91-3290

EL10/88 – PROGRESS REPORT
AUG 1990-JULY 1991 – NORANDA P/L
P A JONES
Vol 1 of 2

148001

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148002

EXPLORATION LICENCE

NO. 10/88 - GOWRIE PARK

PROGRESS REPORT ON EXPLORATION ACTIVITY

AUGUST 1990 TO JULY 1991

P.A. JONES July, 1991

Phil Jones and Associates

FOR NORANDA PTY. LTD.

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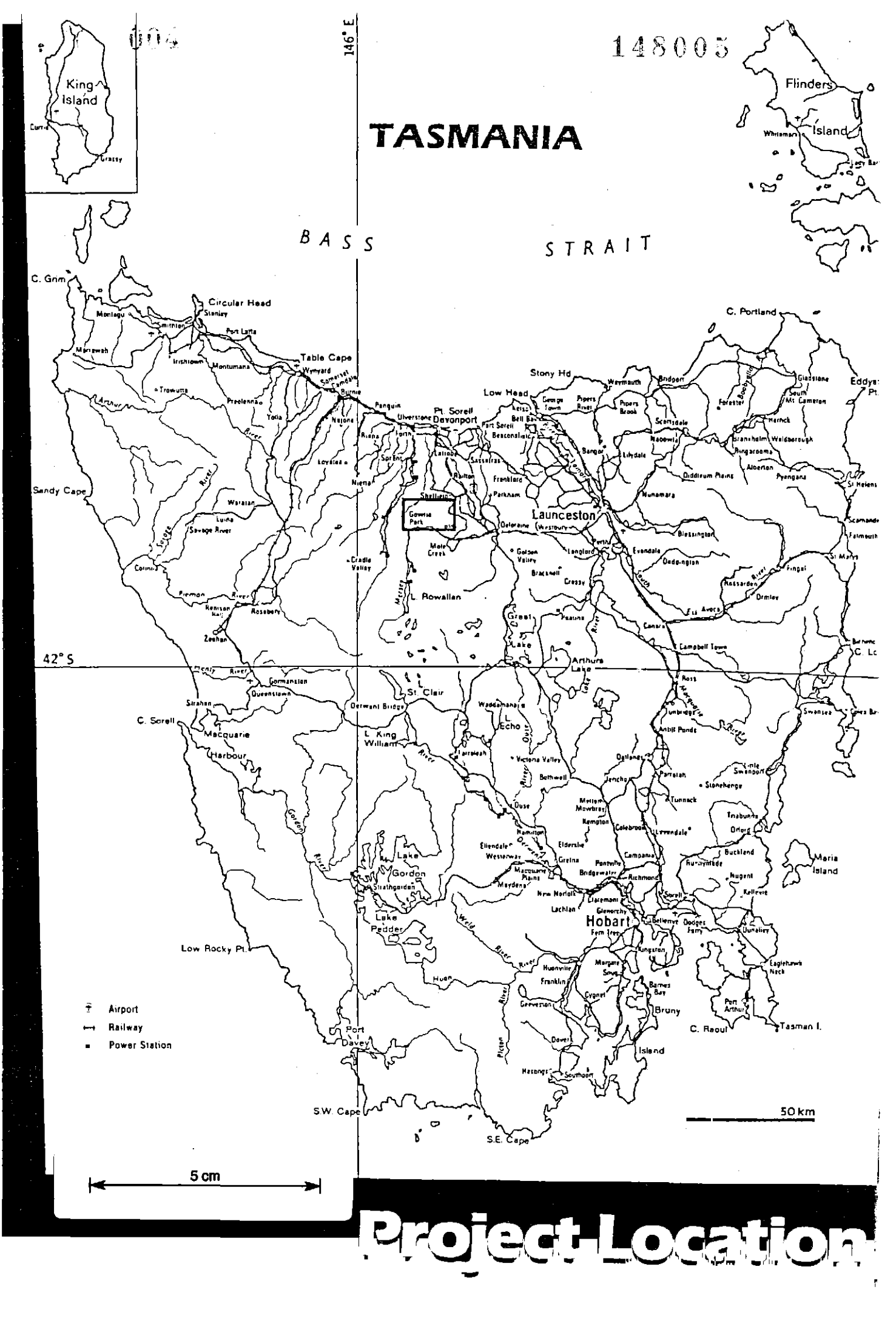
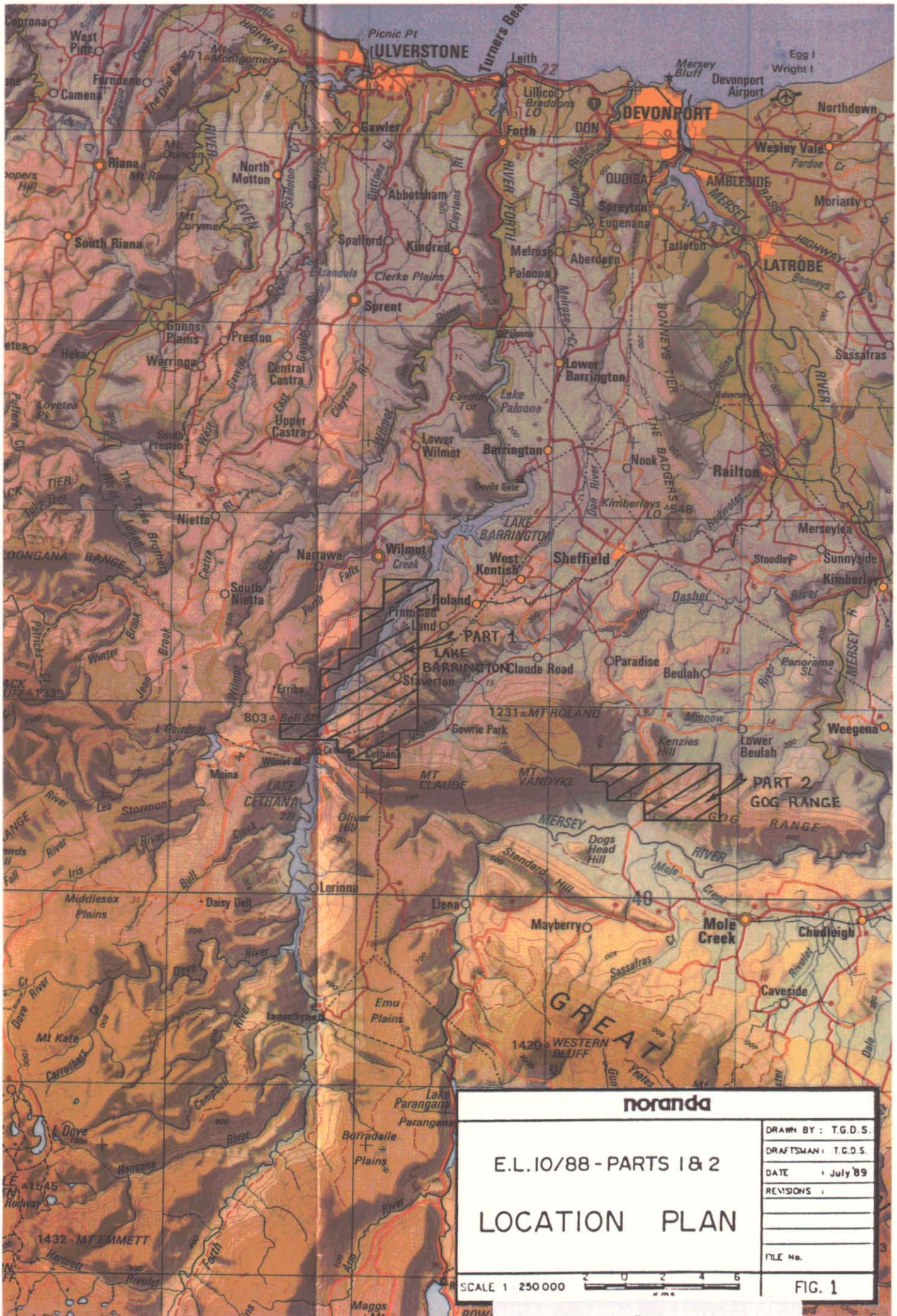

