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NOTES ON THE RESPONSE OF THE PECORS MAGNETIC ANOMALY

Attention has been called to the Pecors magnetic anomaly in the report “The Pecors Magnetic Anomaly Located Under Huronian Sedimentary Cover, A Possible Cu-Ni-PGE Target at the Archean-Proterozoic Boundary, Elliot Lake Area”, by G. Campbell, MSc. Figure 1 shows the Pecors magnetic anomaly and surrounding response.

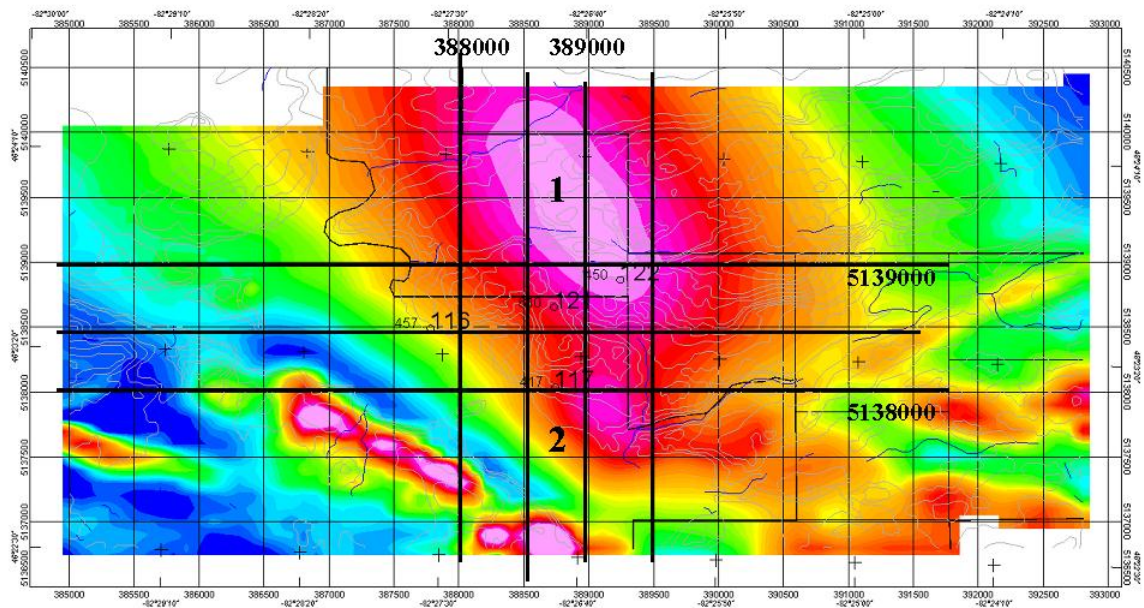


Figure 1: The Pecors magnetic anomaly from the magnetic component of a VTEM survey flown for a consortium of Montoro, Pele and Verbina exploration companies, searching in the first instant for Uranium indications. Anomaly 1 is the main Pecors response. Anomaly 2 is a smaller (apparently an apophysis) off the larger anomaly source. Adjacent smaller or narrower responses are from dykes and formations in the shallow Huronian rocks.

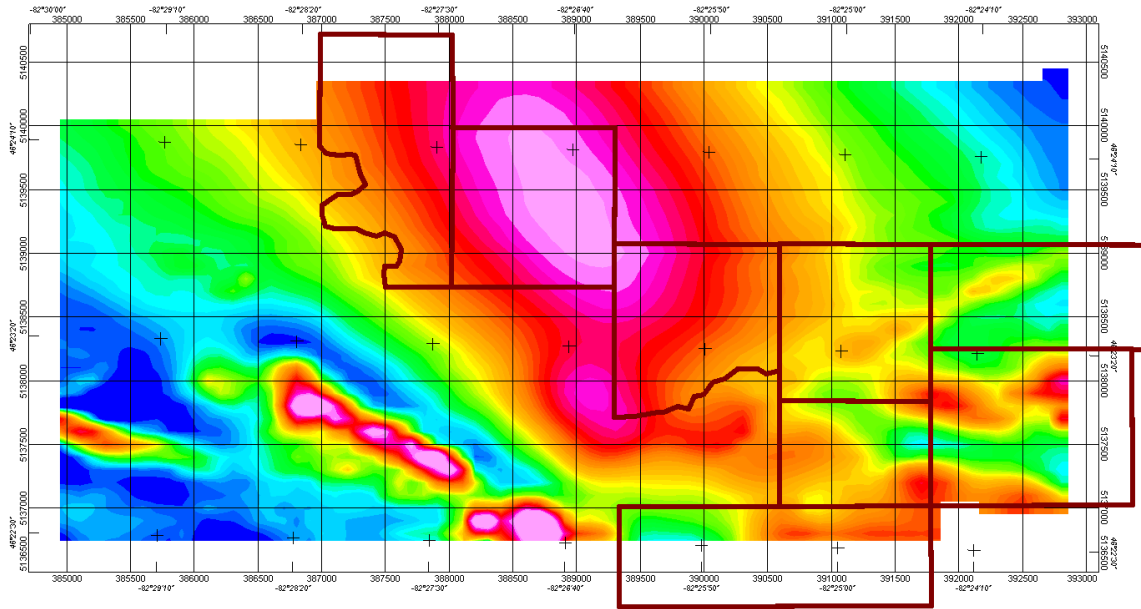


Figure 2: The Pecors magnetic map with Montoro claims outlined.

The anomaly in Figures 1 and 2 has been run by this author through a 3 dimensional inversion program (UBC, Mag 3D) to develop an understanding of the three-dimensional shape and distribution of the source body for this anomaly. The product of this inversion is presented using a three-dimensional viewer (WinDisp 3D, John Paine, Melbourne, Australia), that shows the 3D source body in a rectangular box with iso-surfaces of the inversion presented with different colours. Iso-surfaces are in non-dimensional susceptibility units of 10^{-6} SI (Systeme International).

