

MEMORANDUM

TO: **KEVIN LINES**

COPY: **JOHN CAMPBELL**
LISA GIBBONS

FROM: **MIKE SEXTON**

DATE: **29 SEPTEMBER 2003**

SUBJECT: **JIMS IP 2003**

A line of 100m dipole-dipole IP/resistivity was surveyed at Jims in September 2003. This field work was undertaken to validate previous IP done by Otter some time around 1992, prior to the commencement of mining. Roland Hill (internal memorandum 16 April 2002) reviewed this early Otter work and recommended follow up gradient array IP surveying. This Otter data is extremely noisy and not considered a good basis for undertaking a major survey without validation, hence this orientation line.

The location of the Otter line, 100m and 200m dipole-dipole IP on the same line (8800N, local grid) and the recent Newmont line, 100m dipole-dipole, (7770275mN, AMG66) are shown in Figure 1 as is the outline of the Jims Pit.

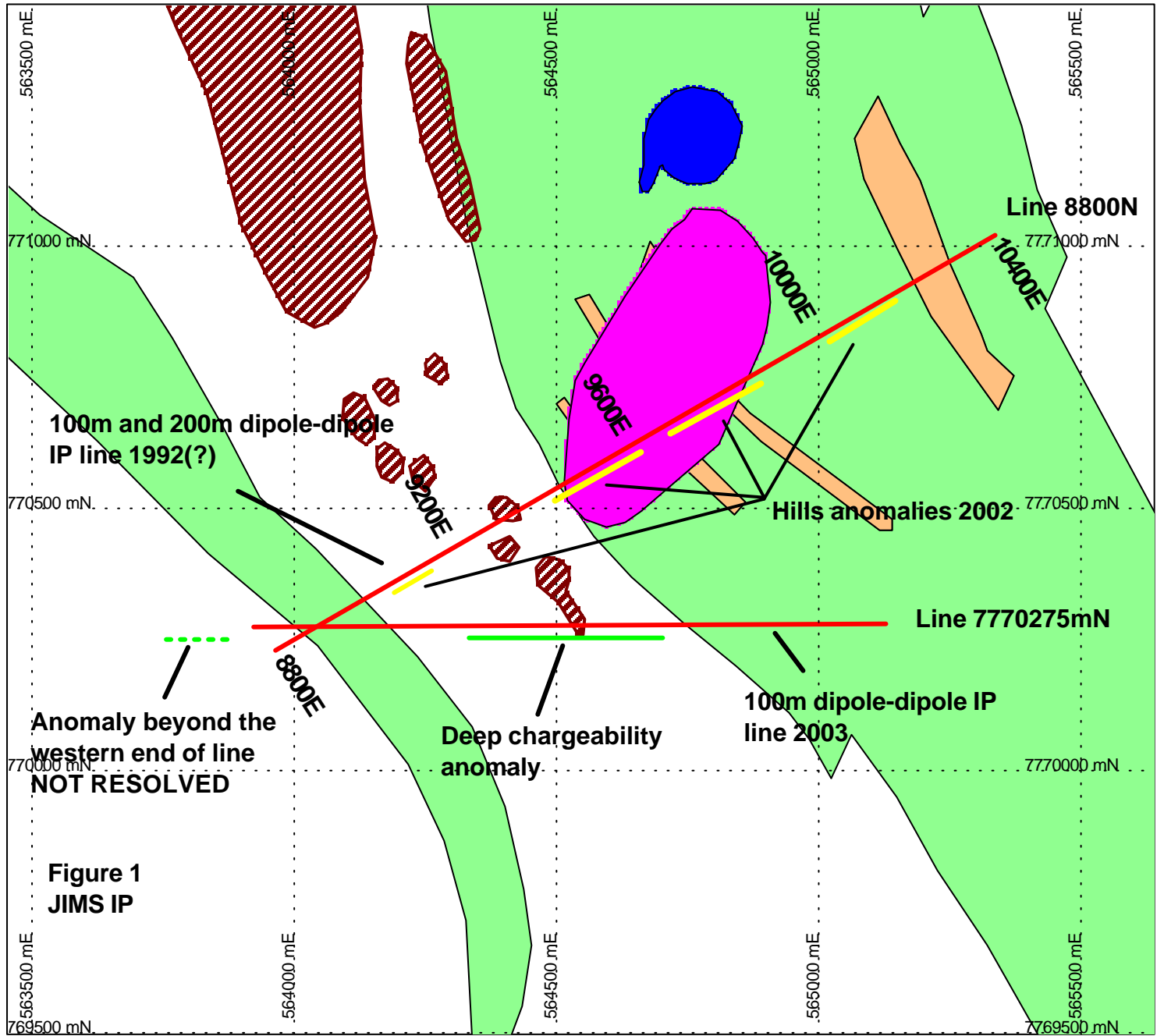
The initial Otter line could not be replicated as it passed over what is now the redundant pit. The Newmont line was placed directly south of the opencut and surveyed east west as this provided the best access.