148005
TASMANIA
King Island
Flinders Island
146° E
BASS STRAIT
C. Grim
Circular Head
Table Cape
Stony Hd
Low Head
C. Portland
Pt. Sorell
Devonport
Launceston
Sandy Cape
L. Rowallan
Arthurs Lake
Great Lake
42° S
St. Clair
C. Sorell
Macquarie Harbour
L. King William
Lake Gordon
Lake Pedder
Low Rocky Pt.
Hobart
Maria Island
Port Davey
S.W. Cape
S.E. Cape
Bruny Island
C. Raoul
Tasman I.
Airport
Railway
Power Station
50 km
5 cm
Project Location



noranda

E.L. 10/88 - PARTS 1 & 2

LOCATION PLAN

DRAWN BY : T.G.D.S.
DRAFTSMAN : T.G.D.S.
DATE : July '89
REVISIONS :
FILE No.

SCALE 1 : 250 000

FIG. 1

SUMMARY AND CONCLUSIONS

The primary exploration target for EL 10/88 is a polymetallic volcanogenic massive sulphide deposit of the Rosebery or Hellyer style. The secondary target is for a volcanic hosted gold show for which the Henty Gold deposit is only one of the type occurrences defined to date in the Mount Read Volcanics.

The licence, totalling approximately 54 square kilometres, was granted to Noranda Pty Ltd for a period of 12 months from 22 August 1989. The tenement has currently been renewed for an additional 12 months. The tenement comprises two separate areas: Part 1 - Lake Barrington and Part 2 - Gog Range Fig. 1. Both portions of the licence are well situated to power, water, transport and labour facilities. Access is good within the prospective area with numerous gravel and 4 x 4 wheel drive tracks being utilised.

Minor prospecting was undertaken late last century to early this century with no serious exploration being completed until Asarco was granted a licence in March 1973. Their original 743 square kilometre application was reduced to 199 square kilometres in 1976 when CRAE entered into a joint venture with Asarco. By 1983 CRAE held sole title to the EL and continued to explore the licence until early in 1988 when it was finally relinquished. During this period extensive ground surveys were completed assessing many of Asarco's original stream sediment anomalies. Many areas were gridded, geologically mapped, soil and rock chip sampled, surveyed with geophysics (gradient array IP, dipole dipole IP, Magnetics, SP, VLF-EM) and later more detailed surveys completed prior to drilling (both diamond and percussion). Significant but low grade basemetal mineralisation was encountered both at Cethana and Staverton. Significant copper silver +/- gold mineralisation was alsc intersected at the Lake Barrington Copper prospect.

Best results from the CRAE drilling were as follows:

Cethana:	77CC1	78.6 - 79.0 =	0.4m @ 8.3% Zn, 0.2% Pb
	77CC5	37.8 - 38.8 =	1.0m @ 3.9% Zn, 0.8% Pb, 1.2% Cu, 185 g/t Ag, 0.5g/t Au
Staverton:	PD 83 SP1	20 - 44 =	24.0m @ 0.5% Zn, 0.9% Pb, 10 g/t Ag
Lake Barrington:	DD 82 LB3	156.5 - 172.45 =	15.85m @ 1.2% Cu, 12 g/t Ag
	DD 82 LB4	225.8 - 226.3 =	0.50m @ 4.8% Cu, 36 g/t Ag, 3.2 g/t Au

The geology of the area is poorly understood, however, the basement sequence includes the Fossey Mountain Trough portion of the MRVs. The volcanics include rhyolitic to dacitic extrusive, intrusive and pyroclastic sequences with minor intercalated units of felsic vitric tuffs and volcaniclastic/tuffaceous siltstones. An anomalous belt of mixed andesite/rhyolite volcanics and epiclastics lying in the vicinity of the Lake Barrington Road may be a time equivalent to the Que-Hellyer volcanic sequence. Overlying these volcanics unconformably and also thrust faulted is the Cambro-Ordovician Roland Conglomerate and Moina Sandstone sequences. Overlying the majority of the more gently undulating areas is a Tertiary Basalt of variable thickness.