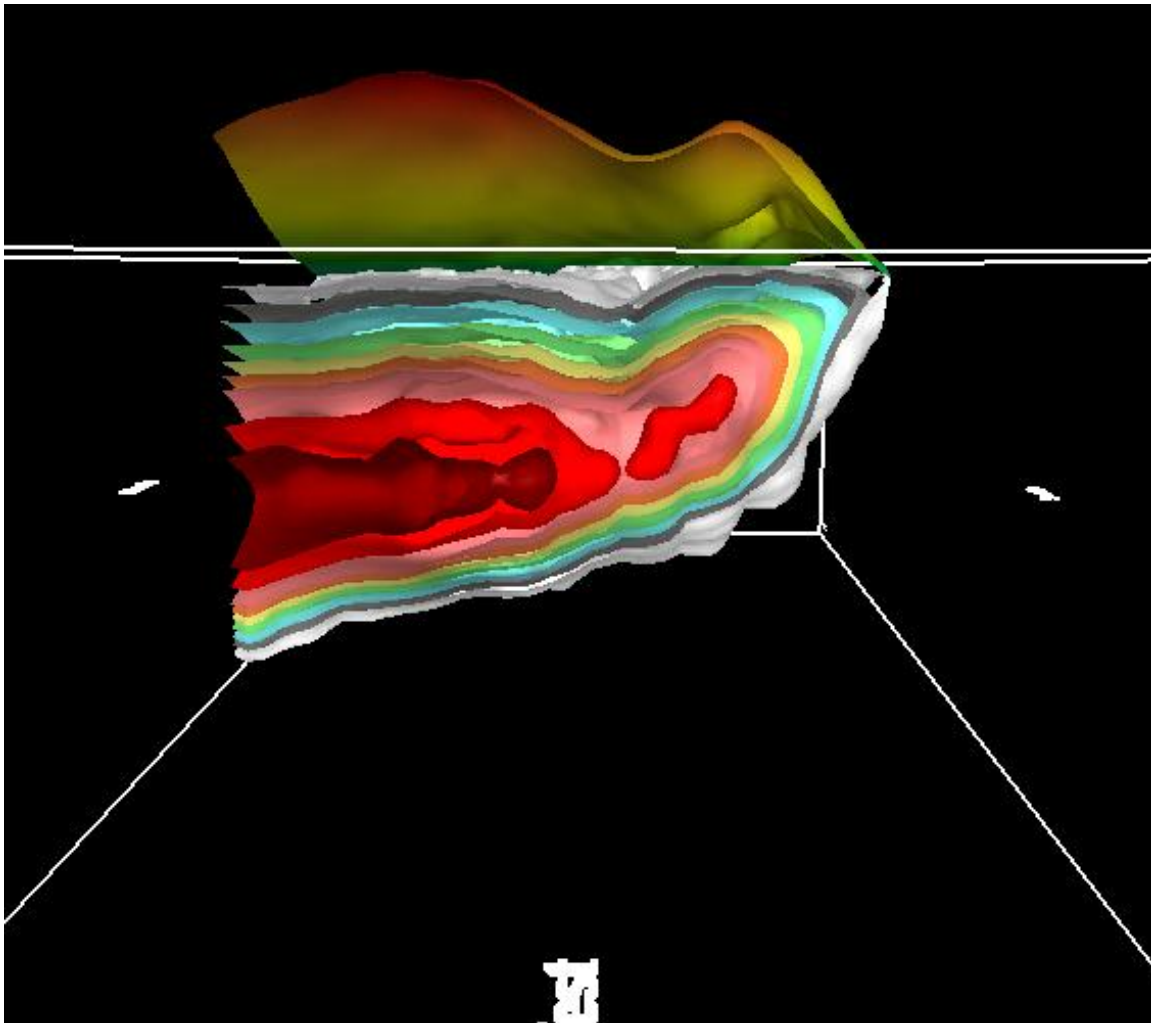


Figure 3: North-South slice through the core of the inverted magnetic anomaly. North is to the left. The inversion box is identified by the white lines seen in perspective, with the surface front and back lines set almost in a plane. A value amplified image of the total field magnetics is seen above the surface lines. The base magnetic response at the surface is set at 56,400nT. The peak amplitude of the magnetic response is 57,225nT. The full anomaly amplitude from background is about 1000nT.

Iso-surface susceptibility amplitudes are as follows:

- 100,000 x 10^{-6} SI - Dark Red
- 75,000 x 10^{-6} SI - Red
- 50,000 x 10^{-6} SI - Pink
- 40,000 x 10^{-6} SI - Orange
- 30,000 x 10^{-6} SI - Yellow
- 20,000 x 10^{-6} SI - Green (judged to represent the surface of the source body)
- 10,000 x 10^{-6} SI - Aqua
- 5,000 x 10^{-6} SI - Grey
- 2,000 x 10^{-6} SI - White (or light Grey)

The magnetic iso-surfaces are highest at the core of the 3D anomaly and are dark red. The lowest are light grey. These behave much as contours do on a flat surface, only here they are in three dimensions. Just as flat-map contours do not directly identify source body edges, the 3D iso-surfaces also do not show the source body surface. They need to be interpreted to suggest the source. Here is judged that the green iso-surface identifies the approximate location of the source body. This may need adjustment, as later in this report, drill holes 116, 117, 121 and 122 offer control for the basement (and therefore magnetic body) depth.

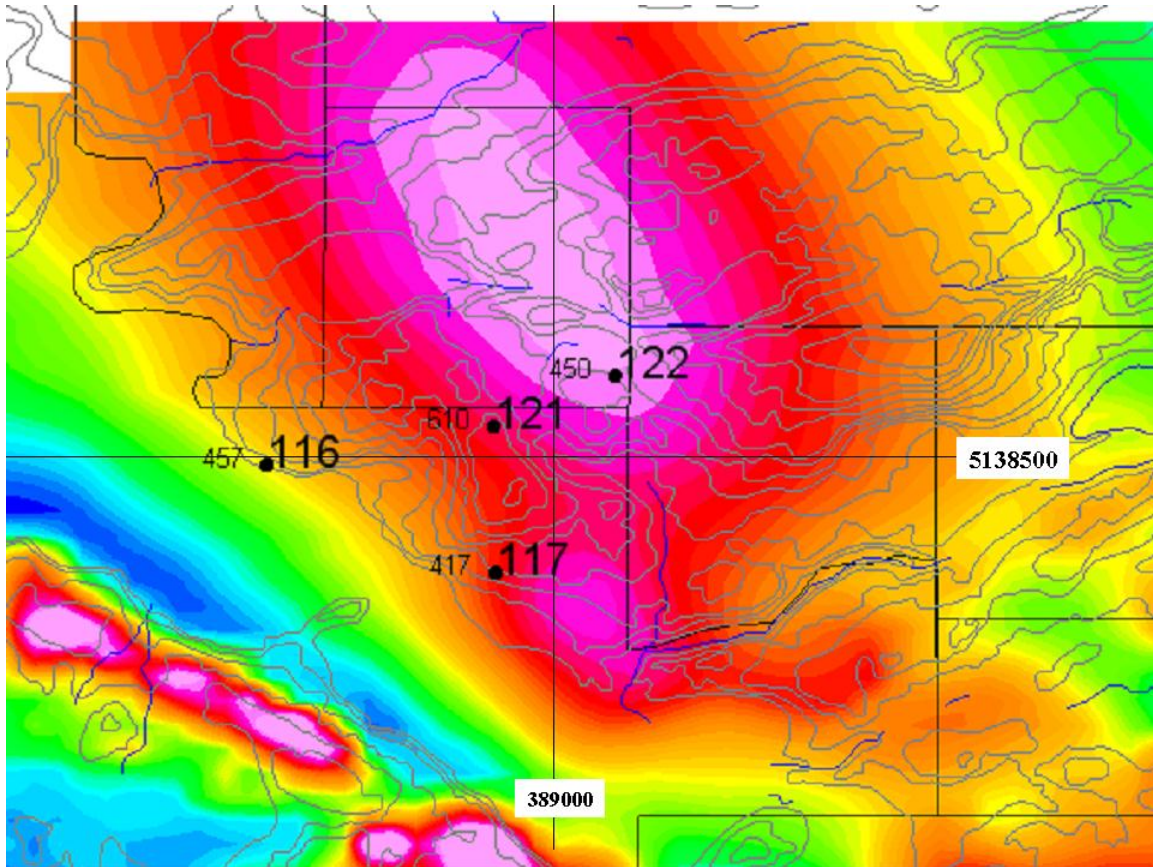


Figure 4: Pecors magnetic anomaly with surface topographic drainage, Montoro claim blocks, and collar location of four holes drilled earlier by Rio Algom. The large number to the right of the holes is the hole number. The smaller number to the left is the depth in metres of what is judged to be basement as seen in the holes. UTM co-ordinates (East and North) are identified on the map.