Edited versions of the Otter pseudosections are presented as Figures 2 and 3. All data points that could be readily identified as noisy by way of poor repeat readings, excessively high error measurements or very low signal levels have been removed. There may well still be invalid readings in these sections, correlation between what is left of the 100m and 200m dipole spreads is reasonably good. What is left of the 100m dipole pseudo-section indicates there is a chargeable feature centred approximately at 9250/9300E and possibly a second feature centred at 9750E though the very high reading at n=3 is dubious. There is not enough data left to model this spread. The 200m dipole line indicates there is a strong chargeable feature located beyond its western extent. The feature appears to extend at depth beneath the spread, but this may just be reflecting poor lateral resolution due to the size of the dipoles employed. There are some local variations within the zone for example the elevated reading at n=3 beneath 9600E which coincides with Jims Pit. This may well indicate sulphides associated with Jims mineralisation but is not resolved due to the 200m dipoles. There are also elevated chargeabilities east of 10100E that appear noisy. These higher values occur from n=1 down hence the top of the source is probably not too deep.

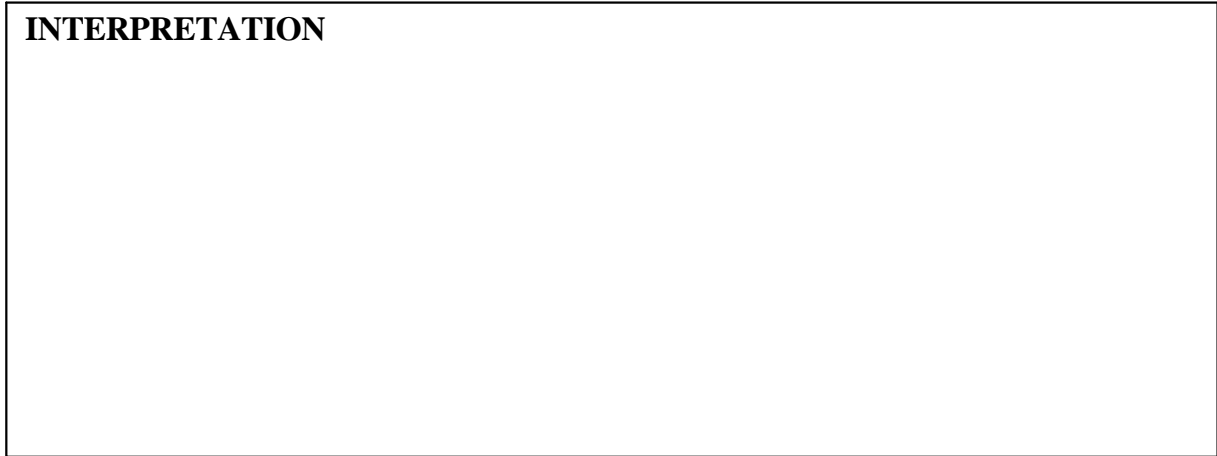
The orientation line surveyed on 7770275mN is presented as Figure 4. This data is very clean. The line indicates there is a strong chargeable zone beyond its western extent and is regarded as the same feature detected by the 200m dipole line discussed above. In normal circumstances the line would have been extended to resolve this feature. There is also a deep (~120m to top) chargeable feature situated from 564330mE to 564700mE. This zone could either be the along strike extension of the feature detected in the 100m dipole line discussed above centred at 9250/9300E or it may be the along strike extension of the Jims mineralisation as the pit is certainly heading in this direction. It straddles a significant break in the magnetics. An inversion model of this line is presented as Figure 5. The model as presented extends somewhat beyond the coverage of the surveyed line, this means that