Significant quartz - sericite - K spar - albite +/- pyrite - chlorite alteration is mapped at Cethana and Staverton associated with minor basemental mineralisation. A different type of alteration is evident in the Lake Barrington Road Area where a strong calcite - chlorite - sericite assemblage has been defined. A somewhat unique zone of quartz / hematite / carbonate stockworking associated with siliceous - sericitic carbonated volcanics occurs at the Fire Tower prospect, on the western portion of the Gog Range Grid. This alteration style is accompanied by highly anomalous gold, arsenic, tungsten and basemetal values.

To date Noranda has concentrated its efforts on the evaluation of the Cethana Alteration Zone and the Fire Tower Prospect.

Detailed surveys completed over the Cethana Alteration Zone have highlighted the potential of this Devonian deformed, Cambrian hydrothermal system. Targetting still remains a problem for this significant system and IP results have helped to clarify the potential allowing drill surveys to be planned.

Intensive work was also conducted over the Fire Tower prospect with geological mapping, IP surveying and diamond drilling surveys being completed. Highly significant gold values were encountered during 1989-90 surveys with composite samples returning values up to 14 g/t and channel samples returning up to 11 metres @ 4.9 g/t with moderate associated basemetal, arsenic, tungsten and cobalt values. This mineralization is associated with highly altered quartz / sericite / carbonate / pyrite altered volcanics, and epiclastics with possible intrusives - see hole GP-90-1 to 3 in the previous annual report. Major zones of stockworking (quartz / carbonate / pyrite / hematite) are also associated with the zone of alteration. An additional 14 diamond holes were targetted to further assess the coincident zones beneath the limit of oxidation in an attempt to assess the geology, structure and grade and style of mineralization. Hole GP-90-10 returned 29m @ 3.24 g/t Au (inc 17m @ 5.37 g/t Au) and hole GP-90-7 cut 6 metres @ 2.81 g/t Au. Hole GP-90-16 intersected the host mineralised sequence from 28 metres returning 2.75m @ 2.25 g/t Au prior to being terminated at 30.75 metres.

From previous surveys and surveys completed by Noranda it is evident that EL 10/86 shows great potential for the discovery of volcanogenic massive sulphide mineralization as well as volcanic hosted precious metal deposits.

To confirm this potential diamond drilling surveys will be undertaken both at Cethana and Gog Range assessing the best coincident geology / geochemistry / geophysical responses delineated previously.

RECOMMENDATIONS

It is recommended that the proposed programme be initiated as soon as possible in order to make the most use of the coming dry summer field season.

The proposed programme is designed to assess the Lake Barrington portion of the tenement for polymetallic volcanogenic massive sulphide (VMS) deposits (at Cethana) and the Gog Range Portion for volcanic and/or structurally hosted precious metal deposits (Fire Tower Prospect).

IP data for both Cethana and the Fire Tower Prospect show significant chargeable and resistive zones which to date have not been tested by drilling surveys. Shallow drill fences completed over the Fire Tower alteration zone, in an attempt to constrain mineralization and target deeper diamond holes, was completed yielding mixed results: although all holes that intersected the host horizon returned significant gold values. The best hole, hole GP-90-10 intersected 29m @ 3.24 g/t Au, however, some holes were terminated after only just encountering the host sequence (hole 16 cutting 2.75m @ 2.25 g/t Au from 28 metres), due to the constraints of the drill fence programme.

TARGET CONCEPT AND OBJECTIVES

The primary exploration target on EL 10/88 is a polymetallic volcanogenic massive sulphide (VMS) body, similar to those found at the Rosebery, Que and Hellyer Mines. Large hydrothermal alteration zones at Cethana and Staverton may represent haloes around similar sulphide bodies. A secondary although equally important target is for a volcanic-hosted gold deposit. Although there are no type deposits in production within the Mount Read Volcanics, two major gold occurrences within the MRV are being pursued at depth to ascertain their viability. The Henty Prospect appears to be a volcanic hosted deposit which has been partly controlled and/or overprinted by major basement structural features (Henty Fault) and the South Hercules deposit is more akin to a gold rich low grade basemetal occurrence adjacent to a mined out massive sulphide.