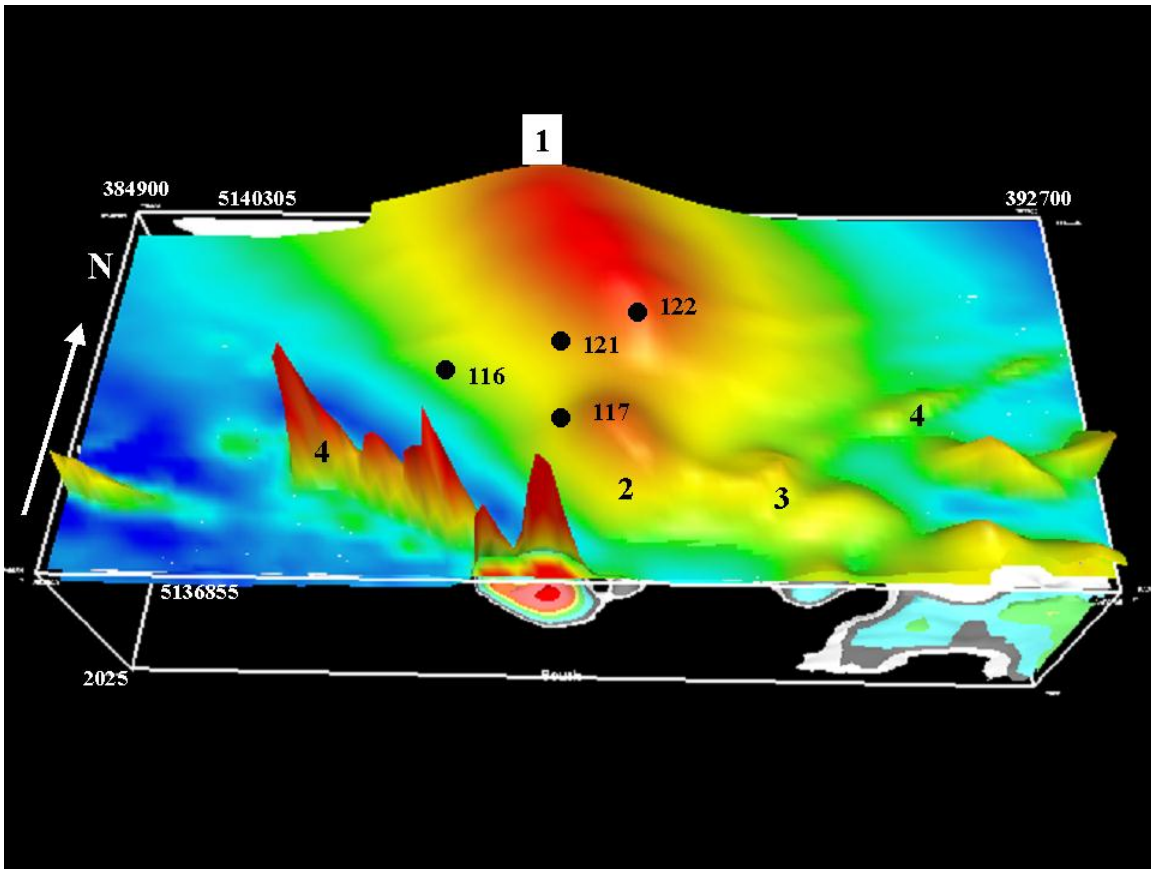


Figure 5: Pecors anomaly area. Magnetics as enhanced amplitude. Pecors anomaly (1), Apophasis (2), possible apophasis extension (3), and shallow dykes and formations (4). Rio Algom hole collars (116 to 122)

INTERPRETATION

The following series of images developed from the 3D inversion provide a description of the source bodies causing the various magnetic responses on the map. Notably, the Pecors anomaly is not fully defined by the VTEM magnetic survey as it is open to the north. Enough of the response is seen however to provide a good definition of the source. Perhaps as much as two thirds of the anomaly is observed by the survey, and a good 3D definition has been achieved. The inversion shown in figure 3 suggests a body with its top fairly flat, but with its bottom, plunging to the north at about 10 degrees, so that the body thickens to the north to the extents of the survey. Measurements on various slices through sections below will show broadly a depth of 300 to 400 metres to the top and as much as 1700 metres from surface to the bottom of the magnetic source body. It appears as a broad sill, possibly an intrusion. The south end of the intrusion as seen in figure 3 suggests a turning up or a shallowing of the source body that is possibly an apophysis off the main body. Alternatively the source of anomaly 2 is a structurally uplifted component of the source of anomaly 1.

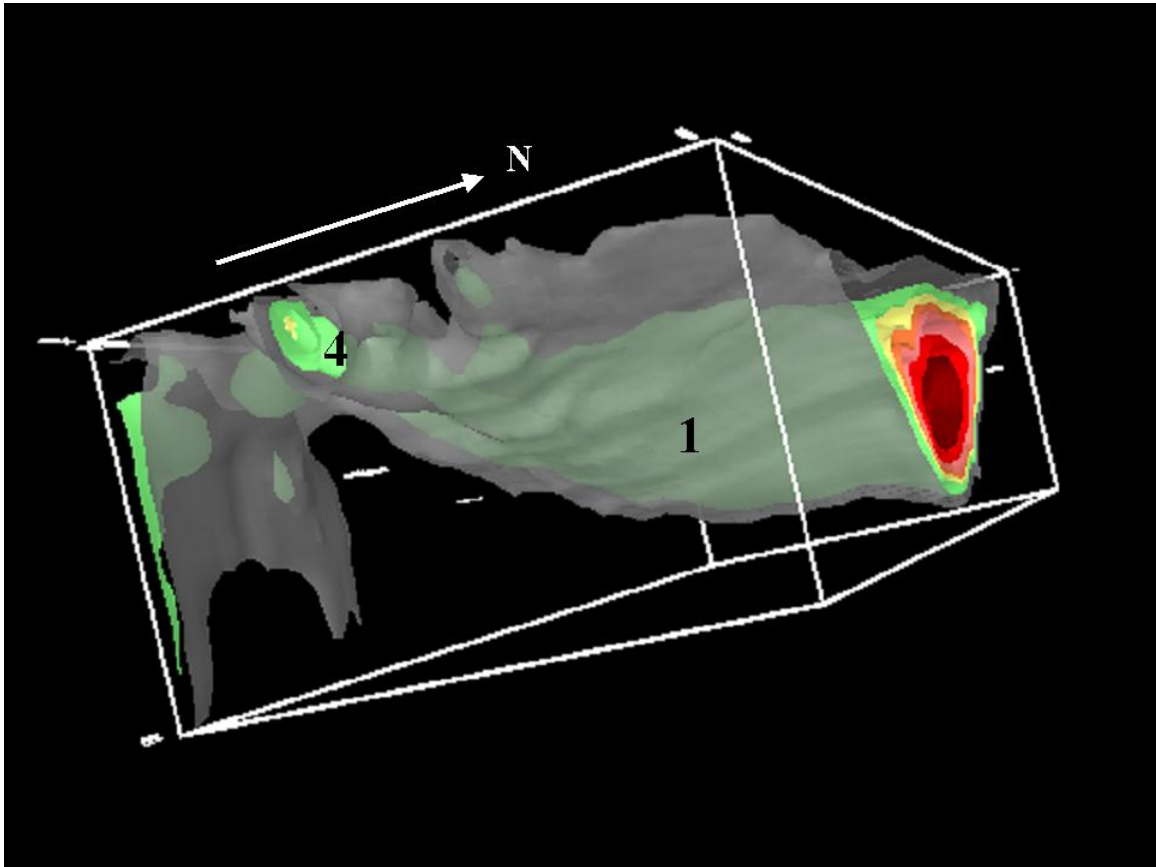


Figure 5: View of the 3D magnetic model from the underside, looking to the southwest. The inversion block is bounded by UTM co-ordinates 384900E, 5136855N and 392700E, 5150305N. The dimensions of the inversion block shown by the white outlines then are: 7.8 km EW x 3.45 km NS and 2.025 km from surface.

