil separation. The operating frequencies of 440, 1760, 3520, and 7040 Hz. were chosen to be measured for both line directions.

Data Processing and Presentation of Results

Transformation of the observed electromagnetic data into the frequency domain by the Fast Fourier Transform (FFT) and subsequent frequency filtering, has been found to be an effective method for suppressing half-space responses, spurious readings, and anomalous responses from lateral variations in the surface conductivity. The **MAX MIN** data from both line orientations of the Kayorum Project was filtered using this technique with program **FILTER**, an in-house, interactive, frequency domain filtering program.

Briefly, the data processing was undertaken in a manner as described in the following paragraphs. First, in order to improve the accuracy of the digital reconstruction, the raw data was splined using cubic spline interpolation to increase the sampling density of the observed field values from 25 metre intervals to 12.5 metre intervals. The new data base includes all measured field data, plus the intermediate synthetic values from the splining operation.

The lowest frequency in the spectral estimate is restricted by the physical length of the survey line. In order to improve the low frequency content of the estimate, the splined data is then tapered, mirrored, and folded about the end point of the line - improving the low frequency content by a factor of two.

The forward transform is then applied to the data, converting the splined, spatial data into the real and complex components of the frequency domain. Once in the frequency domain, the data is filtered by interactive, visual, selection of the appropriate coefficients allowing the refinement of the filtering effects to proceed rapidly. When the desired filter effects are achieved, the entire data is processed with these coefficients, the inverse transform is applied to the data, and the spatial data is written out into an standard ASCII format file, suitable for plotting or other processing.

The results of this processing are presented in Figure # 6 to Figure # 13 of this report. The field profiles have been presented in Report # 91-CND-64-01G by **Wilson, M.C.**, (1991). For **each line orientation** and for **each frequency** two presentations have been combined on all figures as follows:

1) - profiles of filtered in-phase and out-of-phase data in percent; and

2) - contours of the filtered in-phase component for negative part of the anomaly in percent.

5.2 INTERPRETATION OF MAXMIN 1, HLEM RESULTS

North - South Lines (Fig. #'s 6-9, and Fig. # 26; Map # 2)

The grid **N - S** surveys outlined an East-Northeast trending conductor of moderate conductivity (approximately - 18 Siemens). This conductor is confined to the Southeast portion of the grid and has been interpreted to dip moderatèly to the Northwest and the West, as determined by the asymmetric, positive, maxima observed in the downdip direction. The depth to the upper edge of conductive sheet or axis has been determined to be approximately 30 metres, assuming that the conductive zone may be represented by a thin conductive plate. A second, weak, high frequency (3520 - 7040 Hz.), predominantly out-of-phase anomaly, strikes in a WNW - ESE direction from approximately line 1000E to line 1500E and is confined between stations 250S to 0+00. A part of this conductor appears to correlate with an interflow metasedimentary unit. Coverage of the anomaly was incomplete, and therefore no quantitative interpretation of this trend was undertaken.

Other conductive "features" located by the HLEM surveys have been interpreted to be caused by the effects of cultural contamination. A long, linear East - West trending conductor at the Northwest limit of the grid marks the location of a buried gas line (electrified?) and an adjacent hydro-electric power line. Power line responses also may be observed on line 800E, the Southeast corner of the grid and the Northwest corner of the grid. A large Ontario Hydro multi-transformer sub-station is also located to the immediate Northwest corner of the grid.

The response of the tailings area becomes increasingly evident with ascending frequency of operation. In Figure # 9 the in-phase contours effectively approximate the extent of the tailings area and outline the limits of the tailings ponds located on the surface of the tailings dump.

East - West Lines (Fig. #'s 10-13, and Fig. # 26; Map # 2)

The grid **E - W** surveys outlined two near North - South trending conductors of weak to moderate conductivity (approximately 7 - 40 Siemens). The NNW -SSE trending conductor located between stations 0+00 and 500E has been interpreted to dip moderately to the Southwest and the West, as determined by the asymmetric, positive, maxima observed in the downdip direction. The depth to the upper edge of conductive sheet or axis has been determined to be approximately 20 metres, assuming that the conductive zone may be represented by a thin conductive plate. The near N - S trending conductor segment open along strike on property to the north and open off property to the south has been interpreted to dip steeply west on line 400S switching to steeply east on line 600S, as determined by the change in a weakly asymmetric positive maximum located on the west side of the anomaly on line 400S and to a weakly asymmetric positive maximum located on the east side of the anomaly on line 600S. Several broad minima that form an anomalous trend in a ENE - WSW direction are directly coincident with the conductor axis defined by the HLEM surveys on the N - S lines.

Two weak, high frequency (3520 - 7040 Hz.), predominantly out-of-phase anomalies, were located in the northeast quadrant of the grid. One is found near station 1800E and strikes in a WNW - ESE direction over lines 100N and 200N, while a second conductor located near station 1250E is a single line response on line 0+00. The former conductor is open to the south, while to the West-Northwest the response is effectively masked by the influence of the gas and hydro-electric power lines. Due to the proximity of these conductors to cultural contamination and limited coverage of the anomalies, no quantitative interpretation of these trends was undertaken.

Other conductive "features" located by the HLEM surveys have been interpreted to be caused by the effects of cultural phenomena. A sporadic series of alternating positive to negative, near East - West trending anomalies, located near the Northwest limit of the grid, mark the location of a buried gas line (electrified?) and an adjacent hydro-electric power line. Power line responses also may be observed on lines 0+00 to 500N near station 800E, the Southeast corner of the grid and the Northwest corner of the grid. A large Ontario Hydro multi-transformer sub-station is also located to the immediate Northwest corner of the grid.

Again on the E - W lines, the response of the tailings area becomes increasingly pronounced at higher frequencies. In Figure # 12 the in-phase contours approximate the extent of the tailings area, although the shape is not as clearly defined as on N - S oriented lines. The approximate limits of the tailings ponds, located on the surface of the tailings dump, were outlined.

Electromagnetic Modelling (Figure 13A)

Electromagnetic modelling, simulating the MAX MIN 1 data over line 100N was carried out using program MULTILOOP developed by Lamontagne Geophysics of Kingston, Ontario. This program is able to model the multiple conductor problem by approximating each plate with concentric planar ribbons of the same surface conductance as the modeled plate. MULTILOOP provides a very good approximation of the true physical response in absolute amplitude, anomaly shape, and decay times in a wide variety of relevant geophysical situations.

Line 100N was chosen to model the response of the carbonaceous sediment that "rings" the Upper Tisdale member known as the Krist formation. The shape (Figure 10) and interpreted parameters found on Figure 26 (using phasor diagrams) of the electromagnetic anomaly associated with the Krist formation indicated that at approximately 0+50E on line 100N a conductor was located that dipped moderately to the west, and had a conductivity * thickness product of 7 Siemens. A depth of 20 metres was estimated to the conductive axis. The field data is also shown in the top part of Figure 13A.

The in-phase component of the model data, in the lower part of Figure 13A, achieves a good fit for a conductor buried at 20 metres below the surface, dipping 60° to the west and having a conductivity * thickness product of 8 Siemens. Negative lobes on the western flank of the conductor observed in both the in-phase and the quadrature components of the field data are caused by either near surface effects of the tailings dam or by a sub-vertical weakly conductive bedrock feature. The former is likely to be the cause because the survey line and the crest of the tailings material converge at a low angle near the conductors location.

5.3 VLF-EM SURVEYS

VLF-EM surveys were carried out over the bi-directional grid (70° - ENE, and 340° - NNW) using stations Cutler, Maine (NAA, 24.0 KHz.); Annapolis, Maryland (NSS, 21.4 KHz.); and Seattle, Washington (NLK, 24.8 KHz.). Readings were taken and recorded at a 12.5 metre station interval on lines spaced 50 metres apart.

The VLF-EM survey equipment employed to carry out the surveys was the EDA OMNI PLUS VLF/MAGNETOMETER system, now marketed by Scintrex Limited of Concord Ontario. The unit measured the total field strength, total dip and the vertical quadrature of the horizontal magnetic field for each transmitting station. Initializing the OMNI PLUS for the survey or the "facing" direction was consistent throughout the survey - i.e. to the north for lines oriented NNW - SSE and east for lines oriented ENE - WSW.

Data Processing and Presentation of Results

The in-phase and quadrature data were presented as stacked line profiles and can be found in report 91-CND-64-01G. For the purposes of this report, the VLF-EM data has been Fraser filtered to enhance recognition of conductor trends, simplifying interpretation.

The Fraser filter is proportional to the discrete first derivative and affects the in-phase data over a subsurface conductor such that a 90° phase shift of "cross-overs" or points of inflection (positive to negative sense) occurs, changing inflections to peaks. In addition, short wave-length noise is reduced (the Fraser filter acts as a simplified band pass filter) while near surface anomalies are amplified (rendered more clearly). Only the positive values have been contoured, to avoid confusion from the negative contours from flanks of the anomalies.

5.4 INTERPRETATION OF VLF-EM RESULTS

North - South Lines (Fig. # 14 and Fig. # 26; Map # 2)

VLF-EM surveys conducted over grid N - S lines of the Kayorum Property outlined many conductive anomalies. The majority of these conductors trend in the near E - W direction. Only conductors deemed to have a potential geological association have been marked on the interpretation in Figure # 26.

Three major "clusters" of VLF-EM anomalies were identified as having bedrock association. One group of anomalies located in the Northeast quadrant of the grid, between lines 1500E and 2500E and stations 500N to 1000N, trend in the E - W and ENE - WSW directions. These anomalies are associated with positive Fraser filtered values of up to 35%. A central group of conductors, located within an area bounded by lines 300W to 1500E and stations 900N to 200S, and with stronger Fraser filtered amplitudes of up to 50%, trend in the NW - SE, E - W, and ENE - WSW directions. A third zone of anomalies with Fraser filtered values generally < 20%, are located are located in the Southwest sector of the grid, from lines 1800W to 200E and stations 400S to 1500S. The VLF-EM conductors located by the surveys are interpreted to represent conductivity contrasts caused by structures and/or stringer - disseminated sulphides. They are often found in association with mafic metavolcanics (basalt sequences) of the Tisdale Group stratigraphy and interflow sediments that often separate the volcanic cycles.

The VLF-EM surveys were also hampered by the effects of cultural features. Strong anomalous responses are observed in association with power lines, gas lines, and the tailings area. The tailings, with a thickness of up to approximately 25.0 metres, greatly attenuates the secondary field signals from conductive sources located beneath the tailings material. The abrupt topographic change in elevation from background to the surface of the tailings area has caused VLF-EM anomalies that clearly outline the limit of the tailings dam.

East - West Lines (Fig. # 15 and Fig. # 26; Map # 2)

VLF-EM surveys conducted over grid E - W lines of the Kayorum Property outlined many conductive anomalies. The majority of these conductors trend in the near NNW - SSE and the N - S directions. Only conductors deemed to have a geological, bedrock association have been marked on the interpretation in Figure # 26.

A stronger, wider VLF-EM conductor that strikes NNW - SSE and is located near station 0+00E correlates well with the conductor identified by the Max Min 1 surveys. In fact, from station 0+00N this conductor has width or its shape is the result of two interfering conductors crossing at low angles to each other (near N - S and NNW - SSE). Another conductor, with two, narrow, positive peaks, (wide zone ?) was also located in the Northeast sector of the grid. This conductor trends in a NW - SE direction from approximately line 100S to 650N and from station 1400E to 2000E. This conductive zone appears to be cut by weaker VLF-EM conductors that trend in a near N - S direction, however this interpretation is tenuous because the conductor passes through the power and gas line electromagnetic fields at this location. The VLF-EM conductors located by the surveys are interpreted to represent conductivity contrasts caused by structures and/or stringer - disseminated sulphides. They are commonly found in association with mafic metavolcanics (basalt sequences) of the Tisdale Group stratigraphy and interflow sediments that often separate the volcanic cycles.

As mentioned in the section and paragraph above the VLF-EM surveys were also hampered by the effects of cultural features. Strong anomalous responses are observed in association with power lines, gas lines, and the tailings area. The tailings, with a thickness of up to approximately 25.0 metres, greatly attenuates the secondary field signals from conductive sources located beneath the tailings material. The abrupt topographic change in elevation from background to the surface of the tailings area has caused VLF-EM anomalies that clearly outline the limit of the tailings dam.

5.3 MAGNETIC SURVEYS

Magnetic surveys were carried out over the bi-directional grid (70° - ENE, and 340° - NNW) employing the EDA OMNI PLUS VLF/MAGNETOMETER system, now marketed by Scintrex Limited of Concord Ontario. Readings were taken and recorded at a 12.5 metre station interval on lines spaced 50 metres apart.

During the course of the survey, an OMNI IV base station magnetometer and recorder was employed to measure the diurnal variations of the total field magnetic intensity at 15 second intervals. The base station was located on the property of the Trillium Motel (approximately 25 metres west of cabin #1) situated east of Porcupine, Ontario along provincial highway # 101. The magnetic data were corrected for a base value of 58,500 nT.

Data Processing and Presentation of Results

The magnetic total field intensity data is presented in contour format only. Preliminary tests with filtering and additional processing showed that strong cultural effects combined with low total field intensity background values would make this work a time consuming and difficult task.

5.4 INTERPRETATION OF MAGNETIC RESULTS

N - S and E - W Lines (Fig. #'s 16,17, and 26; Map # 2)

The area underlain by the Kayorum property is in general characterized by low apparent susceptibility. The eastern and extreme southern region of the property is interpreted to be underlain by geological units of predominantly mafic meta-volcanic affinity of the Tisdale group, while the central and western portions are underlain by the younger felsic Krist formations. There does not, however, appear to be an observable corresponding magnetic signature associated with the different major geological formations that underlie the property.

Within the mafic lithologies, the sub-units "V10-B" and the "99" units are associated with moderate to strong positive total field intensity anomalies of up to approximately 1000 nT above background. Both these magnetically anomalous units appear to be folded, with the apex of the fold pointing to the NW.

At least two other magnetic features that have been observed are interpreted as diabase dykes. One dyke, located in the central part of the grid, is characterized by its uniformly narrow, linear signature, and amplitudes of up to 1000 nT. It strikes NW - SE from line 500E and station 650S to approximately 100W and 750N where it turns into a near East - West orientation and continues off grid to the west. A second dyke located in the Northeast part of the grid has similar characteristics when compared with the character of the dyke located in the central part of the grid, however this dyke appears to be broken (faulting ?) and has a weak magnetic low developed on its west side, perhaps due to its geometry - a shallow dip. The magnetic anomalies associated with this dyke achieve amplitudes of 500 - 600 nT.

Magnetic Modelling (Figure 19 - 24)

Several of the magnetic units (notably the dykes) detected by the magnetic surveys were selected for analysis with MAGMOD - an interactive magnetic modelling inversion program that calculates the parameters of an inductively magnetized body of simple geometry, such that a best-fit is obtained between its theoretical, calculated magnetic anomaly and the observed anomaly. This program is marketed by Geosoft of Toronto, Ontario.

The first "dyke" to be modelled was the one located in the central part of the grid with a strike orientation of NW - SE. The results of the models related to this feature are presented in Figures 19 to 21. Because the nature of this magnetic anomaly is ideal i.e. its shape, strike length etc., a ribbon or tabular model fit the observed data well. While both models are similar, the ribbon approximates a thin dipping dyke with infinite strike length but limited down-dip width, whereas the tabular body assumes a thick, flattopped dipping dyke of infinite strike length and infinite depth extent. In the results shown in Figure 19 and 20, the observed data was best-fit with the ribbon and tabular model. Allowing the program to converge to a best-fit on its own, the major differences are depth to the body; - 7 metres(ribbon), verses 3 metres(tabular), and depth extent; - 67 metres(ribbon) verses infinite(tabular). By decreasing the susceptibility * thickness of the ribbon model, the depth extent (width of the ribbon) could be increased. The dyke is shown to dip moderately to the Northeast on both lines (100S and 450N) at 60° to 67°.

Results of modelling a NNW - SSE dyke in the Northeast quadrant of the grid for the ribbon and tabular model are shown in Figures 22 and 23. The dyke is interpreted to have a depth of burial between 2 and 3 metres and a shallow dip averaging 10° to the ENE.

A mafic volcanic unit interpreted to represent the V10-B horizon was also modelled using data from line 1400E of the N - S grid. The observed data (Figure 16 and 17) indicates that a 2.5 dimensional body may best approximate the source of the magnetic anomaly. This model differs from the ribbon and tabular model in that the strike length and depth extent are variable but finite. The best-fit model results in Figure 24 show that the magnetic source of the V10-B unit at this location is buried at a depth of approximately 11 metres and dips steeply (66°) to the North. A limited depth extent of under 100 metres is also indicated.

6.0 SYNTHESIS OF GEOPHYSICAL SURVEYS

Previous reports by **Koch and Learn,** (1992) and **Learn,** (1992) have discussed other geophysical surveys (**gravity** and IP), geochemical surveys and geological mapping of the Kayorum property. The following paragraphs are designed to briefly synthesize the more relevant geophysical and geological highlights from the above reports of work and interpretation carried out to date on this property.

IP - Resistivity surveys conducted over mafic metavolcanic sequences underlain by the Kayorum property are of predominantly higher resistivity and many units are associated with polarizability anomalies. The polarizability anomalies are found to parallel, sub-parallel, and/or cross-cut stratigraphy. The **IP - Resistivity** surveys also detected resistivity and polarization effects associated with a carbonaceous sedimentary unit that forms a marker horizon between felsic units of the Upper Tisdale Krist formations and mafic metavolcanics (basalts) of the Middle or Lower Tisdale Group. Although **IP - Resistivity** coverage of the Krist formation was limited by physical obstacles such as tailings ponds and cultural effects (City of Timmins), the survey data obtained over this unit failed to detect any resistivity or polarizability anomalies.

Gravity surveys were able to map the two major lithological units that underlie the Kayorum Property. The mafic metavolcanic units are more dense as characterized by higher gravity values, while the felsic tuffs of the Krist are less dense and are characterized by lower values of gravity. Given a contrast of 0.15 gm/cc between the Krist felsic formations and the Tisdale basalts, a series of Krist up to 800 metres in thickness may be present. A NNW - SSE trending structure (fault) or a fault/contact has been interpreted from the **gravity** data to be located immediately to the east of the carbonaceous marker unit that "rims" the Krist felsic unit, as shown in Figure 26 or Map 2. The **gravity** surveys may have detected positive density effects from carbonate alteration processes and the presence of sulphides in the northeastern portion of the property. The positive bouguer anomalies form a NW - SE trend from 18+00E on 200N to 15+50E on 600N. This trend correlates with **IP** anomalies that have strong polarizability effects at the same locations.

Geochemical sampling and **geological** mapping have outlined several areas of interest with respect to alteration and anomalous **gold lithogeochemistry**. Two anomalous areas were identified on the Harrower and August Porcupine claim groups located in the northeast part of the property. One zone named the **"Alma"** is associated with gold values of up to 411 ppb. while the **"Triumph South"** consisting of a rather broad area of anomalous gold values of up to 273 ppb. A third zone **"Harrower West"** located in the western part of the Harrower claim group is associated with gold values of up to 331 ppb. These zones have been interpreted to be significant because they also fall within a broader halo of **iron carbonate enrichment**. The above zones are in contrast to the **"Harrower East"** group of gold anomalies which fall into a zone predominantly enriched in **carbonate** only.

Two additional targets of interest were outlined by the **geochemical** surveys carried out over the Kayorum property. One area, located in the Southeast quadrant of the Mace claim group within or near the contact of **Interflow Sediments** and the mafic metavolcanics, yielded anomalous gold lithogeochemical values of up to 245 ppb. The other anomalous area occurs immediately south of the southwest boundary of the Kayorum claim group. Anomalous gold values of up to 1808 ppb. (**1.81 g/t** - best on the property) in a mafic metavolcanic (massive basalt) were returned by the sampling program. The outcrop is associated with small quartz veinlets (indicative of deformation ?) but the lithology and their relationship is not well understood due to the lack of bedrock exposure in the area.

Bi-directional **HLEM** surveys carried out over the Kayorum property detected and traced a **synclinal** graphitic, argillaceous, **sedimentary** formation of the Upper Tisdale Group that "rims" the youngest member of the group, the Krist Formation. The unit is characterized by moderate dips to the SW and NW on the Eastern and Southern limbs and dips steeply NE and/or SW on the Western limb. Other weaker conductors detected in Southwest and Eastern parts of the August Porcupine and Mace claim groups were limited to the higher frequencies of operation (3520, 7040 Hz.). One of these conductors correlates with a NNW - SSE trending IP - Resistivity, Gravity, Au Lithogeochemical zone that cuts across stratigraphy as discussed in the sections above, while the other conductor has been interpreted to be associated with Interflow Sediments of the Middle Tisdale Group.

VLF-EM surveys conducted over grid N - S and E - W lines of the Kayorum Property outlined many conductive anomalies. The predominant trend of these **conductors** is near **E - W**, for North - South lines while **conductors** delineated by surveys of East - West lines trend **NNW - SSE** or near **N - S**. Due to the large cultural component (interference) no quantitative interpretation of the anomalies was undertaken at this time.

Magnetic surveys conducted over the Kayorum property indicate that the area is underlain by rocks of low susceptibility. Units identified by magnetic surveys were limited to sub-units of the mafic metavolcanics ("V10-B", "99") and the diabase dykes. There are no obvious magnetic features correlatable with the NW - SE IP, Gravity, VLF-EM, weak HLEM, and Au lithogeochemistry anomaly in the Northeast sector of the grid. Modelling has shown that the diabase dyke, located in the central portion of the grid, dips moderately to the Northeast. This is in sharp contrast to the moderate dip Southwestward of conductive sedimentary unit around the Krist Formation located 100 to 200 metres to the west. This suggests that the dyke was emplaced later in time along a zone of structural weakness in the mafic metavolcanic units.

7.0 CONCLUSIONS

Based on survey results, interpretation of the survey data, and the discussions in the preceding sections of this report, three (3) zones of interest were identified that have potential to host an economic gold deposit. Multi-parameter stacking directly influenced the merit of the zones selected as follows:

1) **Zone 1**: Geophysical and geochemical surveys have detected a NW - SE trending potential gold bearing structure that straddles the Northeast and Southwest corners of the Mace and August Porcupine claim groups and which remains open to the Northwest and the Southeast of the property. This zone is essentially the "stack" of anomalous Au lithogeochemical results, IP polarizability, positive gravity, VLF-EM conductors, and weak HLEM anomalies. The anomalies are located within an area of the property described by coordinates 1400E to 2000E and 200S to 700N. The IP results have

been interpreted to represent increased disseminated and/or stringer sulphides, while the positive gravity anomaly is likely due to the presence of both sulphides and quartz (Fe) carbonate alteration systems. The VLF-EM and HLEM conductors are likely caused by conductivity contrasts, associated with weakly conductive material (sulphides) in a structural zone. The dip of this zone has not been determined, however it is likely some variation of the subvertical. Recognition of electromagnetic anomalies with this zone is clearer with increasing frequency of operation.

2) **Zone 2**: This anomalous zone, located in the Southeast part of the Mace Property, trends in a near E - W direction. The zone consists of a "stack" of VLF-EM conductors, a weak HLEM anomaly, and IP - Resistivity anomalies. The trend is located between 900E to 1500E and 300S to 250N and is open to the East (off property). To the West the response either ends or is masked by the effects of a power line(s) along Moneta Avenue. Samples from a roadside cut show that a small zone of anomalous gold lithogeochemistry is coincident with the Northwest end of the geophysical anomalies. This zone is located within or at the contact of a unit of Interflow sediments between cycles of volcanic activity.

3) **Zone 3**: Zone 3 is located in the extreme southwestern sector of the Kayorum claim group. Due to limited coverage the trend of this zone is unclear. The small anomalous area (limited coverage) is consists of a "stack" of gold lithogeochemistry (highest on the property), an IP - Resistivity anomaly and VLF-EM conductors. The IP and gold anomalies are essentially point anomalies because of limited coverage (one line 600S) and lack of outcrop exposure (limited sample area) respectively. VLF-EM surveys delineated NW - SE, to near N - S trending conductors adjacent and to the NE of the IP and gold anomalies. The anomalous appears to be located in the mafic (basalt) metavolcanic units.

8.0 RECOMMENDATIONS

Based on the conclusions and discussions in prior sections of this report concerning the geophysical surveys carried out over the Kayorum Property the following recommendations are made:

1) Several drill holes will be required to test **Zone 1** a NW - SE trending multi-parameter geophysical and gold lithogeochemical anomaly located within the northeastern portion of the Kayorum property. This target is interpreted to represent a potential auriferous-bearing quartz-carbonate-sulphide alteration system.

2) Secondary targets that merit testing such as **Zone 2** are found trending WNW - ESE near the southern boundary of the Mace property in the east-central part of the grid. It should be noted that the trend directions have been interpreted on inadequately spaced data between lines and that other orientations may be valid when interpreting the strike of an anomalous source.

3) **Zone 3**, a located near the end of line 600S should be tested after being checked for cultural association. This anomaly would appear to fall within a mafic metavolcanic context beyond the carbonaceous unit on the western limb of the Kayorum Syncline.

4) Remaining single parameter anomalies have been rated at a lower priority, - largely due to the fact IP - resistivity and Gravity surveys together with Geological mapping and lithogeochemical sampling were not systematically completed over the grid area. Features such

as a prominent NNW - SSE gravity "step" located in the central - west part of the grid may warrant testing by diamond drilling especially where the gravity and IP results are co-incident.

5) Prior to diamond drilling of **Zone 1** and **Zone 2**, additional Gravity and IP - Resistivity surveys may be warranted to more clearly define the orientation and lateral extent of the targets. In the case of **Zone 3** and if the gold anomaly remains valid additional property acquisition may be warranted prior to a suite of geophysical surveys and diamond drilling.

6) More rigorous modelling should be undertaken to support the interpretation of carbonate alteration effects. In addition modelling studies should be undertaken utilizing density measurements made from hand specimens of the principle lithologies underlain by the Kayorum Project. One may be able to establish a limit on the thickness of Krist formations by modelling.

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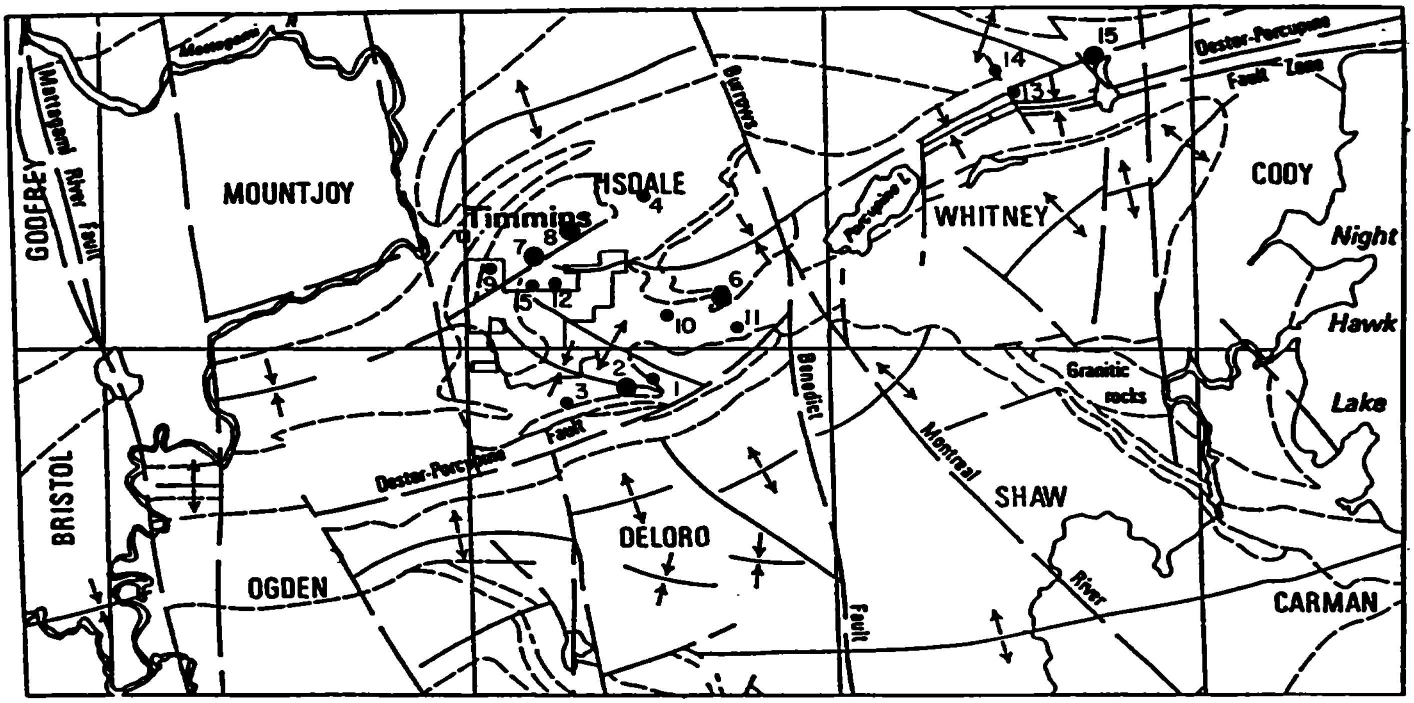


<u>FIGURE 1:</u> Gold mines of the Timmins camp
(Scale 1:200 000)

<u>INDEX TO MINES</u>
(metric tonnes of Au produced)

<u>DELORO TOWNSHIP</u>

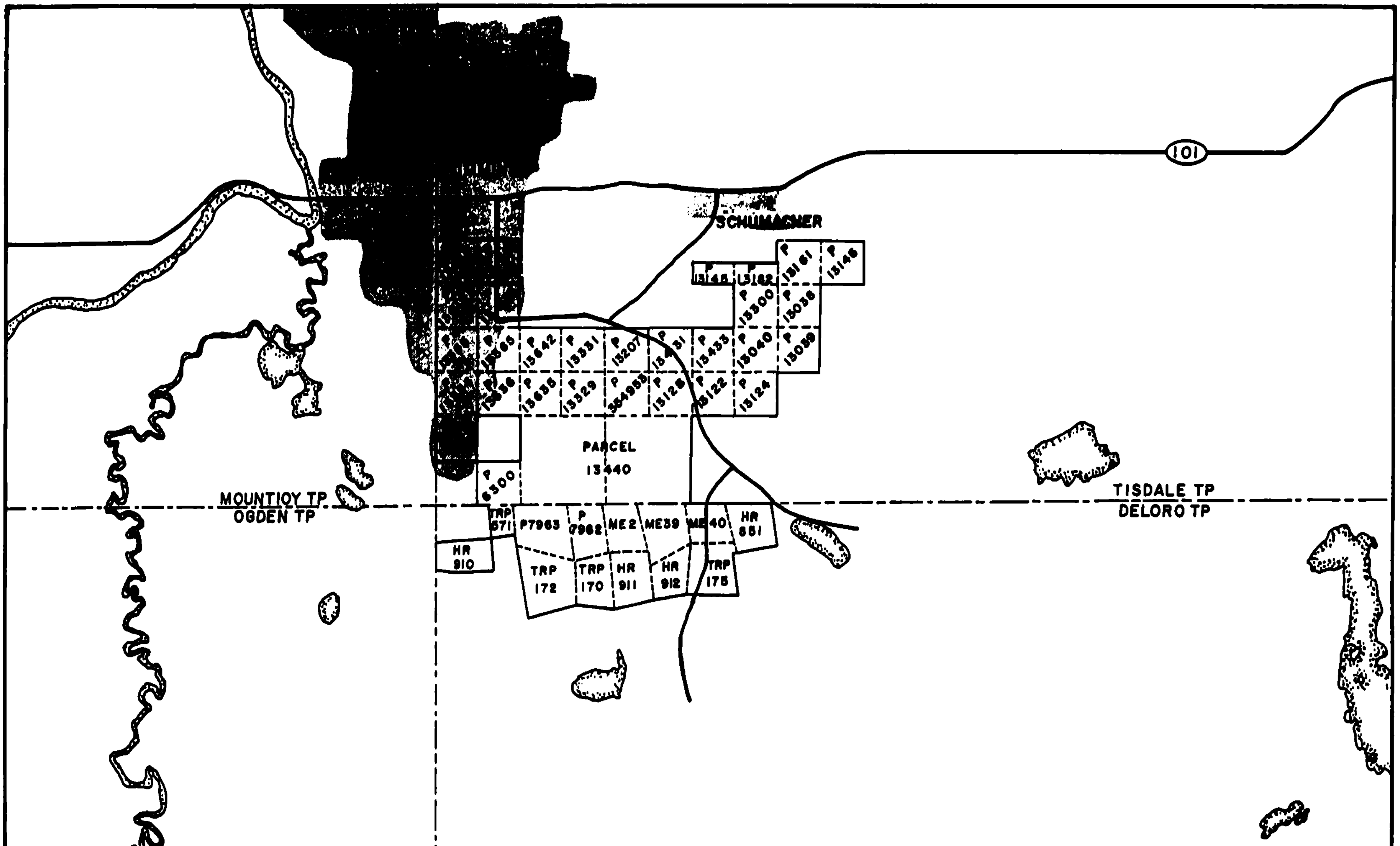
1.	Buffalo Ankerite	(30t)
2.	Aunor	(61t)
3.	Delnite	(29t)

<u>TISDALE TOWNSHIP</u>

4.	Coniaurum	(35t)
5.	Crown	(4t)
6.	Dome	(300t)*
7.	Hollinger	(602t)
8.	McIntyre	(310t)
9.	Moneta	(5t)
10.	Paymaster	(37t)
11.	Preston	(48t)
12.	Vipond	(13t)

<u>WHITNEY TOWNSHIP</u>

13.	Broulan	(8t)
14.	Hallnor	(46t)
15.	Pamour	(60t)*



COGEMA CANADA LTEE

KAYORUM PROJECT

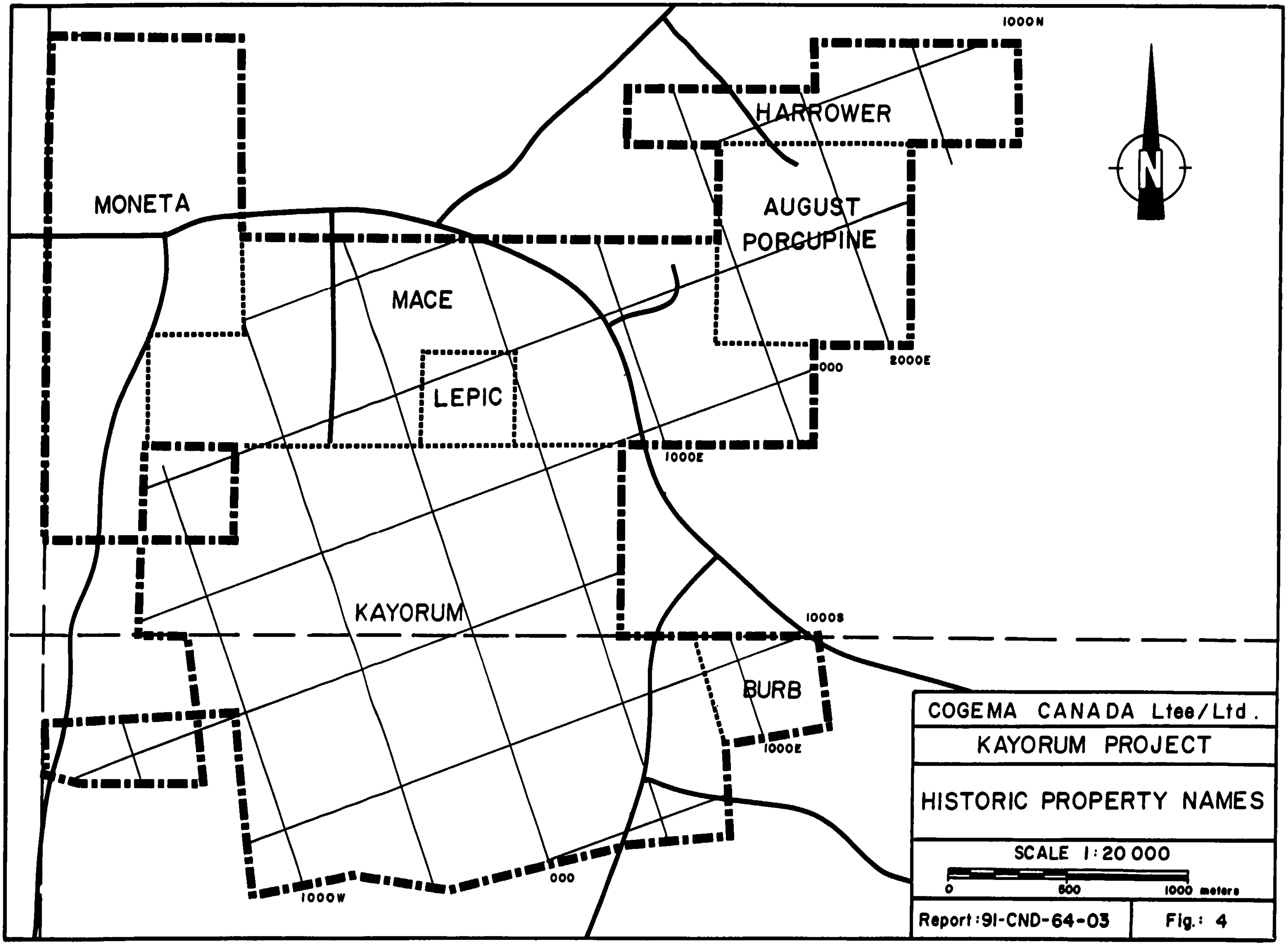
CLAIM MAP

Scale 1:50 000

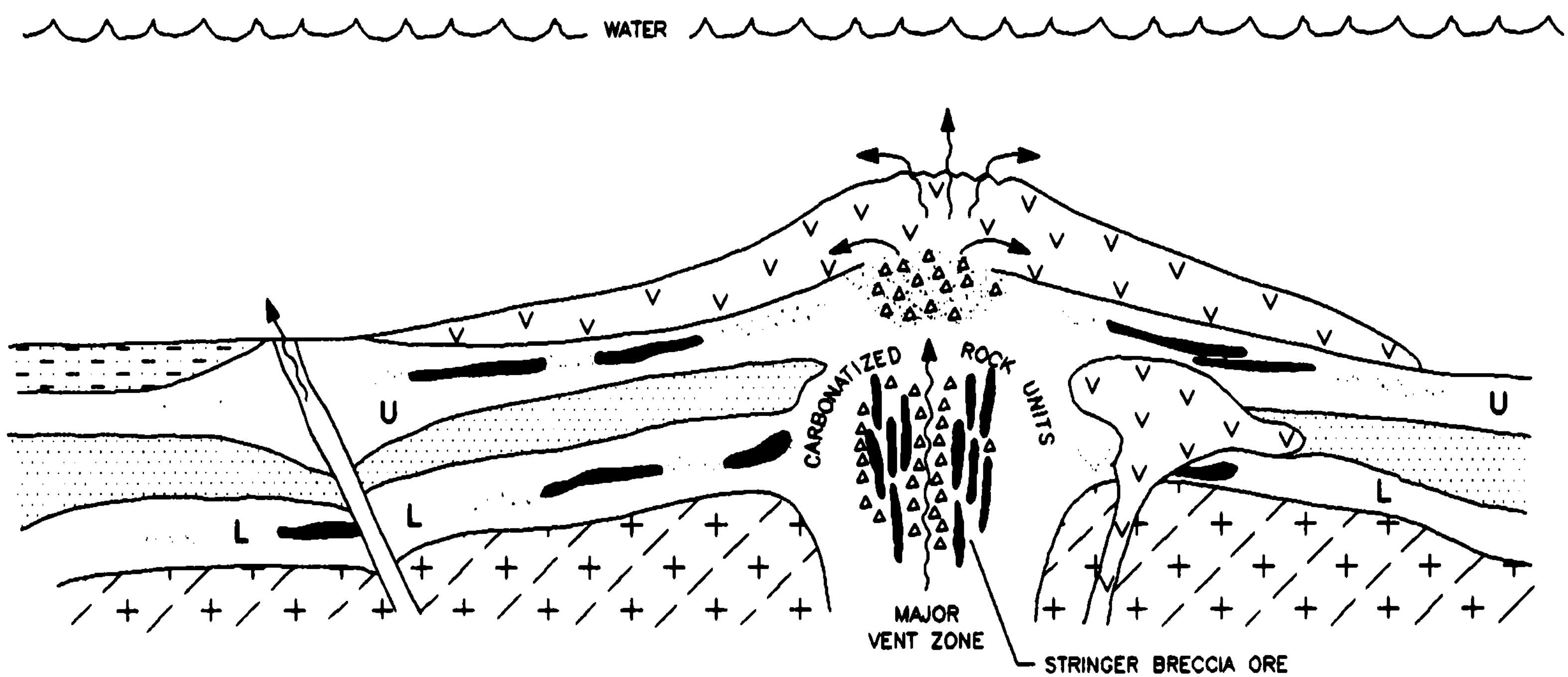
0 1 2 3 km

Rapport: 91-CND-64-03

Fig: 3



MONETA
HARROWER
AUGUST
PORCUPINE
MACE
LEPIC
KAYORUM
BURB
N
1000N
2000E
000
1000E
1000S
1000E
000
1000W
COGEMA CANADA Ltee/Ltd.
KAYORUM PROJECT
HISTORIC PROPERTY NAMES
SCALE 1:20 000
0
500
1000 meters
Report: 91-CND-64-03
Fig.: 4



GOLD DEPOSITS

U-"Upper" Dome, Preston, Coniaurum, McIntyre, Hollinger, Moneta

L-"Lower" Aunor, Delinite, Buffalo Ankerite, Paymaster, Pamour, Hallnor, Broulian Reef

NOT TO SCALE

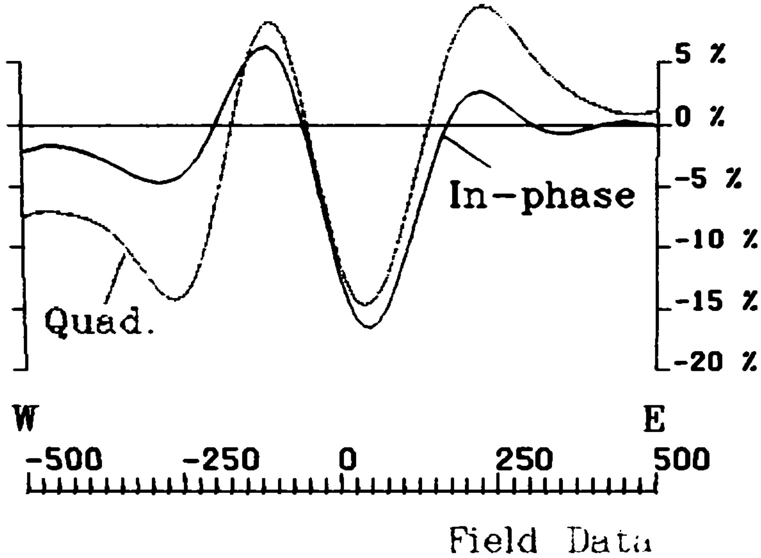
After Karvinen (1981)

COGEMA CANADA LTD.