anything in the model beyond those limits is not resolved. It has been presented in this fashion to demonstrate the need for a near surface chargeable body west of the end of the line to account for what is in the pseudosection.

To sum up, the Otter IP work was extremely poorly done with at least 50% of the data collected invalid. There are strong chargeable features that should be reflecting the presence of sulphides or graphite. These do not appear to have been tested by the shallow drilling undertaken by Otter. With the Newmont orientation line it can be easily demonstrated that the gradient array as recommended by Hill would be inappropriate as it would not detect sources such as indicated by the inversion model, Figure 5. Any additional IP should utilize a 100m dipole-dipole array or a 100m pole-dipole array which would provide better depth of investigation whilst maintaining reasonable lateral resolution. Unless it can be shown that either the western chargeability feature or the central one on 7770275mN are associated with mineralisation we have not really demonstrated a link between mineralisation and IP effect via the presence of mappable sulphides.

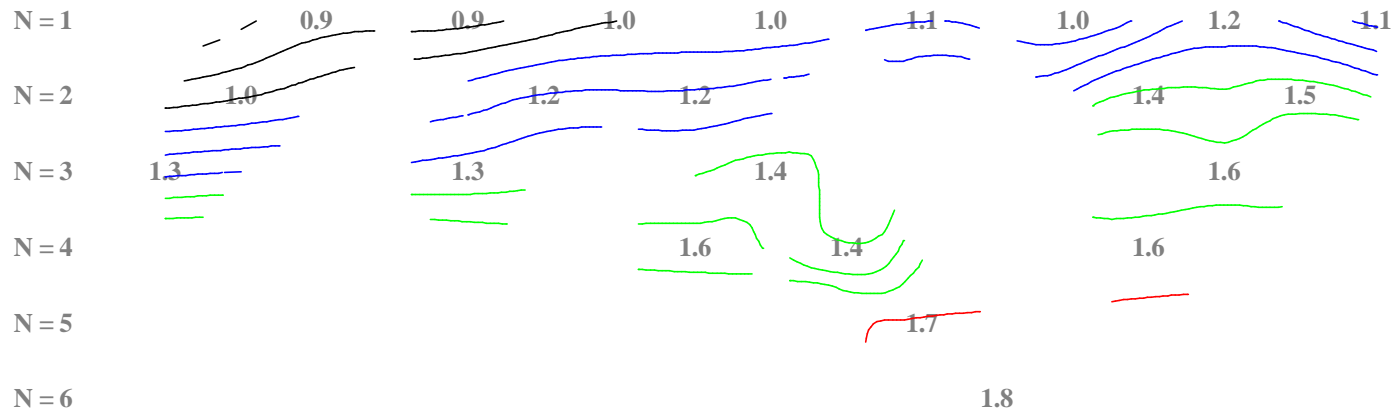


INTERPRETATION



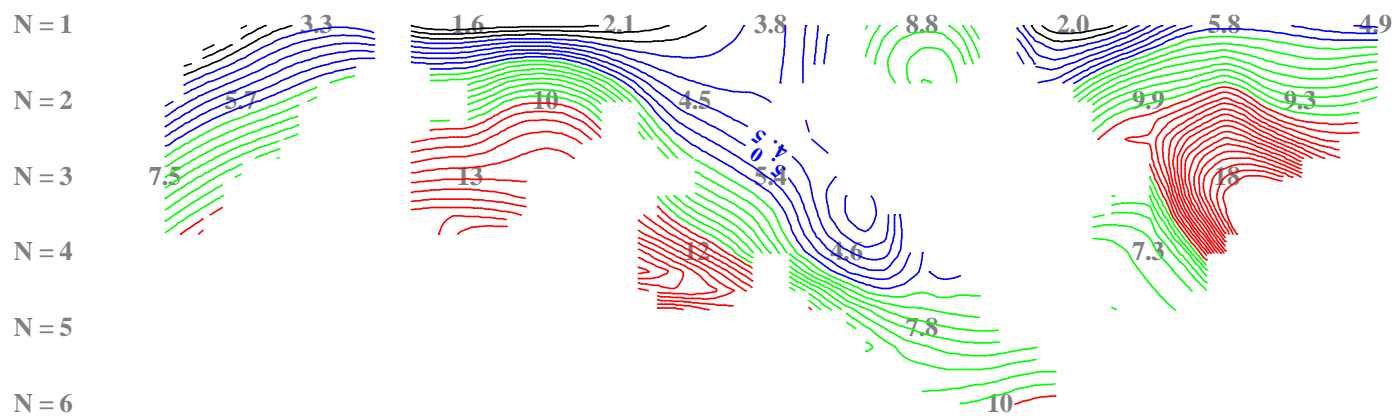
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 PLOT FILE: Jims_100m.ngf
 DATA FILE: Jim_100m.rnd

9050 E 9250 E 9450 E 9650 E 9850 E

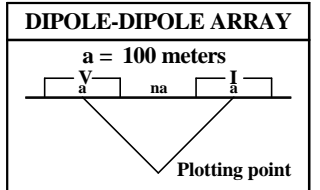


Log Apparent Resistivity

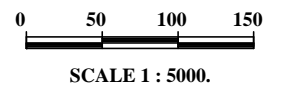
9050 E 9250 E 9450 E 9650 E 9850 E



Apparent Chargeability



SURVEY & PROCESSING SPECS



SCALE 1 : 5000.

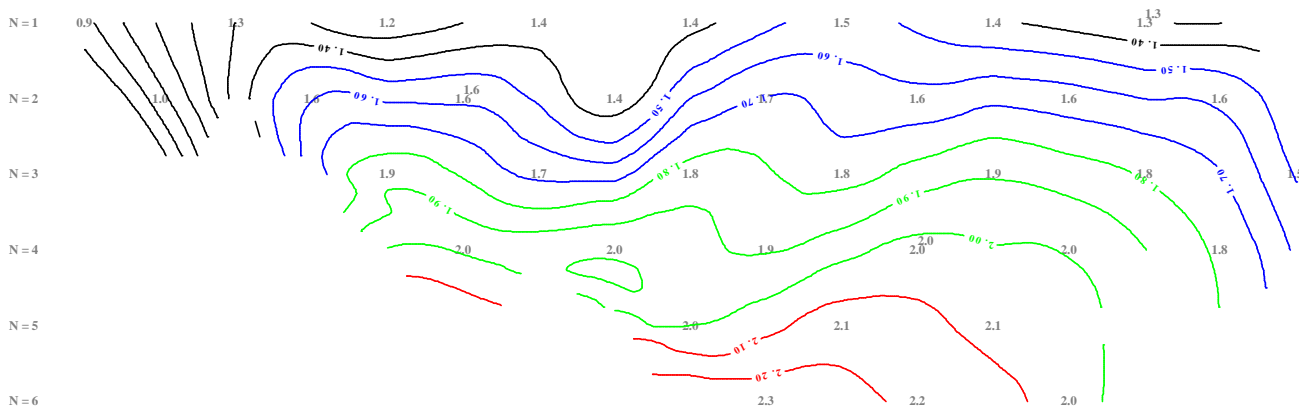
Newmont Australia Pty Ltd
Tanami
 IP/Resistivity Survey
 Jims
 Old data after edit