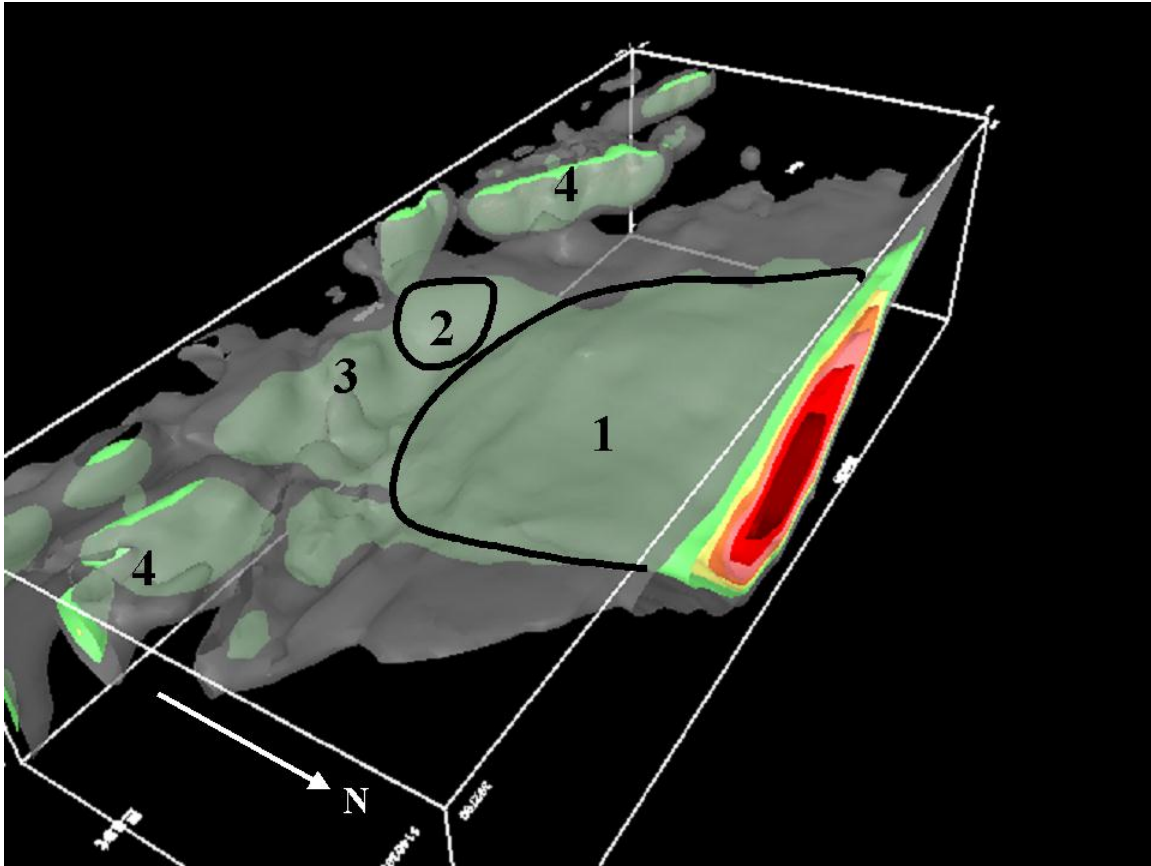


Figure 6: View of the 3D model obliquely from above in about the same southwest direction as in figure 4. The edge of the main body (1) is identified. This is the green iso-surface ($20,000 \times 10^{-6}$ SI seen through a transparent grey ($5,000 \times 10^{-6}$ SI) surface. The small southern extension of the main body is identified as 2. Anomalies 3 may be further extensions of 2, but this is uncertain. Anomalies 4 are separate and shallow to top formations (upper center) and dykes (lower left). The anomalies 4 are suggested to be part of the overlying Huronian rocks.

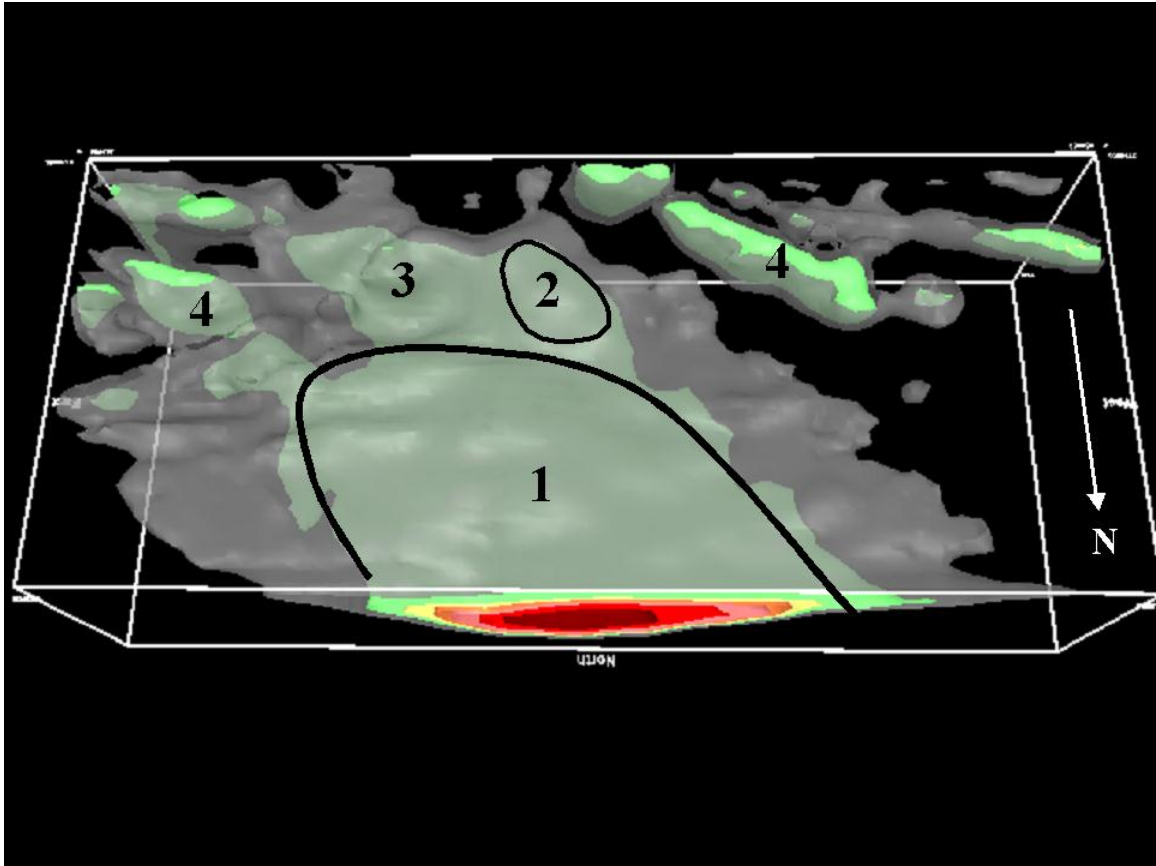


Figure 7: Overhead, somewhat oblique view of the model, looking south, as described in figure 6.