KAYORUM PROJECT

SCHEMATIC REPRESENTATION OF PRIMARY GOLD DEPOSITION IN THE TIMMINS AREA

By: R. Koch	Date: 03/92
Report: 91-CND-64-04	Fig: 5A



COGEMA CANADA LTD.

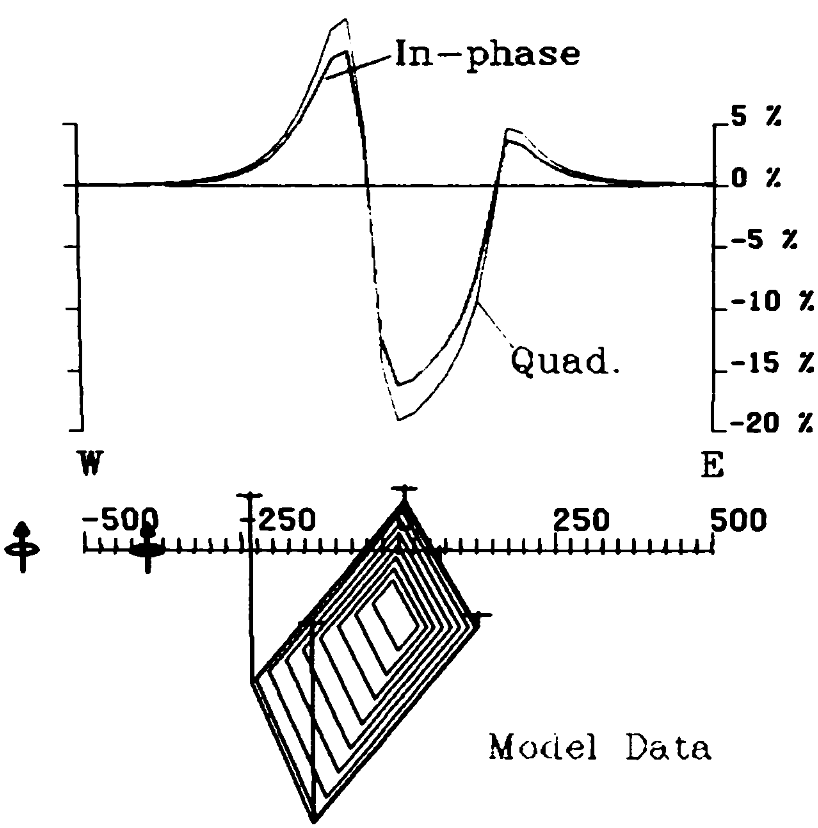
MULTILOOP MODEL

OF LINE 100N

COIL SEP. = 200m

FREQ. = 440 Hz.

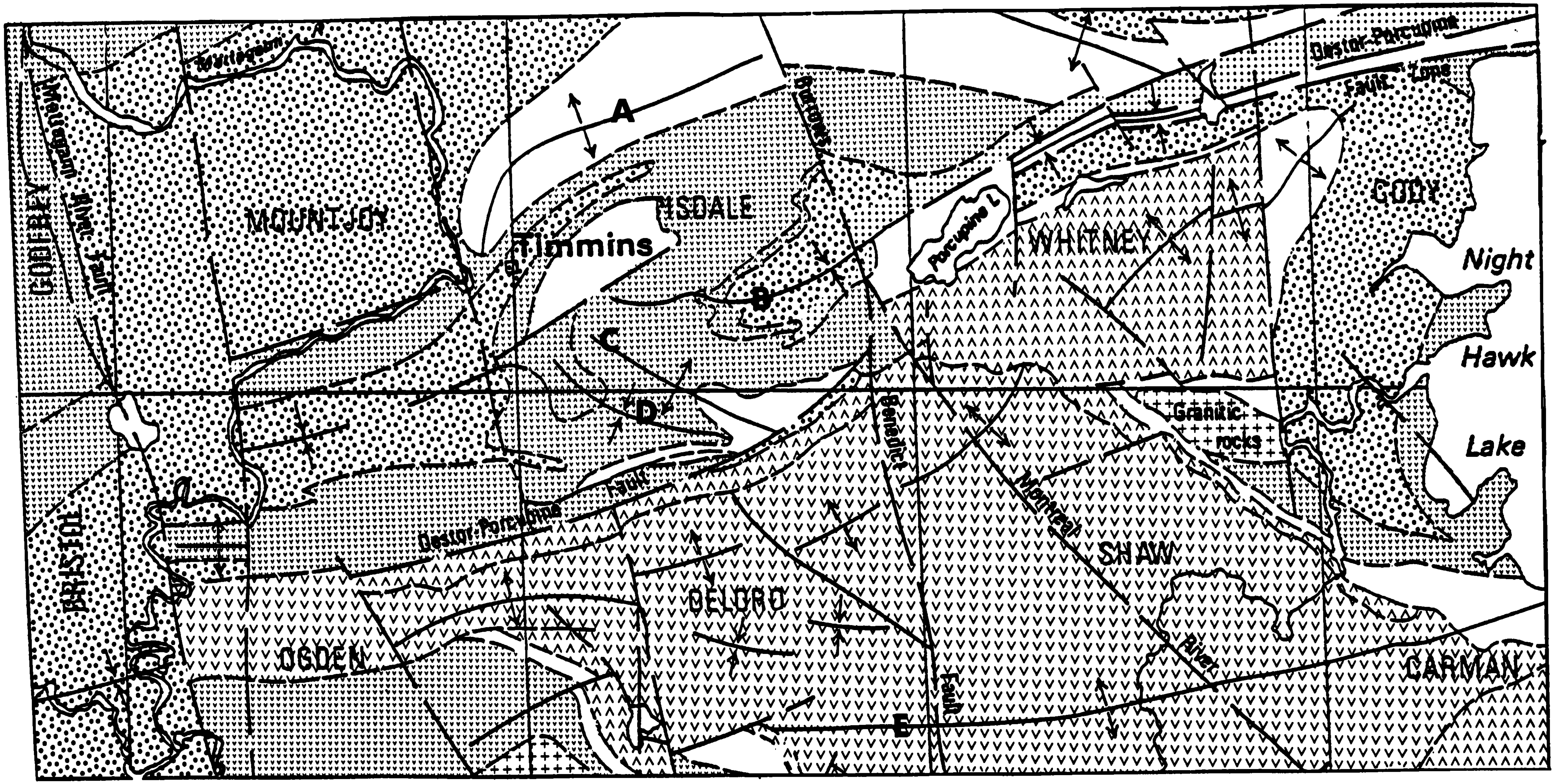
Report # 91-CND-64-04 | Figure # 13A



CONDUCTOR I

DEPTH	-20.
DIP	130.
PLUNGE	0.
CONDUCTANCE	8.
STRIKE LENGTH	750.
DEPTH EXTENT	400.

KAYORUM PROJECT



LEGEND

METASEDIMENTARY ROCKS

- Timiskaming group
- Porcupine group

TISDALE GROUP

- Upper felsic units
- Middle mafic/intermediate units
- Lower ultramafic/mafic units

DELORO GROUP

- Upper intermediate/felsic units
- Middle mafic units

A North Tisdale anticline

B Porcupine syncline

C South Tisdale anticline

D Kayorum syncline

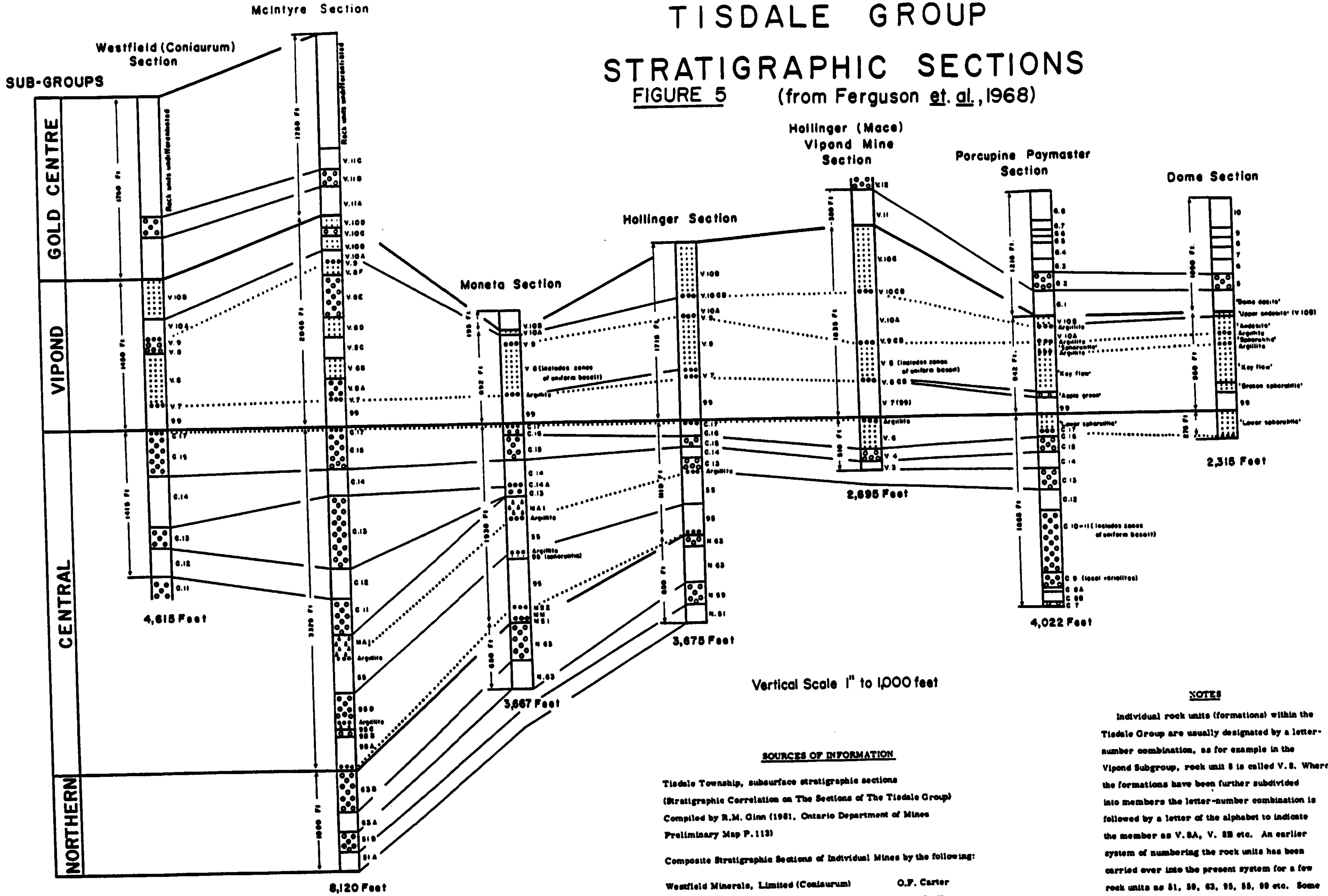
E Shaw dome major axis

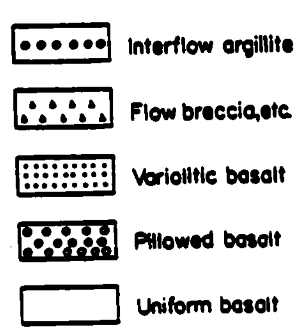
COGEMA CANADA Ltée/Ltd
KAYORUM PROJECT
REGIONAL GEOLOGY
km 0 0.5 1 2 3 4 5 — 1:100 000
Report: 91-CND-64-03 — Figure: 02

TISDALE GROUP

STRATIGRAPHIC SECTIONS

FIGURE 5 (from Ferguson et. al., 1968)





Vertical Scale 1" to 1,000 feet

SOURCES OF INFORMATION

Tisdale Township, subsurface stratigraphic sections (Stratigraphic Correlation on The Sections of The Tisdale Group) Compiled by R.M. Ginn (1961), Ontario Department of Mines Preliminary Map P.113)

Composite Stratigraphic Sections of Individual Mines by the following:

Westfield Minerals, Limited (Coniaurum)	O.F. Carter
McIntyre Porcupine Mines, Limited	A.T. Griffis
Moneta Porcupine Mines, Limited	B.S. Buffam
Hollinger Consolidated Gold Mines, Limited	L.C. Graton & associates
	W.A. Jones, H. Michie
Hollinger Consolidated Gold Mines, Limited (Mace Section, Vipond mine)	L.C. Graton & associates
Porcupine Paymaster Mines, Limited	C.S. Longley
Dome Mines, Limited	T.C. Holmes, C. Meldrum

The maximum thickness of rock units was used in plotting the sections.

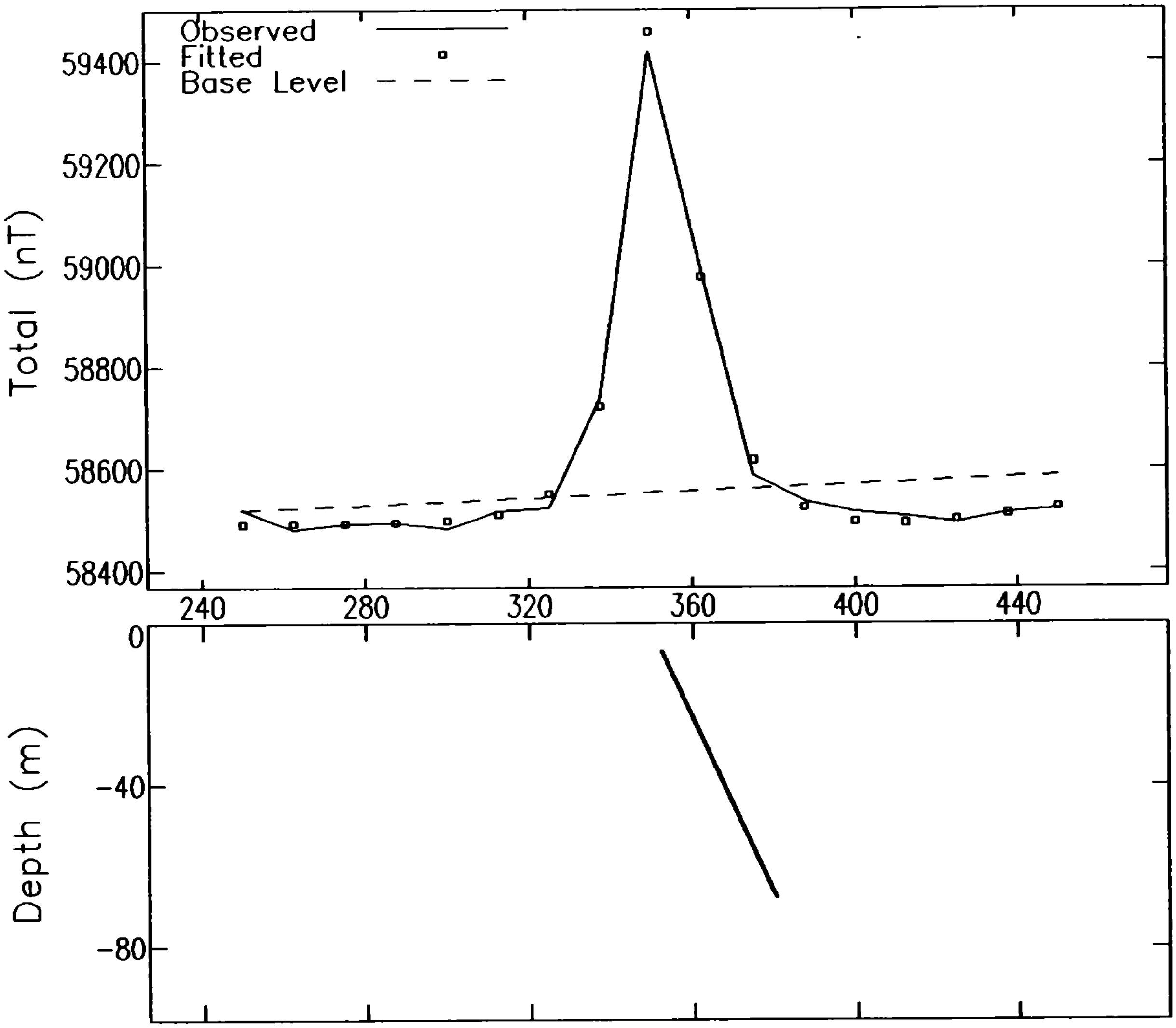
Drawing and correlation of sections by S.A. Ferguson, 1964.

NOTES

Individual rock units (formations) within the Tisdale Group are usually designated by a letter-number combination, as for example in the Vipond Subgroup, rock unit 8 is called V. 8. Where the formations have been further subdivided into members the letter-number combination is followed by a letter of the alphabet to indicate the member as V. 8A, V. 8B etc. An earlier system of numbering the rock units has been carried over into the present system for a few rock units as 51, 59, 63, 95, 55, 99 etc. Some rock units at McIntyre and Moneta were at one time assigned to the "McIntyre Formation" and are called M S 1 (McIntyre shale No. 1), M M (McIntyre massive basalt), M S 2 (McIntyre shale No. 2) and M A 1 (McIntyre agglomerate No. 1). Also some interflow sedimentary beds are designated C.B. (carbonaceous bed) indicating a sedimentary bed which contains carbonaceous material and some rock units have a descriptive name. For further information see report.

KAYORUM PROJECT – L100S

Magnetic Survey – E–W Lines



MODEL PARAMETERS:

Model Type		Ribbon
Depth	F	6.85 m
Width	F	66.9 m
Dip	F	66 deg
Suscep x Thick	F	0.0798 emu-m
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	352.3546 m
Cross Position	X	0 m
Base Level	F	58552.89 nT
Base Slope	F	.3433789 nT/m

(F–fitted, X–fixed, L–limit)

GEOMAGNETIC FIELD:

Field Strength	58500 nT
Inclination	78 deg
Declination	11 deg

COORDINATES:

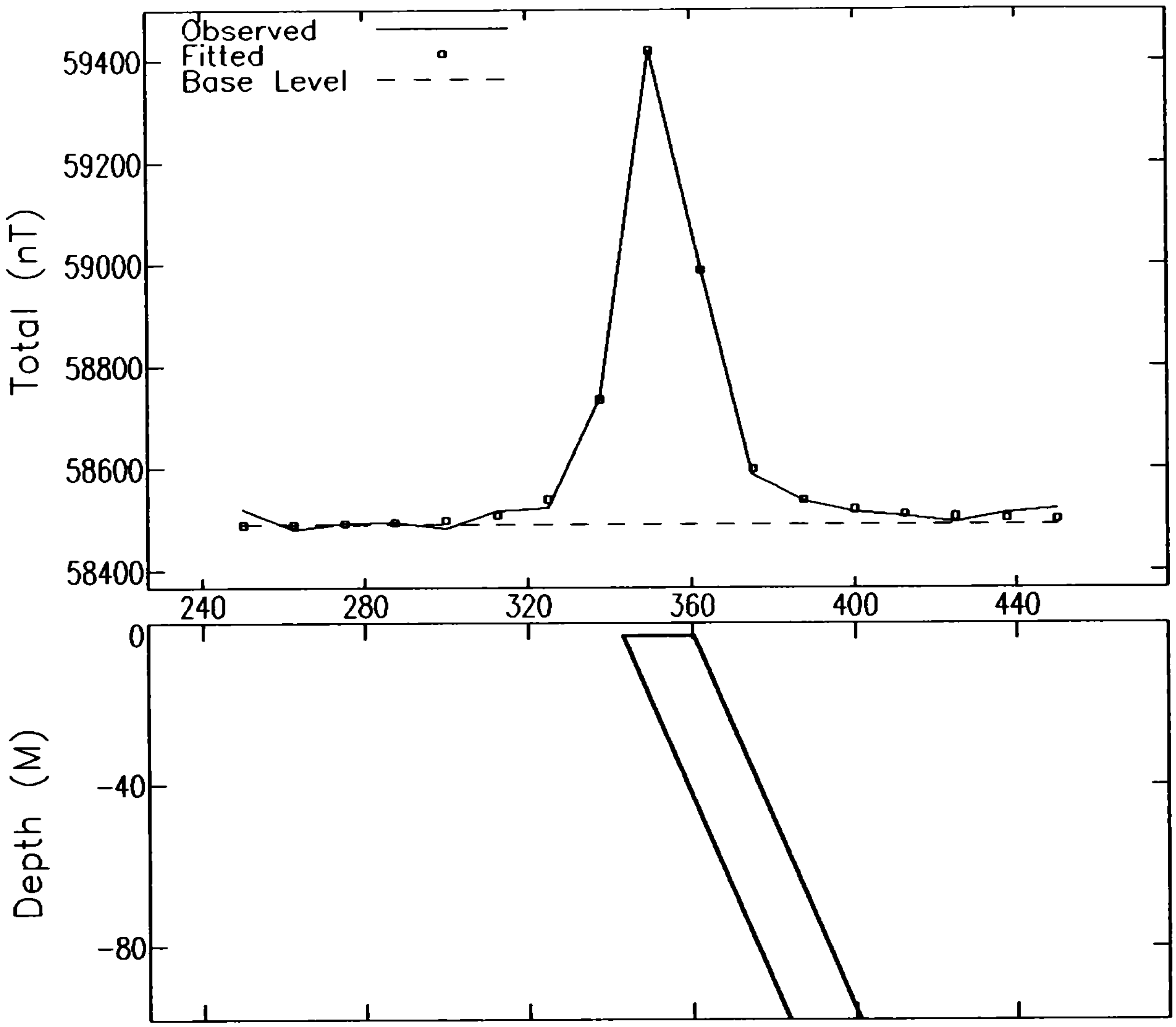
Sensor Height	1.5 m
Strike Perp	45 deg
Line Direction	70 deg
Main Direction	70 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 19

Geosoft MAGMOD–3 Modeling Result 92/03/19

KAYORUM PROJECT - L100S

Magnetic Survey - E-W Lines



MODEL PARAMETERS:

Model Type		Tabular
Depth	L	3.18 M
Half Width	F	8.59 M
Dip	F	67 deg
Susceptibility	F	0.00415 emu
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	351.6005 M
Cross Position	X	0 M
Base Level	F	58490.16 nT
Base Slope	F	.0032768 nT/M

(F-fitted, X-fixed, L-limit)

GEOMAGNETIC FIELD:

Field Strength	58500 nT
Inclination	78 deg
Declination	11 deg

COORDINATES:

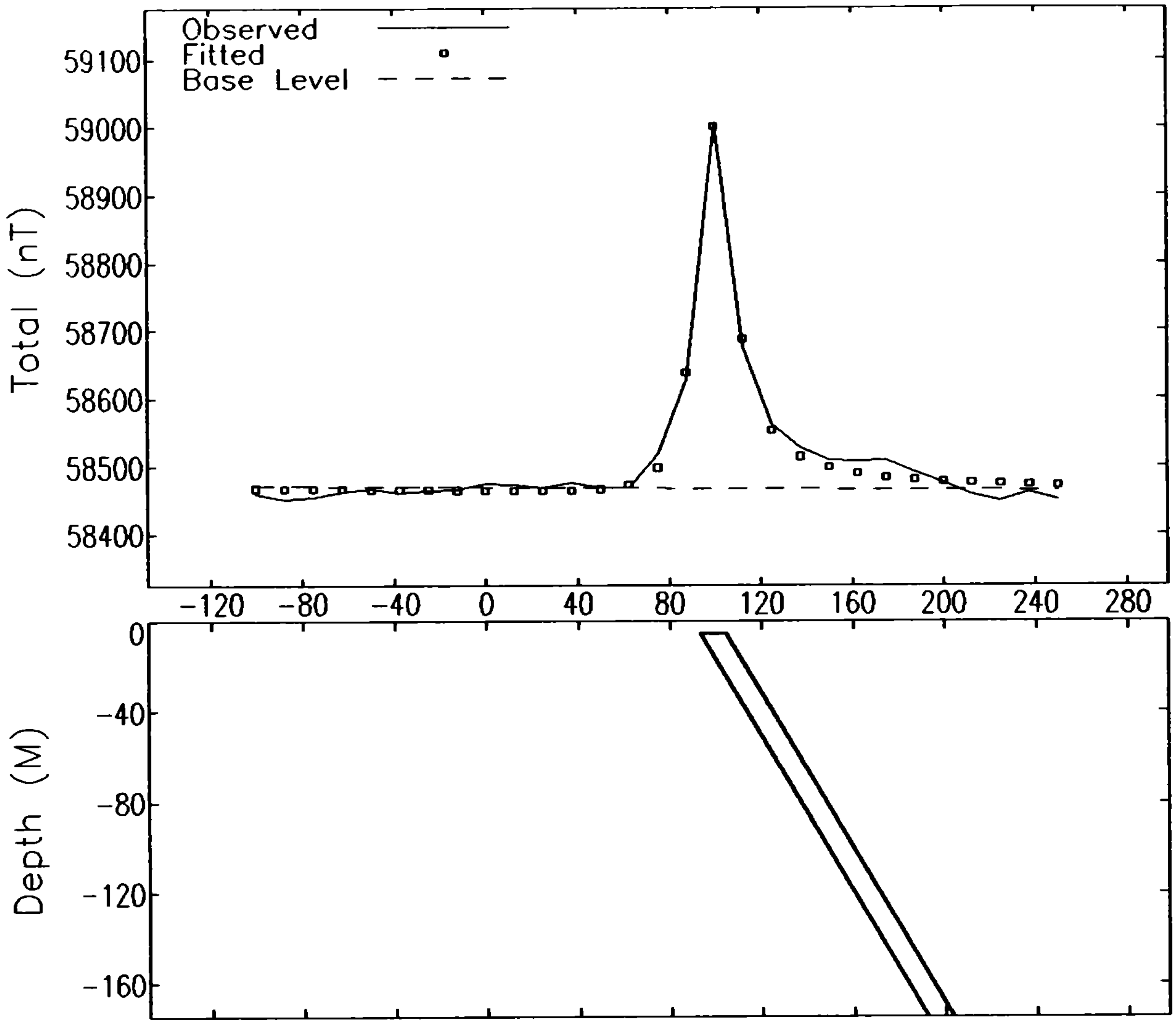
Sensor Height	1.5 M
Strike Perp	45 deg
Line Direction	70 deg
Main Direction	70 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 20

Geosoft MAGMOD-3 Modeling Result 92/03/12

KAYORUM PROJECT – L450N

Magnetic Survey – E-W Lines



MODEL PARAMETERS:

Model Type		Tabular
Depth	L	5.66 M
Half Width	L	5.45 M
Dip	F	60 deg
Susceptibility	F	0.00418 emu
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	98.9041 M
Cross Position	X	0 M
Base Level	F	58467.18 nT
Base Slope	F	-.0211249 nT/M

(F–fitted, X–fixed, L–limit)

GEOMAGNETIC FIELD:

Field Strength	58000 nT
Inclination	78 deg
Declination	11 deg

COORDINATES:

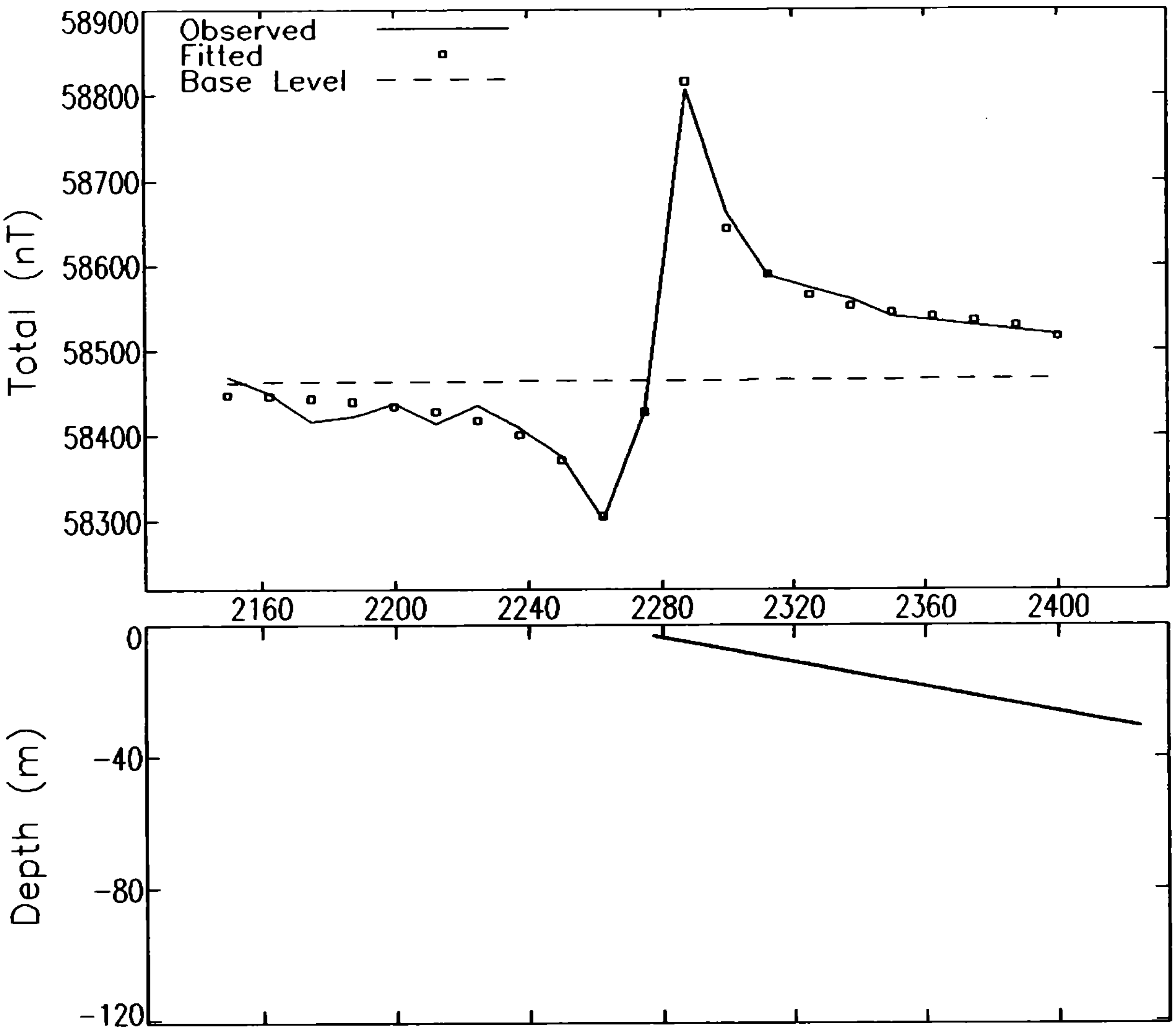
Sensor Height	1.5 M
Strike Perp	45 deg
Line Direction	70 deg
Main Direction	70 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 21

Geosoft MAGMOD-3 Modeling Result 92/03/11

KAYORUM PROJECT – L1050N

Magnetic Survey – E-W Lines



MODEL PARAMETERS:		
Model Type		Ribbon
Depth	F	3.17 m
Width	F	149 m
Dip	F	11 deg
Suscep x Thick	F	0.0322 emu-m
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	2277.463 m
Cross Position	X	0 m
Base Level	F	58464.49 nT
Base Slope	F	.0170917 nT/m

(F-fitted, X-fixed, L-limit)

GEOMAGNETIC FIELD:	
Field Strength	58500 nT
Inclination	78 deg
Declination	11 deg

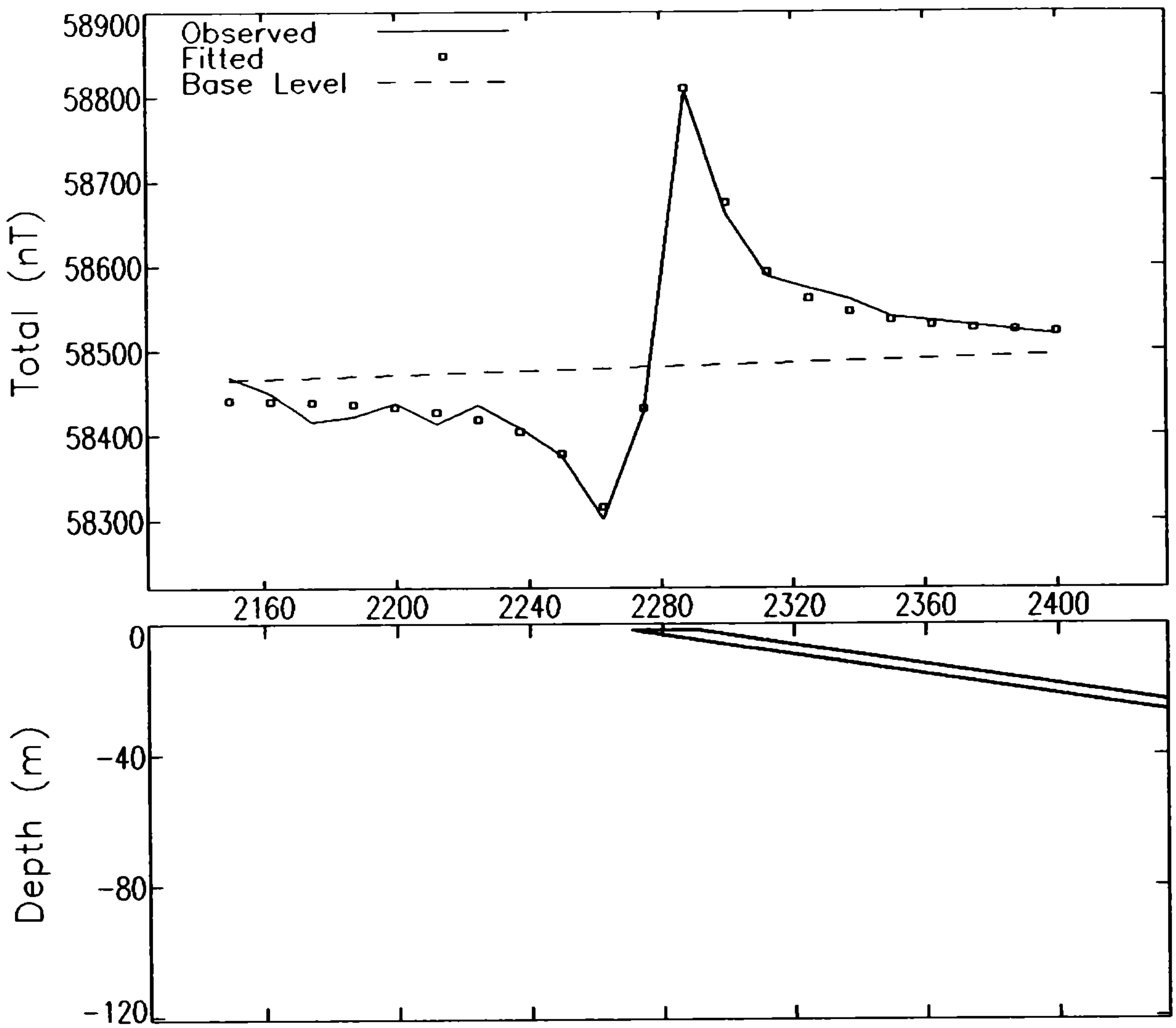
COORDINATES:	
Sensor Height	1.5 m
Strike Perp	70 deg
Line Direction	70 deg
Main Direction	70 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 22

Geosoft MAGMOD-3 Modeling Result 92/03/19

KAYORUM PROJECT – L1050N

Magnetic Survey – E–W Lines



MODEL PARAMETERS:

Model Type		Tabular
Depth	L	2.06 m
Half Width	F	9.86 m
Dip	L	9 deg
Susceptibility	F	0.0102 emu
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	2281.048 m
Cross Position	X	0 m
Base Level	F	58481.08 nT
Base Slope	F	.1169968 nT/m

(F–fitted, X–fixed, L–limit)

GEOMAGNETIC FIELD:

Field Strength	58500 nT
Inclination	78 deg
Declination	11 deg

COORDINATES:

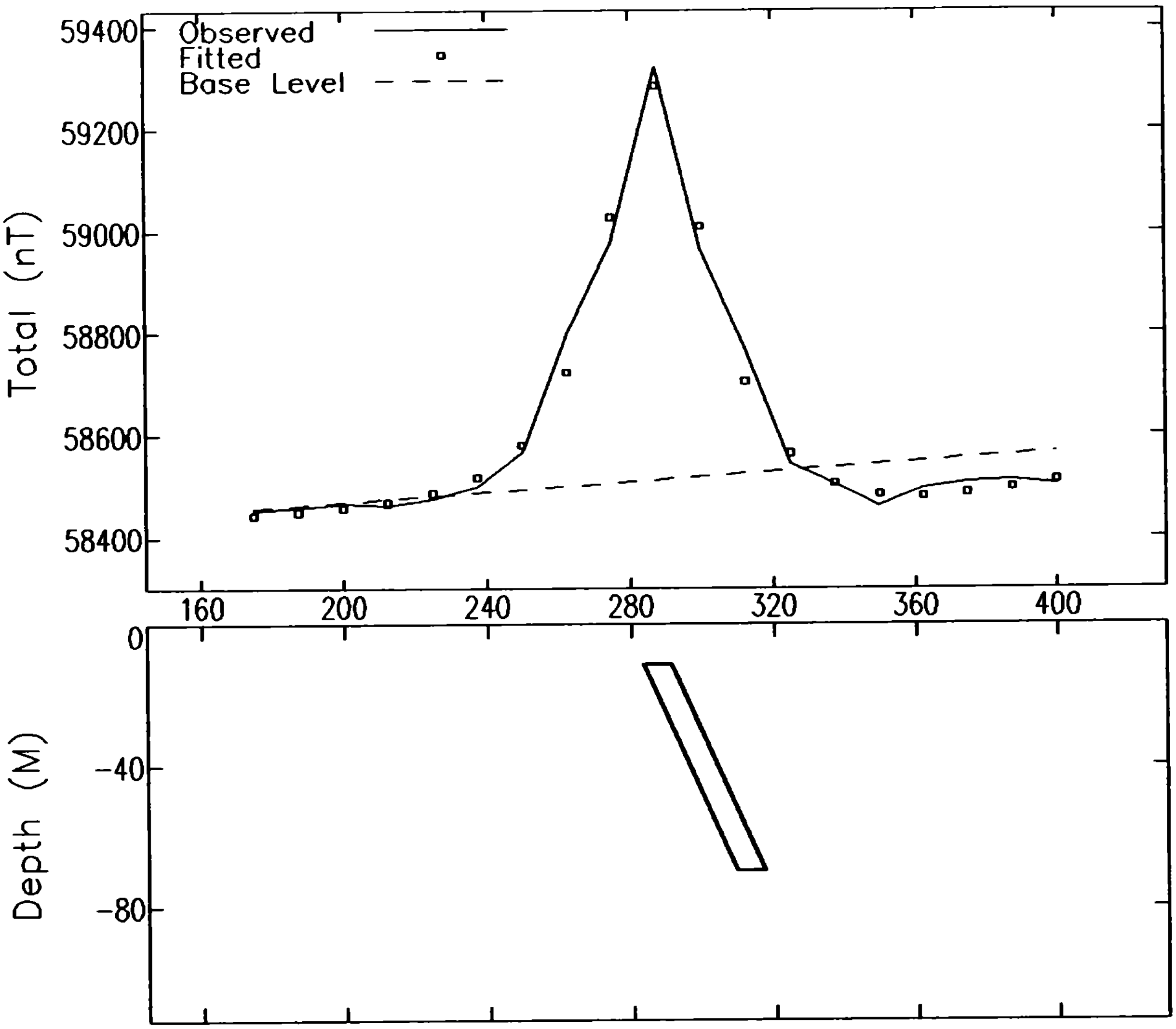
Sensor Height	1.5 m
Strike Perp	70 deg
Line Direction	70 deg
Main Direction	70 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 23

Geosoft MAGMOD–3 Modeling Result 92/03/12

KAYORUM PROJECT – Line 1400E

Magnetic Survey – N–S Lines



MODEL PARAMETERS:

Model Type		Tabular2
Depth	F	11.4 M
Half Width	L	3.81 M
Half Length	X	125 M
Offset	X	0 M
Dip	F	66 deg
Thickness	F	58.5 M
Susceptibility	F	0.0147 emu
Remnance Ratio	X	0
Remnance Incl	X	0 deg
Remnance Decl	X	0 deg
Main Position	F	287.2256 M
Cross Position	X	0 M
Base Level	F	58512.01 nT
Base Slope	F	.4945639 nT/M

GEOMAGNETIC FIELD:

Field Strength	58500 nT
Inclination	78 deg
Declination	11 deg

COORDINATES:

Sensor Height	1.5 M
Strike Perp	25 deg
Line Direction	340 deg
Main Direction	340 deg
Main Offset	
Cross Direction	
Cross Offset	

Figure # 24

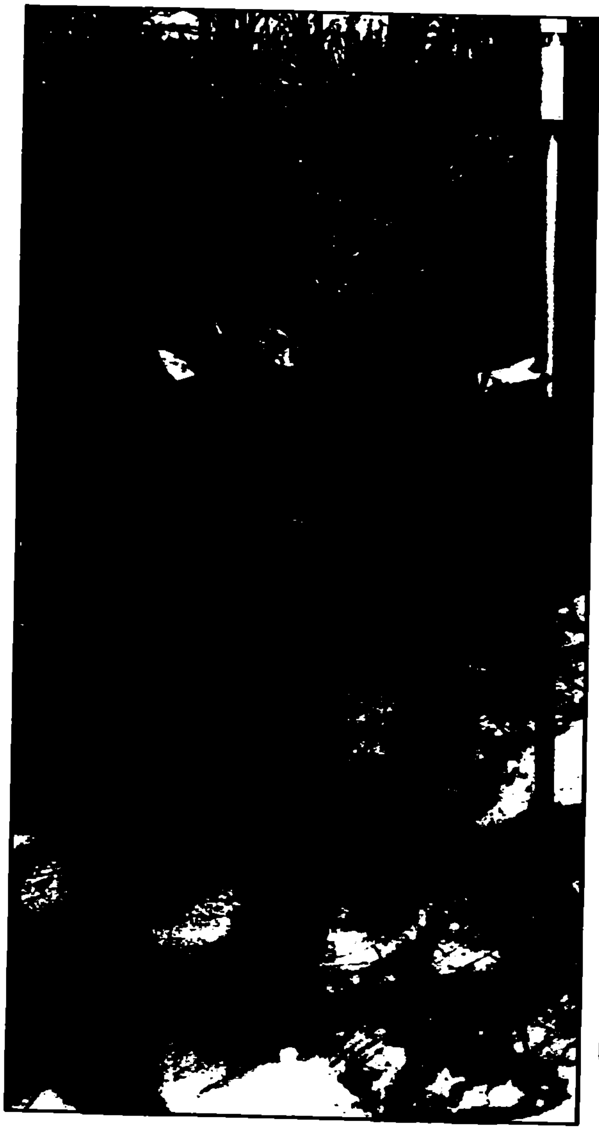
Geosoft MAGMOD–3 Modeling Result 92/03/12

APPENDIX I

Equipment Specifications

OMNI PLUS
VLF/Magnetometer System

EDA



Major Benefits of the OMNI PLUS

- Combined VLF/Magnetometer/Gradiometer System
- No Orientation Required
- Three VLF Magnetic Parameters Recorded
- Automatic Calculation of Fraser Filter
- Calculation of Ellipticity
- Automatic Correction of Primary Field Variations
- Measurement of VLF Electric Field

OMNI PLUS VLF/Magnetometer System

Description

The "OMNI PLUS" geophysical system combines the OMNI IV "Tie-Line" magnetometer and gradiometer together with a VLF measurement capability.