Figure 2

INTERPRETATION

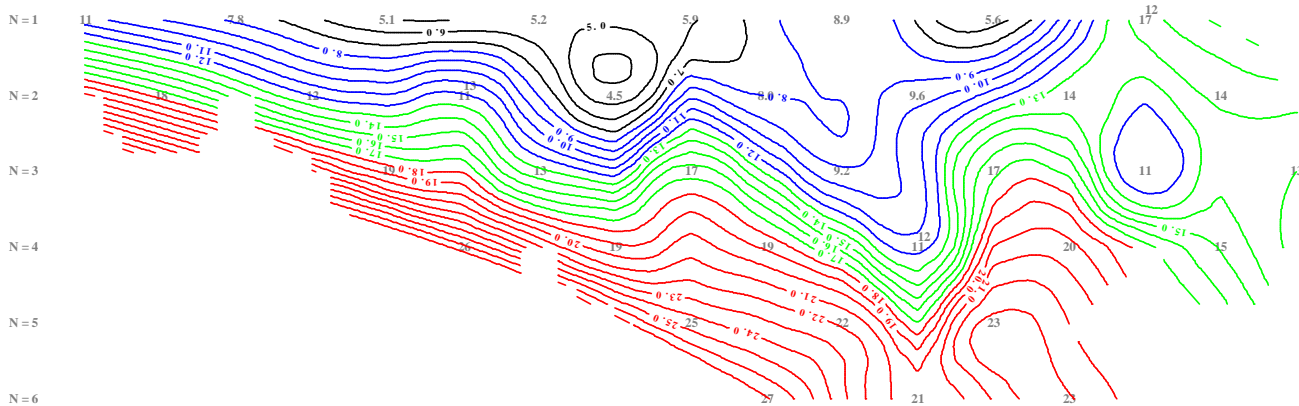
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 PLOT FILE: Jims_200m.ngf
 DATA FILE: Jim_200m.rnd

8800 E 9000 E 9200 E 9400 E 9600 E 9800 E 10000 E 10200 E 10400 E

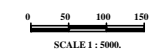
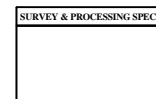
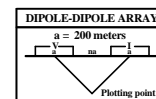


Log Apparent Resistivity

8800 E 9000 E 9200 E 9400 E 9600 E 9800 E 10000 E 10200 E 10400 E



Apparent Chargeability



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 IP/Resistivity Survey
 Jims
 Old data after edit