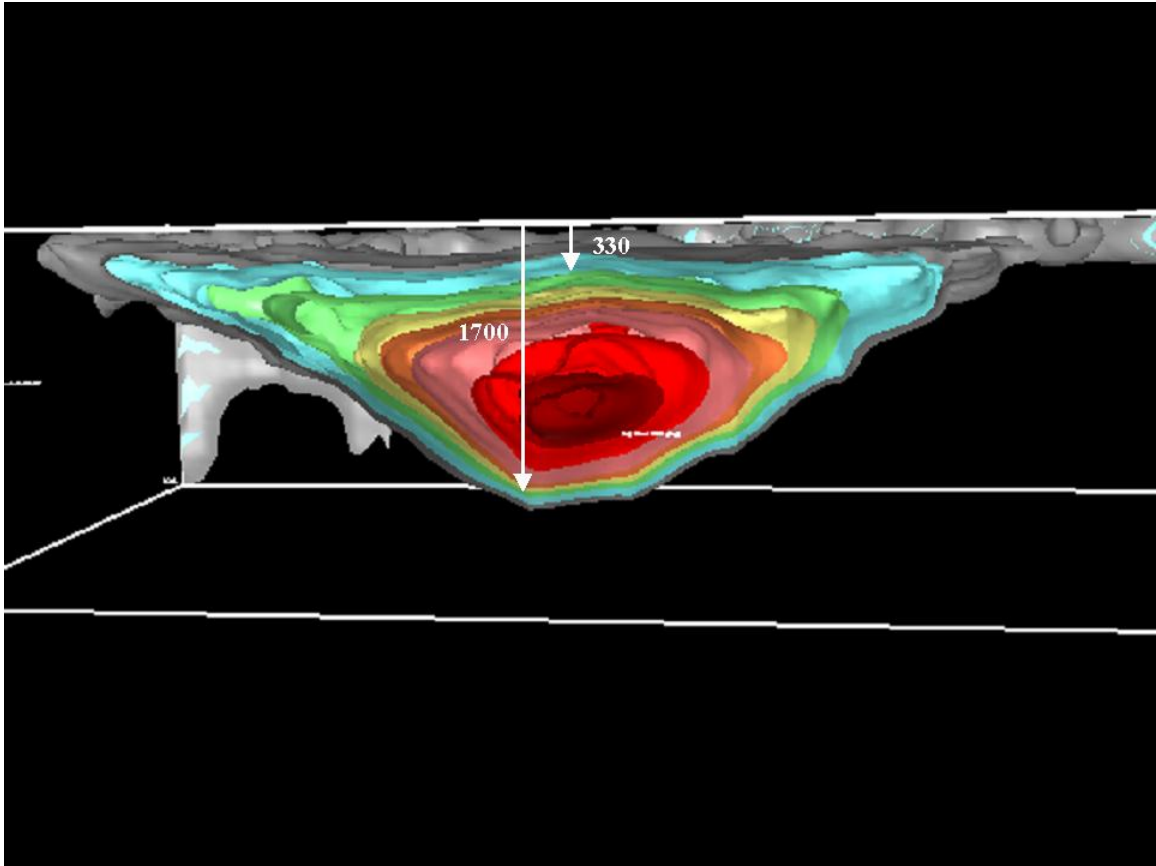


Figure 8: East-West section at UTM N5139264 looking south. This passes through the approximate center of the magnetic anomaly. The suggested depths to the top and bottom of the 3D model are indicated.

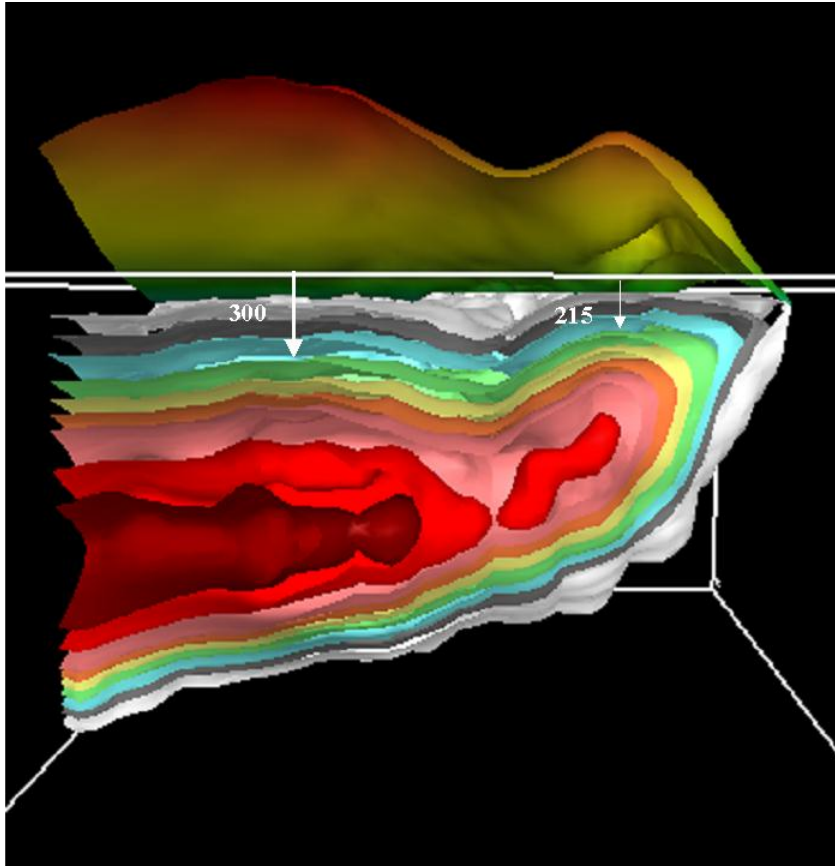


Figure 9: North-South section at UTM 388944 E, through the 3D model looking east. Depths to the top of anomaly 1 (300 metres) and anomaly 2 (215 metres) are indicated on the image. This is figure 3 with the depth annotated. Depth to top has been taken to be to the green iso-surface. This is a somewhat arbitrary selection. Depths to source body top may be greater as indicated below using the drill hole basement intersections.