The OMNI PLUS VLF/Magnetometer System has been developed in co-operation with Geophysical Surveys Inc. of Quebec, Canada.

This brochure concentrates on the VLF magnetic and electric field parameters measured and recorded by the OMNI PLUS. More information on the OMNI PLUS magnetometer system and tie-line capability is available in the OMNI IV brochure.

Features

Each OMNI PLUS incorporates the following features:

- Measurement and recording in memory of the following VLF data for each field reading:
  - total field strength,
  - total dip,
  - vertical quadrature or, alternately, horizontal amplitude,
  - apparent resistivity,
  - phase angle,
  - time,
  - grid co-ordinates,
  - direction of travel along grid lines, and
  - natural and cultural features.
- Complete data protection for a number of years by an internal lithium backup battery.
- "Tie-Line" or "Looping" algorithm, unique only to EDA's OMNI IV and OMNI PLUS Series, for the self-correction of atmospheric variations and variations in the primary field from the VLF transmitter.
- Measurement of up to three VLF transmitting stations to provide complete coverage of an anomaly regardless of the orientation of the survey grid or of the anomaly itself.
- Display descriptors to monitor the quality of the VLF signal being measured.
- Choice of three data storage modes:
  - spot record, for readings without grid co-ordinates
  - multi record, for multiple readings at one station
  - auto record, for automatic update of station number
- Output of grid co-ordinates with the designated compass bearing, using N, S, E, W descriptors.

Major Benefits

- **Combined VLF/Magnetometer/Gradiometer System**

The OMNI PLUS incorporates the capabilities of the OMNI IV "Tie-Line" Magnetometer and Gradiometer System with the ability to measure the VLF magnetic and electric fields.

Only one OMNI PLUS is needed to record all of the following geophysical parameters:

1. The total magnetic field
2. The simultaneous gradient of the total magnetic field
3. The VLF magnetic field, including:
   - the total dip
   - the total field strength of the VLF magnetic field
   - the vertical quadrature, or alternately, the horizontal amplitude
4. The VLF electric field, including:
   - the phase angle
   - apparent resistivity

As an example, at each location the OMNI PLUS can calculate and record in a matter of seconds, three VLF magnetic field and two VLF electric field parameters from two different transmitters, a magnetic total field reading and a simultaneous magnetic gradient reading.

- **No Orientation Required**

The OMNI PLUS requires no orientation, by the operator, of the sensor head toward the transmitter station. This simplifies field procedures as well as saving considerable survey time. When two VLF transmitters are measured, the benefits of this time-saving feature are automatically doubled. There is no requirement for the operator to orient himself and the sensor head toward the first selected transmitting station and then re-orient towards the second transmitting station.

Consistent high quality data is achieved in the OMNI PLUS due to the utilization of three orthogonal sensor coils rather than two sensor coils used in conventional systems. The quality of data is not then dependent on the operator's ability to correctly orient the sensor head for optimum coupling with the transmitting station.

The OMNI PLUS compensates automatically for the direction of travel along the grid lines as well as for the angle of the sensors from the vertical plane through the use of tiltmeters.

- **Three VLF Magnetic Parameters Recorded**

The OMNI PLUS calculates and records in memory the:
- total dip
- total field strength
- vertical quadrature

The operator has the option to substitute the horizontal amplitude for the vertical quadrature. The OMNI PLUS calculates each of these parameters from the in-phase and quadrature measurements of all three components.

- **Automatic Calculation of Fraser Filter**

The OMNI PLUS automatically calculates the Fraser Filter, from the dip angle data, regardless of the interval between the stations along the grid lines. The operator no longer has to manually perform this mathematical calculation thereby reducing the possibility of human error. The Fraser Filter algorithm follows established conventions.

The operator can choose to output either the total dip or the Fraser filtered data, or both.

- **Calculation of Ellipticity**

The OMNI PLUS calculates the true ellipticity of the VLF magnetic field from the measurement of the in-phase and quadrature of all three components. The ellipticity provides more interpretative information about the anomaly than the dip angle and is less influenced by overburden shielding.

- **Automatic Correction of Primary Field Variations**

The OMNI PLUS can be used as a base station to monitor primary field changes from up to three VLF transmitters as well as alternately measuring the variations in the magnitude of the earth's magnetic field. Only one OMNI PLUS is needed to perform both functions.

The OMNI PLUS base station can then automatically correct, by linear interpolation, the field units for these drift variations in the primary VLF and total magnetic fields.

- **Measurement of VLF Electric Field**

The OMNI PLUS calculates and records the apparent resistivity and phase angle from the measurement of the VLF electric field. This VLF electric field measurement can be accomplished by using capacitively or resistively coupled electrodes at spacings of 5, 10 or 20 meters.

Other Benefits

- **Automatic Tuning**

The OMNI PLUS automatically tunes up to three VLF transmitters within a frequency range of 15 to 30 kHz, once the operator has programmed in the specific frequencies.

- **Base Station Synchronization**

The OMNI PLUS has a unique "count-down" feature which can be activated in the field unit upon synchronization with the base station. The field unit then displays and decrements the remaining time, in seconds, until the base station is scheduled to take a measurement. The operator can obtain a field reading at exactly the same time as the base station. The simultaneous field and base station measurements significantly improve the automatic correction accuracy.

- **Automatic "Tie-Line" Correction**

The OMNI PLUS can automatically correct by itself the VLF field data for atmospheric variations and changes in the primary field originating from the VLF transmitter. By tieing-back into one or several tiepoints on the grid, the OMNI PLUS will automatically calculate and apply the drift measured to the field data previously recorded in memory. More information on this unique "tie-line" method can be obtained from page 3 of the OMNI IV brochure.

- **Notation of Natural and Cultural Features**

The OMNI PLUS can record natural and cultural features unique to each grid location. This capability eliminates the need for a field notebook and provides additional information that can assist in interpreting recorded data.

- **Analogue Output**

Since VLF as well as magnetic data is often easier to interpret as a profile plot, data collected by the OMNI PLUS can be represented in analogue format at a vertical scale best suited for data presentation. The operator can selectively output in analogue and/or digital format, up to 10 of the following parameters:

- total dip
- Fraser filtered data
- ellipticity
- VLF total field strength
- vertical quadrature
- horizontal amplitude
- apparent resistivity
- phase angle
- magnetic total field strength
- magnetic vertical gradient

- **Computer Interface**

The OMNI PLUS can transfer uncorrected, corrected or filtered data to most computers with a RS232C port. In some cases, a DCA-100 Data Communications Adaptor may be required. Computers with collection packages including either "X-ON, X-OFF" or "ENQ/ACK" communications protocol formats are also compatible.

EDA

Specifications*

Frequency Tuning Range	15 to 30 kHz, with bandwidth of 150 Hz; tuning range accommodates new Puerto Rico station at 28.5 kHz
Transmitting Stations Measured	Up to 3 stations can be automatically measured at any given grid location within frequency tuning range
Recorded VLF Magnetic Parameters	Total field strength, total dip, vertical quadrature (or alternately, horizontal amplitude)
Standard Memory Capacity	800 combined VLF magnetic and VLF electric measurements as well as gradiometer and magnetometer readings
Display	Custom designed, ruggedized liquid crystal display with built-in heater and an operating temperature range from −40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal strength status monitor and function descriptors.
RS232C Serial I/O Interface	2400 baud rate, 8 data bits, 2 stop bits, no parity
Test Mode	A. Diagnostic Testing (data and programmable memory) B. Self Test (hardware)
Sensor Head	Contains 3 orthogonally mounted coils with automatic tilt compensation
Operating Environmental Range	−40°C to +55°C; 0 – 100% relative humidity; Weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid 18V DC battery cartridge or belt; 18V DC disposable battery belt; 12V DC external power source for base station operation only.
Weights and Dimensions	
Instrument Console	2.8 kg, 128 x 150 x 250 mm
Sensor Head	2.1 kg, 130 dia. x 130 mm
VLF Electronics Module	1.1 kg, 40 x 150 x 250 mm
Lead Acid Battery Cartridge	1.8 kg, 235 x 105 x 90 mm
Lead Acid Battery Belt	1.8 kg, 540 x 100 x 40 mm
Disposable Battery Belt	1.2 kg, 540 x 100 x 40 mm

*Preliminary

EDA Instruments Inc.,
4 Thorncliffe Park Drive,
Toronto, Ontario
Canada M4H 1H1
Telex: 06 23222 EDA TOR,
Cables: Instruments Toronto
(416) 425-7800

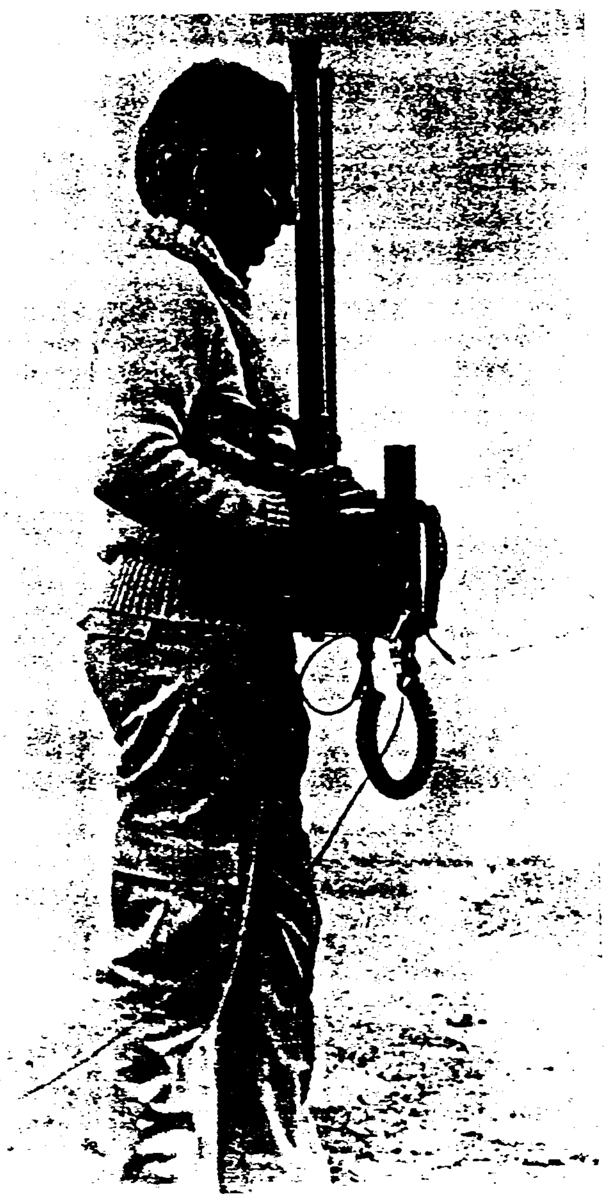
In USA,
EDA Instruments Inc.,
5151 Ward Road,
Wheat Ridge, Colorado
U.S.A. 80033
(303) 422-9112

Printed in Canada

APEX MAXMIN I PORTABLE EM

The MaxMin I ground EM System is designed for mineral and water exploration and for geoengineering applications. It is an expansion of the highly popular MaxMin II and III EM System concepts. The frequency range is extended to seven octaves from four. The ranges and numbers of coil separations are increased and new operating modes are added. The receiver can also be used independently for measurements with powerline sources. The advanced spheric and powerline noise rejection is further improved, resulting in faster and more accurate surveys, particularly at larger coil separations. Several receivers may be operated along a single reference cable.

Mating plug in data acquisition computer and cassette unit are available for use with the MaxMin I for automatic digital data acquisition and processing. These units are covered in separate data sheet.



MAXMIN I SPECIFICATIONS:

Frequencies: 110, 220, 440, 880, 1760, 3520, 7040 and 14080 Hz, plus 50/60 Hz powerline frequency (receiver only).

Modes:

MAX 1: Horizontal loop mode (Transmitter and receiver coil planes horizontal and coplanar).

MAX 2: Vertical coplanar loop mode (Transmitter and receiver coil planes vertical and coplanar).

MAX 3: Vertical coaxial loop mode (Transmitter and receiver coil planes vertical and coaxial).

MIN 1: Perpendicular loop mode 1 (Transmitter coil plane horizontal and receiver coil plane vertical).

MIN 2: Perpendicular loop mode 2 (Transmitter coil plane vertical and receiver coil plane horizontal).

Coil separations:

12.5, 25, 50, 75, 100, 125, 150, 200, 250, 300, & 400 metres (standard).

10, 20, 40, 60, 80, 100, 120, 160, 200, 240 & 320 metres (selected with grid switch inside of receiver).

50, 100, 200, 300, 400, 500, 600, 800, 1000, 1200 & 1600 feet (selected with grid switch inside of receiver).

Parameters measured:

In-Phase and quadrature components of the secondary magnetic field, in % of primary (transmitted) field.

Field amplitude and/or tilt of 50/60 Hz powerline field.

Readouts: Analog direct readouts on edgewise panel meters for in-phase, quadrature and tilt, and for 50/60Hz amplitude. (Additional digital LED readouts when using the DAC, for which interfacing and controls are provided for plug-in).

Ranges of readouts: Analog in-phase and quadrature scales: 0±4%, 0±20%, 0±100%, switch activated. Analog tilt scale: 0±75% grade. (Digital in-phase and quad. 0±102.4%).

Readability: Analog in-phase and quadrature 0.05% to 0.5%, analog tilt 1% grade. (Digital in-phase and quadrature 0.1%).

Repeatability: ±0.05% to ±1% normally, depending on frequency, coil seperation & conditions.

Signal filtering: Powerline comb filter, continuous spherics noise clipping, autoadjusting time constant and other filtering.

Warning lights: Receiver signal and reference warning lights to indicate potential errors.

Survey depth: From surface down to 1.5 times coil seperation used.

Transmitter dipole moments:

110 Hz: 220 Atm²	1760 Hz: 160 Atm²
220 Hz: 215 Atm²	3520 Hz: 80 Atm²
440 Hz: 210 Atm²	7040 Hz: 40 Atm²
880 Hz: 200 Atm²	14080 Hz: 20 Atm²

Reference cable: Light weight unshielded 4/2 conductor teflon cable for maximum temperature range and for minimum friction. Please specify cable lengths required.

Intercom: Voice communication link provided for operators via the reference cable.

Receiver power supply: Four standard 9V batteries (0.5Ah, alkaline). Life 30 hrs continuous duty, less in cold weather. Rechargeable battery and charger option available.

Transmitter power supply: Rechargeable sealed gel type lead acid 12V-13Ah batteries (4x6V-6½Ah) in canvas belt. Optional 12V-8Ah light duty belt pack available.

Transmitter battery charger: For 110-120/220-240VAC, 50/60/400 Hz and 12-15VDC supply operation, automatic float charge mode, three charge status indicator lights. Output 14.4V-1.25A nom.

Operating temp: -40 to +60 deg.C.

Receiver weight: 8 kg, including the two integral ferrite cored antennas (9 kg with data acq. comp.)

Transmitter weight: 16 kg with standard 12V-13Ah battery pack.
14 kg with light duty 12V-8Ah pack.

Shipping weight: 59 kg plus weight of reference cables at 2.5 kg per 100 metres plus other optional items if any.

Standard spares: One spare transmitter battery pack, one spare transmitter battery charger, two spare transmitter retractile connecting cords, one spare set receiver batteries.

Specifications subject to change without notification.

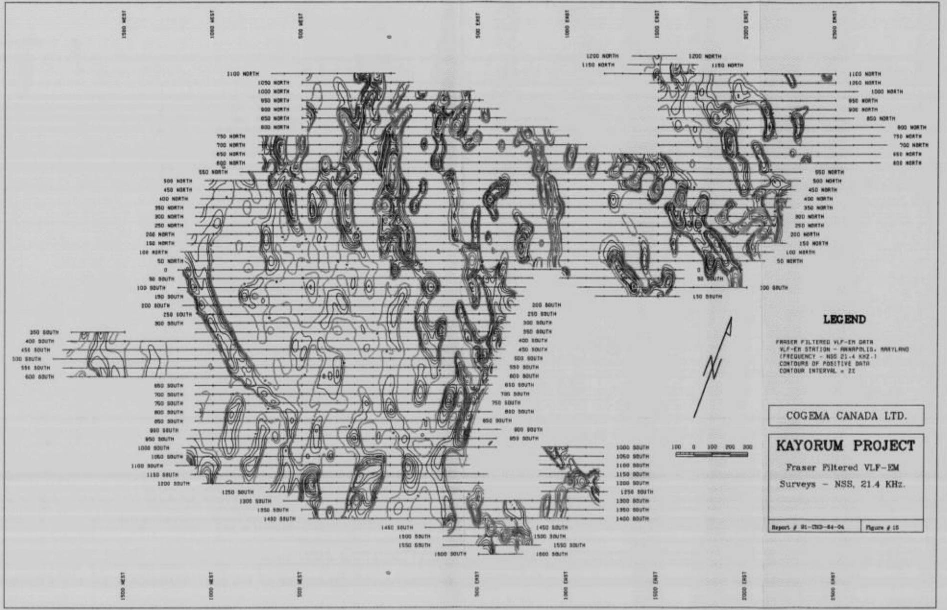
APEX PARAMETRICS LIMITED

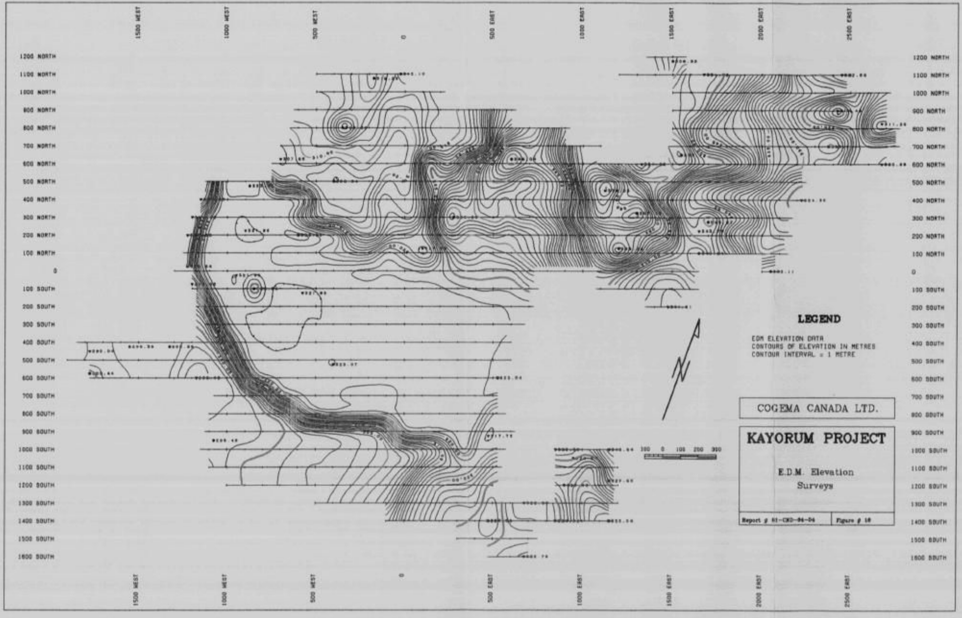
P.O. Box 818, Uxbridge
Ontario, Canada L0C 1K0

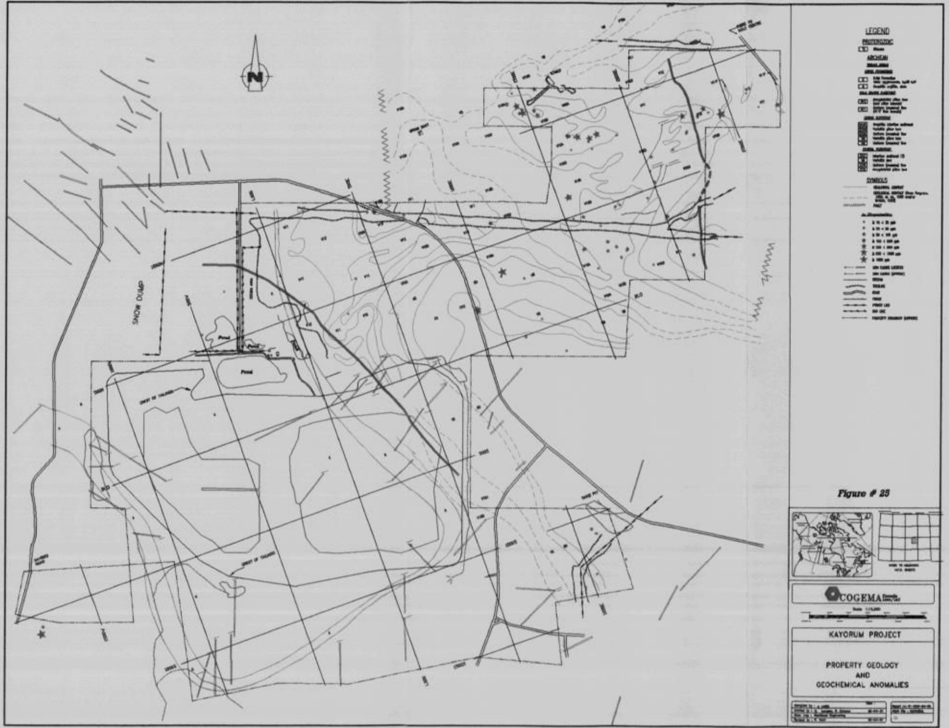
Telephones: 416-640-6102
416-852-5875

Cables: APEXPARA TORONTO

Telex: 06-966625 APEXPARA UXB


1500 WEST
1000 WEST
500 WEST
0
500 EAST
1000 EAST
1500 EAST
2000 EAST
2500 EAST
LEGEND
FRASER FILTERED VLF-EM DATA
VLF-EM STATION - ANNAPOLIS, MARYLAND
(FREQUENCY - NSS 21.4 KHZ.)
CONTOURS OF POSITIVE DATA
CONTOUR INTERVAL = 2%
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Fraser Filtered VLF-EM
Surveys - NSS, 21.4 KHz.
Figure # 15


1500 WEST
1000 WEST
500 WEST
0
500 EAST
1000 EAST
1500 EAST
2000 EAST
2500 EAST
1200 NORTH
1100 NORTH
1000 NORTH
900 NORTH
800 NORTH
700 NORTH
600 NORTH
500 NORTH
400 NORTH
300 NORTH
200 NORTH
100 NORTH
0
100 SOUTH
200 SOUTH
300 SOUTH
400 SOUTH
500 SOUTH
600 SOUTH
700 SOUTH
800 SOUTH
900 SOUTH
1000 SOUTH
1100 SOUTH
1200 SOUTH
1300 SOUTH
1400 SOUTH
1500 SOUTH
1600 SOUTH
LEGEND
EDM ELEVATION DATA
CONTOURS OF ELEVATION IN METRES
CONTOUR INTERVAL = 1 METRE
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
E.D.M. Elevation
Surveys


N
SNOW DUMP
Pond
Pond
LEGEND
PROTEROZOIC
ARCHEAN
SYMBOLS
Figure # 25
COGEMA
KAYORUM PROJECT
PROPERTY GEOLOGY
AND
GEOCHEMICAL ANOMALIES

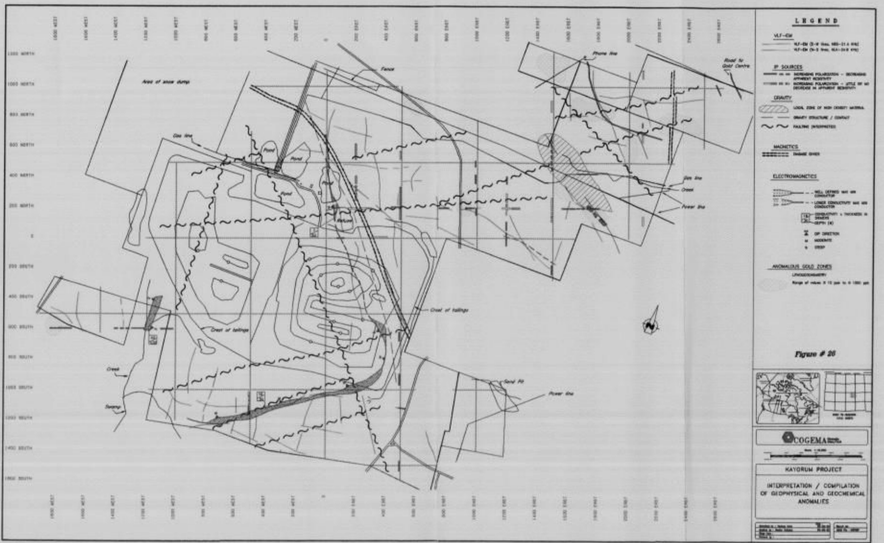
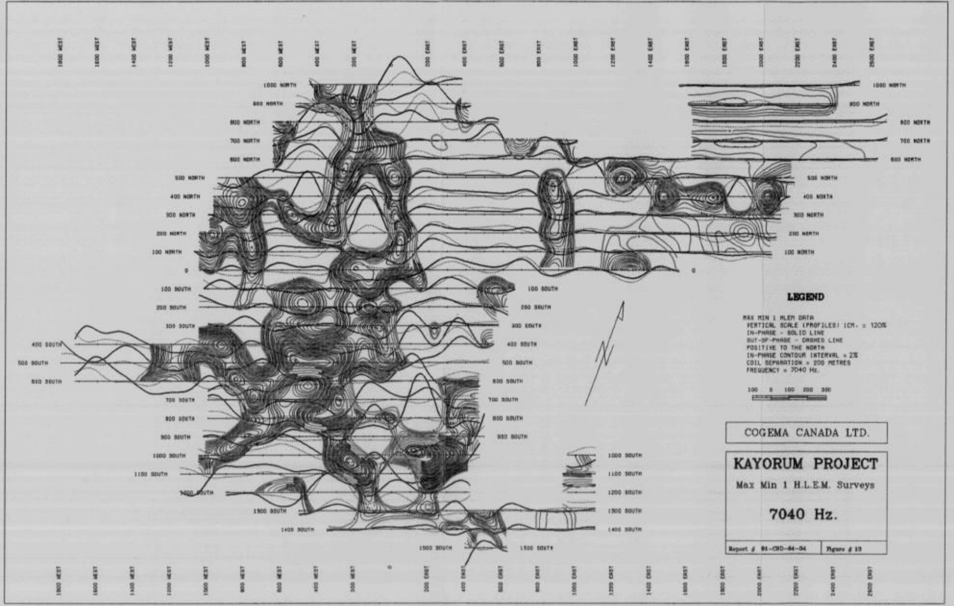
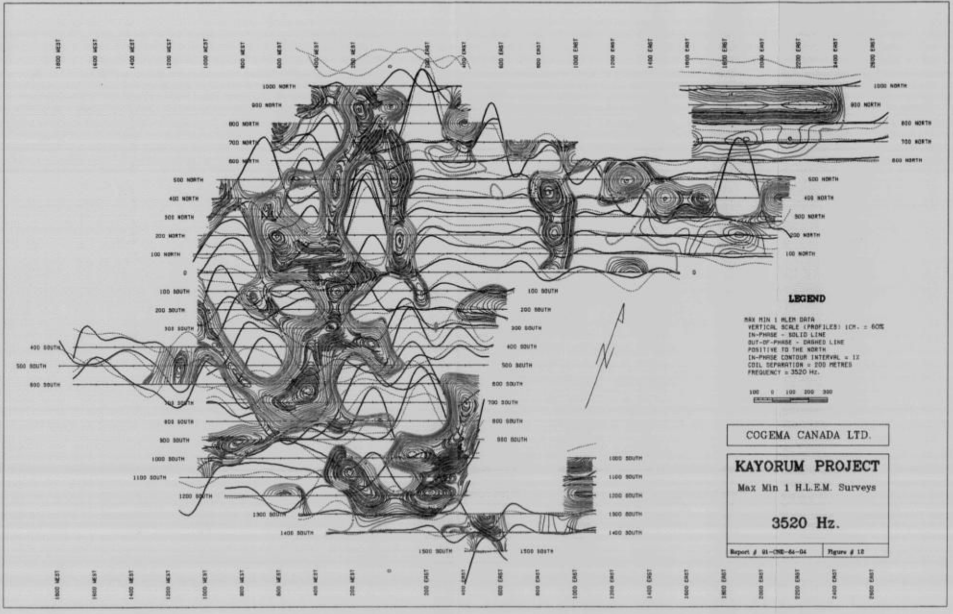
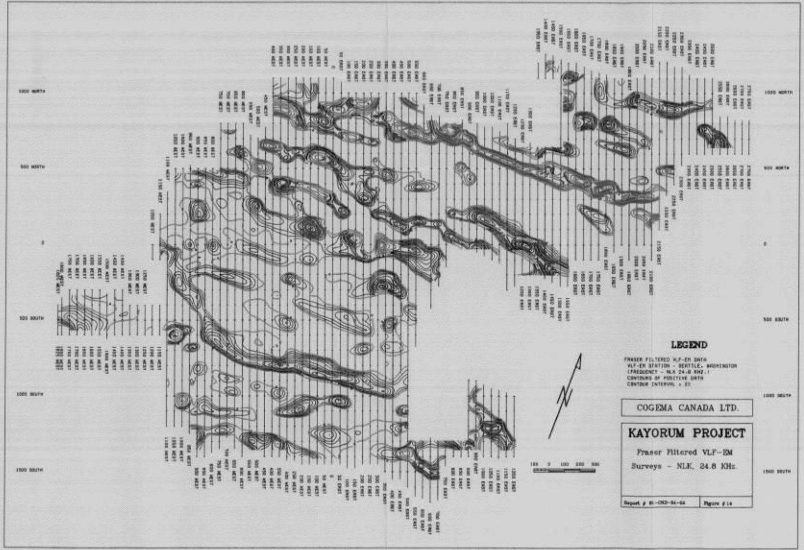
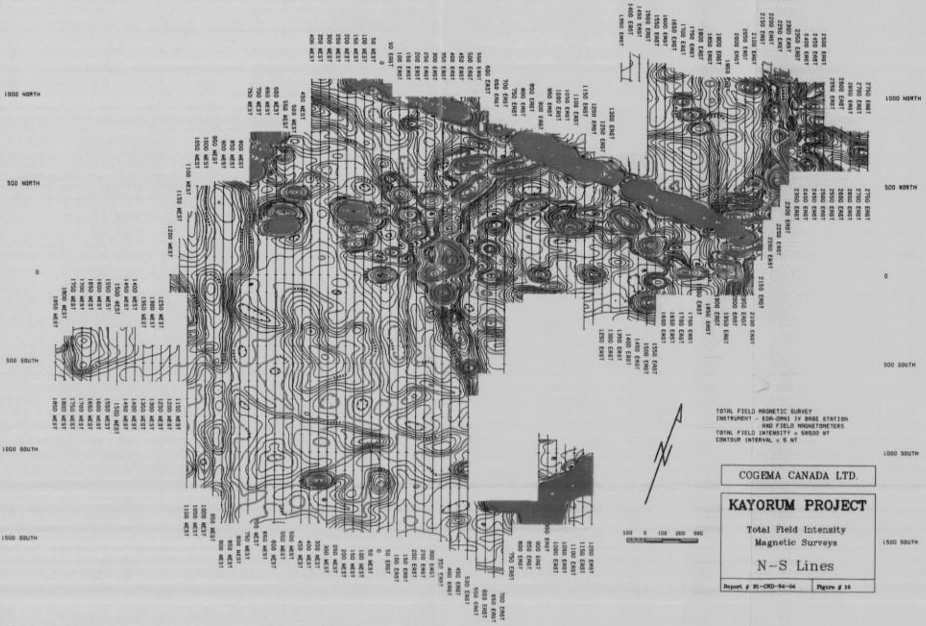

LEGEND
VLF-EM
IP SOURCES
GRAVITY
MAGNETICS
ELECTROMAGNETICS
ANOMALOUS GOLD ZONES
Area of snow dump
Gas line
Pond
Fence
Phone line
Road to Gold Centre
Gas line
Creek
Power line
Crest of tailings
Creek
Swamp
Sand Pit
Power line
COGEMA
KAYORUM PROJECT
INTERPRETATION / COMPILATION OF GEOPHYSICAL AND GEOCHEMICAL ANOMALIES

Figure # 26


LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 120%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE NORTH
IN-PHASE CONTOUR INTERVAL = 2%
COIL SEPARATION = 200 METRES
FREQUENCY = 7040 Hz.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
7040 Hz.
Report # 81-CND-44-04
Figure # 13


LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 60%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE NORTH
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 200 METRES
FREQUENCY = 3520 Hz.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
3520 Hz.
Report # 91-CNE-64-04
Figure # 12


1000 NORTH
500 NORTH
0
500 SOUTH
1000 SOUTH
1500 SOUTH
LEGEND
FRASER FILTERED VLF-EM DATA
VLF-EM STATION - SEATTLE, WASHINGTON
(FREQUENCY - NLK 24.8 KHZ.)
CONTOURS OF POSITIVE DATA
COGEMA CANADA LTD.
KAYORUM PROJECT
Fraser Filtered VLF-EM
Surveys - NLK, 24.8 KHz.
Figure # 14



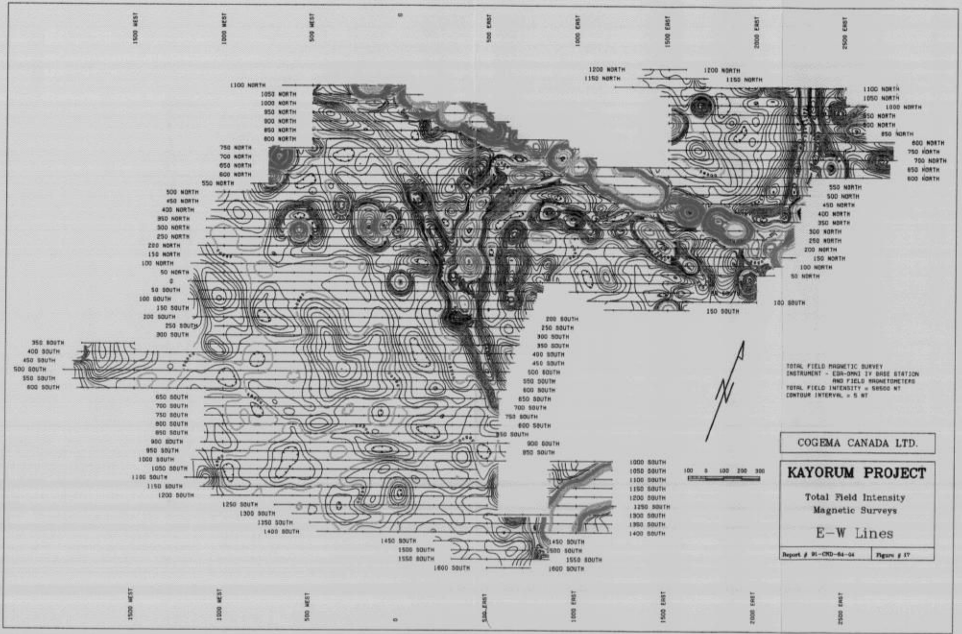
COGEMA CANADA LTD.