Previous detailed surveys had highlighted the prospectivity of these zones yet failed to delineate a distinct target within the large alteration areas. Recent IP, geochemical and geological mapping surveys have in conjunction with a detailed assessment of previous data shown large sections of the Cethana prospect to be highly prospective with coincident responses requiring diamond drilling.

Exploration on the Gog Range portion of the tenement has provided significant encouragement in the location of a gold anomaly hosted within altered and stockworked volcanics and epiclastics. This Zone, previously reported by CRAE as having a strongly anomalous (320 g/t Au) drainage response, was downgraded after a cursory examination showed gold to be related to quartz veining. Noranda has conducted a detailed exploration programme on the Fire Tower Prospect culminating in the completion of 17 diamond drill holes which has indicated significant gold values associated with boldly outcropping stockworked, basemetal / arsenic / pyrite mineralized and altered volcanics and epiclastics. Deeper diamond drilling surveys will be completed to assess this highly anomalous zone at depth.

DESCRIPTION OF THE PROPERTY AND OWNERSHIP

Exploration Licence 10/88 Gowrie Park, of approximately 46 square kilometres in area was granted to Noranda Pty Ltd for a period of 12 months from August 22, 1989. Subsequent to this application, Noranda was successful in obtaining an adjacent licence, EL 35/88 Cethana, totalling 8 square kilometres through the Mines Department tender system. Once granted, this small tenement was amalgamated into EL 10/88 which during November 1989 was further amended (adding 0.9 square kilometres to the total area of 10/88), by the Mines Department to allow for the squaring up of the northern most boundary of the licence (Enclosure 1).

The tenement which consists of two parts is bound by the following co-ordinates:

Part 1 - Lake Barrington, totalling 37 square kilometres.

Commencing at a north west corner of the area whose grid co-ordinates are 431 000 m E 5 417 000 m N thence grid east to 434 000 m E grid south to 5 415 000 m N grid west to 433 000 m E again grid south to 5 409 000 m N again grid west to 432 000 m E again grid south to 5 406 500 m N again grid west to 430 500 m E grid north to 5 407 000 m N again grid west to 429 500 m E again grid north to 5 407 500 m N again grid west to 428 500 m E again grid north to 5 408 000 m N again grid west to 426 000 m E again grid north to 5 409 000 m N thence grid east to 428 000 m E again grid north to 5 412 000 m N again grid east to 429 000 m E again grid north to 5 413 000 m N again grid east to 430 000 m E again grid north to 5 415 000 m N aforesaid again grid east to 431 000 m E aforesaid thence again grid north to the point of commencement.

Part 2 - Gog Range, totalling 17 square kilometres

Commencing at the northwest corner of the area whose grid co-ordinates are 442 000 m E 5 407 000 m N thence gride east to 449 000 m E grid south to 5 404 000 m N grid west to 445 000 m E grid north to 5 405 000 m N again grid west to 443 000 m E again grid north to 5 406 000 m N again grid west to 442 000 m E aforesaid thence again grid north to the point of commencement.

All exploration and reporting is conducted as if one licence (EL 10/88).

The pre-existing Mining Lease, 93 M/84 totalling 12 hectares, is located in the western portion of the Gog Range and covers a stone and gravel deposit held by A.E. and K.H. Walters.

LOCATION AND ACCESS

Exploration Licence 10/88 comprises two separate areas, these being Part 1 - Lake Barrington and Part 2 - Gog Range.

The Lake Barrington area is located 15 kilometres south west of Sheffield and 35 kilometres south south west of Devonport, a major city and port on the north coast. The Gog Range portion of the tenement lies 15 kilometres east south east of Lake Barrington and approximately 12 kilometres south south east of Sheffield.