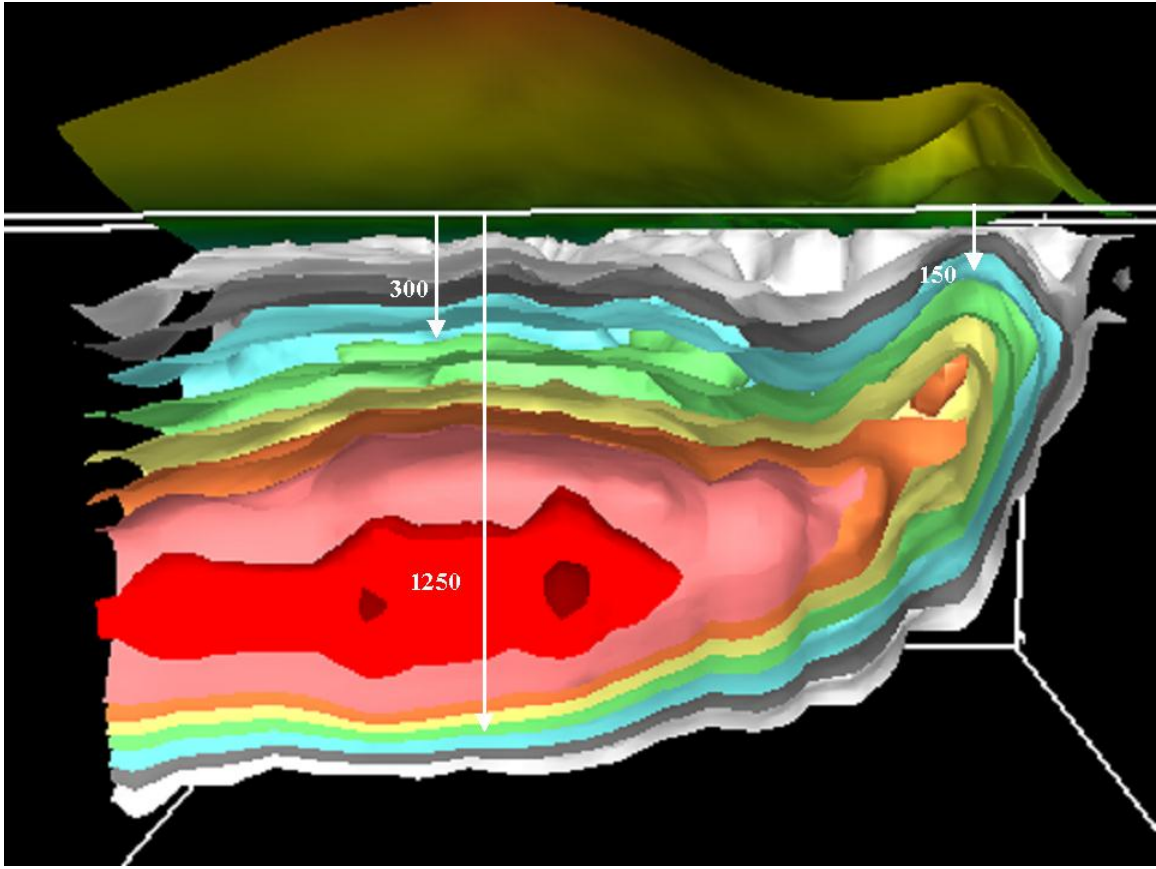


Figure 10: North-South section at UTM E 389594 through the 3D model looking east. Depths to the top of anomaly 1 (300 metres), the bottom of anomaly 1 (1250 metres) and anomaly 2 (150 metres) are indicated on the image. This section is further east than figure 8, by 650 metres, and sees the shallowest part of the apophysis or structurally uplifted anomaly 2

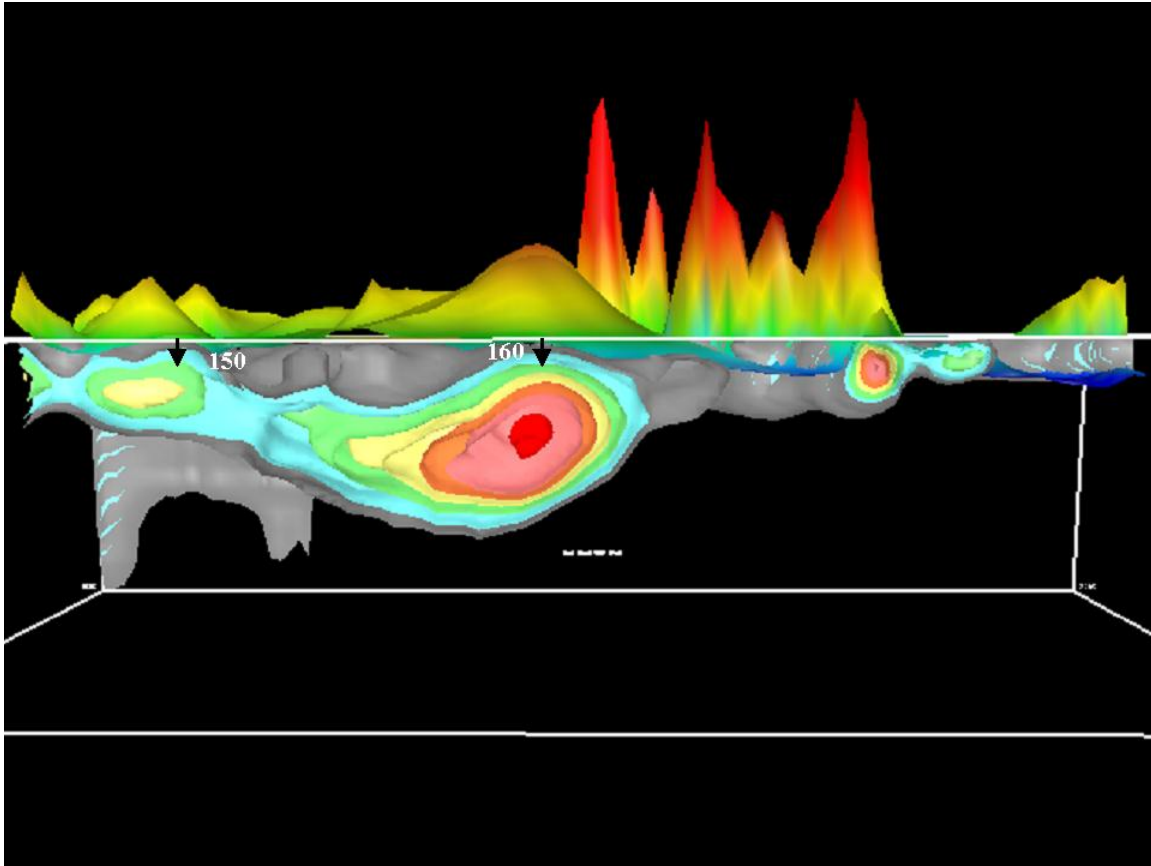


Figure 11: East-West section at UTM N 5238092 through the 3D model looking south. Depth to the top of the apophysis anomaly 2 (160 metres, centre) is indicated on the image. This section suggests that anomaly 2 may extend the east (left) where it appears with a similar depth. Shallow dykes in this area confuse the image however.

THE RIO ALGOM DRILL HOLES IN RELATION TO THE 3D INVERSION MODEL

Greg Campbell relates the results of the four holes located in figures 1 and 4 as follows:

“The Huronian cover dips north and is 300-650 m thick as indicated in old Rio Algom drilling that was done for uranium in 1959 near the centre of the magnetic anomaly. Two holes (PW-121, PW-122) drilled by Rio Algom over the magnetic anomaly cut radioactive conglomerate in the Matinenda Formation at the base of Huronian sequence (no assays given) and penetrated what Rio described as a "basic, dark green rock with a recrystallized diabasic textured matrix" (DH PW-122). The rock contained 'moderate' scattered pyrrhotite (no pyrite mentioned) mineralization. Basement rocks in the neighbouring hole to the southwest (PW-121) were described similarly with conspicuous scattered fine grained pyrrhotite and 'light' amounts of pyrite and chalcopyrite. The holes penetrated only a short distance into basement before they were terminated. Another hole drilled by Picton Uranium (2,350 ft) to the northeast was terminated in a thick section of quartz gabbro.”

The holes in the sections that follow (Figs. 12, 13, 14 and 15) show to some extent the location at depth of the basement magnetic anomaly. The drill holes have been recently located in the field using GPS. There are variances from the assumed green iso-surface in the model, being the edge of the magnetic body, but this has been a reasonable first approximation. Using these holes as control, the magnetic body edge might be at a higher iso-surface value of yellow or even orange.