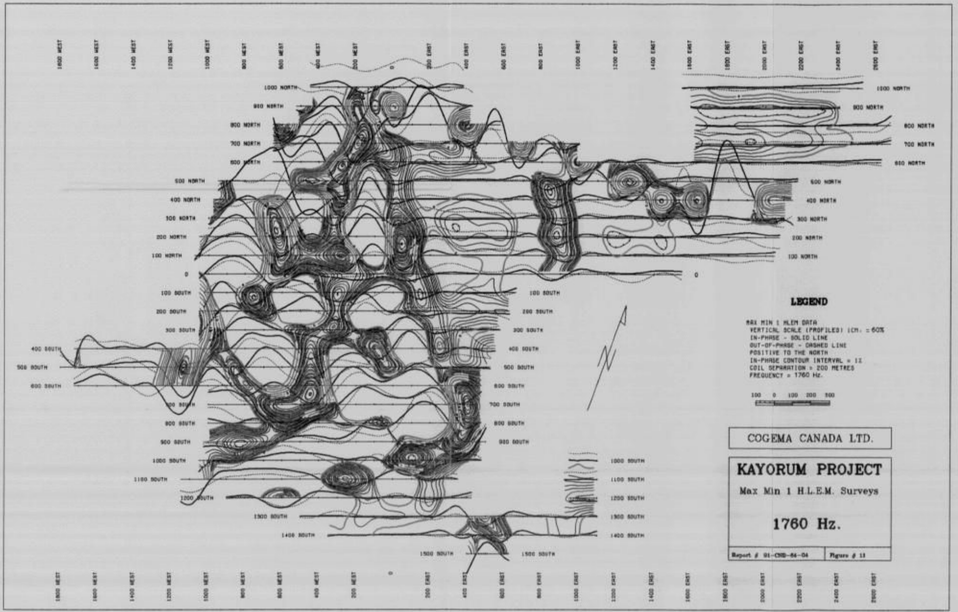
KAYORUM PROJECT

Total Field Intensity
Magnetic Surveys

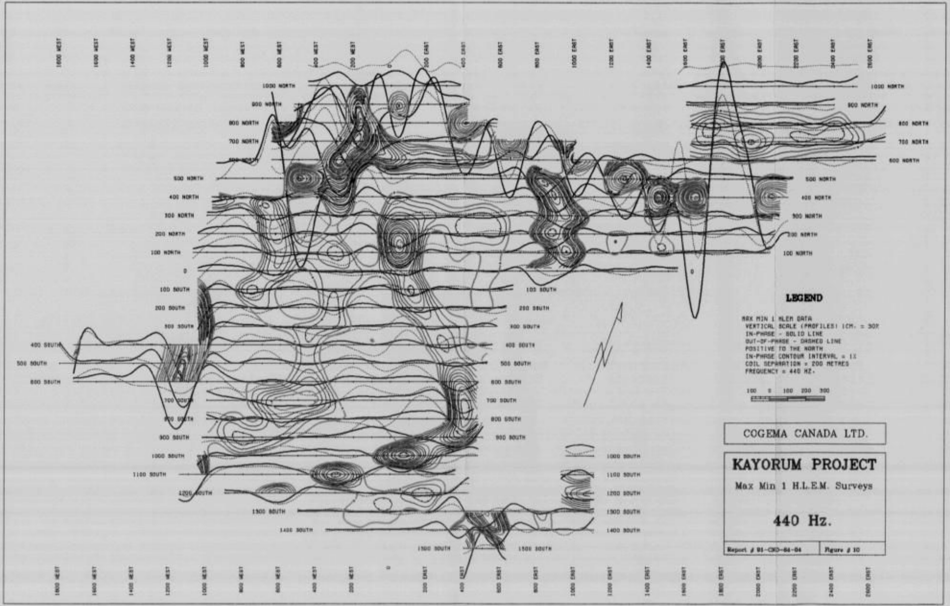
N–S Lines

Report # 91-CND-84-04 | Figure # 16

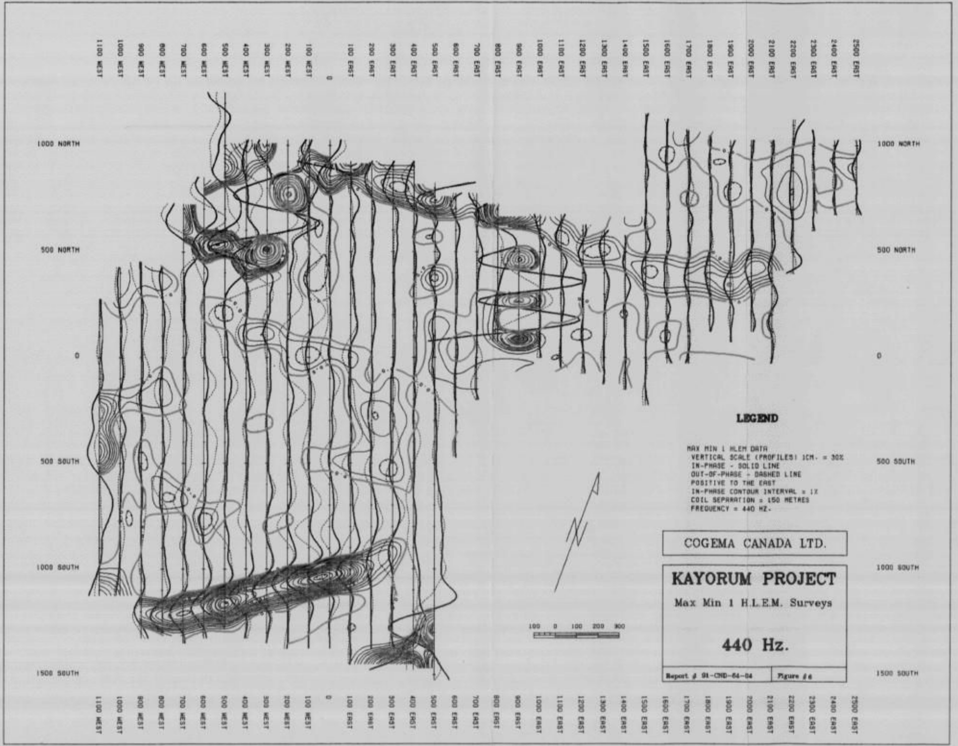

1500 WEST
1000 WEST
500 WEST
0
500 EAST
1000 EAST
1500 EAST
2000 EAST
2500 EAST
1100 NORTH
1200 NORTH
1150 NORTH
350 SOUTH
500 SOUTH
600 SOUTH
1600 SOUTH
100 SOUTH
150 SOUTH
TOTAL FIELD MAGNETIC SURVEY
INSTRUMENT - EDA-OMNI IV BASE STATION
AND FIELD MAGNETOMETERS
TOTAL FIELD INTENSITY = 58500 NT
CONTOUR INTERVAL = 5 NT
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Total Field Intensity
Magnetic Surveys
E-W Lines
Report # 91-CND-64-04
Figure # 17



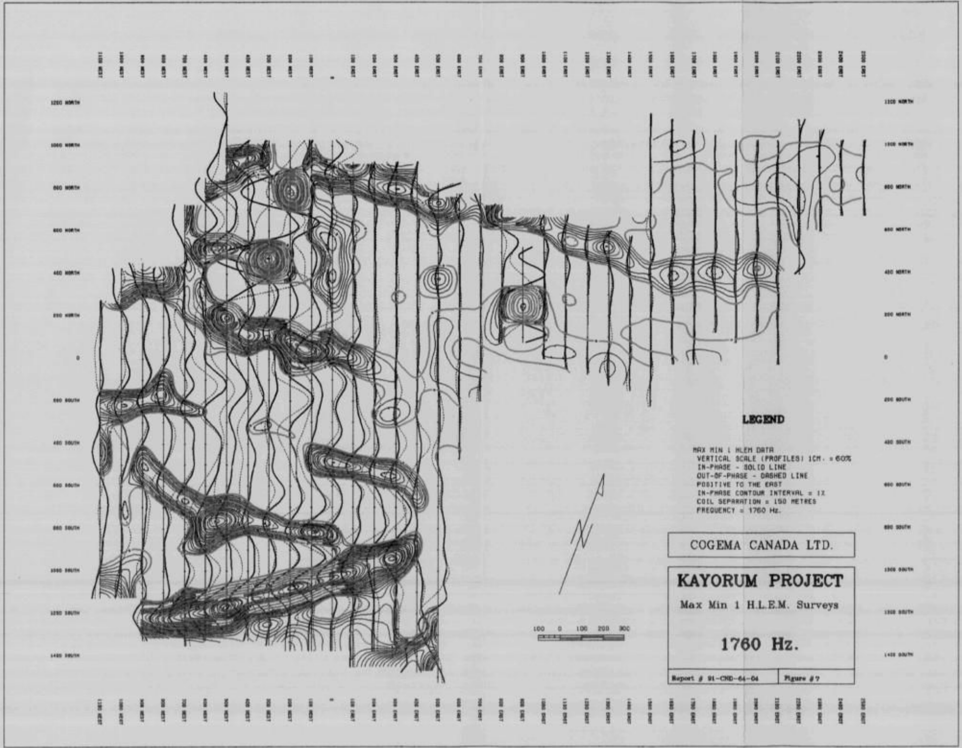
1000 NORTH
900 NORTH
800 NORTH
700 NORTH
600 NORTH
500 NORTH
400 NORTH
300 NORTH
200 NORTH
100 NORTH
0
100 SOUTH
200 SOUTH
300 SOUTH
400 SOUTH
500 SOUTH
600 SOUTH
700 SOUTH
800 SOUTH
900 SOUTH
1000 SOUTH
1100 SOUTH
1200 SOUTH
1300 SOUTH
1400 SOUTH
1500 SOUTH
1600 WEST
1400 WEST
1200 WEST
1000 WEST
800 WEST
600 WEST
400 WEST
200 WEST
200 EAST
400 EAST
600 EAST
800 EAST
1000 EAST
1200 EAST
1400 EAST
1600 EAST
1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
LEGEND
MAX MIN I HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 60%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE NORTH
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 200 METRES
FREQUENCY = 1760 Hz.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
1760 Hz.
Report # 91-CND-64-04
Figure # 11



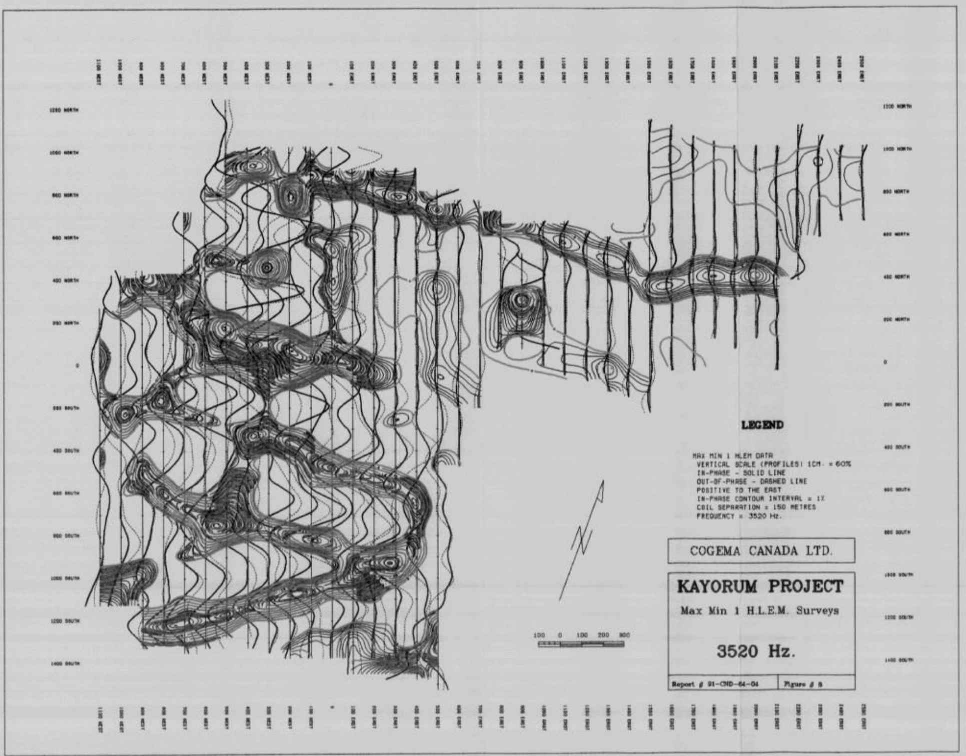
1800 WEST
1600 WEST
1400 WEST
1200 WEST
1000 WEST
800 WEST
600 WEST
400 WEST
200 WEST
0
200 EAST
400 EAST
600 EAST
800 EAST
1000 EAST
1200 EAST
1400 EAST
1600 EAST
1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
1000 NORTH
900 NORTH
800 NORTH
700 NORTH
600 NORTH
500 NORTH
400 NORTH
300 NORTH
200 NORTH
100 NORTH
0
100 SOUTH
200 SOUTH
300 SOUTH
400 SOUTH
500 SOUTH
600 SOUTH
700 SOUTH
800 SOUTH
900 SOUTH
1000 SOUTH
1100 SOUTH
1200 SOUTH
1300 SOUTH
1400 SOUTH
1500 SOUTH
LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 30%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE NORTH
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 200 METRES
FREQUENCY = 440 HZ.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
440 Hz.
Report # 91-CND-64-04
Figure # 10

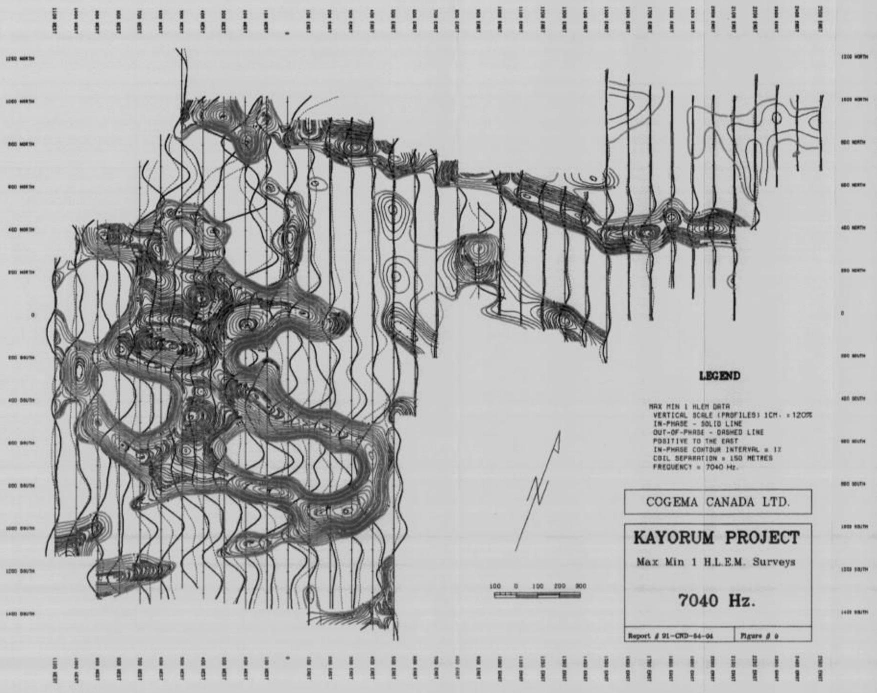


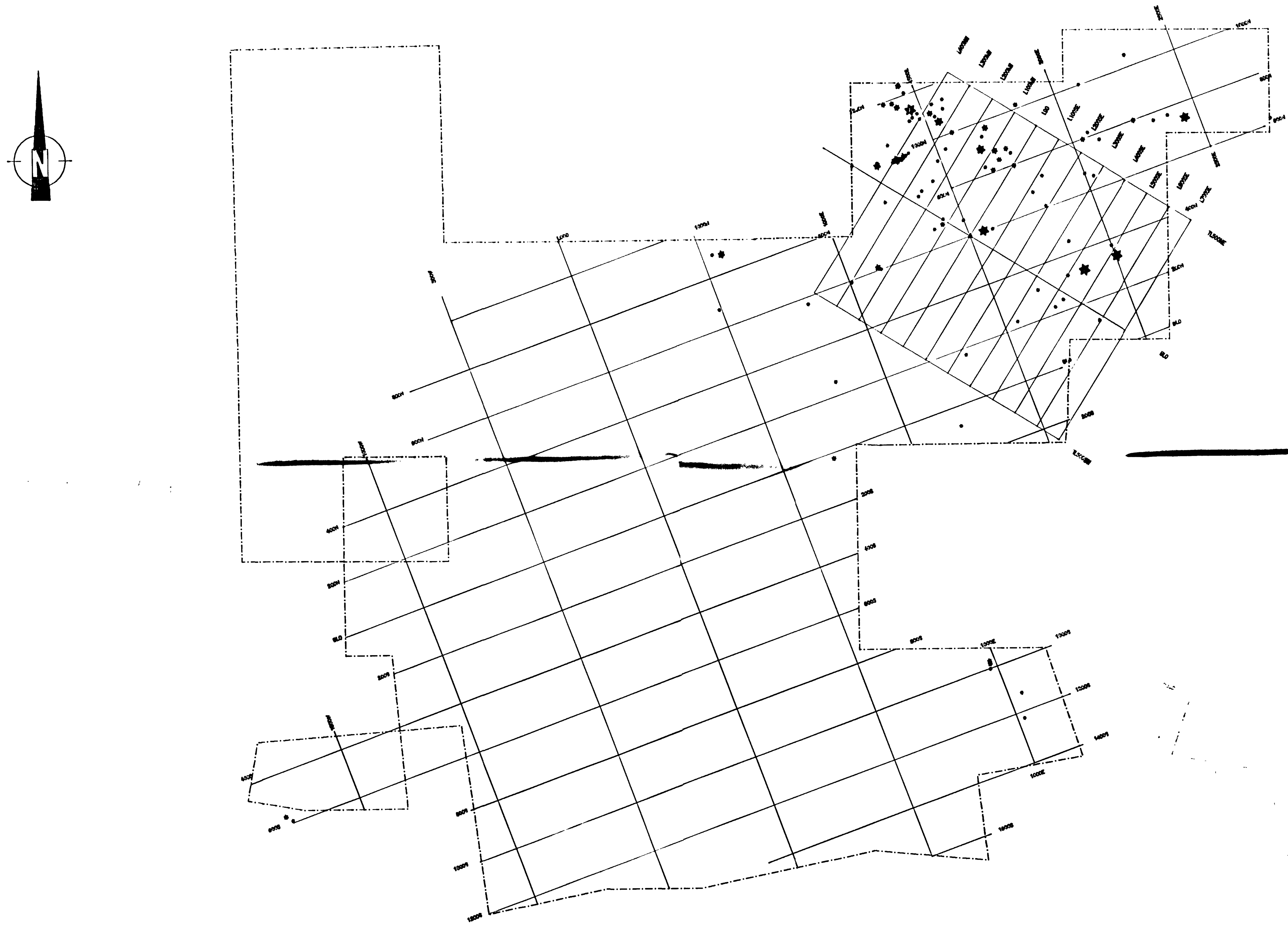
1000 NORTH
500 NORTH
0
500 SOUTH
1000 SOUTH
1500 SOUTH
1100 WEST
1000 WEST
900 WEST
800 WEST
700 WEST
600 WEST
500 WEST
400 WEST
300 WEST
200 WEST
100 WEST
0
100 EAST
200 EAST
300 EAST
400 EAST
500 EAST
600 EAST
700 EAST
800 EAST
900 EAST
1000 EAST
1100 EAST
1200 EAST
1300 EAST
1400 EAST
1500 EAST
1600 EAST
1700 EAST
1800 EAST
1900 EAST
2000 EAST
2100 EAST
2200 EAST
2300 EAST
2400 EAST
2500 EAST
LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 30%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE EAST
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 150 METRES
FREQUENCY = 440 HZ.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
440 Hz.
Report # 91-CND-64-04
Figure #6



LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 60%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE EAST
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 150 METRES
FREQUENCY = 1760 Hz.
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
1760 Hz.
Report # 91-CND-64-04
Figure # 7
100 0 100 200 300


1200 NORTH
1000 NORTH
800 NORTH
600 NORTH
400 NORTH
200 NORTH
0
200 SOUTH
400 SOUTH
600 SOUTH
800 SOUTH
1000 SOUTH
1200 SOUTH
1400 SOUTH
LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 60%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE EAST
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 150 METRES
FREQUENCY = 3520 Hz.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
3520 Hz.
Report # 91-CND-64-04
Figure # 8


LEGEND
MAX MIN 1 HLEM DATA
VERTICAL SCALE (PROFILES) 1CM. = 120%
IN-PHASE - SOLID LINE
OUT-OF-PHASE - DASHED LINE
POSITIVE TO THE EAST
IN-PHASE CONTOUR INTERVAL = 1%
COIL SEPARATION = 150 METRES
FREQUENCY = 7040 Hz.
100 0 100 200 300
COGEMA CANADA LTD.
KAYORUM PROJECT
Max Min 1 H.L.E.M. Surveys
7040 Hz.
Report # 91-CND-64-04
Figure # 9



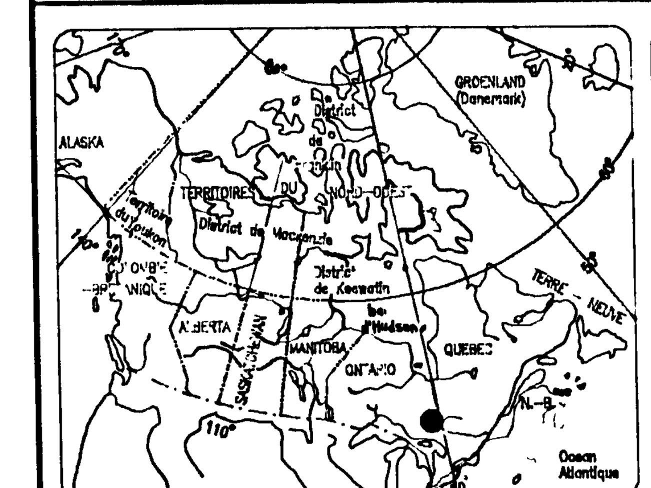
LEGEND

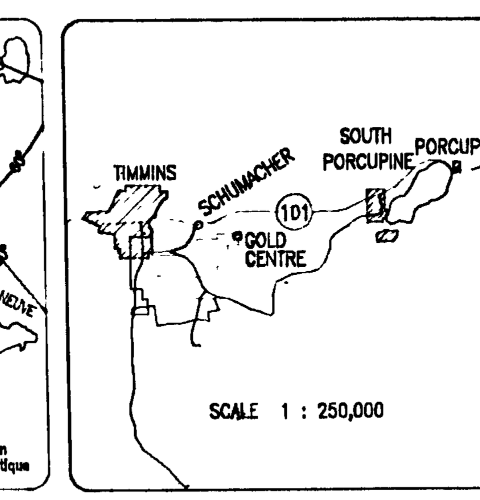
As Lithogeochemistry

- ≥ 60 < 120 ppm
- ≥ 120 < 180 ppm
- ≥ 180 < 240 ppm
- ≥ 240 < 300 ppm
- ≥ 300 < 360 ppm
- ≥ 360 < 420 ppm
- ≥ 420 ppm

PROPERTY BOUNDARY LOCATED

PROPERTY BOUNDARY (APPROX)





COGEMA Canada Ltee/Ltd.

0 100 200 300 400 500 600 700 800 900 1000 meters

SCALE 1 : 10 000

KAYORUM PROJECT

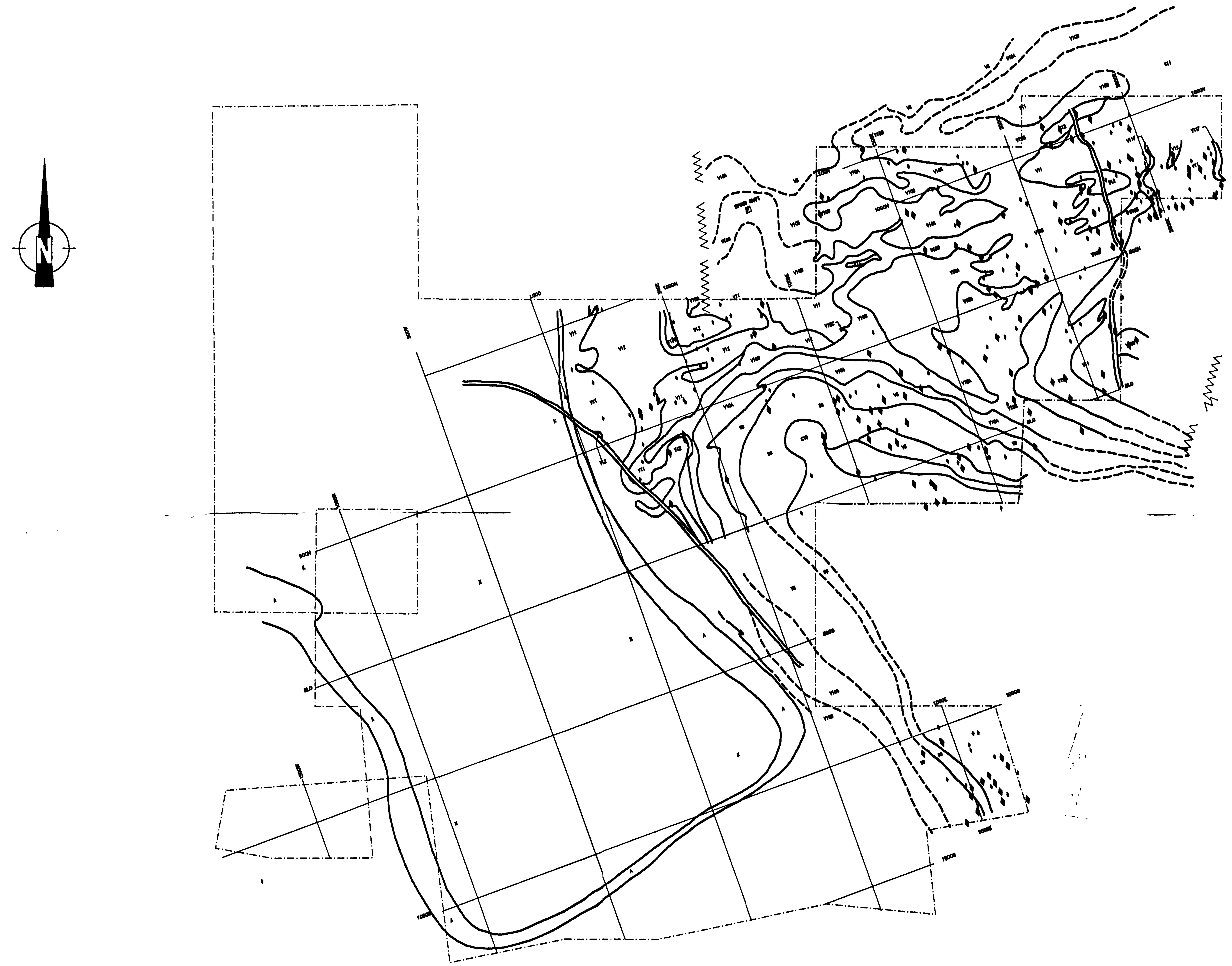
As Lithogeochemistry Map

Interpretation by: J. Learn	Date 11/92
Drafted by: S. Lacasse	
Base map: NORTHLAND ENGINEERING	
Revised by: J.L., S.L.	

Report no. 92-CND-84-04

Annex no.

MAP NO. 2



LEGEND

PROTEROZOIC

[diabase symbol]	Diabase

ARCHEAN

TISDALE GROUP

UPPER FORMATIONS

K	Krist Formation felsic agglomerate, lapilli tuff
A	Graphitic argillite, slate

GOLD CENTRE SUBGROUP

V12	Amygdaloidal pillow lava (and pillow breccia)
V11	Uniform (massive) flow (V11F flow breccia)

VIPOND SUBGROUP

V10C	Graphitic interflow sediment
V10B	Variolitic pillow lava
V10A	Uniform (massive) flow
V8	Variolitic pillow lava
99	Uniform (massive) flow

CENTRAL SUBGROUP

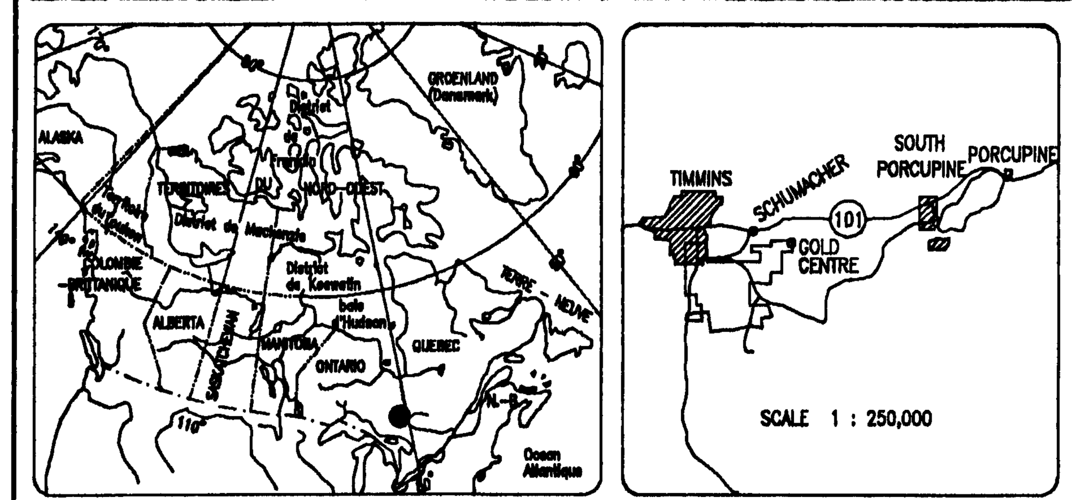
C17	Interflow sediment (?)
V6	Variolitic lava
C16	Uniform (massive) flow
C15	Amygdaloidal pillow lava

SYMBOLS

————	GEOLOGICAL CONTACT
– – – –	GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)
ʌʌʌʌʌʌ	FAULT

Calcite content

- ≥ 4 < 5
- ≥ 5



COGEMA Canada Ltee/Ltd.

0 100 200 300 400 500 600 700 800 900 1000 meters

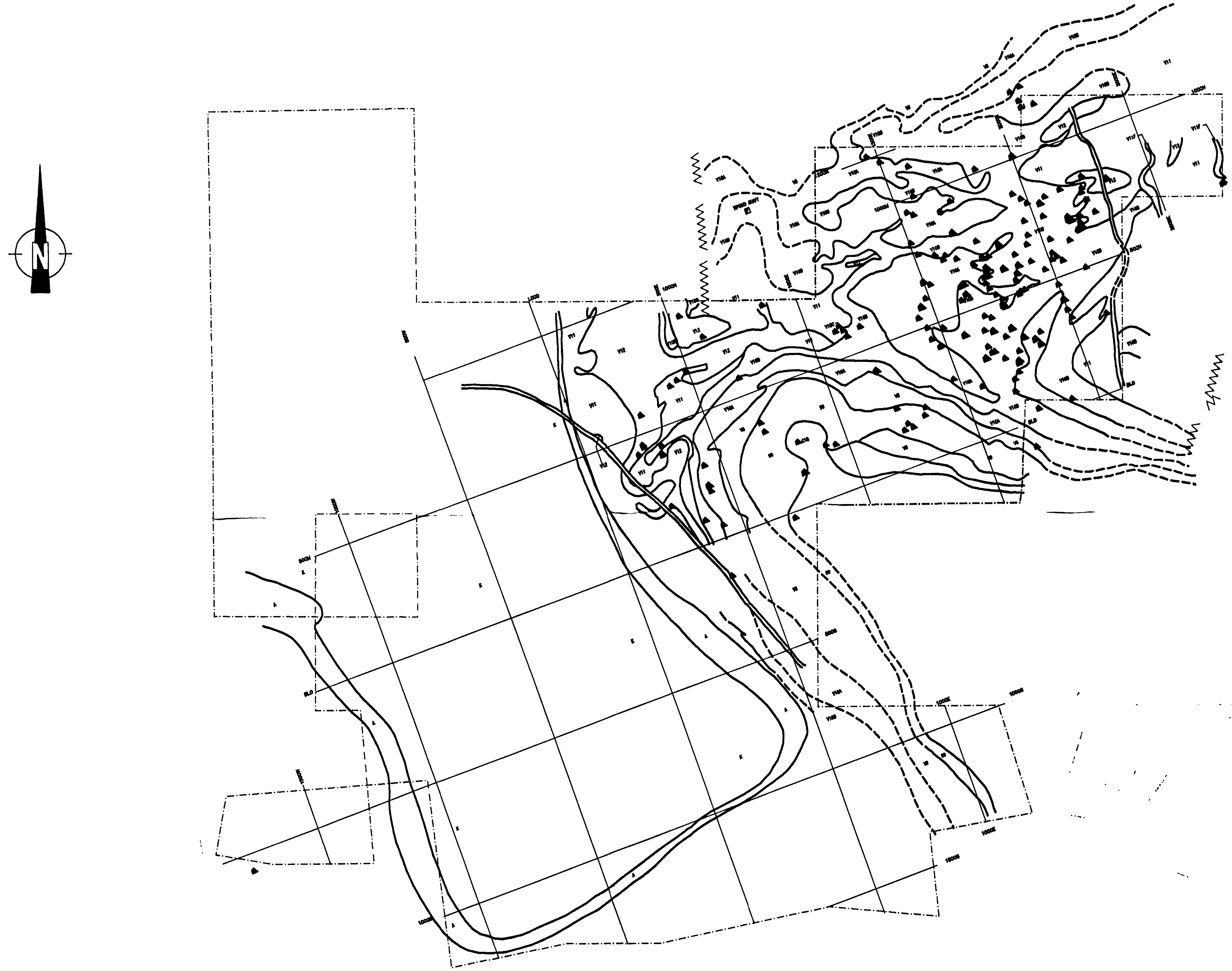
SCALE 1 : 10 000

KAYORUM PROJECT

Alteration map
Calcite content

Interpretation by: J. Learn	Date 12/92
Drafted by: S. Lacasse	
Base map: NORTHLAND ENGINEERING	
Revised by: J.L., S.L.	

Report no. 92-CND-64-05
Annex no.
MAP NO. 5



LEGEND

PROTEROZOIC

Diabase

ARCHEAN

TISDALE GROUP

UPPER FORMATIONS

K	Krist Formation felsic agglomerate, lapilli tuff
A	Graphitic argillite, slate

GOLD CENTRE SUBGROUP

V12	Amygdaloidal pillow lava (and pillow breccia)
V11	Uniform (massive) flow (V11F flow breccia)

VIPOND SUBGROUP

V10C	Graphitic interflow sediment
V10B	Variolitic pillow lava
V10A	Uniform (massive) flow
V8	Variolitic pillow lava
99	Uniform (massive) flow

CENTRAL SUBGROUP

C17	Interflow sediment (?)
V6	Variolitic lava
C16	Uniform (massive) flow
C15	Amygdaloidal pillow lava

SYMBOLS

GEOLOGICAL CONTACT

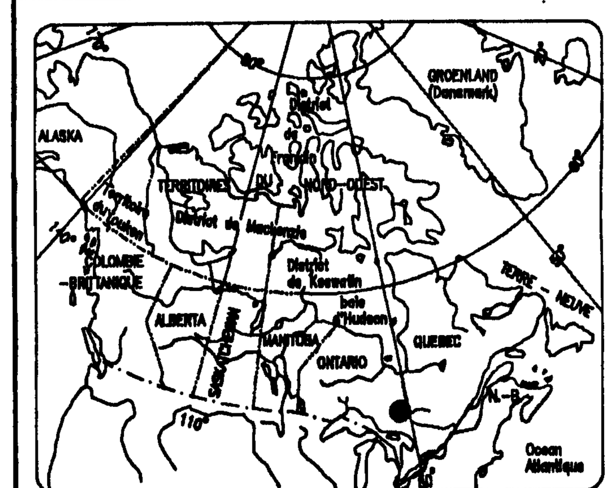
GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)

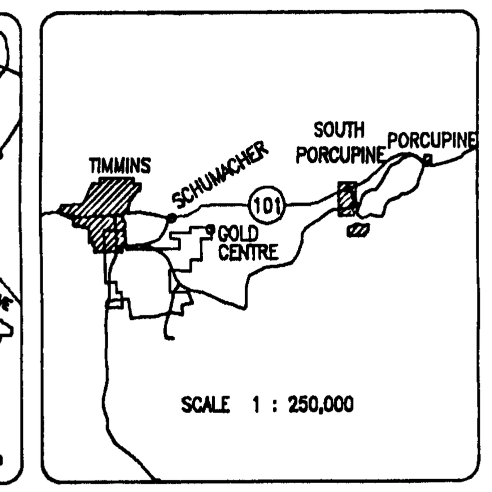
FAULT

Iron carbonates alteration

$\geq 3 < 4$

≥ 4





COGEMA Canada Ltee/Ltd.

0 100 200 300 400 500 600 700 800 900 1000 meters

SCALE 1 : 10 000

KAYORUM PROJECT

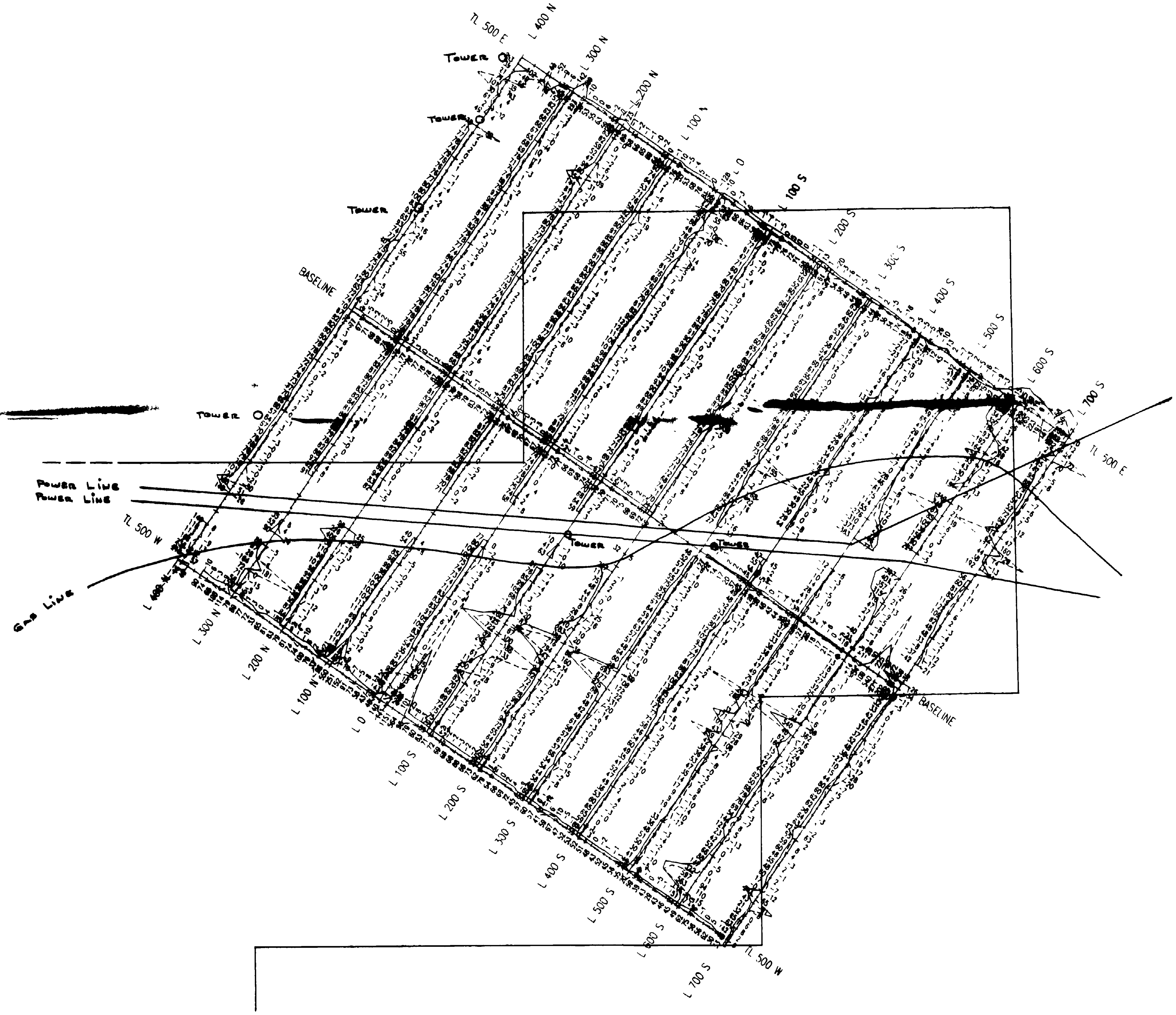
Alteration map
Iron carbonate alteration

Interpretation by: J. Learn	Date 12/92
Drafted by: S. Lacasse	
Base map: NORTHLAND ENGINEERING	
Revised by: J.L., S.L.	

Report no. 92-CND-64-05

Annex no.

MAP NO. 4



MAGNETIC PROFILES.

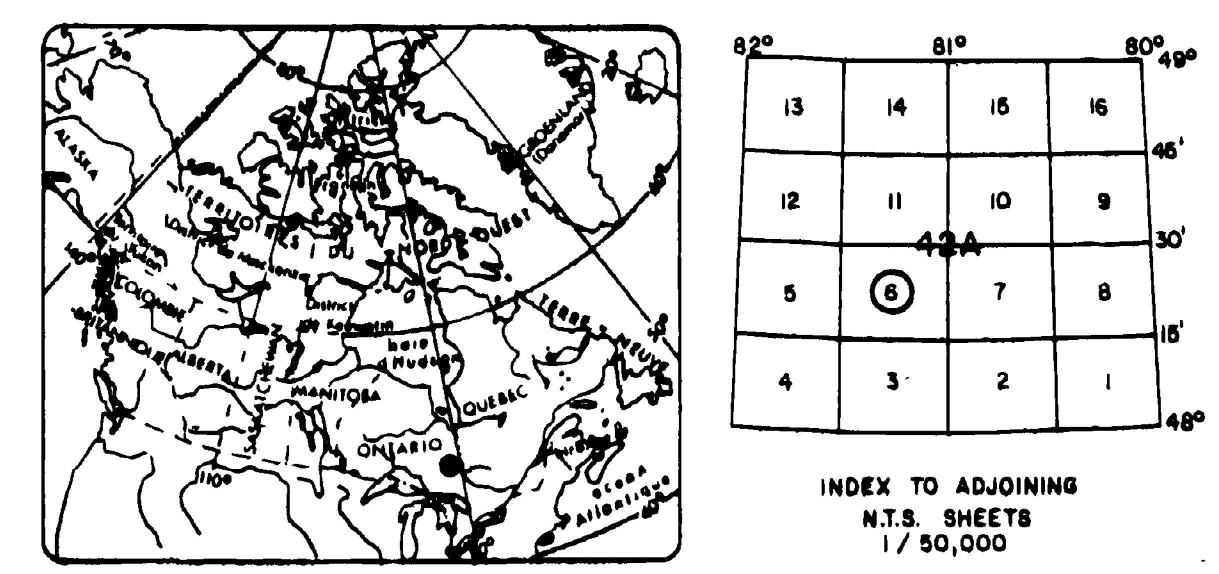
——— Total Field	1 cm =	500 gamma.
– – – Vertical Gradient	1 cm =	100 gamma/metre.

Relative zero for Total Field = 59000 gamma.