Sheffield is a service town for the large agricultural community and is connected via a network of major bitumen roads to all major towns and ports in Tasmania.

Access within the prospective area is good with numerous gravel and bitumen roads developed by the HEC during dam construction. Subsidiary four wheel drive tracks including old Forestry logging tracks, HEC transmission line and previous explorer tracks also add to the overall accessibility.

An excellent power and water source is available in the area through the extensive hydro-electric schemes. The area has an annual rainfall of from 120 to 200 cm dependent on location. In general the farming (grazing and cropping) land is flat to hilly with the prospective sequences being more hilly to rugged.

HISTORY AND EXPLORATION TO DATE

Asarco Australia Pty Ltd was granted EL 7/73 totalling 743 square kilometres on 15 March 1973. The licence covered the majority of the Cambrian Mount Read Volcanics within the Fossey Mountain Trough and its initial programme was one of regional stream sediment sampling and reconnaissance mapping. In March 1974 the tenement was reduced to 440 square kilometres - after targets were outlined from the previous surveys.

CRAE entered into a joint venture with Asarco on 12 July 1976 and at the same time pegged EL 10/76 which was a relinquished parcel of land within 7/73 held previously by the Tasmanian Mines Department. Title for EL 7/73 transferred to CRAE on 29 December 1977 and in 1979 the licence was reduced to 199 square kilometres. In June 1980 Asarco transferred its interest in the joint venture to Carpentaria Exploration Co. Ltd and finally in 1983 CRAE assumed sole title to the EL. The tenement was relinquished early in 1988 and was immediately put up for tender through the Mines Department ETA system.

Extensive ground surveys were initiated by CRAE to assess the targets generated through Asarco's stream sampling programme. These surveys included gridding, geological mapping, soil and rock chip sampling and geophysical surveying (gradient array IP, dipole dipole IP, Magnetics, Self Potential, and VLF-EM) on the Lake Barrington, Promised Land, Staverton, Cethana (East and West), Gog Range and Cethana Picnic Ground prospects. Encouraging results necessitated follow-up, more detailed work to be conducted on the Lake Barrington, Cethana, Staverton and Gog Range grids. These surveys included detailed dipole dipole IP, Genie EM, PEM, UTEM and helicopter borne EM (Dighem), results of which led to the drilling of 18 holes; 16 diamond and two percussion. Thirteen of the holes were drilled on the Cethana Prospect with seven situated at Cethana West and the remainder at Cethana East. The majority of holes intersected low grade lead-zinc mineralization (1.2%) within pyritic altered volcanics and tuffaceous sediments. Best results are as follows:-

Cethana West - Hole DD 77CC1 78.6 - 79.0 = 0.4 m
@ 8.3% Zn + 0.2% Pb

Cethana East - Hole DD 77CC5 37.8 - 38.8 = 1.0 m
@ 3.9% Zn + 0.8% Pb + 1.2% Cu + 185 ppm Ag
+ 0.5g/t Au

All four diamond holes drilled on the Lake Barrington prospect encountered encouraging pyritic copper mineralization with some gold and silver credits also present, within siliceous and chlorite/sericite altered volcanics and volcaniclastics. Best results are as follows:-

DD82 LB3	140.8	-	140.98	= 0.18 m @ 9.1% Cu, 52 g/t Ag
	156.5	-	172.45	= 15.85 m @ 1.2% Cu, 12 g/t Ag
	207.85	-	209.00	= 1.15 m @ 1.6% Cu, 18 g/t Ag
DD83 LB4	48.0	-	49.0	= 1.00 m @ 1.9% Cu, 5 g/t Ag
	225.8	-	226.3	= 0.50 m @ 4.8% Cu, 36 g/t Ag, 3.2 g/t Au

A percussion hole designed to test coincident geochemical / geophysical responses on the Staverton grid intersected highly altered pyritic quartz sericite schists with minor but significant basemetal mineralization. Results for this hole are as follows:-

PB 83 SP1 20 - 44 = 24 m @ 0.9% Pb, 0.5% Zn, 10 g/t Ag
incl ud. 20 - 34 = 6 m @ 1.3% Pb, 1.0% Zn, 14 g/t Ag

Importantly it should be noted that little gold assaying was attempted until extremely late in the period of tenure when an attempt was made to broadly assess the licence for fine grained volcanogenic gold deposits. Bulk Cyanide Leach sampling techniques in conjunction with standard stream sediment sampling surveys were implemented sparesly across the tenement.