Figure 3

INTERPRETATION

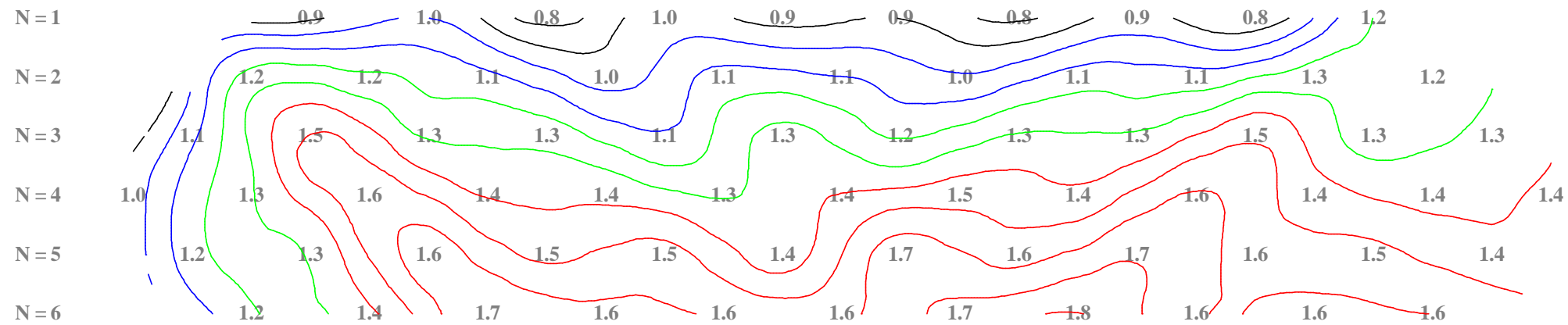


LINE N

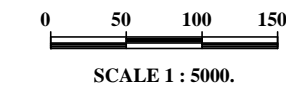
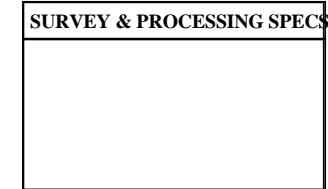
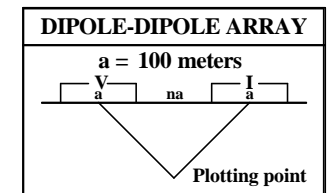
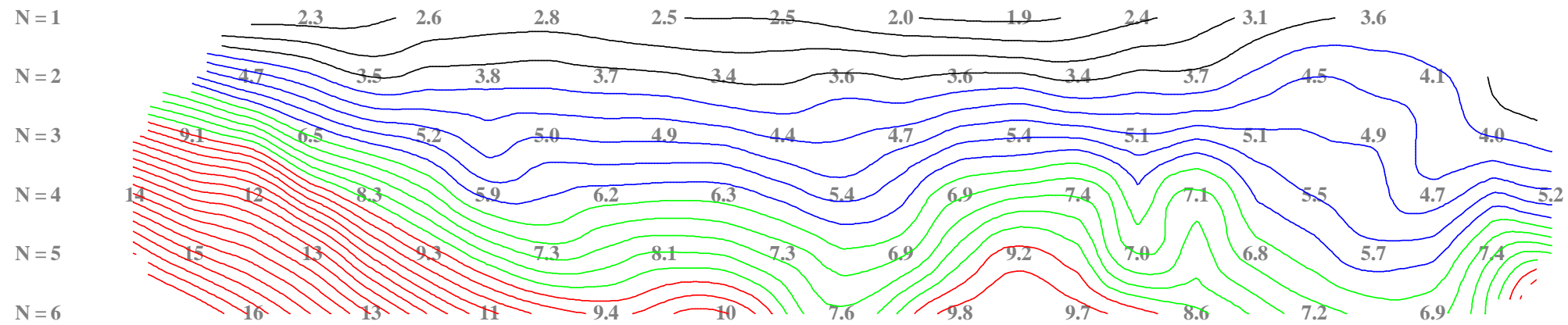
PLOT FILE: Jims.ngf

DATA FILE: L7770275.rnd

563925 E 564125 E 564325 E 564525 E 564725 E 564925 E 565125 E

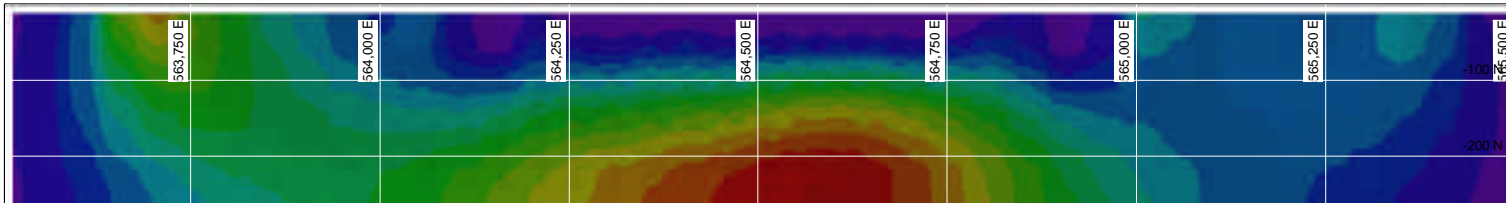


563925 E 564125 E 564325 E 564525 E 564725 E 564925 E 565125 E



Newmont Australia Pty Ltd
Tanami
 IP/Resistivity Survey
 Jims
 Line 7770275mN (AMG 66)

Figure 4
 Figure 4



Chargeability Inversion Model
Line 7770275mN
Jims

100m dipole dipole IP/resistivity
Survey line extent 563925mE to 565125mE

Image from D:\WT\tanam\Jims\Memo\ChargeW.reg.

Image file: ChargeW.bmp
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Original image size (Pixels X,Y): 1151, 155
Original image size (Inches X,Y): 15.00, 2.00

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