Readings:

Total Field − 59000 (gamma) 165 | 15 Gradient (gamma/metre)

Instrument: EDA, OMNI PLUS Magnetometer



INDEX TO ADJOINING N.T.S. SHEETS 1/50,000

Scale 1 : 5000

100 0 100 200 300 400 (metres)

42A06NW0040 OM92-078 TISDALE

230

COGEMA CANADA LTD

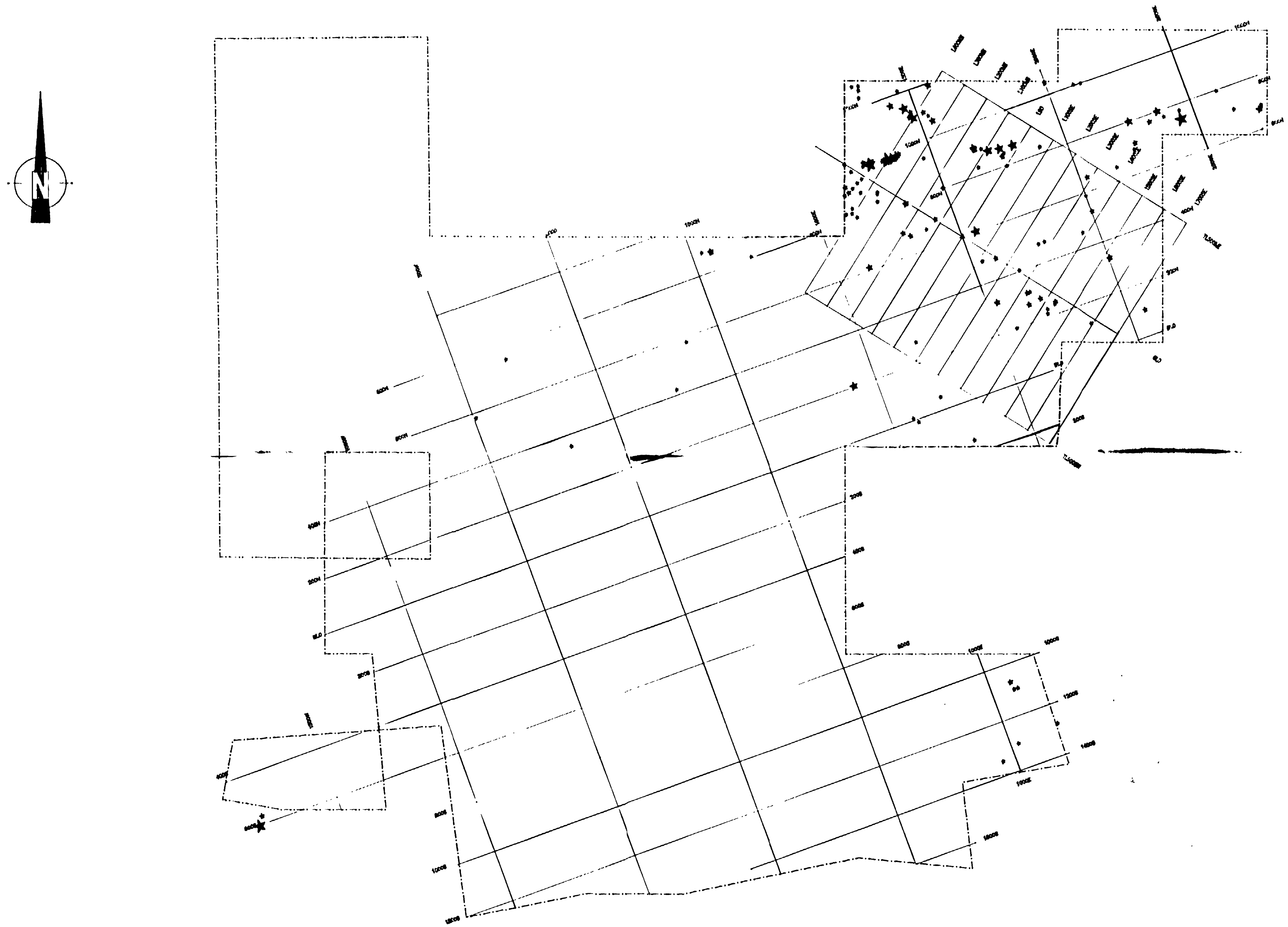
KAYORUM PROJECT, KAY–92 GRID

MAGNETIC SURVEY

TOTAL FIELD AND GRADIENT PROFILES

VAL D'OR GEOPHYSIQUE LTEE

Interpreted by:	Date 07/1992
Scale 1 : 5000	Report no: 92-CND-64-06 Map 6



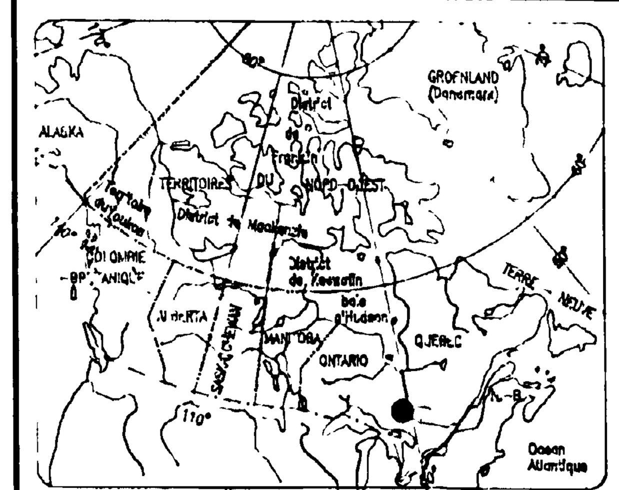
LEGEND

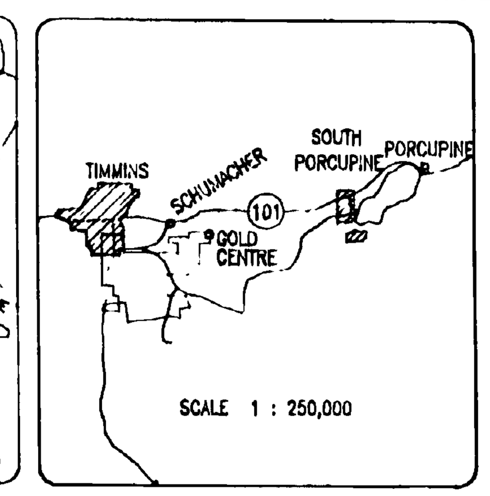
Au Lithogeochemistry

- ≥ 10 < 20 ppb
- ≥ 20 < 50 ppb
- ≥ 50 < 100 ppb
- ≥ 100 < 200 ppb
- ≥ 200 < 500 ppb
- ≥ 500 < 1000 ppb
- ≥ 1000 ppb

PROPERTY BOUNDARY LOCATED

PROPERTY BOUNDARY (APPROX)





COGEMA Canada Ltee/Ltd.

0 100 200 300 400 500 600 700 800 900 1000 meters

SCALE 1 : 10 000

KAYORUM PROJECT

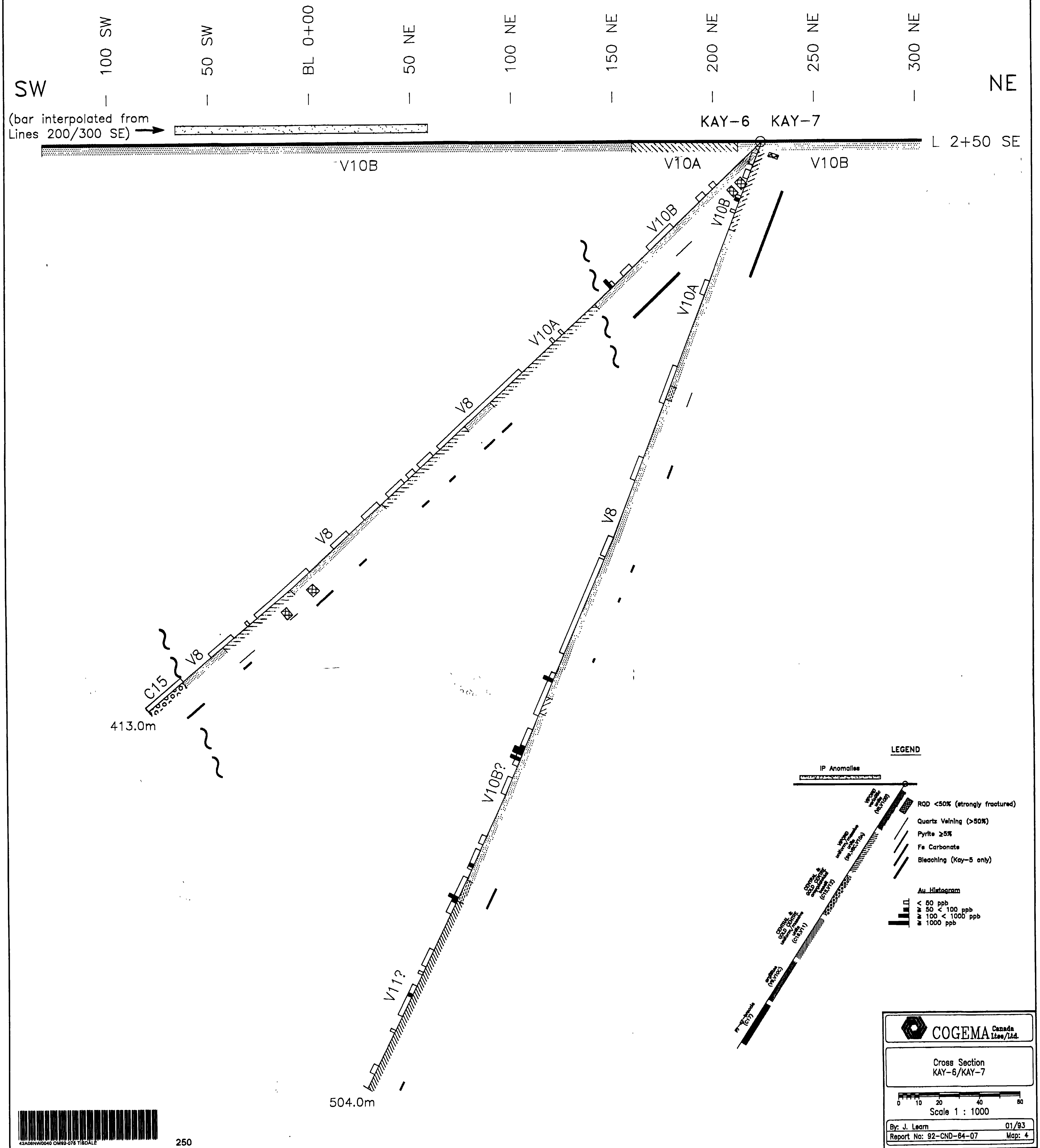
Au Lithogeochemistry Map

Interpretation by: J. Learn	Date 11/92
Drafted by: S. Lacasse	
Base map: NORTHLAND ENGINEERING	
Revised by: J.L., S.L.	

Report no. 92-CND-64-04

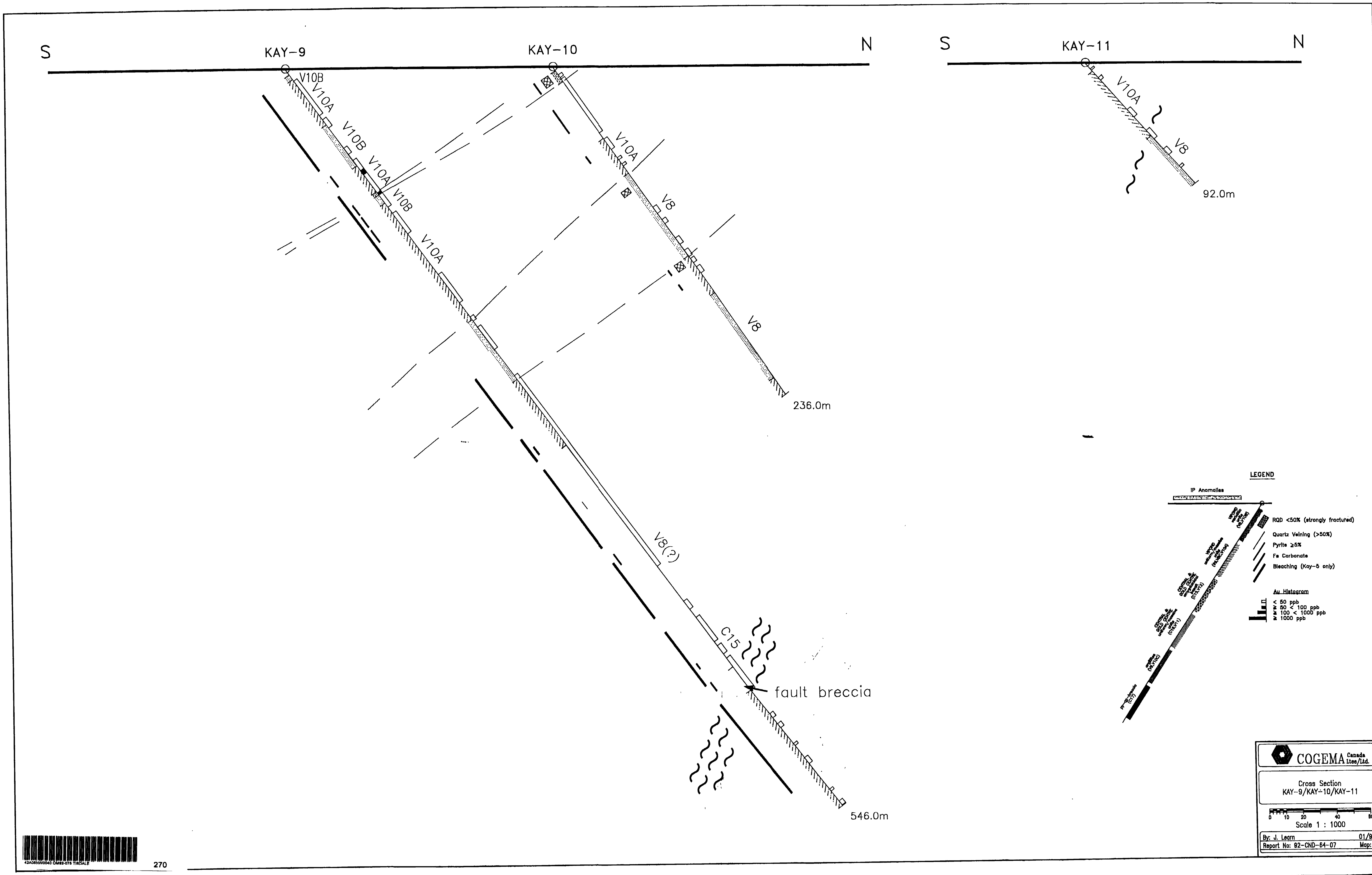
Annex no.

MAP NO. 1


SW
NE
100 SW
50 SW
BL 0+00
50 NE
100 NE
150 NE
200 NE
250 NE
300 NE
(bar interpolated from
Lines 200/300 SE)
KAY-6
KAY-7
L 2+50 SE
V10B
V10A
V10B
V10B
V10B
V10A
V10A
V8
V8
V8
V8
C15
413.0m
V10B?
V11?
504.0m
LEGEND
IP Anomalies
RQD <50% (strongly fractured)
Quartz Veining (>50%)
Pyrite ≥5%
Fe Carbonate
Bleaching (Kay-5 only)
Au Histogram
< 50 ppb
≥ 50 < 100 ppb
≥ 100 < 1000 ppb
≥ 1000 ppb
COGEMA Canada Ltee/Ltd.
Cross Section
KAY-6/KAY-7
Scale 1 : 1000
By: J. Learn
01/93
Report No: 92-CND-64-07
Map: 4

250


SW
NE
250 SW
200 SW
150 SW
100 SW
50 SW
BL 0+00
50 NE
100 NE
150 NE
200 NE
250 NE
300 NE
KAY-8
V10B
V10A
V10B
V10A
V10B
V10A
V10B
V10A
V10B
V10A
V10B
V10A
V8
V8
V8
99
99
C15
C15
C14?
507.0m
fault breccia
geology above the DDH not easily compared with Section Kay-1/Kay-2 due to east-west folding
(Kay-1/Kay-2 close to east-west anticlinal structure; Kay-8 close to east-west synclinal Structure?)
geological interpretation below DDH influenced by Section Kay-1/Kay-2
LEGEND
RQD <50% (strongly fractured)
Quartz Veining (>50%)
Pyrite ≥5%
Fe Carbonate
Bleaching (Kay-5 only)
Au Histogram
< 50 ppb
≥ 50 < 100 ppb
≥ 100 < 1000 ppb
≥ 1000 ppb
COGEMA Canada Ltee/Ltd.
Cross Section
KAY-8
0 10 20 40 60
Scale 1 : 1000
By: J. Learn 01/93
Report No: 92-CND-64-07 Map: 5
260



S
KAY-9
KAY-10
N
V10B
V10A
V10B
V10A
V10B
V10A
V10A
V8
V8
V8(?)
C15
fault breccia
236.0m
546.0m
S
KAY-11
N
V10A
V8
92.0m
LEGEND
IP Anomalies
RQD <50% (strongly fractured)
Quartz Veining (>50%)
Pyrite ≥5%
Fe Carbonate
Bleaching (Kay-5 only)
Au Histogram
< 50 ppb
≥ 50 < 100 ppb
≥ 100 < 1000 ppb
≥ 1000 ppb
COGEMA Canada Ltee/Ltd.
Cross Section
KAY-9/KAY-10/KAY-11
0 10 20 40 60
Scale 1 : 1000
By: J. Learn 01/93
Report No: 92-CND-64-07 Map: 6

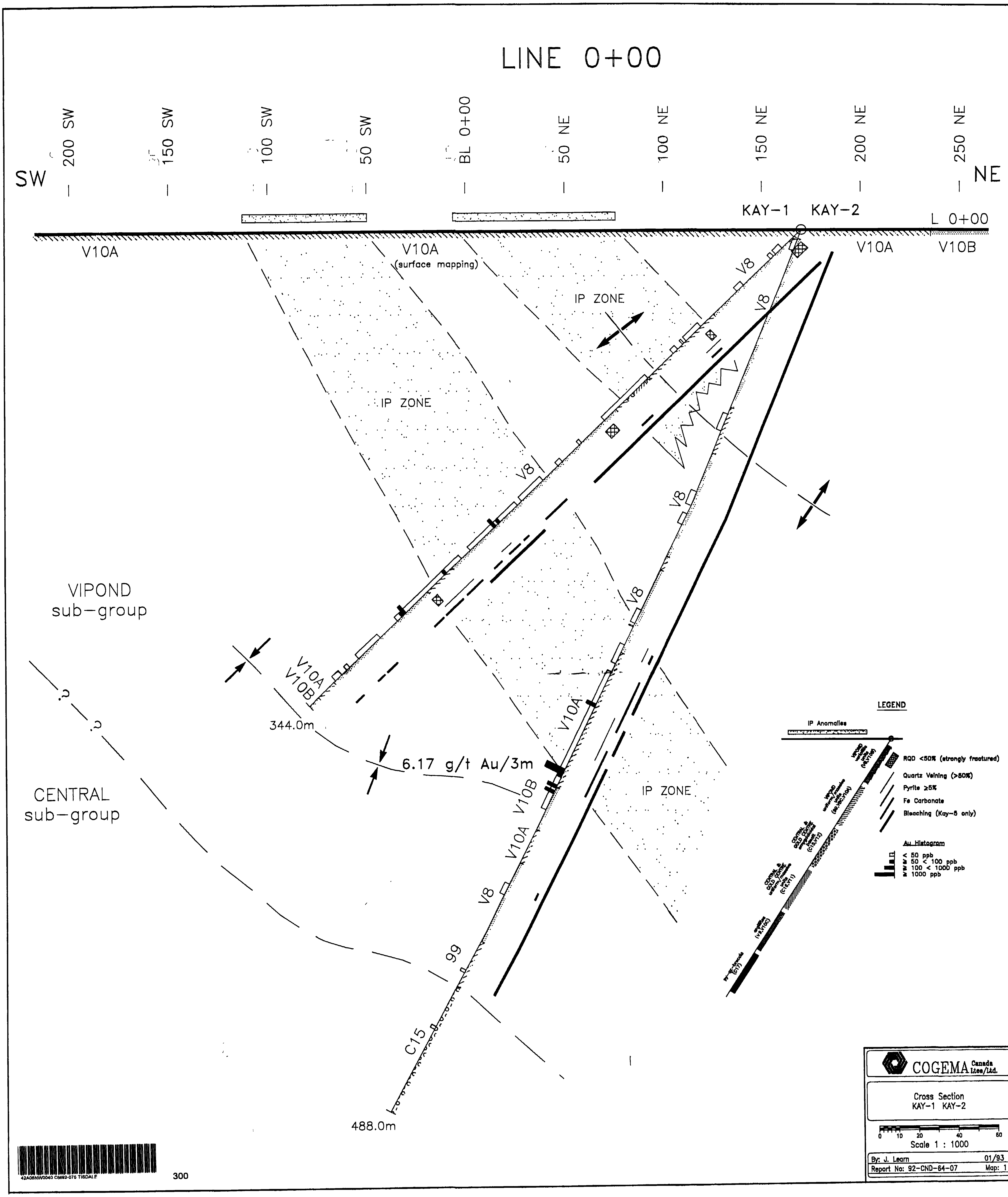
270

42A06NW0040 OM92-075 TISDALE

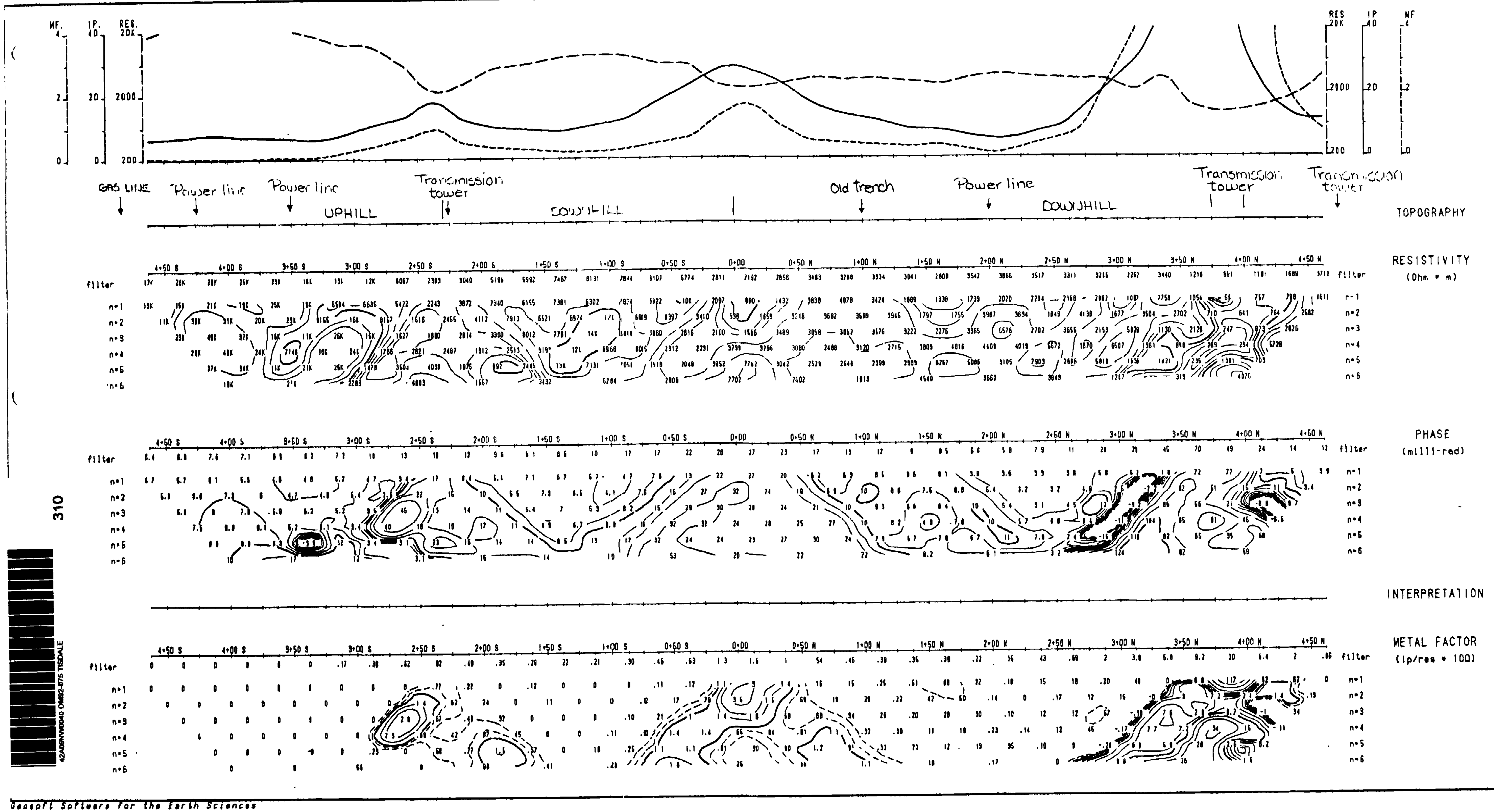
280


LINE 4+00 NW
SW
NE
150 SW
100 SW
50 SW
BL 0+00
50 NE
100 NE
150 NE
200 NE
250 NE
KAY-3
L 4+00 NW
V10B
V11
V10B
V10A
V10A
V10B
V8
V8
V8
IP ZONE
IP ZONE
IP ZONE
V10A
V10B
V11
GOLD CENTRE
sub-group
302.0m
graphitic slips
in fractures in
quartz veining
VIPOND
sub-group
LEGEND
IP Anomalies
RQD <50% (strongly fractured)
Quartz Veining (>50%)
Pyrite ≥5%
Fe Carbonate
Bleaching (Kay-5 only)
Au Histogram
< 50 ppb
≥ 50 < 100 ppb
≥ 100 < 1000 ppb
≥ 1000 ppb
COGEMA Canada Ltee/Ltd.
Cross Section
KAY-3
0 10 20 40 60m
Scale 1 : 1000
By: J. Learn 01/93
Report No: 92-CND-64-07 Map: 2

290



LINE 0+00
SW
NE
200 SW
150 SW
100 SW
50 SW
BL 0+00
50 NE
100 NE
150 NE
200 NE
250 NE
KAY-1
KAY-2
L 0+00
V10A
V10A
(surface mapping)
V10A
V10B
IP ZONE
IP ZONE
IP ZONE
V8
V8
V8
V8
V8
V8
VIPOND
sub-group
CENTRAL
sub-group
V10A
V10B
344.0m
6.17 g/t Au/3m
V10A
V10B
V10A
99
C15
488.0m
LEGEND
IP Anomalies
RQD <50% (strongly fractured)
Quartz Veining (>50%)
Pyrite ≥5%
Fe Carbonate
Bleaching (Kay-5 only)
Au Histogram
< 50 ppb
≥ 50 < 100 ppb
≥ 100 < 1000 ppb
≥ 1000 ppb
COGEMA Canada Ltee/Ltd.
Cross Section
KAY-1 KAY-2
0 10 20 40 60
Scale 1 : 1000
By: J. Learn
01/93
Report No: 92-CND-64-07
Map: 1
300



Line 4+00 W

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Filter

Resistivity
Polarization
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

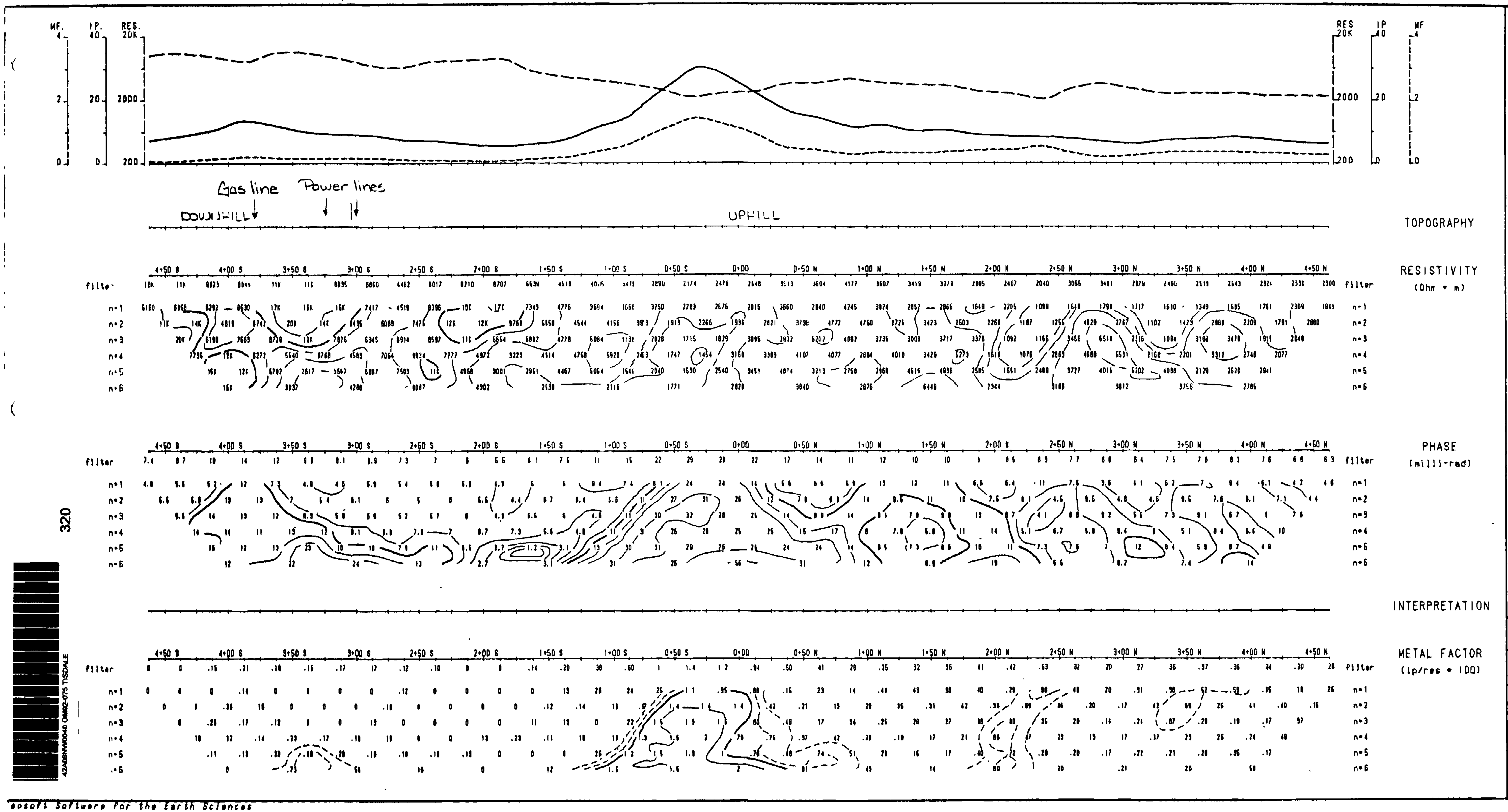
92-CND-64-08
Map #8

VAL D'OR GEOPHYSIQUE LTEE.

92-761

310

42A06NW0040 OM92-075 TISDALE



Line 3+00 W

Dipole-Dipole Array

a na a

plot point

a = 25 M

n = 1, 2, 3, 4, 5, 6

Filtered Profiles

		Filter
Resistivity	————	
Polarization	————	
Metal Factor	--------	

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ▣ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

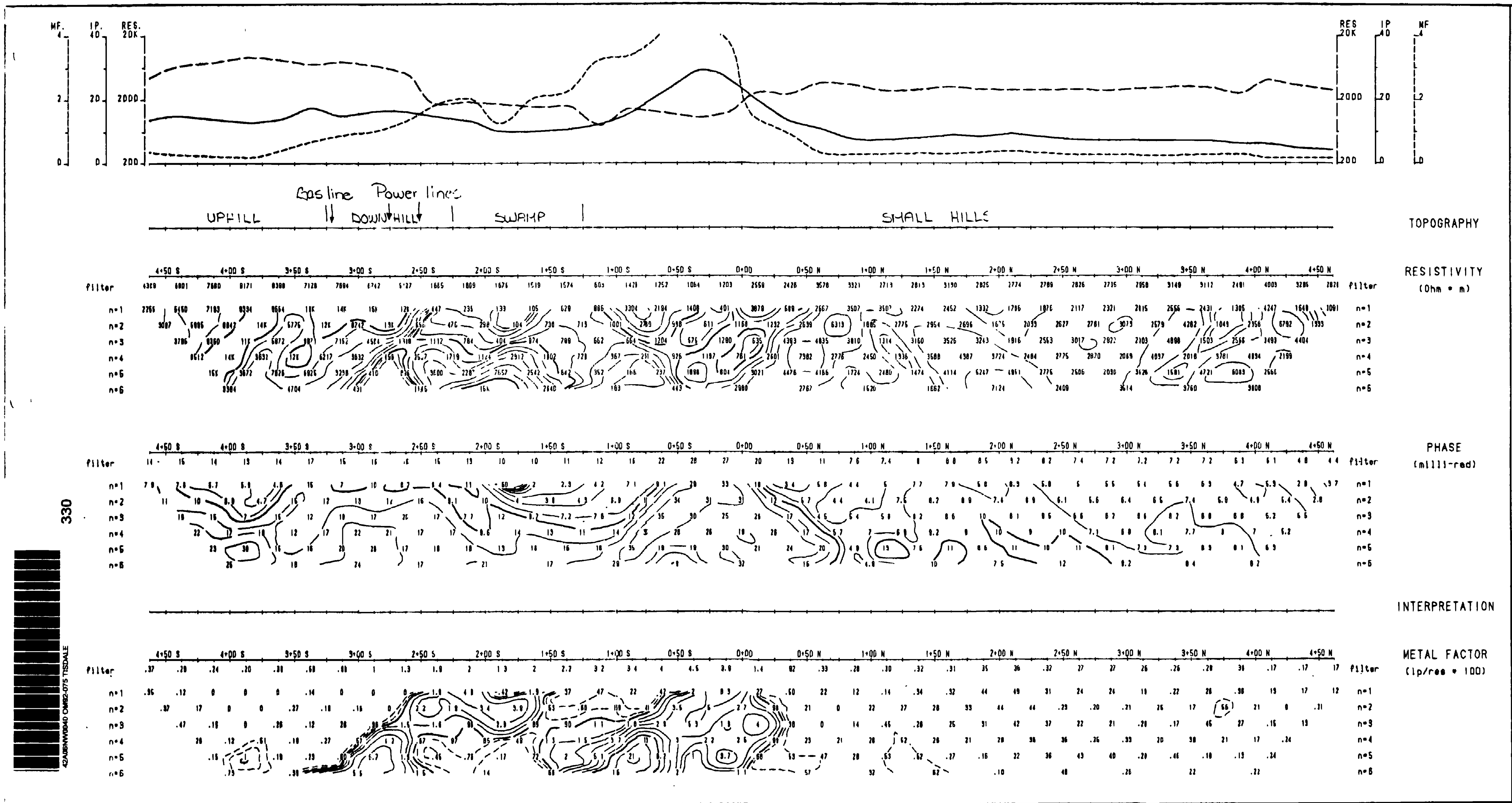
Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-64-06
Map #9

VAL D'OR GEOPHYSIQUE LTEE.

92-761



Line 2+00 W

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Filter

Resistivity	— — —
Polarization	———
Metal Factor	- - - - -

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

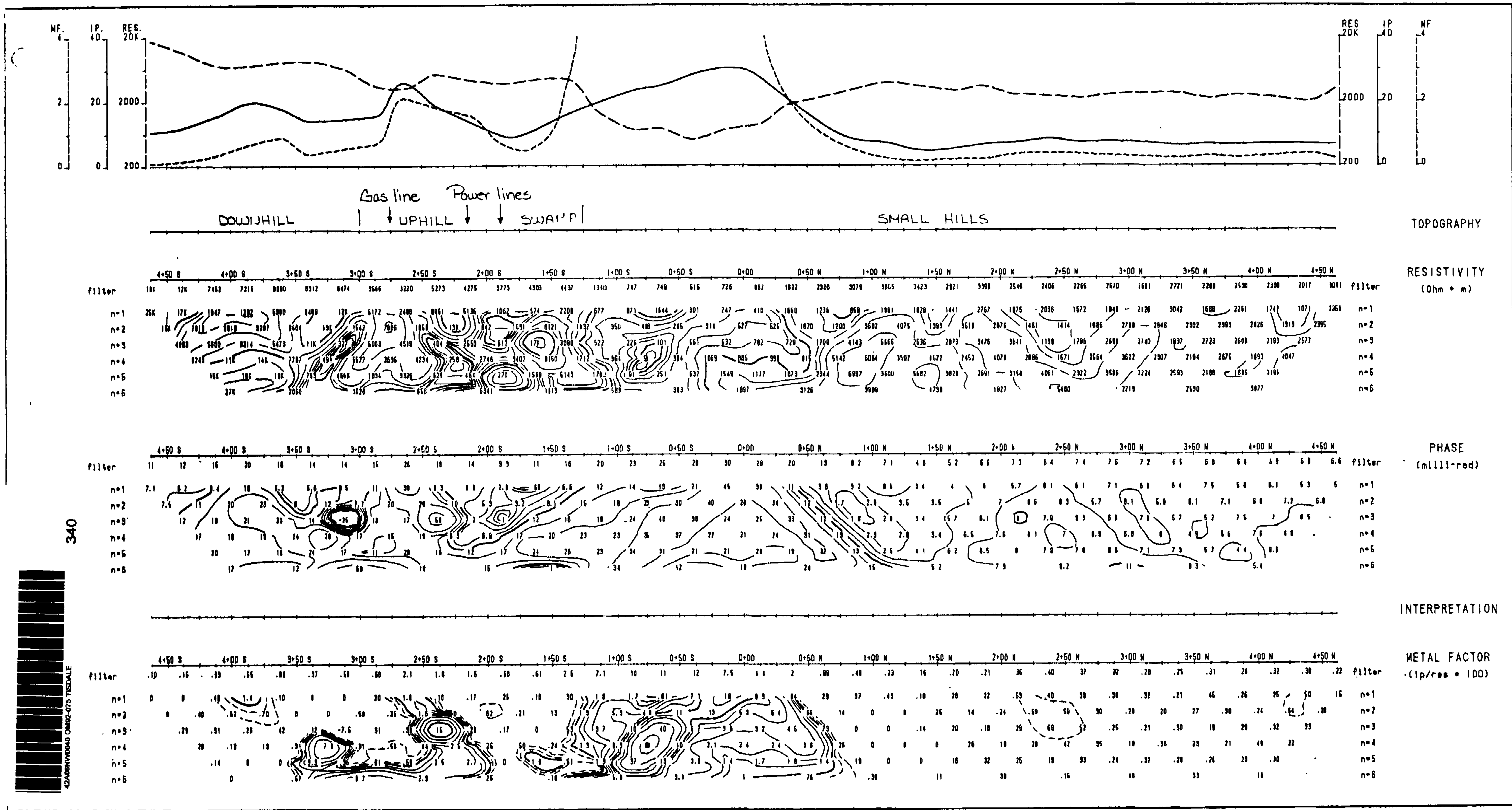
Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-64-06
Map #10

VAL D'OR GEOPHYSIQUE LTEE.

92-761



Line 1+00 W

Dipole-Dipole Array

a = 25 M

n = 1, 2, 3, 4, 5, 6

plot point

Filtered Profiles

		Filter
Resistivity	— — — —	
Polarization	———	
Metal Factor	- - - - - -	

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6

Time cycle: 2 sec.

Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ▣ Increase in polarization with little or no associated decrease in apparent resistivity
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project

Tisdale township

Date: 92/06/22

Interpretation by:

Scale 1 : 2500

92-CND-64-06

Map #11

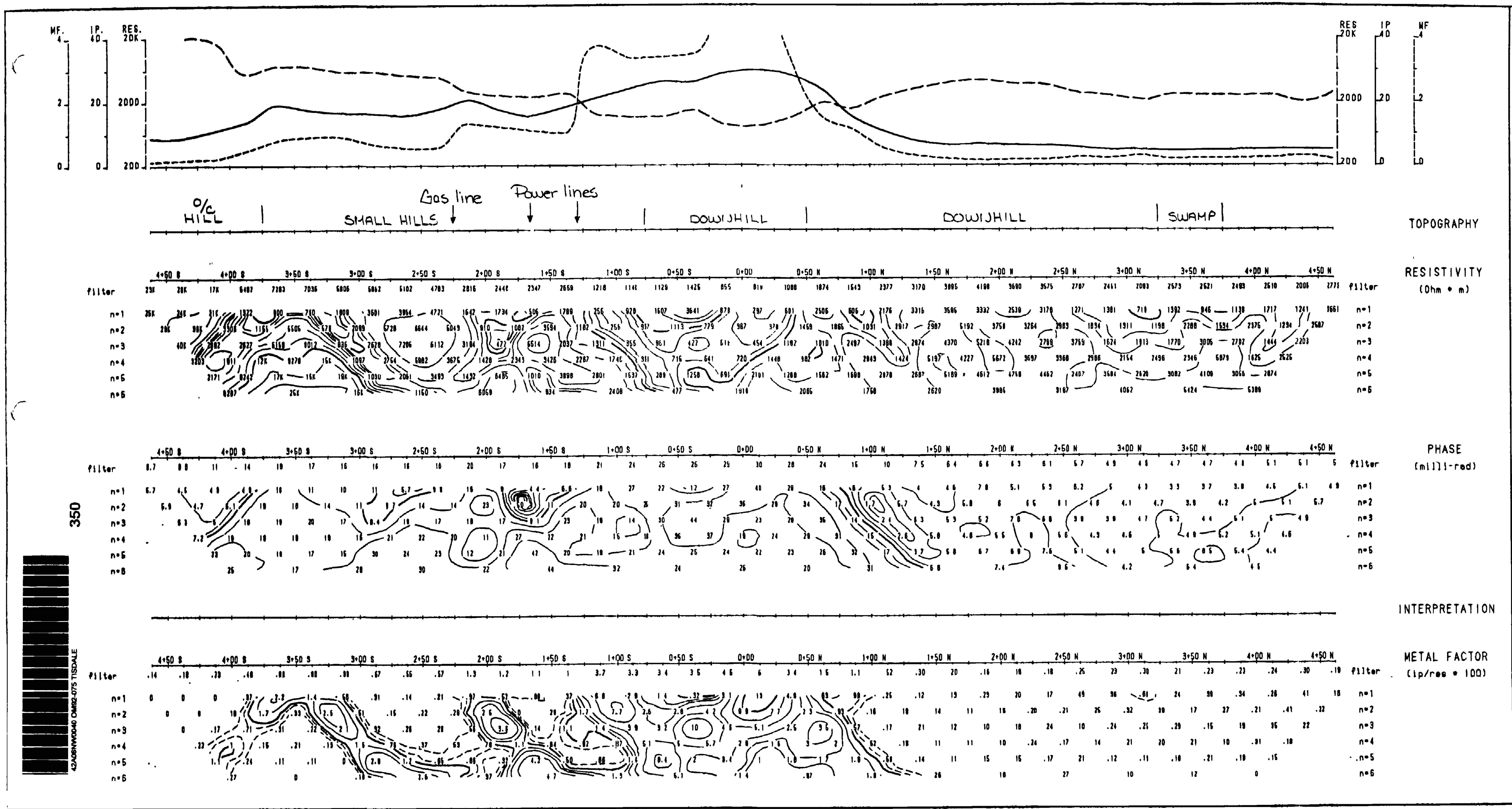
VAL D'OR GEOPHYSIQUE LTEE.

92-761

340

42A06NW0040 OM92-075 TISDALE

Geosoft Software for the Earth Sciences



Line 0+00

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Filter

Resistivity
Polarization
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

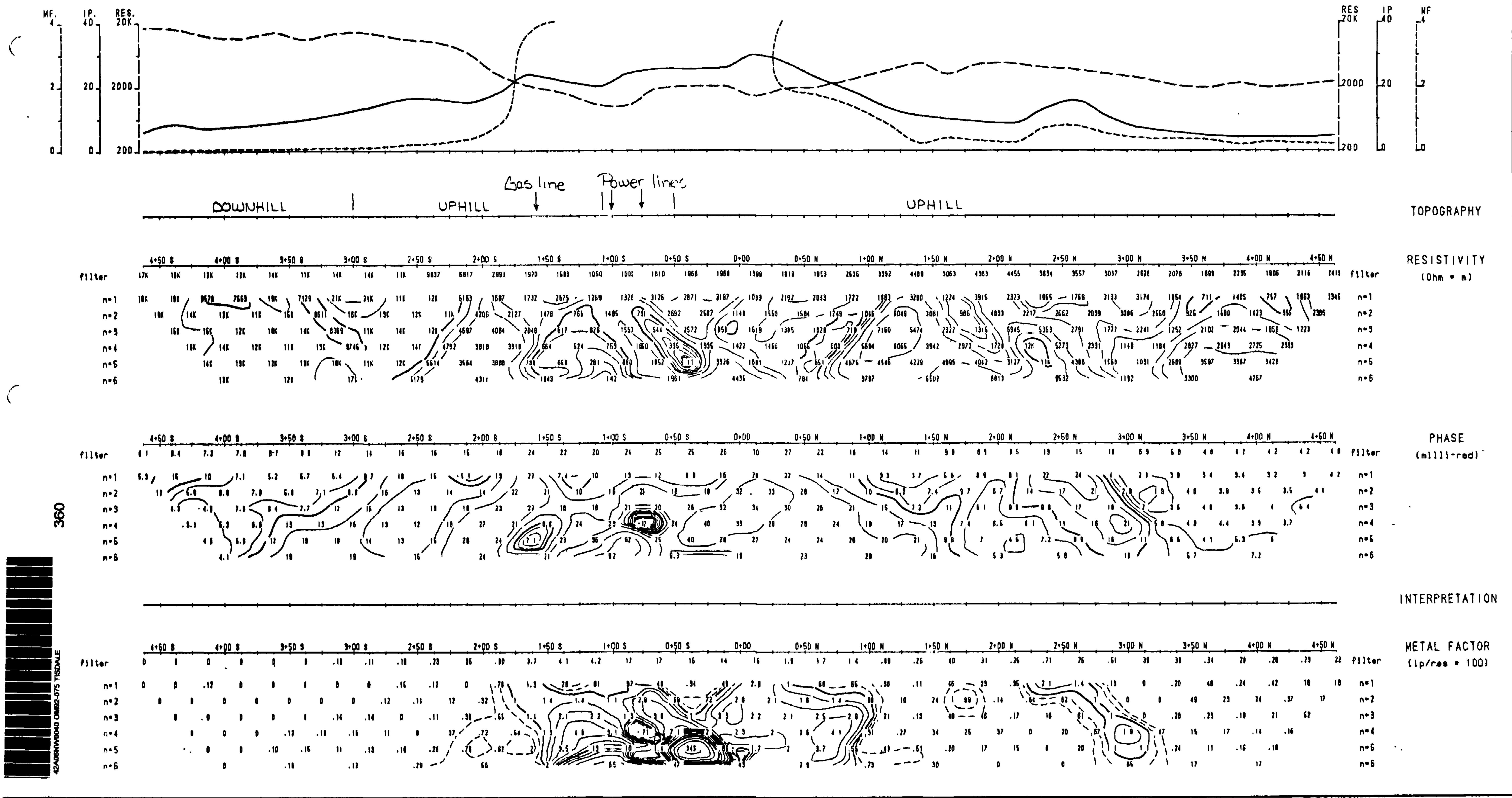
92-CND-64-06
Map #12

VAL D'OR GEOPHYSIQUE LTEE.

92-761

Geosoft Software for the Earth Sciences

42A06NW0040 OM92-075 TISDALE



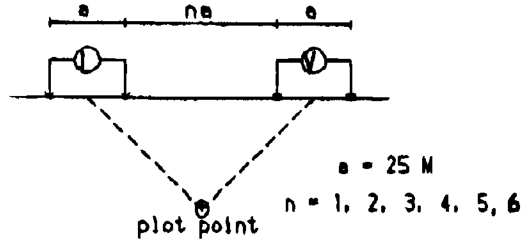
360

42A08NW0040 OM92-075 TISDALE

eosoft Software for the Earth Sciences

Line 1+00 E

Dipole-Dipole Array



a = 25 M
n = 1, 2, 3, 4, 5, 6

Filtered Profiles

Filter

Resistivity	———
Polarization	———
Metal Factor	———

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

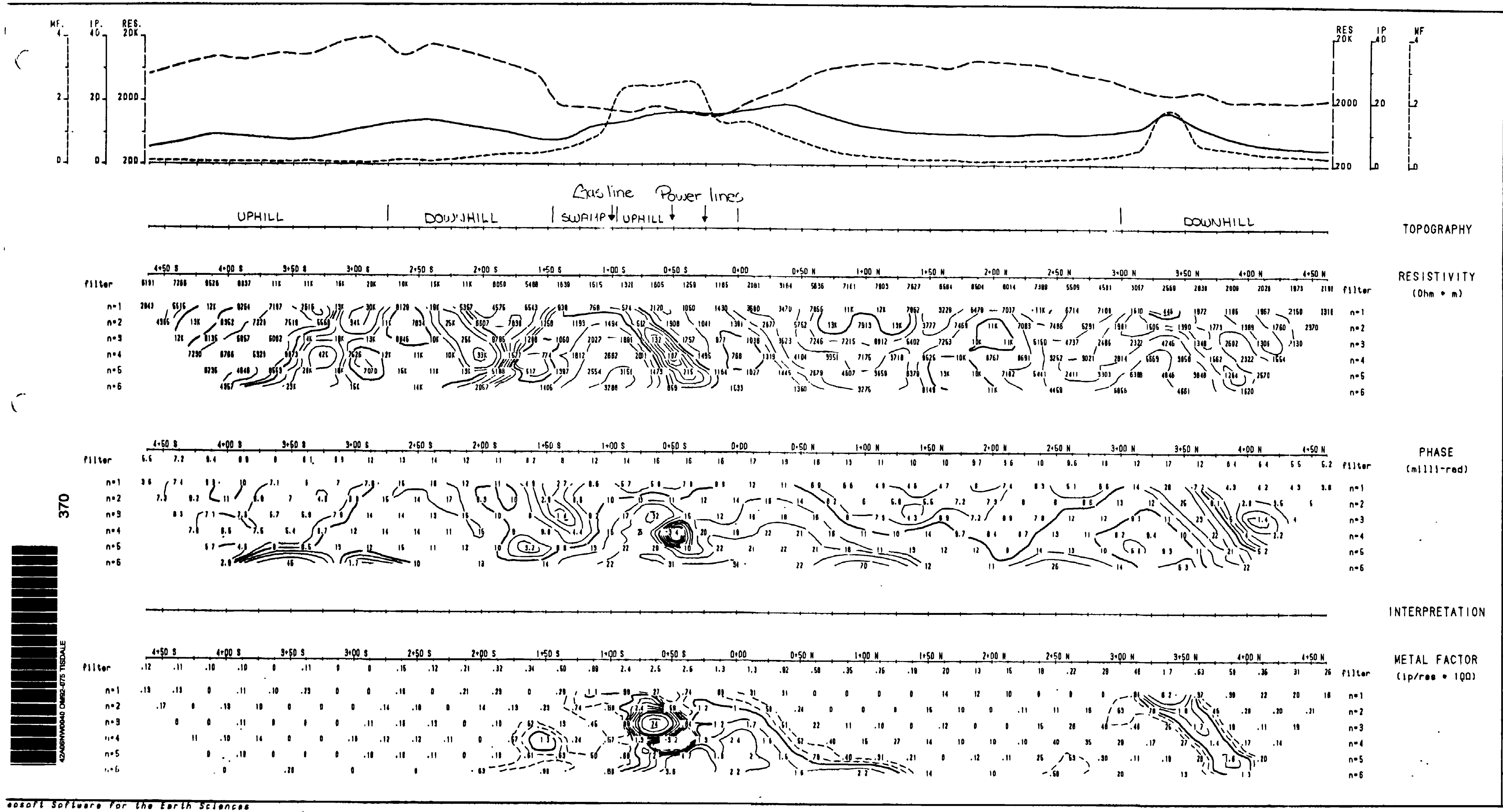
92-CND-64-06
Map #13

VAL D'OR GEOPHYSIQUE LTEE.

92-761

370

42A06NW0040 OM92-075 TISDALE



Line 2+00 E

Dipole-Dipole Array

a = 25 M

n = 1, 2, 3, 4, 5, 6

plot point

Filtered Profiles

		Filter
Resistivity	— — —	
Polarization	———	
Metal Factor	- - - - -	

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ▣ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

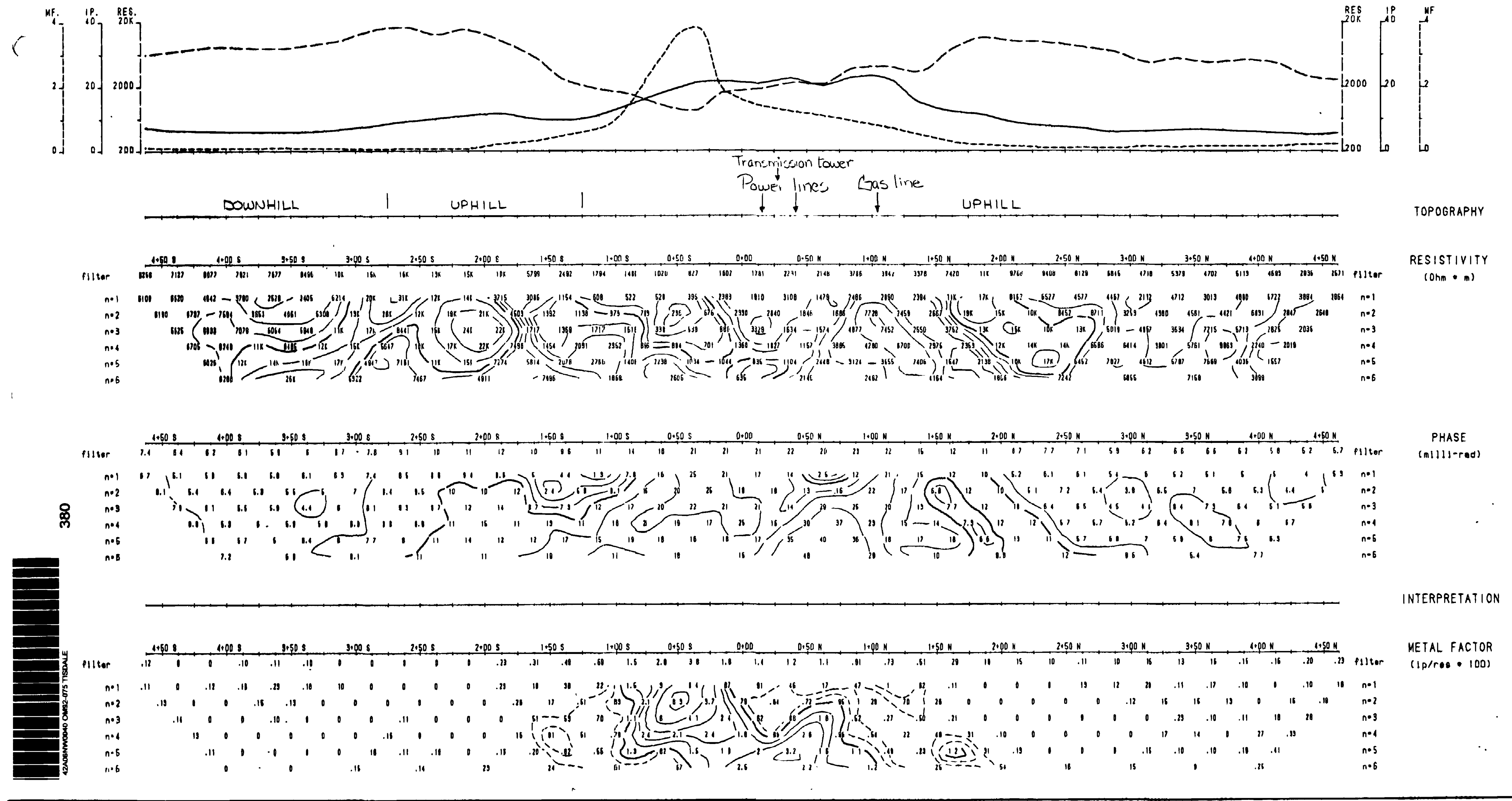
Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-64-06
Map #14

VAL D'OR GEOPHYSIQUE LTEE.

92-761

Geosoft Software for the Earth Sciences



Line 3+00 E

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

		Filter
Resistivity	— — — —	
Polarization	————	
Metal Factor	- - - - - -	

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

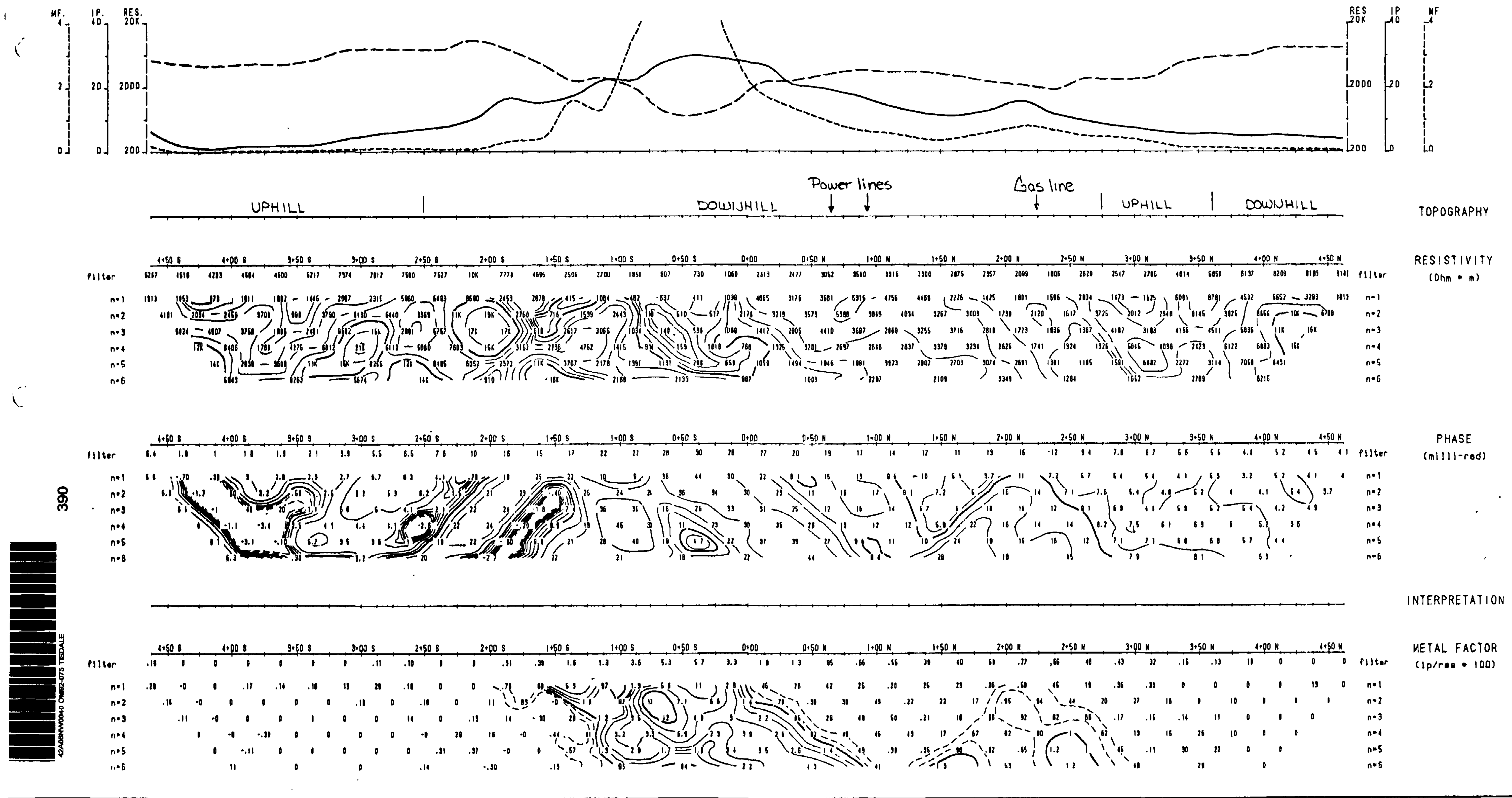
92-CND-64-06
Map #15

VAL D'OR GEOPHYSIQUE LTEE.

92-761

380

42A06NW0040 OM92-075 TISDALE



Line 4+00 E

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Filter

Resistivity
Polarization
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

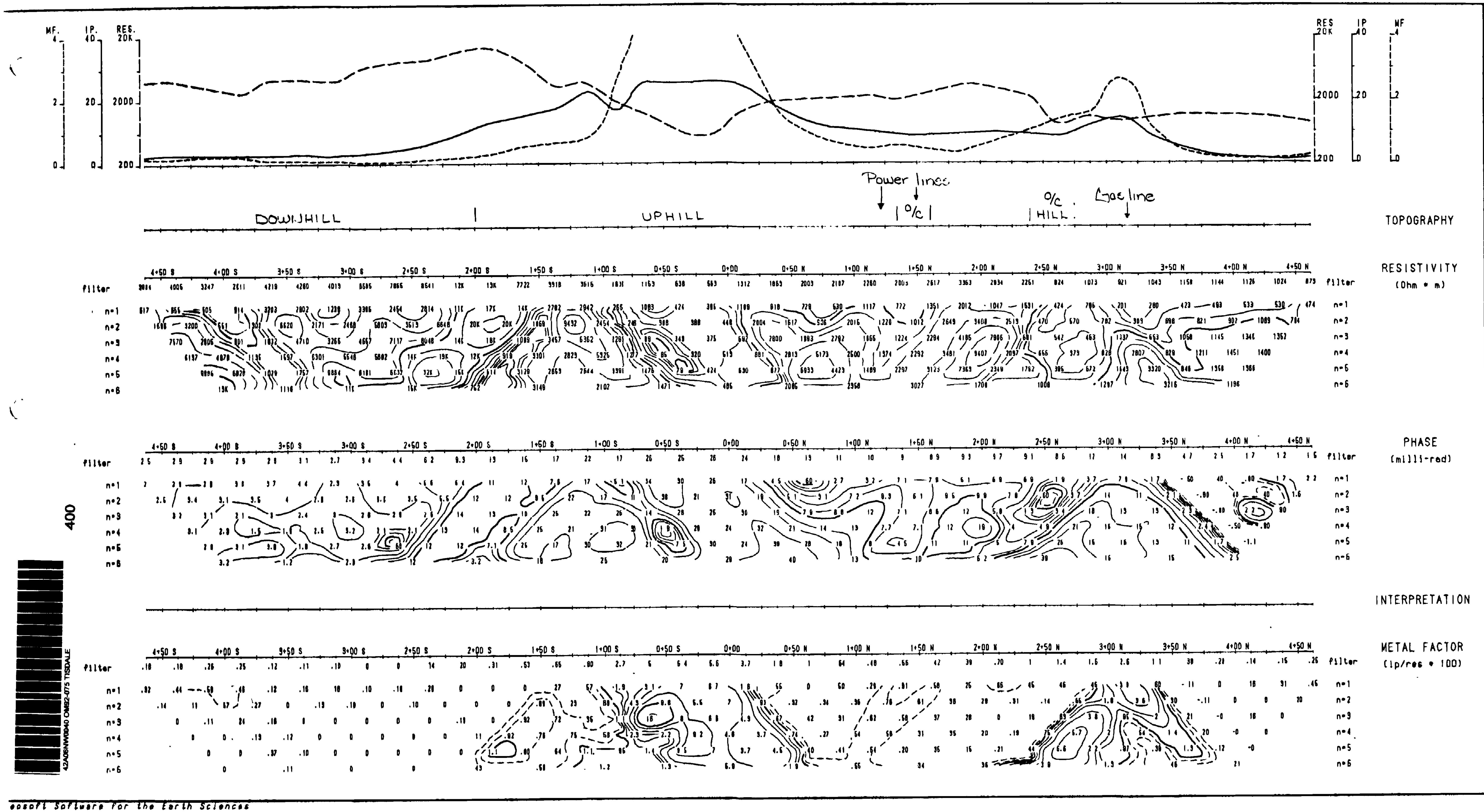
92-CND-64-06
Map #16

VAL D'OR GEOPHYSIQUE LTEE.

92-761

390

42A06NW0040 OM92-075 TISDALE



Line 5+00 E

Dipole-Dipole Array

a = 25 M

n = 1, 2, 3, 4, 5, 6

plot point

Filtered Profiles

Filter

Resistivity
Polarization
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization - anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

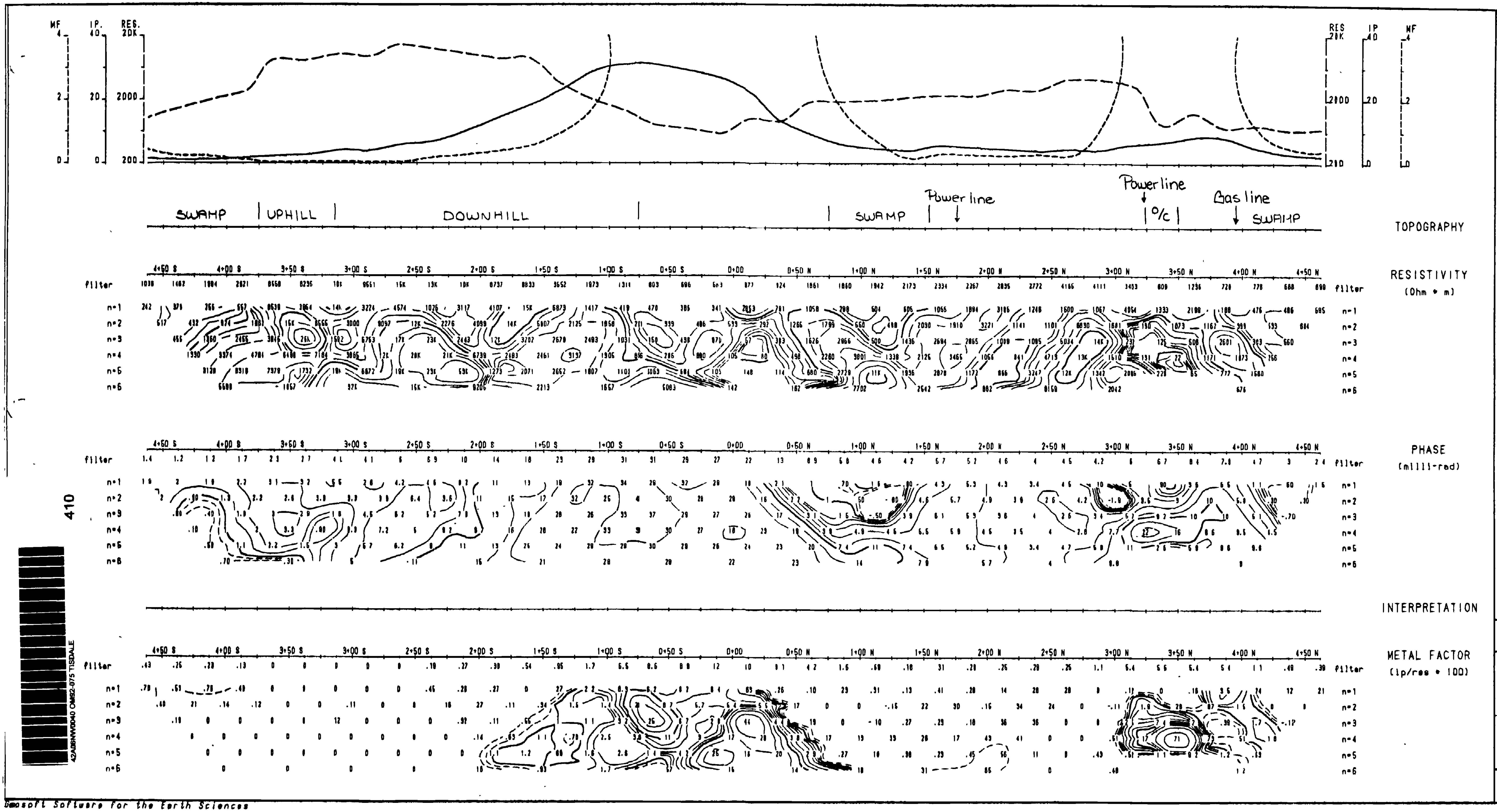
Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-84-06
Map #17

VAL D'OR GEOPHYSIQUE LTEE.

92-761



Line 6+00 E

Dipole-Dipole Array

a = 25 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

		Filter
Resistivity	– – – –	• •
Polarization	———	• • •
Metal Factor	- - - - - -	• • • •

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ▣ Increase in polarization with little or no associated decrease in apparent resistivity
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

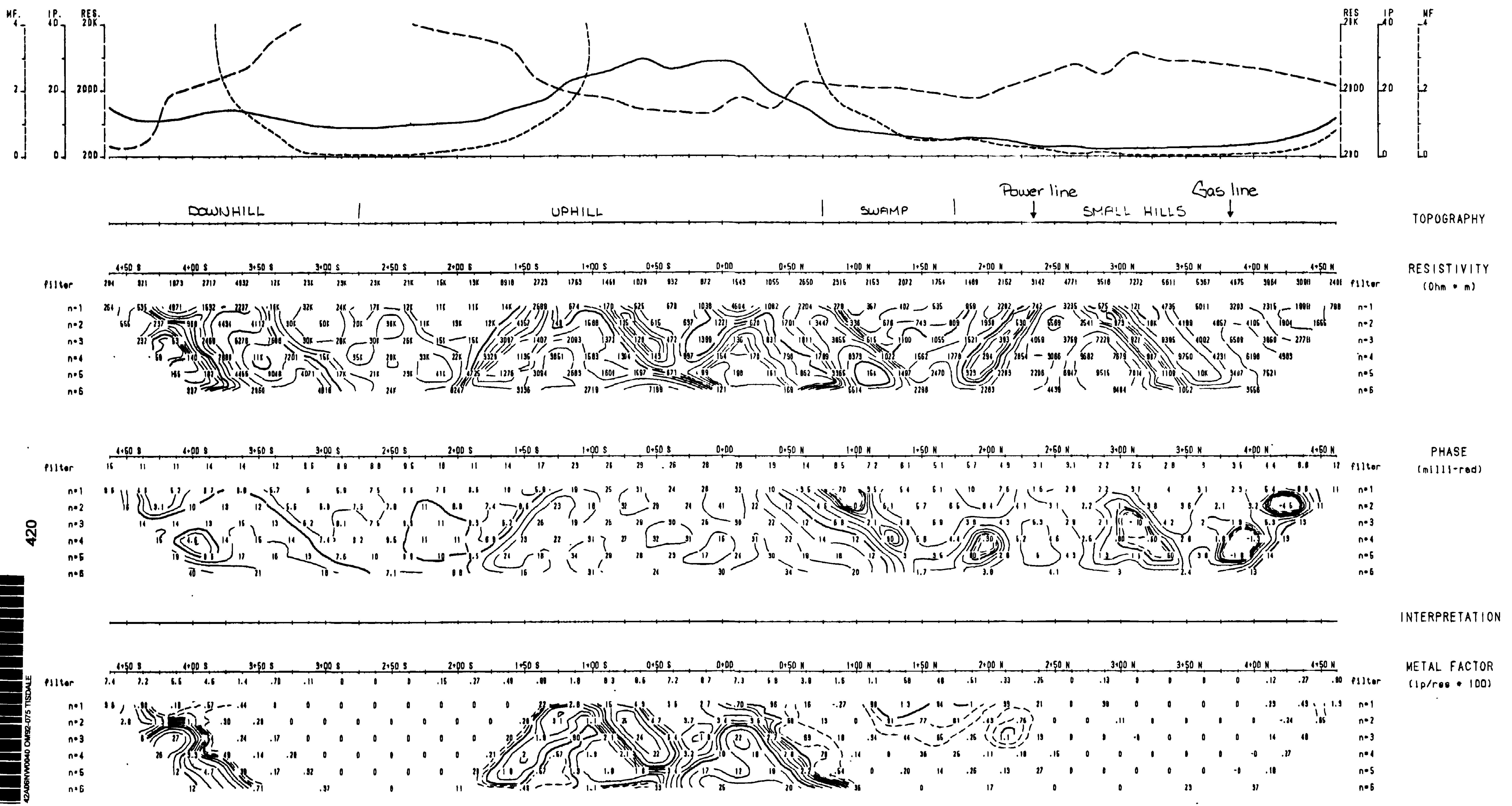
Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-64-06
Map #18

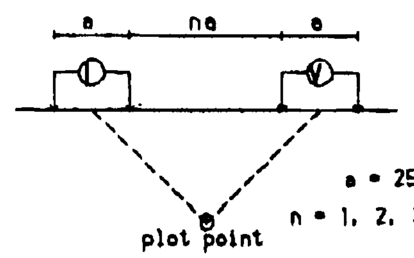
VAL D'OR GEOPHYSIQUE LTEE.

92-761



Line 7+00 E

Dipole-Dipole Array



a = 25 M

n = 1, 2, 3, 4, 5, 6

Filtered Profiles

		Filter
Resistivity	———	
Polarization	———	
Metal Factor	- - - - -	

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 2500

92-CND-64-06
Map #19

VAL D'OR GEOPHYSIQUE LTEE.

92-761

420

42A06NW0040 OM92-075 TISDALE

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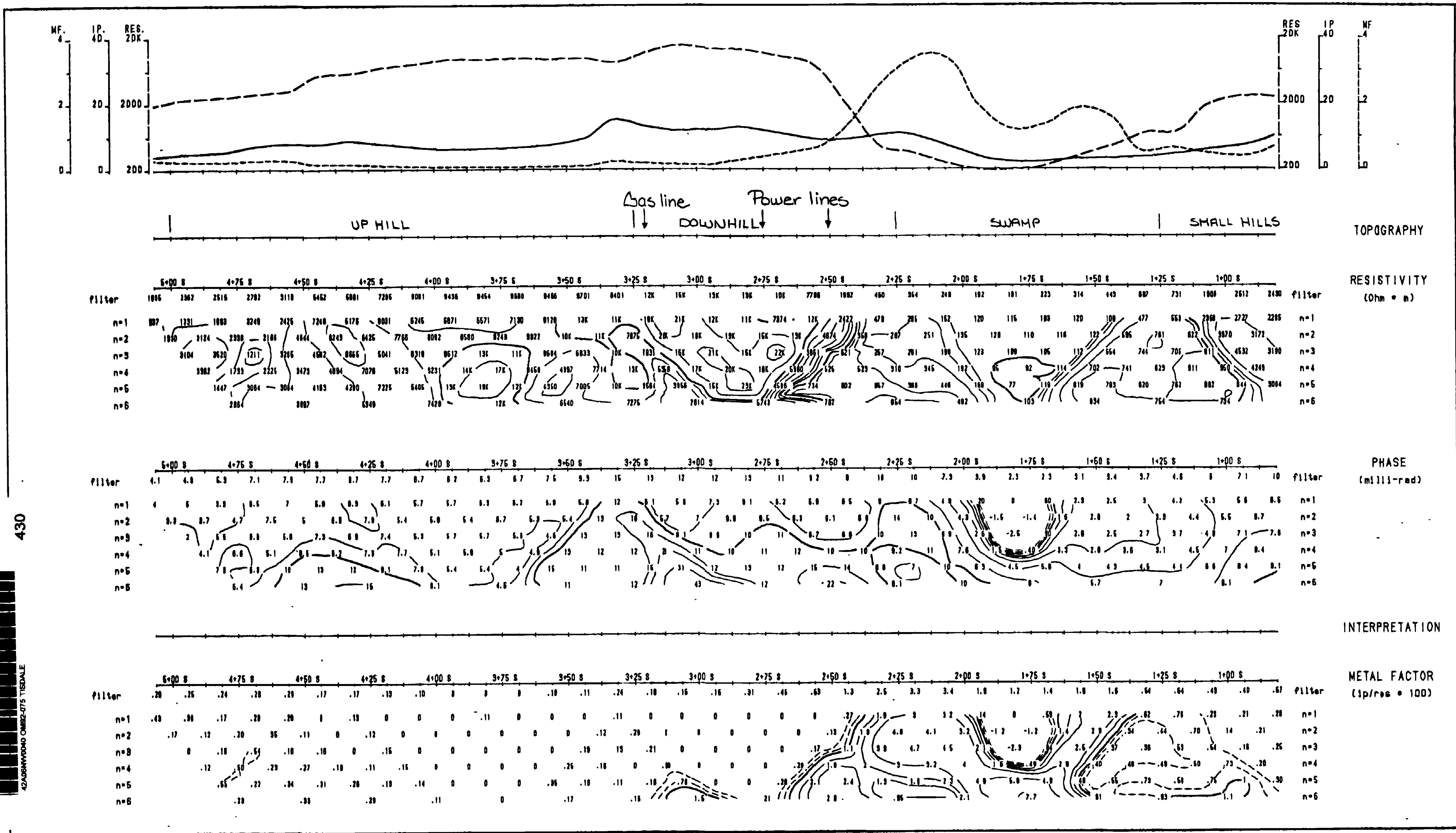


Line 2+00 W

Dipole-Dipole Array

a = 12.5 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Resistivity
Polarization
Metal Factor

Filter

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ▣ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

92-CND-84-06
Map #20 1 of 3

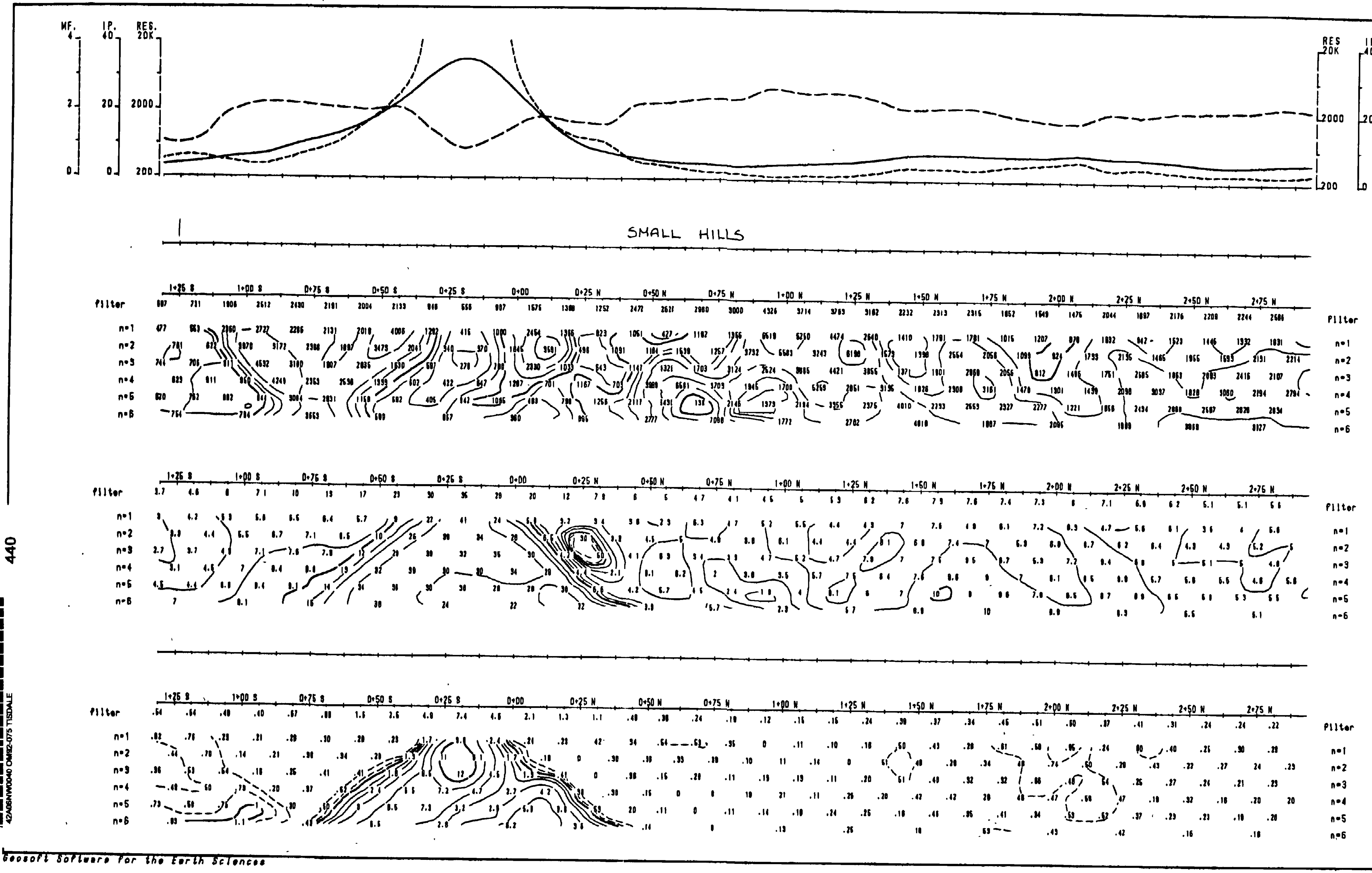
VAL D'OR GEOPHYSIQUE LTEE.