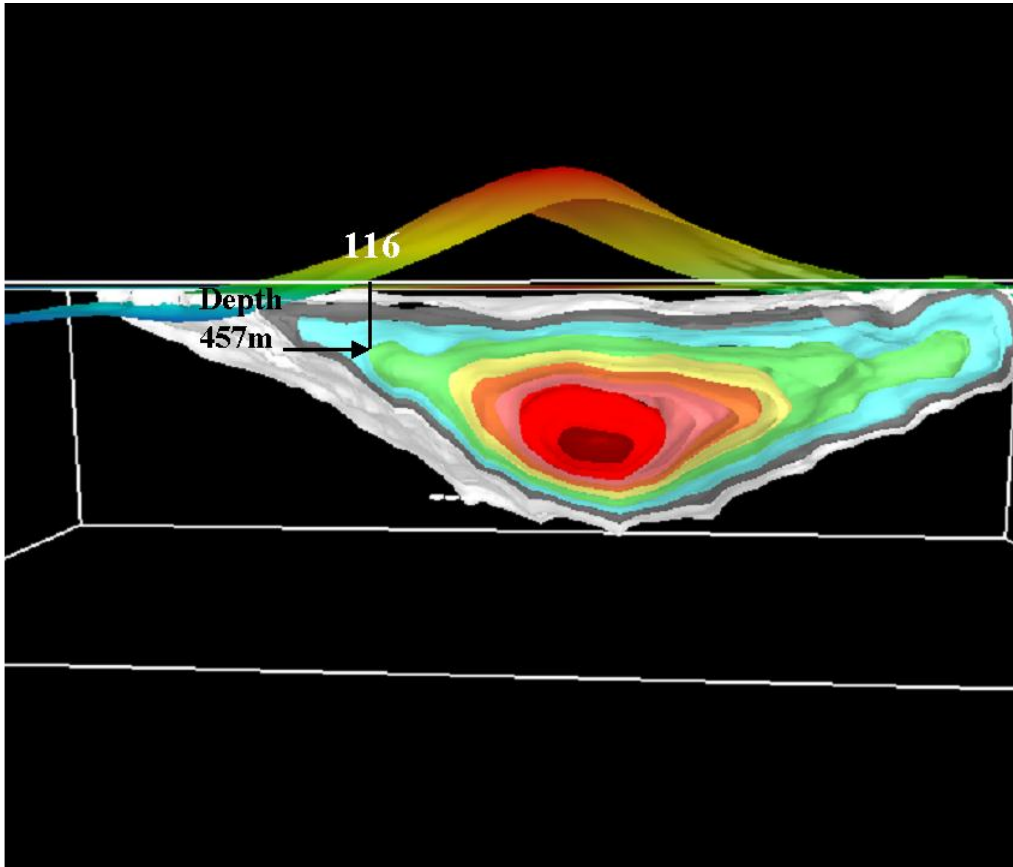


Figure 12: East-West Section through 3D model looking north, at UTM 5138483N. Hole 116 is located at UTM 387777E, 5138511N. The hole indicator of the “basement” magnetic body would seem to be at the green surface where the magnetic body is thinning.

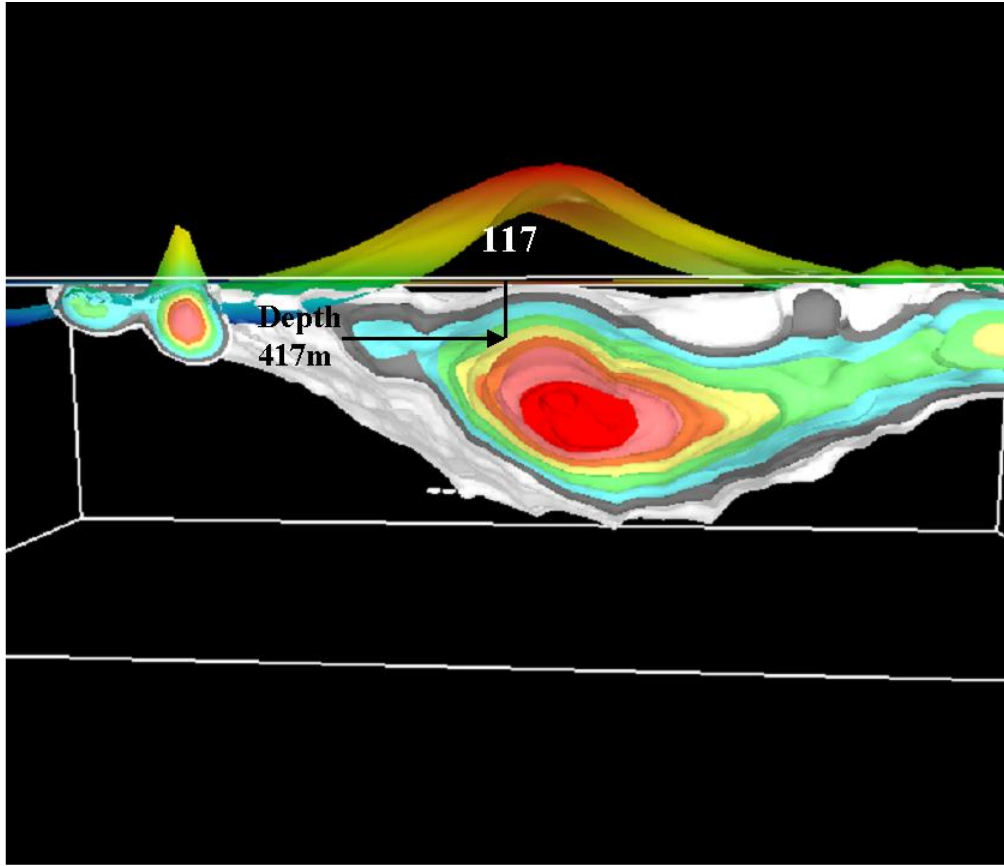


Figure13: East-West Section through 3D model looking north at UTM 5138027N. Hole 117 is located at UTM 388711E, 5138048N. This hole is at the northwest edge of the apophysis anomaly 2, and appears to show at this location that the yellow iso-surface is the magnetic body edge.