Significant results were returned, however, no detailed investigations were instigated to confirm and quantify the occurrences. In particular no detailed follow up of the Gog Range gold/tungsten panned concentrate sample - now the Fire Tower Prospect.

Some minor core reassaying for gold was conducted very late in the period, returning values to 1 g/t Au over 1 metre. However, in general, only samples which contained visible lead-zinc were assayed for the noble metal. Extensive pyritic zones failed to be assayed. An exception to the lack of gold assaying occurred on the Lake Barrington Prospect where drillhole assaying for gold was completed on mineralized zones from all four holes.

REGIONAL GEOLOGY

The geology in the general area of the licence is poorly understood and the most up to date published mapping is of 1958 vintage (Sheffield and Middlesex sheets). Mapping by the Department of Mines during the Mount Read Volcanic Project stopped immediately to the west of the licence and it is hoped that this mapping will shortly continue through and beyond the licence to the east so as to constrain the geological setting.

The basement sequence in the region includes the Fossey Mountain Trough portion of the Cambrian Mount Read Volcanics (MRV). These volcanics importantly host five polymetallic ore deposits; Mt Lyell, Rosebery, Hercules, Que River and Hellyer and one volcanic related gold deposit - Henty. These calc-alkaline volcanics which form the Mount Read Arc, extend in a belt over 150 kilometres long from Elliott Bay in the south-west, up through Queenstown and Hellyer and then continue easterly around the northern flank of Mount Roland toward Deloraine. The 10 - 15 kilometre wide belt which flanks the western margin of the Precambrian Tyennan Geanticline is divided into three main lithofacies.

The central belt sequence (CV) comprises rhyolitic to andesitic subaerial and subaqueous intrusive and extrusive volcanics and lacks notable sedimentary horizons. Previous interpretations by Mines Department geologists (Corbett et al) had placed virtually all of the known volcanogenic mineralization within this central belt of massive volcanics. More recent studies by Corbett, Large and others have shown that the majority of deposits now occur within the time equivalent Tyndall Group / Southwell Subgroup / Western sequence rocks. These units flank the central volcanic sequence on the western side by volcano - sedimentary marine sequences (western sequence) and to the north and east by a mixed sequence of volcaniclastic sediments, rhyolitic quartz crystal tuffs and lavas with minor intermediate volcanics (Southwell Subgroup and Tyndall Group rocks). The western sequence rocks grade westward into fossiliferous middle late Cambrian turbiditic successions of the Dundas Group.

An anomalous pile of andesites (Beulah Formation) near Sheffield which also crop out within EL 10/88 may be Que-Hellyer time equivalents, hence the surrounding areas rate highly for volcanic massive sulphide (VMS) potential.

Late Cambrian shallow marine and terrestrial siliciclastic Roland Conglomerates unconformably overlie or are thrust over the older volcanic sequences. Siluro-Ordovician siliciclastic sediments and carbonates conformably overlie the Roland Conglomerate.

This period was followed by widespread folding and faulting which culminated in the intrusion of the Devonian Dolcoath Granite. The steep margins to the granite and rocks adjacent to it are now dotted with numerous tin, tungsten, molybdenum and gold prospects.

Large flood basalt sheets were erupted on to an eroded surface during the Tertiary, infilling many valley areas. Continuing erosion via streams and glaciation has left the present day rugged and incised relief.

GEOLOGY OF THE PROPERTY

The geology of the property varies greatly from Lake Barrington to Gog Range, therefore the two areas will be discussed separately.