92-761

Geosoft Software For the Earth Sciences

430

42A06NW0040 OM92-075 TISDALE



Line 2+00 W

Dipole-Dipole Array

a = 12.5 M
n = 1, 2, 3, 4, 5, 6
plot point

Filtered Profiles

Filter

Resistivity
Polarization
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

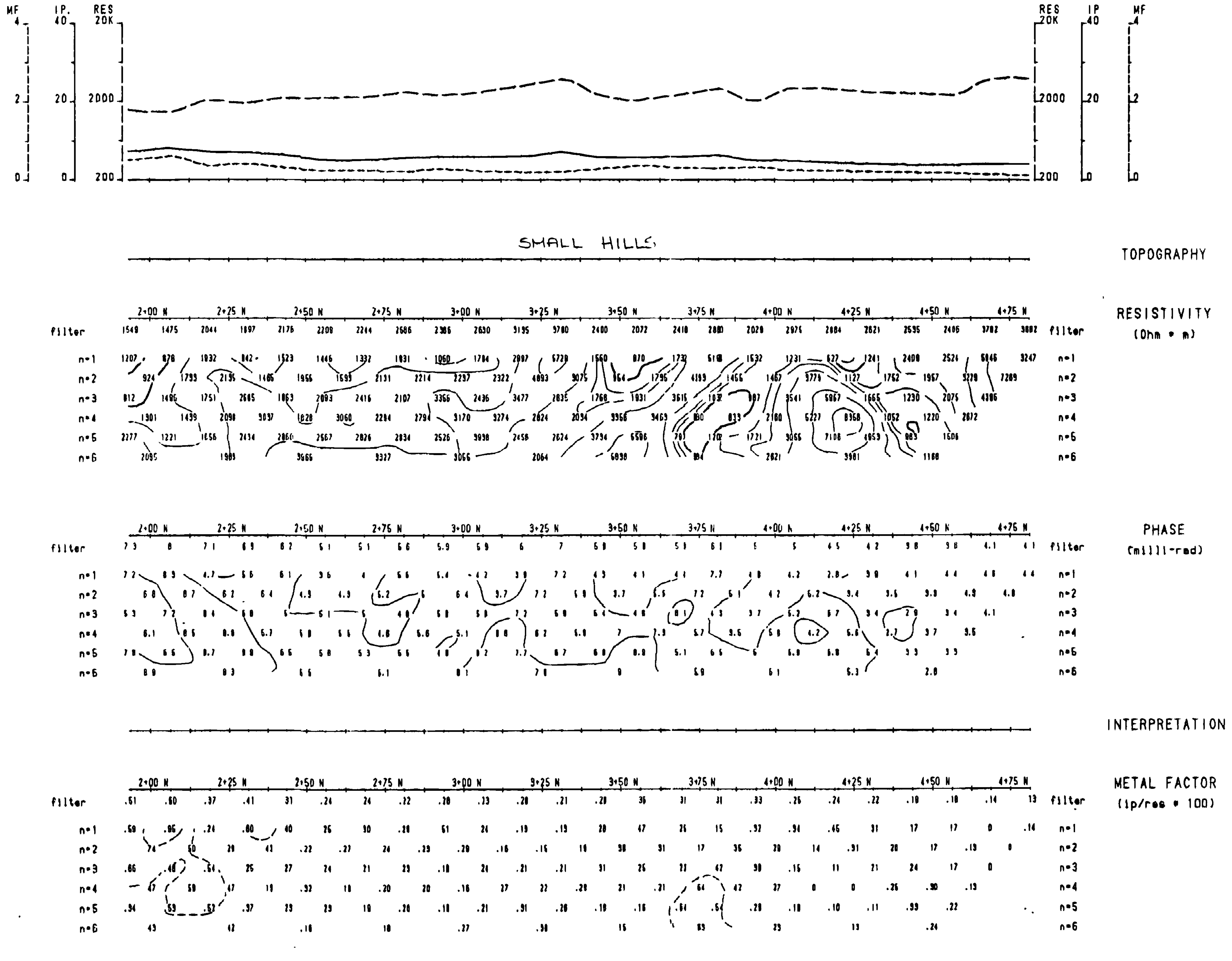
92-CND-64-06
Map #20 2 of 3

VAL D'OR GEOPHYSIQUE LTEE.

92-761

440

42A06NW0040 OM92-075 TISDALE



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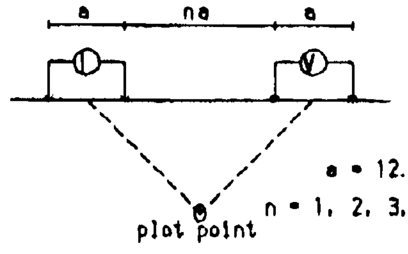
Line 2+00 W

Dipole-Dipole Array



a = 12.5 M
n = 1, 2, 3, 4, 5, 6

Filtered Profiles

Filter

Resistivity ———
Polarization ———
Metal Factor ———

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

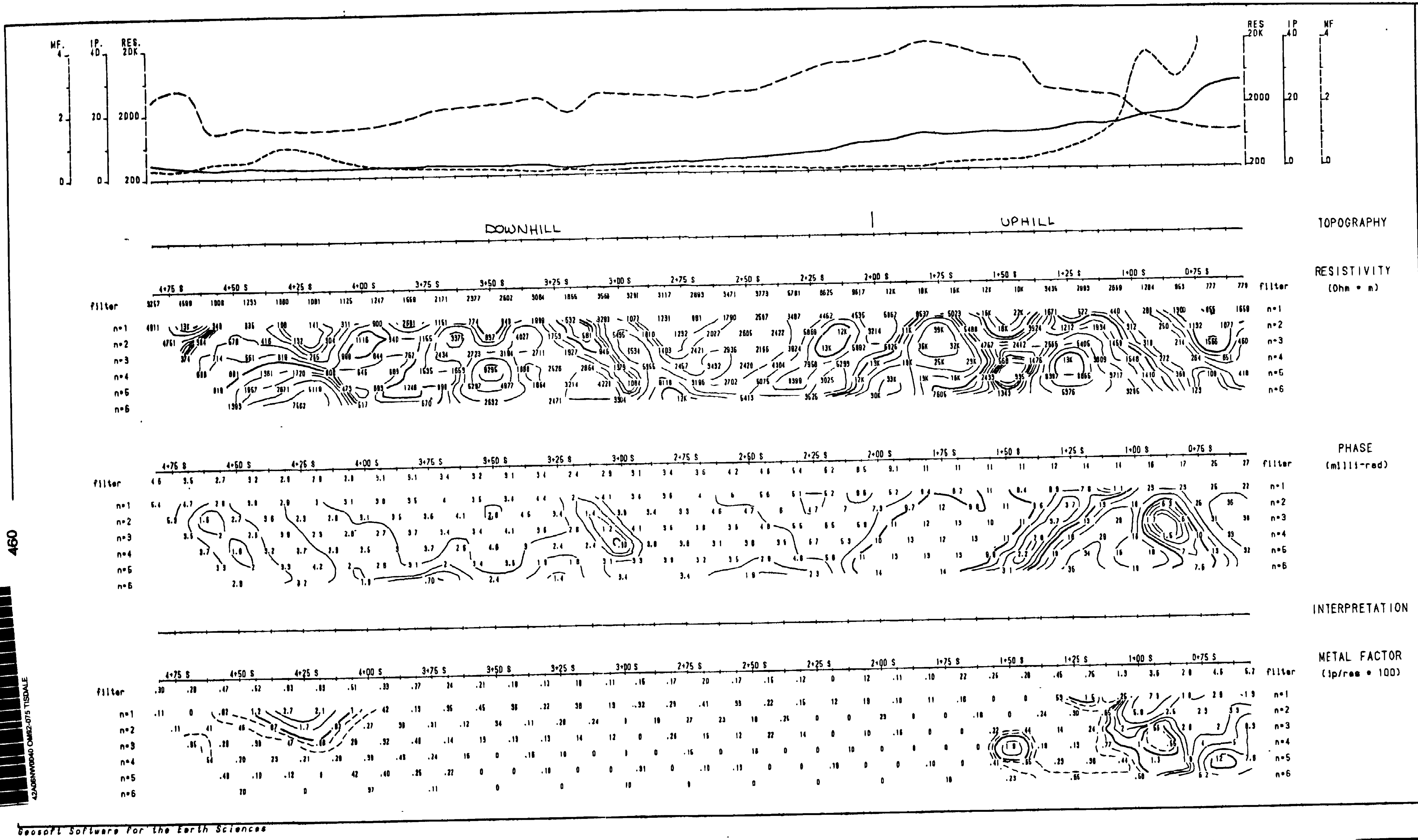
Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

92-CND-64-06
Map #20 3 of 3

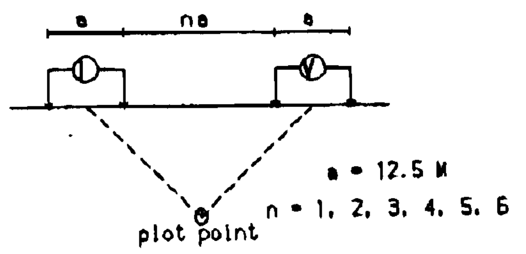
VAL D'OR GEOPHYSIQUE LTEE.

92-761



Line 5+00 E

Dipole-Dipole Array



Filtered Profiles — Filter

- Resistivity ———
- Polarization ———
- Metal Factor ---------

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly,no resistivity signature.
- ▼ Low resistivity feature.Bedrock valley or thick overburden.Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

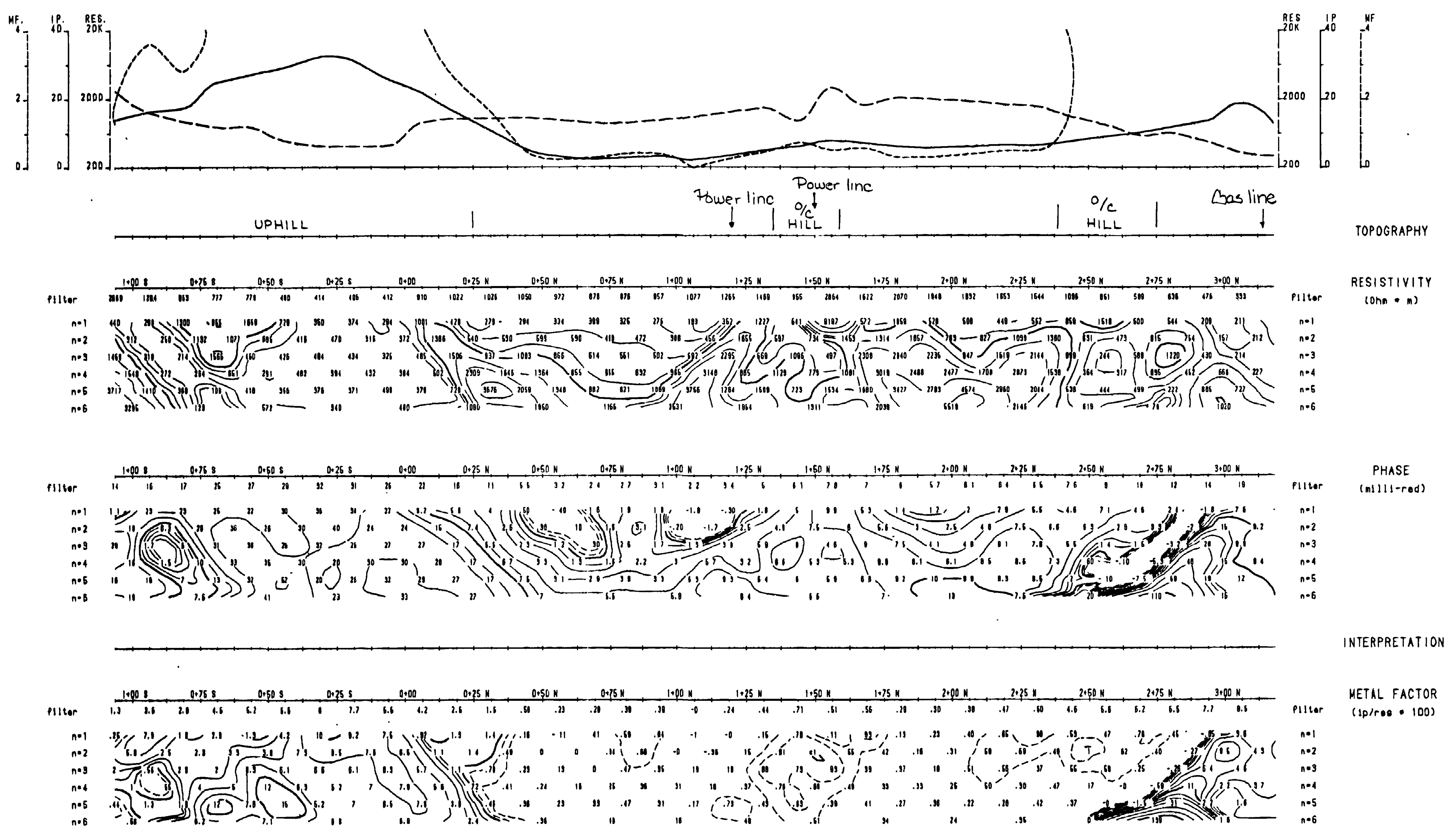
92-CND-84-06
Map #21 1 of 3

VAL D'OR GEOPHYSIQUE LTEE.

92-761

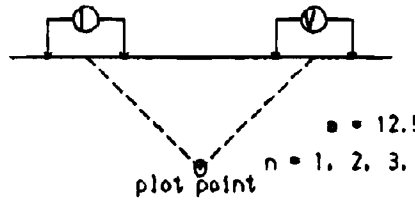
460

42A06NW0040 OM92-075 TISDALE



Line 5+00 E

Dipole-Dipole Array



Filtered Profiles

	Filter
Resistivity ————	• •
Polarization ————	• • •
Metal Factor --------	• • • •

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1, EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- ■ Increase in polarization associated to a relative decrease in apparent resistivity.
- ◘ Increase in polarization with little or no associated decrease in apparent resistivity.
- □ Weak or poorly defined polarization anomaly, no resistivity signature.
- ▼ Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

92-CND-64-06
Map #21 2 of 3

VAL D'OR GEOPHYSIQUE LTEE.

92-761

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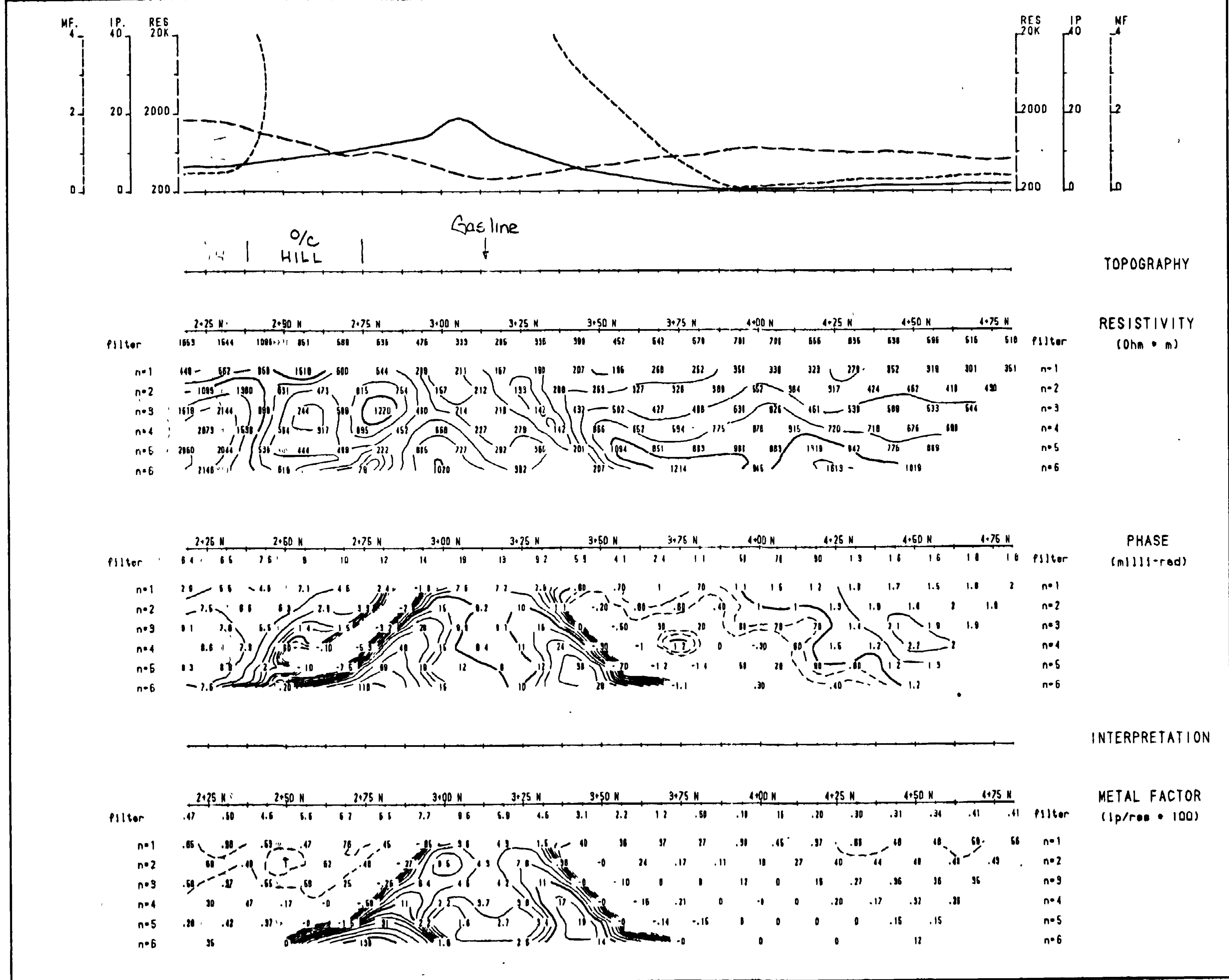
470

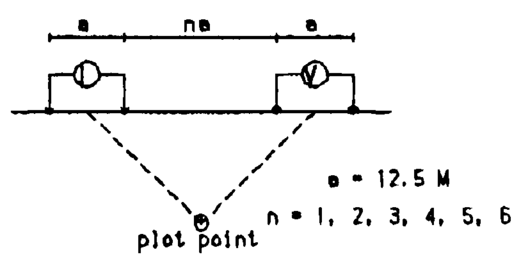
42A06NW0040 OM92-075 TISDALE



Geosoft Software for the Earth Sciences

Line 5+00 E

Dipole-Dipole Array



Filtered Profiles

Filter

Resistivity ————
Polarization ————
Metal Factor --------

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instrument: PHOENIX IPT1,EDA IP-6
Time cycle: 2 sec.
Operator: Gerry Shields

INTERPRETATION

- Increase in polarization associated to a relative decrease in apparent resistivity.
- Increase in polarization with little or no associated decrease in apparent resistivity.
- Weak or poorly defined polarization anomaly, no resistivity signature.
- Low resistivity feature. Bedrock valley or thick overburden. Structural causes?

Induced Polarization Survey

COGEMA CANADA LTD

Kayorum Grid Kay-92 project
Tisdale township

Date: 92/06/22
Interpretation by:
Scale 1 : 1250

92-CND-64-06
Map #21 3 of 3

VAL D'OR GEOPHYSIQUE LTEE.

92-761


1800 WEST
1600 WEST
1400 WEST
1200 WEST
1000 WEST
800 WEST
600 WEST
400 WEST
200 WEST
0
200 EAST
400 EAST
600 EAST
800 EAST
1000 EAST
1200 EAST
1400 EAST
1600 EAST
1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
Area of snow dump
Fence
Phone line
Road to
Gold Centre
Gas line
Pond
Pond
Pond
Pond
Refuse
Gas line
Creek
Power line
Crest of tailings
Crest of tailings
Creek
Swamp
Sand Pit
Power line
7
20
40
<20
18
30
LEGEND
VLF-EM
VLF-EM (E-W lines, NSS-21.4 KHz)
VLF-EM (N-S lines, NLK-24.8 KHz)
IP SOURCES
INCREASING POLARIZATION – DECREASING APPARENT RESISTIVITY
INCREASING POLARIZATION – LITTLE OR NO DECREASE IN APPARENT RESISTIVITY
GRAVITY
LOCAL ZONE OF HIGH DENSITY MATERIAL
GRAVITY STRUCTURE / CONTACT
FAULTING (INTERPRETED)
MAGNETICS
DIABASE DYKES
ELECTROMAGNETICS
WELL DEFINED MAX MIN CONDUCTOR
LOWER CONDUCTIVITY MAX MIN CONDUCTOR
CONDUCTIVITY x THICKNESS IN SIEMENS
DEPTH (M)
DIP DIRECTION
M MODERATE
S STEEP
ANOMALOUS GOLD ZONES
LITHOGEOCHEMISTRY
Range of values ≥ 10 ppb to ≥ 1000 ppb
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
NEWFOUNDLAND
N.B.
N.S.
INDEX TO ADJOINING
N.T.S. SHEETS
COGEMA Canada Ltee/Ltd
Scale 1:5,000
KAYORUM PROJECT
INTERPRETATION / COMPILATION
OF GEOPHYSICAL AND GEOCHEMICAL
ANOMALIES
Compiled by : Rodney Koch
Date :
92-02-20
Drafted by : Nestor Calayan
92-03-25
Base map :
Revised by :
Report no: 91-CND-64-04
ACAD File : KINTERP
MAP NO : 2

LEGEND

PROTEROZOIC

(symbol)	Diabase

ARCHEAN

TISDALE GROUP

UPPER FORMATIONS

K	Krist Formation felsic agglomerate, lapilli tuff
A	Graphitic argillite, slate

GOLD CENTRE SUBGROUP

V12	Amygdaloidal pillow lava (and pillow breccia)
V11	Uniform (massive) flow (V11F flow breccia)

VIPOND SUBGROUP

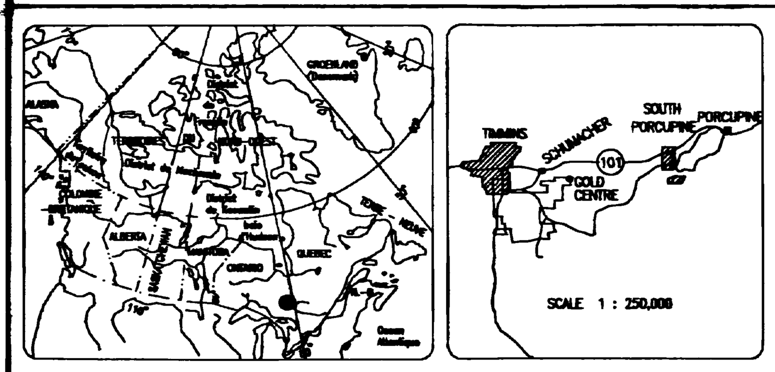
V10C	Graphitic interflow sediment
V10B	Variolitic pillow lava
V10A	Uniform (massive) flow
V8	Variolitic pillow lava
99	Uniform (massive) flow

CENTRAL SUBGROUP

C17	Interflow sediment (?)
V6	Variolitic lava
C16	Uniform (massive) flow
C15	Amygdaloidal pillow lava

SYMBOLS

GEOLOGICAL CONTACT
GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)
FAULT
BEDDING, INCLINED (QUESTIONNABLE MEASURE)
FOLIATION, INCLINED, VERTICAL
STRETCHING LINEATION
STRETCHING LINEATION IN INCLINED ,VERTICAL FOLIATION PLANE
CROSS-CUTTING FOLIATIONS, INCLINED, VERTICAL
QUARTZ VEINING, INCLINED, VERTICAL
GLACIAL STRIAE
DDH CASING LOCATED
DDH CASING (APPROX)
OUTCROP
PIT
TRENCH
VEIN RUBBLE
SAMPLE SITE
STREAM
TREELINE
TRAIL
SKI-TRAIL
SKI-TRAIL (APPROX)
ROAD
FENCE
POWER LINE
GAS LINE
PROPERTY BOUNDARY LOCATED
PROPERTY BOUNDARY (APPROX)



COGEMA Canada Ltee/Ltd.

SCALE 1 : 2000 (0, 50, 100, 150, 200 meters)

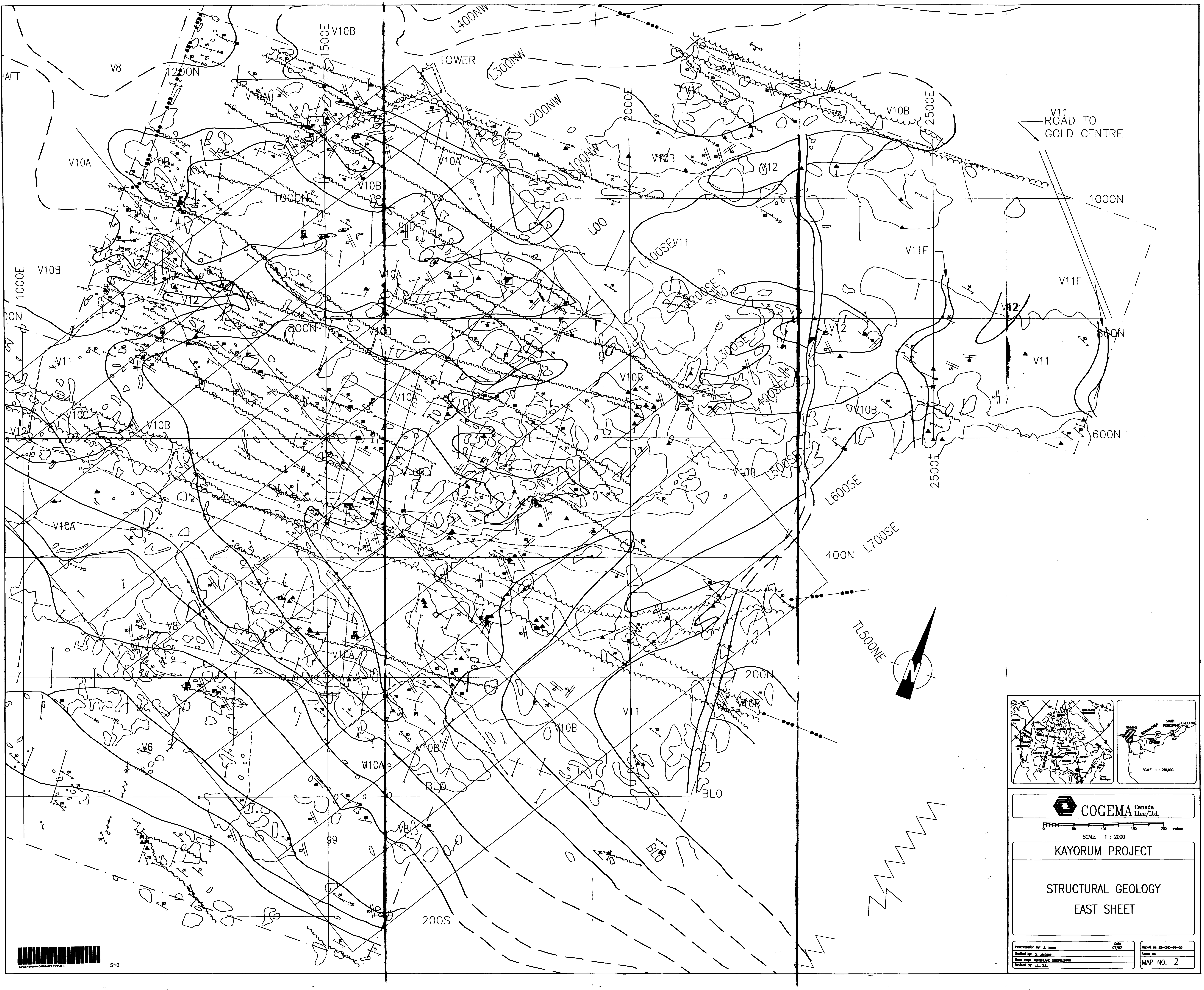
KAYORUM PROJECT

STRUCTURAL GEOLOGY
SOUTH SHEET

Interpretation by: J. Leam	Date 12/92
Drafted by: S. Lacasse	
Base map: NORTHLAND ENGINEERING	
Revised by: J.L., S.L.	

Report no. 92-CND-64-05
Annex no.
MAP NO. 3

500



ROAD TO
GOLD CENTRE
TOWER
L400NW
L300NW
L200NW
L100NW
L00
L100SE
L200SE
L300SE
L400SE
L500SE
L600SE
L700SE
TL500NE
1200N
1000N
800N
600N
400N
200N
200S
1000E
1500E
2000E
2500E
BLO
V6
V8
V10A
V10B
V10C
V11
V11F
V12
COGEMA Canada Ltee/Ltd.
SCALE 1 : 2000
KAYORUM PROJECT
STRUCTURAL GEOLOGY
EAST SHEET
MAP NO. 2
SCALE 1 : 250,000
510

LEGEND

PROTEROZOIC

Diabase

ARCHEAN

TISDALE GROUP

UPPER FORMATIONS

K	Krist Formation felsic agglomerate, lapilli tuff
A	Graphitic argillite, slate

GOLD CENTRE SUBGROUP

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V6	Variolitic lava
C16	Uniform (massive) flow
C15	Amygdaloidal pillow lava

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GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)

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FOLIATION, INCLINED, VERTICAL

STRETCHING LINEATION

STRETCHING LINEATION IN INCLINED ,VERTICAL FOLIATION PLANE

CROSS-CUTTING FOLIATIONS, INCLINED, VERTICAL

QUARTZ VEINING, INCLINED, VERTICAL

GLACIAL STRIAE

DDH CASING LOCATED

DDH CASING (APPROX)

OUTCROP

PIT

TRENCH

VEIN RUBBLE

SAMPLE SITE

STREAM

TREELINE

TRAIL

SKI-TRAIL

SKI-TRAIL (APPROX)

ROAD

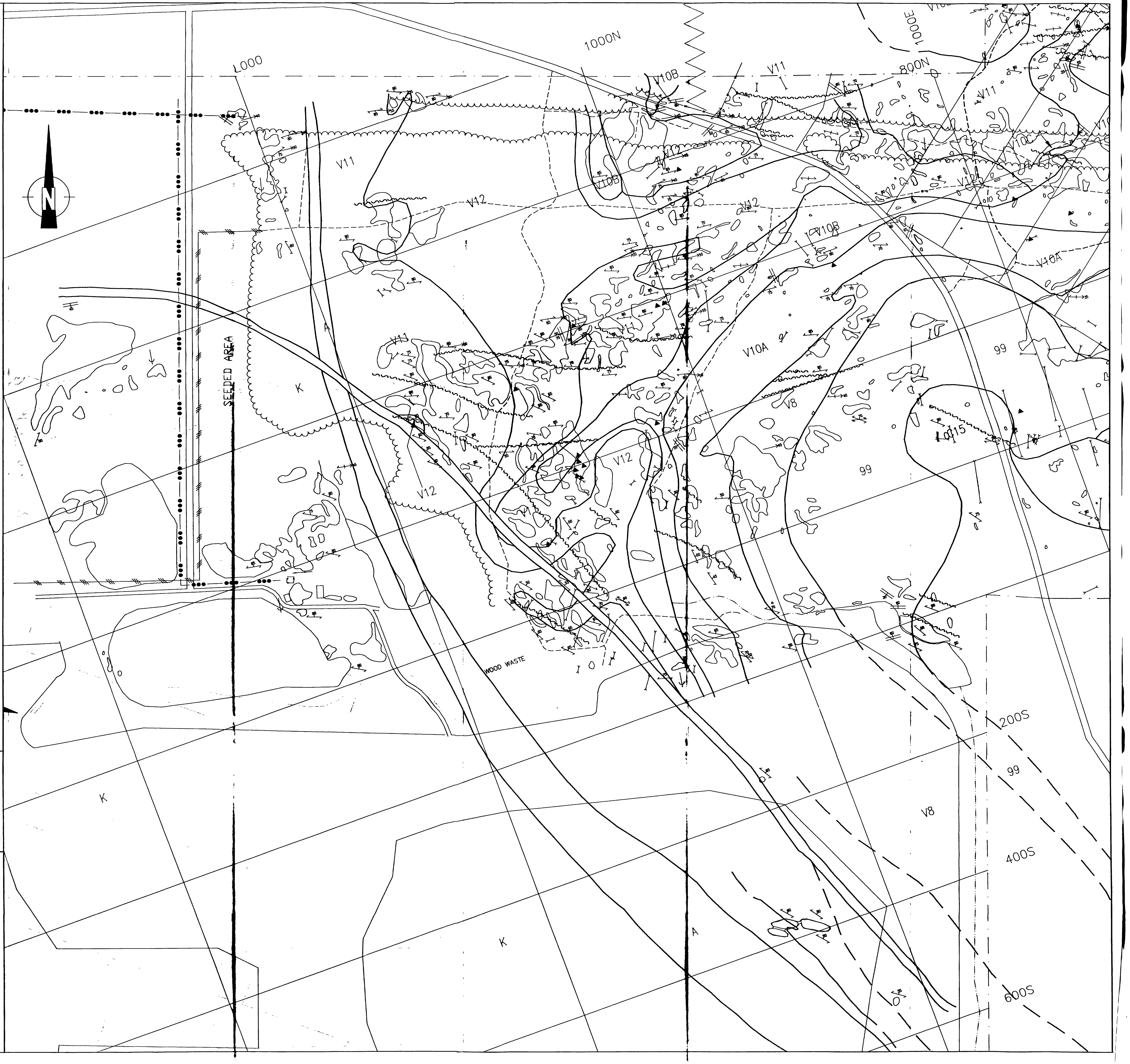
FENCE

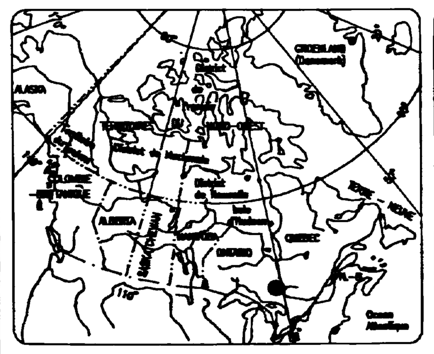
POWER LINE

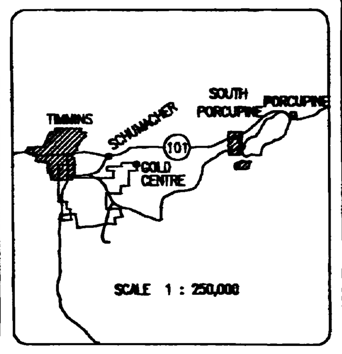
GAS LINE

PROPERTY BOUNDARY LOCATED

PROPERTY BOUNDARY (APPROX)







COGEMA Canada Ltee/Ltd.

0 50 100 150 200 meters

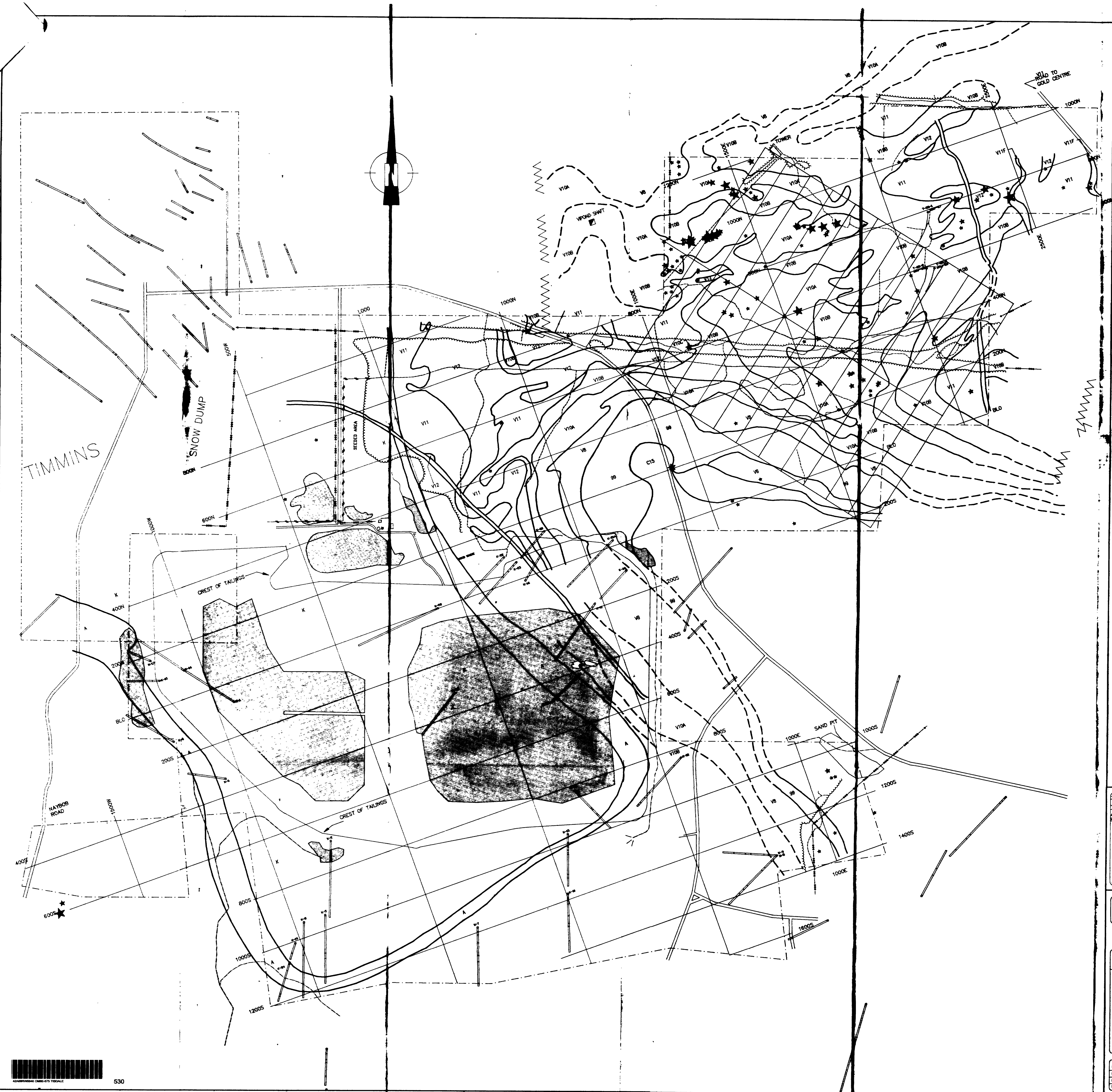
SCALE 1 : 2000

KAYORUM PROJECT

STRUCTURAL GEOLOGY

WEST SHEET

Interpretation by: J. Learn	Report no. 92-CND-64-05
Drafted by: S. Lacasse	Annex no.
Base map: NORTHLAND ENGINEERING	MAP NO. 1
Revised by: J.L., S.L.	



LEGEND

PROTEROZOIC

Diabase

ARCHEAN

TISDALE GROUP

UPPER FORMATIONS

K	Krist Formation felsic agglomerate, lapilli tuff
A	Graphitic argillite, slate

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C16	Uniform (massive) flow
C15	Amygdaloidal pillow lava

SYMBOLS

GEOLOGICAL CONTACT

GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)

FAULT

Au Lithogeochemistry

- ≥ 10 < 20 ppb
- ≥ 20 < 50 ppb
- ≥ 50 < 100 ppb
- ≥ 100 < 200 ppb
- ≥ 200 < 500 ppb
- ≥ 500 < 1000 ppb
- ≥ 1000 ppb

DDH CASING LOCATED

DDH CASING (APPROX)

STREAM

TREELINE

TRAIL

SKI-TRAIL

SKI-TRAIL (APPROX)

ROAD

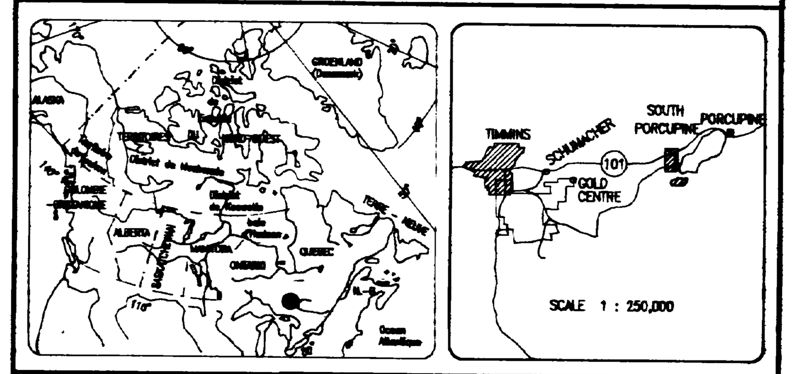
FENCE

POWER LINE

GAS LINE

PROPERTY BOUNDARY LOCATED

PROPERTY BOUNDARY (APPROX)



COGEMA Canada Ltee/Ltd.

0 50 100 150 200 250 300 350 400 450 500

SCALE 1 : 5000

KAYORUM PROJECT

GEOLOGICAL MAP

Date 07/92

Revised by: J.L., S.L.