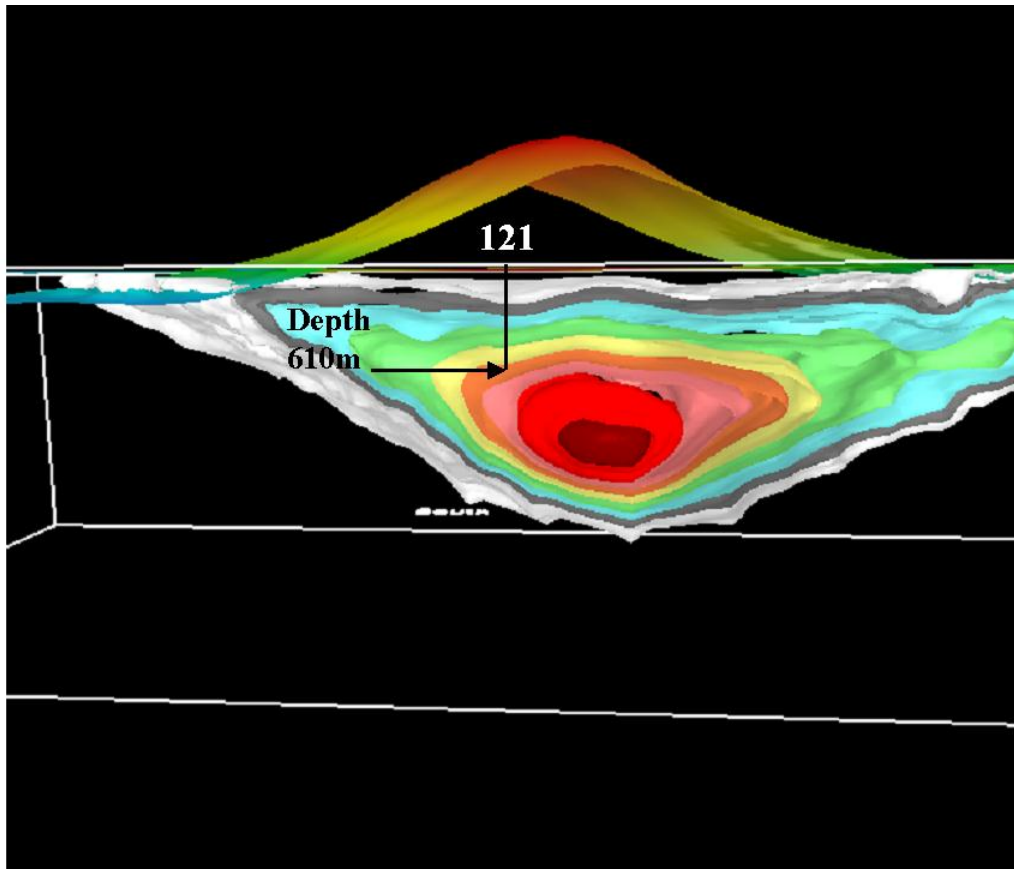


Figure 14: East-West Section through 3D model looking north at UTM 5138655N. Hole 121 is located at UTM 388732E, 5138655N. The “basement” depth at 610 metres is the deepest of these four holes and suggests at this location the magnetic basement is at the orange iso-surface or about 50% to 60% the depth assumed when the green surface is chosen.

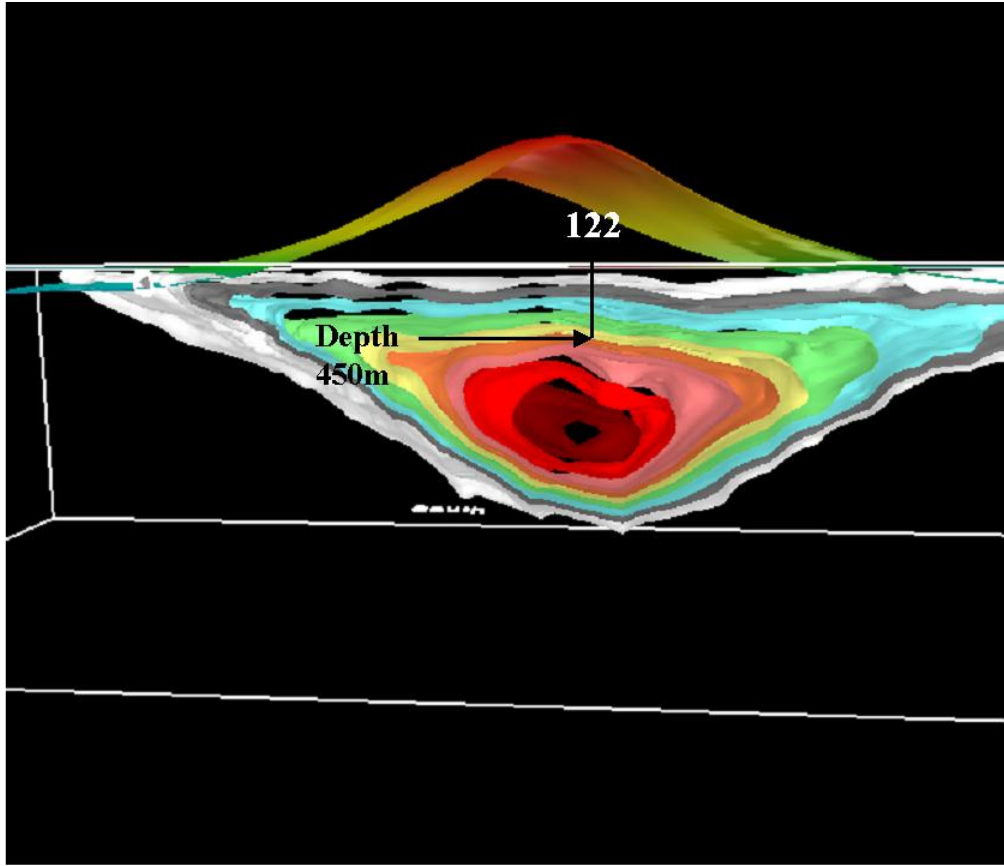


Figure 15: East-West Section through 3D model looking north at UTM 5138867N. Hole 122 is located at UTM 389225E, 5138870N. The hole depth at 450 metres also (as with hole 121) at the orange surface suggests that the top of the magnetic body is deeper than suggested earlier.

CONCLUSIONS

Information from the drill holes provides some corroboration of the depths from the 3D model, however, a cautious adjustment of the depths to basement might be made using the drill hole depths from holes 121 and 122. This would increase the depths, especially toward the center of the main anomaly (1) by 50%. The results from holes 116 and 117 however suggest a closer identification of the depth with the earlier assumption using the green iso-surfaces. Toward the edges of the 3D model, the drilled depths of the basement rocks, are closer to the green iso-surfaces. Uncertainty in the depths to source tops remain.

It is being assumed here that the “basement” rocks seen in the drill holes are those that cause the magnetic body. The description above suggests that they are. If these rocks are intrusive, then there would be a target in hand to work with. There might be basal sulphide accumulations that would be seen only if holes were drilled deeper, or if the southern, shallow body has brought basal sulphides close to surface.

The shape of the main magnetic body (1) is approximately a trough with relatively flat top, a deep keel plunging to the north, with thinning edges all around. The thickest part of the body is from 1,000 to 1,300 metres thick. The top is between 300 and 450 metres from surface. There is an extension (2) from the main body at the south end that may be as shallow as 150 metres, but more likely this apophysis is deeper at as much as 300 metres, but shallower than the top of the larger body.

This report provides some sense of the shape and depth of the source of the Pecors magnetic anomaly. Uncertainty lies in what to do to further test this body. Past drilling has identified the general character of the mineralized body that has conductive and magnetic sulphides (pyrrhotite). The holes are apparently blocked near surface (Greg Campbell personal communication). It would seem that chemical analysis of the source body rocks would be most important to judge if the Pecors body(s) hold promise for Ni/Cu or PGE mineralization. The use of downhole EM logging might be a guide for Ni/Cu mineralization. This would require either new holes or possibly re-entering and cleaning and deepening the old holes (if that is possible). The old holes do not penetrate very far into the basement (?) (intrusive body?), so a look into the body from downhole EM will not be possible. PGE is another question, where PGE mineralization does not require conductive/connected sulphides, although it might have, but might have only disseminated sulphides, not seen by EM surveys. Something like the use of induced polarization would not be likely to advance the exploration at this time, as the body(s) are pretty well identified from the magnetics.

It would seem that new holes would need to be drilled to advance the potential for Ni/Cu, PGE mineralization.

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