MAP NO. 1

530

LEGEND
PROTEROZOIC
Diabase
ARCHEAN
TISDALE GROUP
UPPER FORMATIONS
K Krist Formation felsic agglomerate, lapilli tuff
A Graphitic argillite, slate
GOLD CENTRE SUBGROUP
V12 Amygdaloidal pillow lava (and pillow breccia)
V11 Uniform (massive) flow (V11F flow breccia)
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V10C Graphitic interflow sediment
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V8 Variolitic pillow lava
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C17 Interflow sediment (?)
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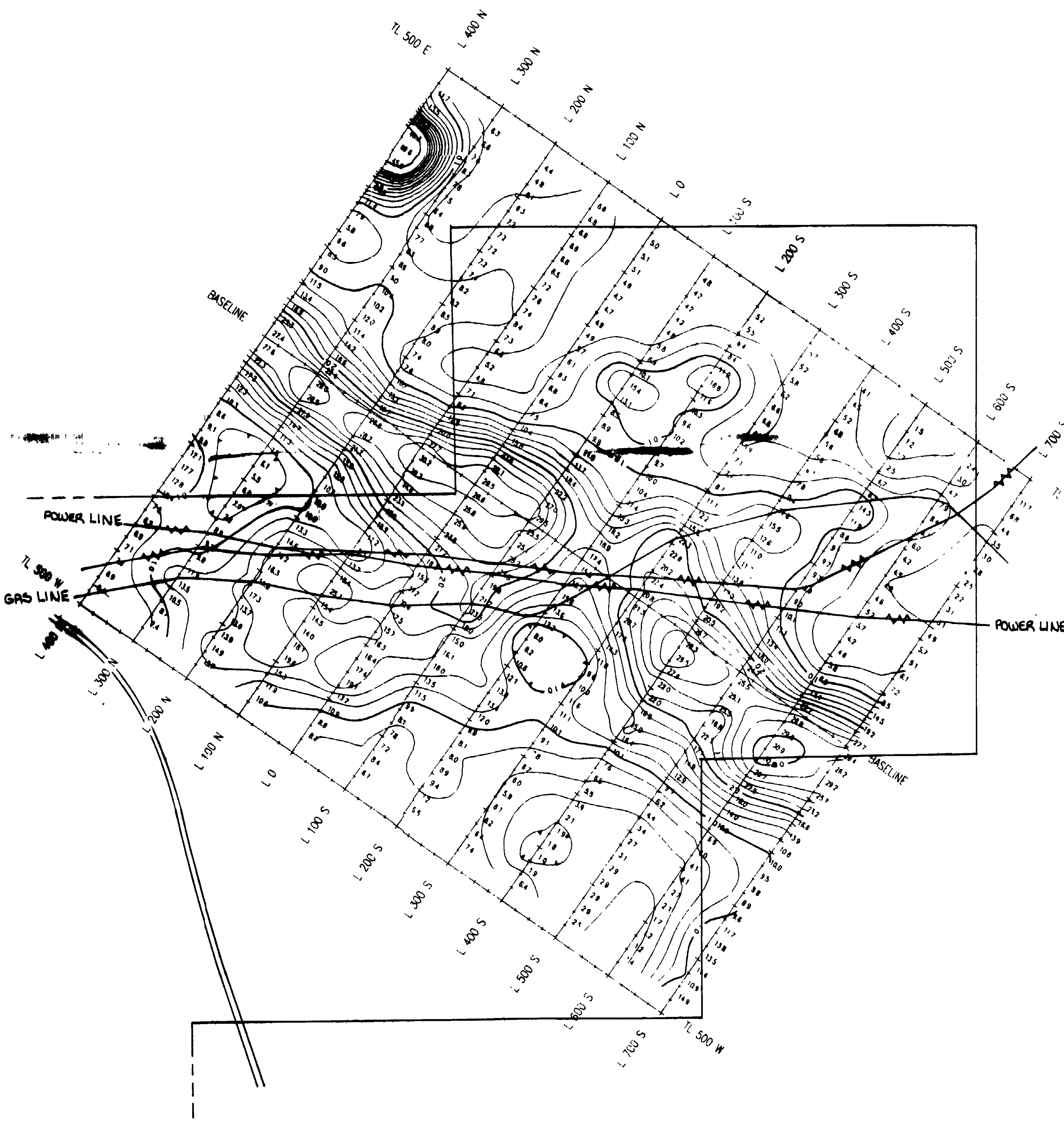
GEOLOGICAL CONTACT (from Ferguson, 1959, et. al., 1968 and/or Brisbin, 1992)
FAULT
Au Lithogeochemistry
≥ 10 < 20 ppb
≥ 20 < 50 ppb
≥ 50 < 100 ppb
≥ 100 < 200 ppb
≥ 200 < 500 ppb
≥ 500 < 1000 ppb
≥ 1000 ppb
DDH CASING LOCATED
DDH CASING (APPROX)
OUTCROP
PIT
TRENCH
VEIN RUBBLE
SAMPLE SITE
STREAM
TREELINE
TRAIL
SKI-TRAIL
SKI-TRAIL (APPROX)
ROAD
FENCE
POWER LINE
GAS LINE
PROPERTY BOUNDARY LOCATED
PROPERTY BOUNDARY (APPROX)
OUTCROPS MAPPED JUNE 1992 (MEUNIER)
SCALE 1 : 250,000
GOLD CENTRE
COGEMA Canada Ltee/Ltd.
0 50 100 150 200 metres
SCALE 1 : 2000
KAYORUM PROJECT
DETAILED MAPPING
EAST SHEET
MAP NO. 2
ROAD TO GOLD CENTRE
TOWER
1000N
800N
600N
400N
200N
200S
1500E
2000E
2500E
1000E
1200N
V11
V11F
V12
V10A
V10B
V10C
V8
V6
99
BLO
540



25
22
21
20
19
18.5
18
17
16.5
16
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
5.5
5
4
3
2
1
0
-3.3

Chargeability
(milli-second)

LEGEND

CONTOUR INTERVAL (milli-second)

1
5

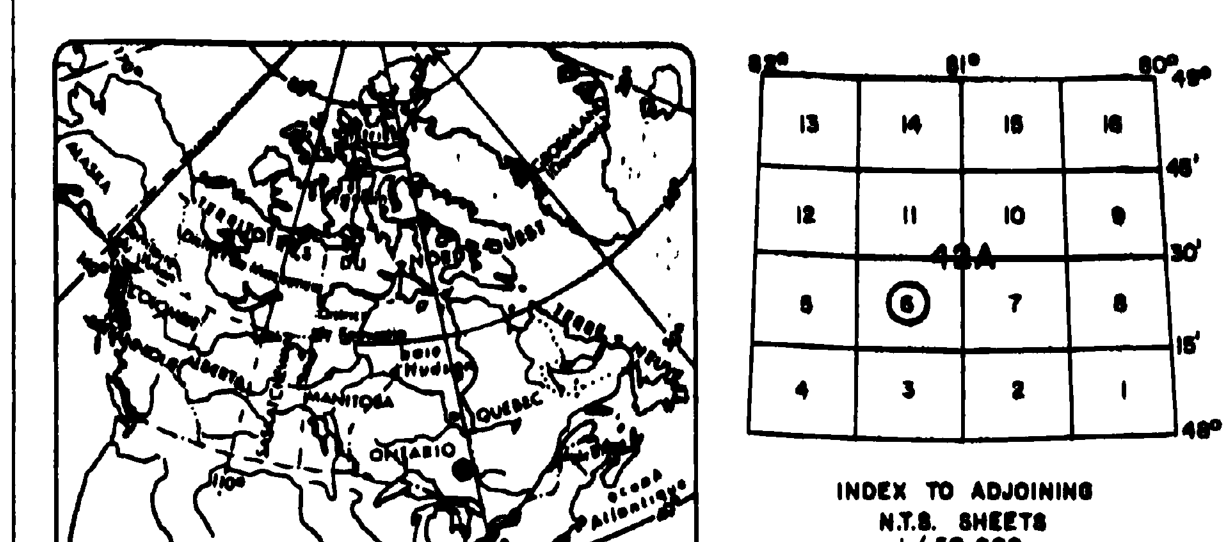
Electrode array: Dipole-dipole
a = 25 m. n = 1, 2, ..., 6

Instruments: BRGM IP-6, Phoenix IPT1

Period: 1 second

Filter calculation:

13 Map reading (milli-rad)
12 n = 1
11 10 n = 2
15 11 10 n = 3



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N.T.S. SHEETS
1 / 50,000

COGEMA CANADA LTD

KAYORUM PROJECT, KAY-92 GRID

INDUCED POLARIZATION SURVEY

CHARGEABILITY CONTOURS (filter)

VAL D'OR GEOPHYSIQUE LTEE

Interpreted by:

Date 6/1992

Scale 1 : 5000

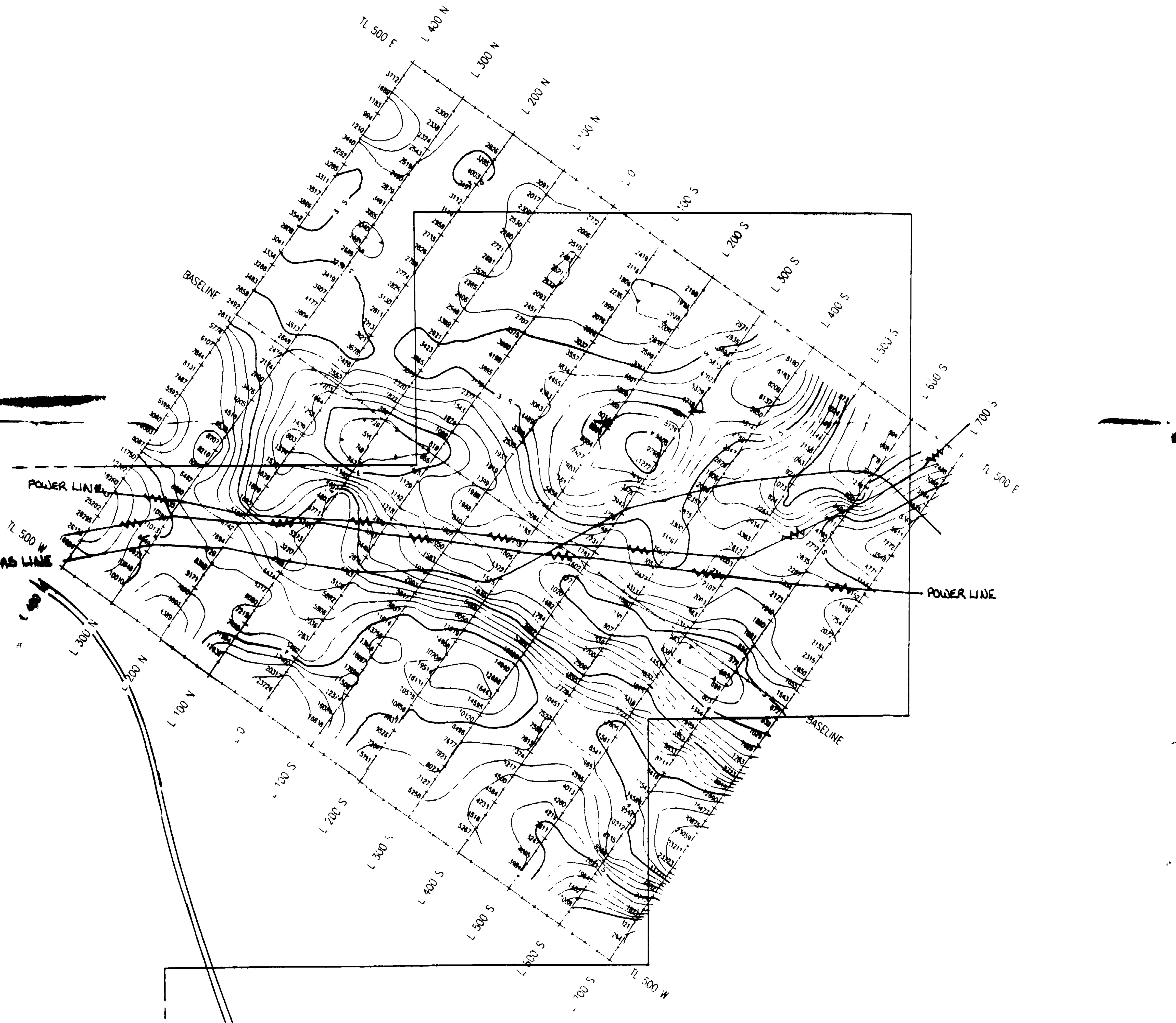
Report no: 92-CND-64-06 Map 2

Scale 1 : 5000

100 0 100 200 300 400
(metres)

42A05NW0040 OM92-078 TISDALE

550



Resistivity (Ohm-m)	log₁₀ (Ohm-m)
15849	4.2
11220	4.05
10000	4
8913	3.95
7943	3.9
7079	3.85
6683	3.825
5957	3.775
5623	3.75
5309	3.725
5012	3.7
4732	3.675
4467	3.65
4217	3.625
3981	3.6
3758	3.575
3548	3.55
3350	3.525
3162	3.5
2985	3.475
2818	3.45
2661	3.425
2512	3.4
2371	3.375
2239	3.35
2113	3.325
1995	3.3
1884	3.275
1679	3.225
1585	3.2
1496	3.175
1334	3.125
1189	3.075
1000	3
841	2.925
562	2.75

Resistivity
(Ohm-m) log$_{10}$ (Ohm-m)

LEGEND

CONTOUR INTERVAL (Ohm-metre)

Logarithmic contours:

- 0.1 — 10, 12.5, 16, 20, 25, 32, 40 ...
- 0.5 — 10, 32, 100, 320, 1000 ...

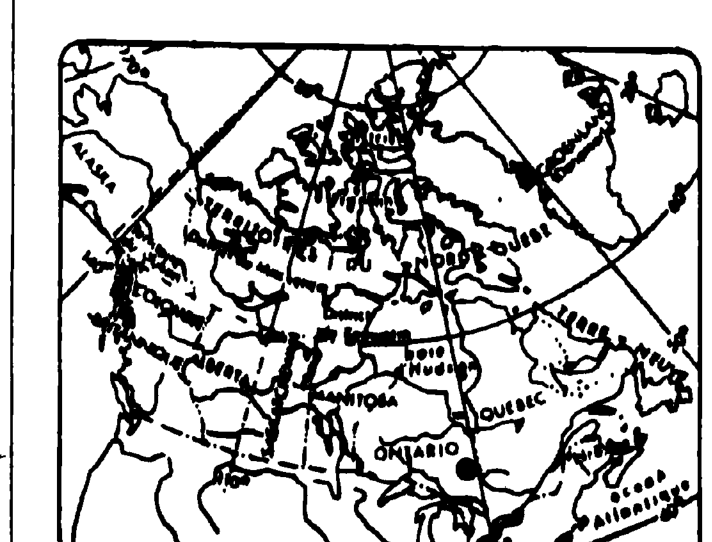
Electrode array: Dipole-dipole
a = 25 m. n = 1, 2, ..., 6

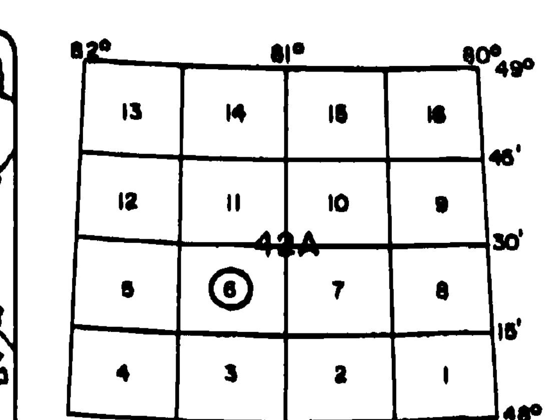
Instruments: BRGM IP-6, Phoenix IPT1

Period: 1 second

Filter calculation:

357 Map reading (Ohm-metre)
380 n = 1
270 462 n = 2
152 338 562 n = 3





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N.T.S. SHEETS
1/50,000

COGEMA CANADA LTD

KAYORUM PROJECT, KAY-92 GRID

INDUCED POLARIZATION SURVEY

RESISTIVITY CONTOURS (filter)

VAL D'OR GEOPHYSIQUE LTEE

Interpreted by: Date 6/1992

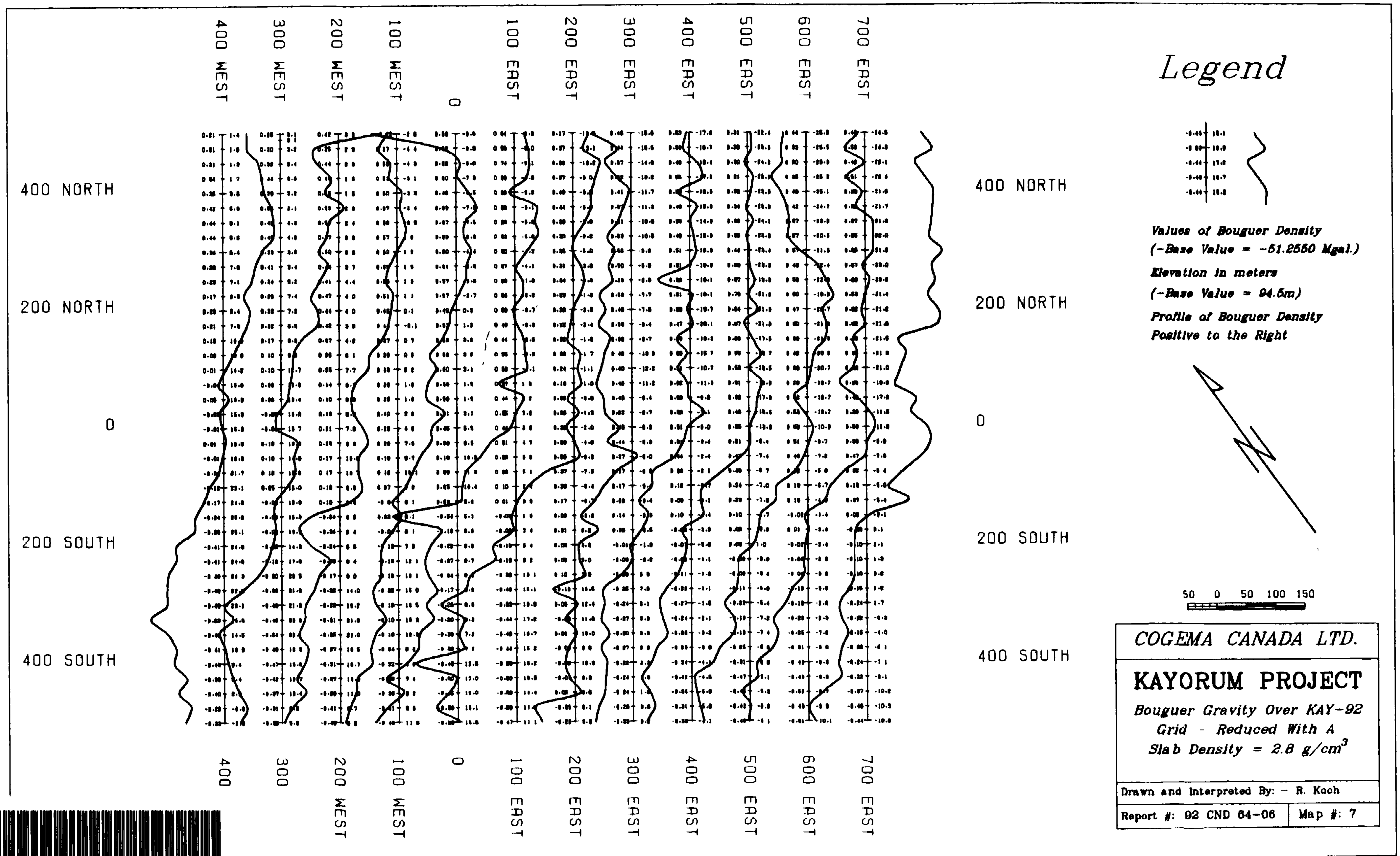
Scale 1 : 5000 | Report no: 92-CND-64-06 | Map 1

Scale 1 : 5000

100 0 100 200 300 400
(metres)

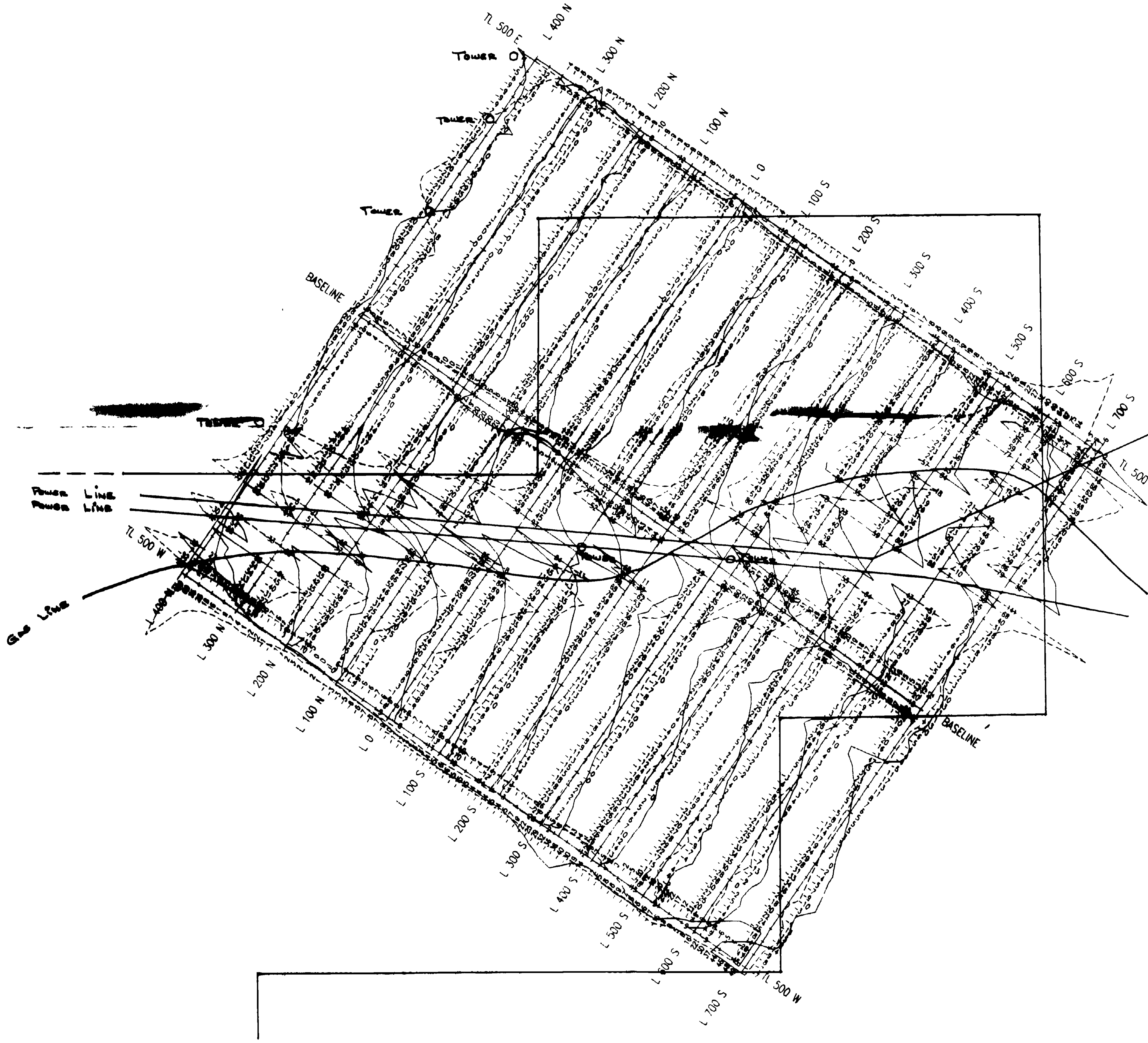
42A06NW0040 OM92-075 TISDALE

560



42A08NW0040 OM92-075 TISDALE

570



LEGEND

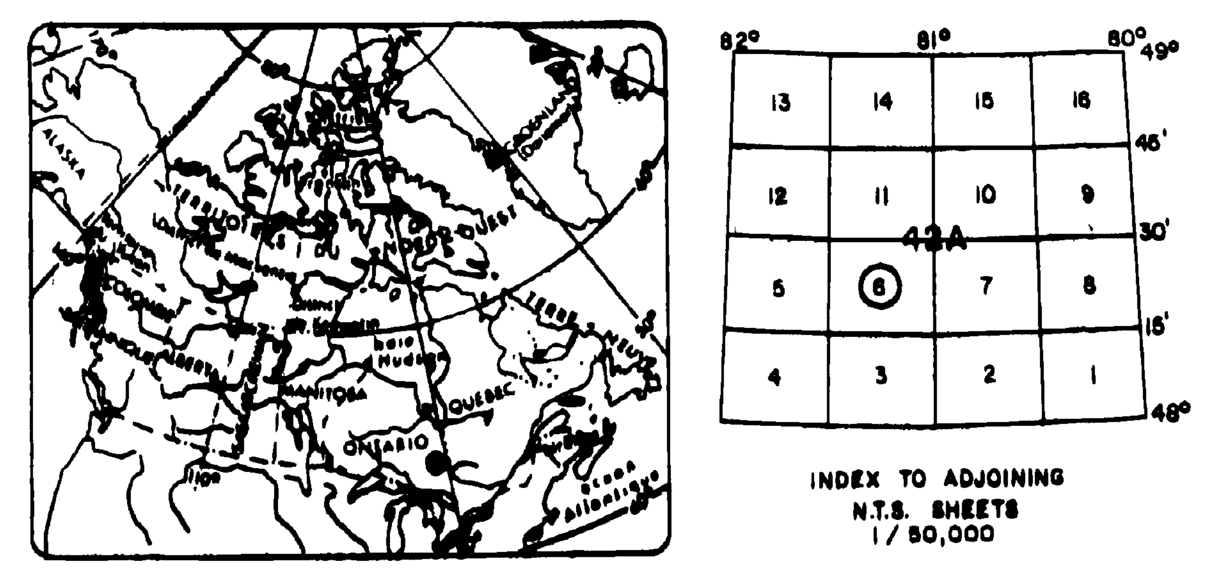
ELECTROMAGNETIC PROFILES.

______	In-phase	1 cm. = 40 %
_ _ _ _	Out-of-phase	1 cm. = 40 %

Station : N.A.A.
Frequency : 24.0 Khz
Readings direction : North

Readings: In-Phase % 12┼-6 Out-of-Phase %

Instrument: EDA OMNI PLUS



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N.T.S. SHEETS
1 / 50,000

COGEMA CANADA LTD

KAYORUM PROJECT, KAY-92 GRID

ELECTROMAGNETIC E.M.-V.L.F. SURVEY

N.A.A. PROFILES

VAL D'OR GEOPHYSIQUE LTEE

Interpreted by: Date 07/1992

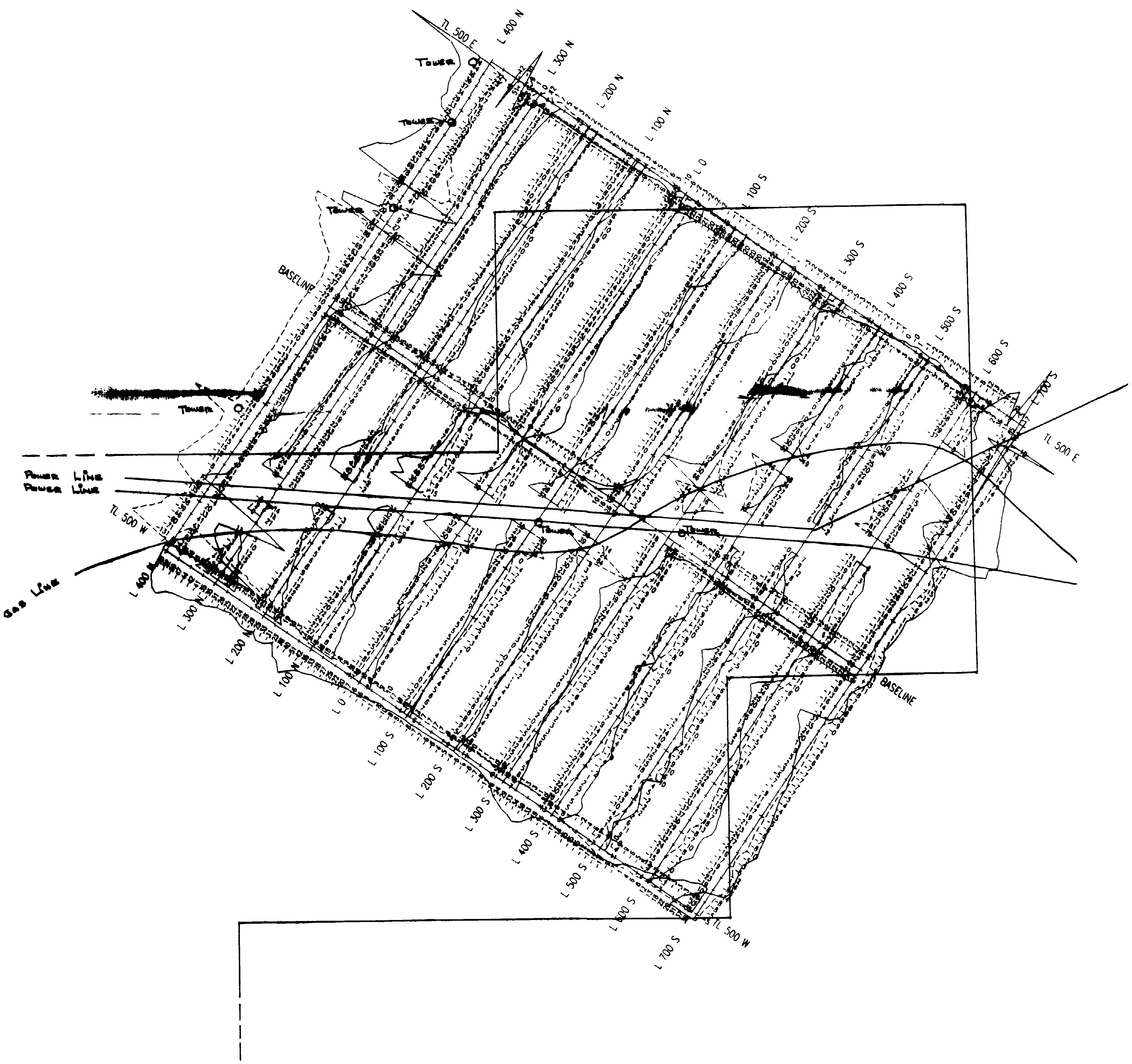
Scale 1 : 5000 | Report no: 92-CND-64-06 | Map 3

Scale 1 : 5000

100 0 100 200 300 400 (metres)

42A06NW0040 OM92-076 TISDALE

580



Scale 1 : 5000

100 0 100 200 300 400 (metres)

42A06NW0040 OM92-075 TISDALE

590

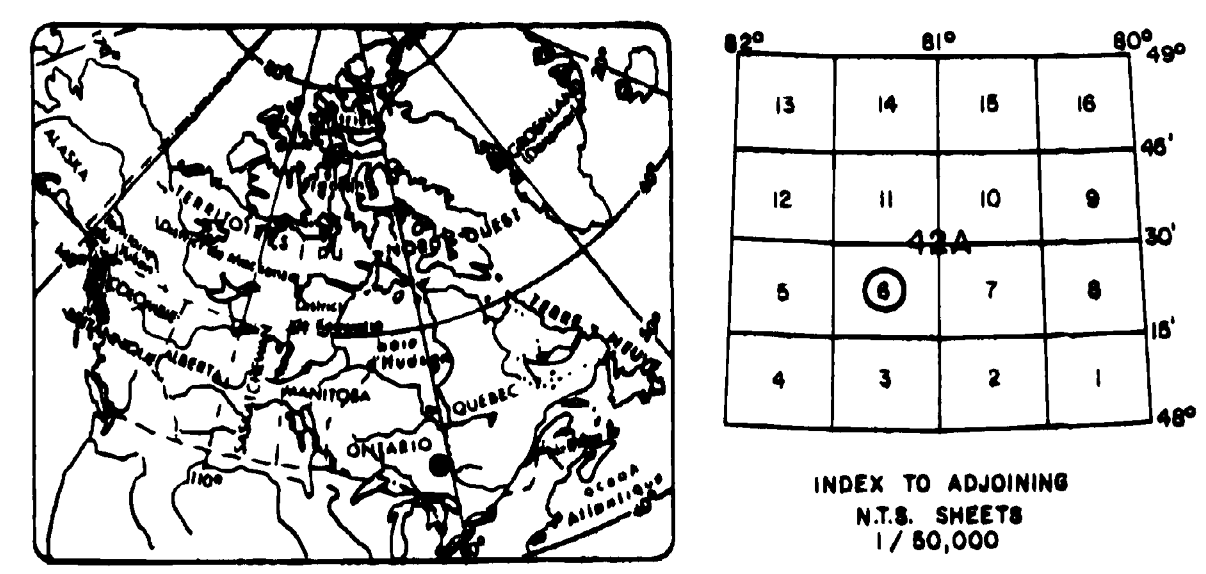
LEGEND

ELECTROMAGNETIC PROFILES.

____	In-phase	1 cm. = 40 %
----	Out-of-phase	1 cm. = 40 %

Station : N.S.S.
Frequency : 21.4 Khz
Readings direction : East

Readings: In-Phase % 12 ⊢ -6 Out-of-Phase %
Instrument: EDA OMNI PLUS



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N.T.S. SHEETS
1/50,000

COGEMA CANADA LTD

KAYORUM PROJECT, KAY-92 GRID

ELECTROMAGNETIC E.M.-V.L.F. SURVEY

N.S.S. PROFILES

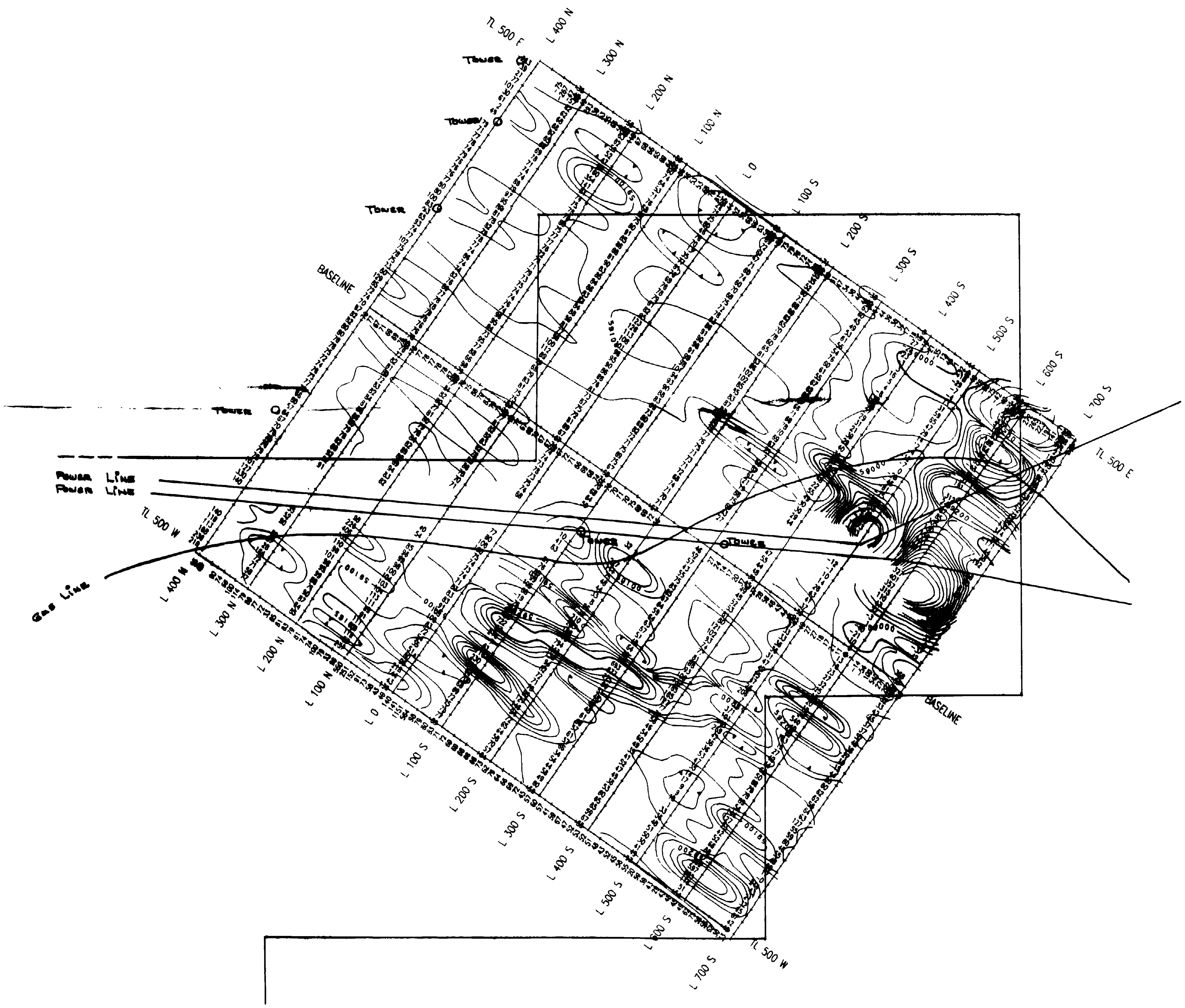
VAL D'OR GEOPHYSIQUE LTEE

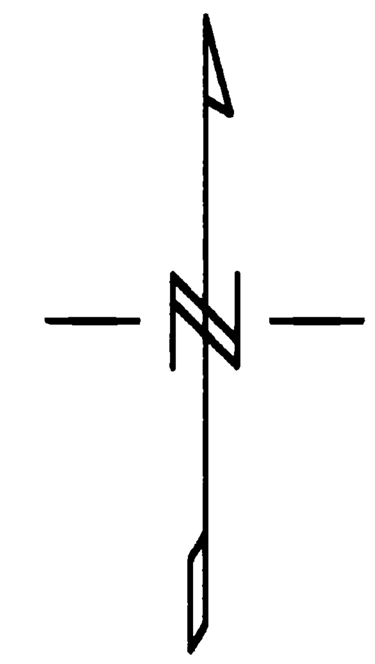
Interpreted by:

Date 07/1992

Scale 1 : 5000

Report no: 92-CND-64-06 Map 4





LEGEND

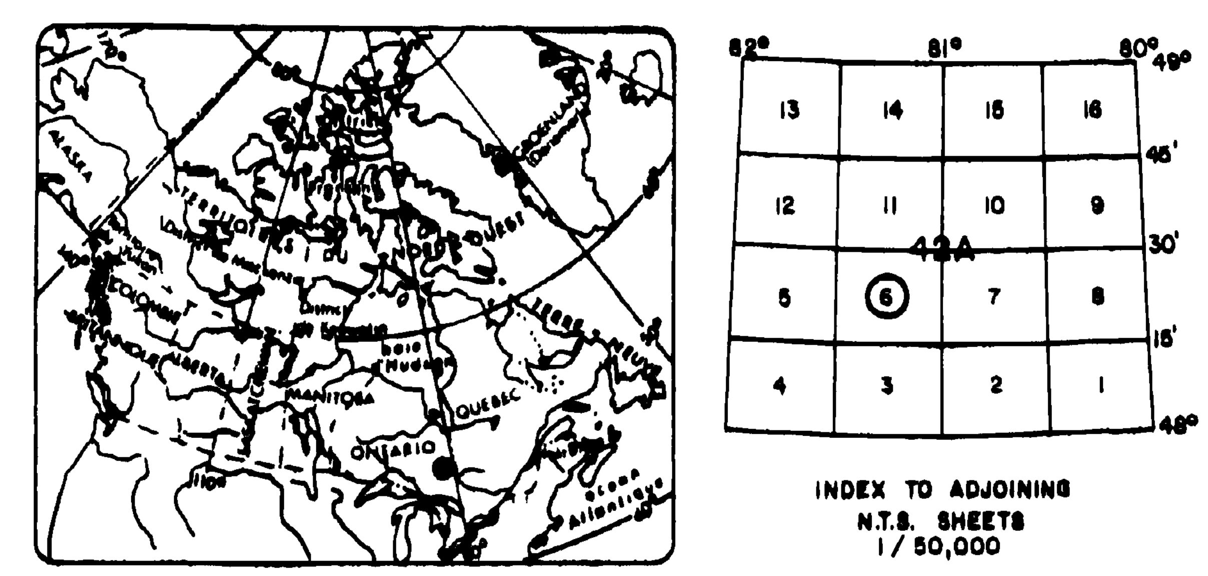
CONTOUR INTERVAL (gamma)

——	20
——	100
——	500

Reading = total field - 59000 gamma

Instrument: EDA OMNI PLUS

Total Field (Gamma)



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COGEMA CANADA LTD
KAYORUM PROJECT, KAY-92 GRID

MAGNETIC SURVEY
TOTAL FIELD CONTOURS

VAL D'OR GEOPHYSIQUE LTEE

Interpreted by: Date 07/1992

Scale 1 : 5000 Report no: 92-CND-64-06 Map 5

Scale 1 : 5000

100 0 100 200 300 400 (metres)

600

TIMMINS
SNOW DUMP
Pond
Pond
Pond
CREST OF TAILINGS
CREST OF TAILINGS
SAND PIT
VIPOND SHAFT
ROAD TO GOLD CENTRE
HAYBOB ROAD
LEGEND
PROTEROZOIC
Diabase
ARCHEAN
TISDALE GROUP
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V8 Variolitic pillow lava
99 Uniform (massive) flow
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V6 Variolitic lava
C16 Uniform (massive) flow
C15 Amygdaloidal pillow lava
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GEOLOGICAL CONTACT (from Ferguson, 1959 et al, 1968 and/or Brisbin, 1992)
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≥ 10 < 20 ppb
≥ 20 < 50 ppb
≥ 50 < 100 ppb
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≥ 200 < 500 ppb
≥ 500 < 1000 ppb
≥ 1000 ppb
DDH CASING LOCATED
DDH CASING (APPROX)
STREAM
TREELINE
ROAD
FENCE
POWER LINE
GAS LINE
PROPERTY BOUNDARY (APPROX)
INDEX TO ADJOINING N T S SHEETS
COGEMA Canada Ltee/Ltd
Scale 1:5 000
KAYORUM PROJECT
PROPERTY GEOLOGY
AND
GEOCHEMICAL ANOMALIES
Compiled by J. Learn
Date
Drafted by : S Lacasse, N. Calayan 92-04-01
Base map Northland Engineering
Revised by R Koch 92-04-01
Report no. 91-CND-64-04
ACAD File KAYOGEOL
MAP NO : 1