LAKE BARRINGTON (Enclosure 2)

Rocks encountered in outcrop in the Lake Barrington Area, centred on the Cethana Alteration Zone, comprise a sequence dominated by quartz feldspar phyric rhyolitic minor dacitic volcanics including probable intrusive, extrusive and pyroclastic units with minor intercalated sequences of fine grained (aphyric) felsic - vitric tuffs and volcaniclastic/tuffaceous siltstones and shales - Tyndall Group equivalents. The interpreted basal portion of the sequence lying adjacent to the thrusted Roland Conglomerate - Moina Sandstone contact is comprised of well bedded north dipping sandstones, siltstones and shales with intercalated volcanic units which grade northwards into volcaniclastic and tuffaceous sediments thence conformably into volcanics.

Bedding orientations where observable in the volcanics also show a steep northerly dip which in places is subparallel to the regional cleavage. Graded bedding and scour and fill structures within the basal sediments indicate the sequence youngs to the north and that the sediments merge into a volcanic dominated sequence through a transition zone of both sequences.

Alteration within the Cethana area is demonstably variable, however, a significant quartz - sericite - K spar - albite +/- pyrite - chlorite mineralogy is mapped, where outcrop permits from Lake Barrington east to the Mount Claude Road where the host volcanics are hidden by extensive talus and/or fluvioglacial material. The zone of alteration is up to 500 metres in width and has minor associated basemetal mineralization occurring as disseminations, aggregates and transgressive veinlets and stringers. Results of a lead isotope survey conducted on galena rich core (CRAE Drillholes) samples: predominantly late stage, cross cutting mineralization, showed a Cambrian signature falling within the Rosebery 95% confidence ellipse. It is possible that this style of mineralization may be remobilized or stringer mineralization peripheral to a major deposit at depth.

A possible Devonian overprint has been observed complicating the picture with the addition of a biotite-tourmaline-quartz assemblage generally as veinlets and to a lesser extent as pervasive disseminations. Although this is not encountered at Hellyer, it is at Rosebery where a granite association is well demonstrated ('F lens area).

The schistosity observed in the alteration zones at Cethana and further north at Staverton is considered to be the product of a Devonian regional deformation event where stresses appear to have been concentrated in the easily deformed mica rich sequences in preference to the less deformed and less altered more competent rocks.

The approximately east-west trending volcanics continue northward from Cethana through younger less altered dacitic and rhyolitic lavas and tuffs until a second major zone of quartz - sericite altered volcanics and sediments is encountered at Staverton. The sequence at Staverton is shown on the Mines Department 1:50,000 Cethana compilation map to be predominantly felsic agglomeratic, however, cursory mapping with later petrographic work has shown the rocks to be schistose quartz phyric pumiceous and vitric tuffs, massive chloritic felsic vitric tuffs and quartz phyric crystal tuffs. More detailed mapping of this area is required.

Overlying this unit to the north is the lithologically anomalous andesitic Beulah Formation. Detailed mapping along the Lake Barrington Rowing Course road has indicated that this formation, described previously as intermediate to mafic lavas, tuffs and breccias, in fact comprises a mixed volcanic-epiclastic assemblage. Calcite-chlorite altered feldspar phyric dacitic lavas, quartz feldspar phyric glassy rhyolite lavas (with pyroclastic component) and porphyritic andesites are associated with mass flow type medium grained lithic wackes of mixed felsic-intermediate volcanic composition and minor intercalations of mixed micaceous volcaniclastic greywacke and silstone.

Several sedimentary facing determinations indicate a younging generally northwards, confirming facing directions observed further south. The mixed volcanic/sediment sequence may be an equivalent to the Que-Hellyer sequence and more detailed mapping is necessary in order to ascertain its true stratigraphic position. Until May 1991, this area was covered by a recreation reserve and hence off limits to explorers, however, the reserve now has been brought back under the Mining Act and exploration now can proceed.

Strong calcite-chlorite-sericite alteration was highlighted through petrographic studies on rock chips obtained from reconnaissance surveys along the access road to the Lake Barrington Rowing Course. The style of alteration is markedly dissimilar to that observed at Cethana and Staverton.

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The Beulah Formation is in turn overlain to the north by a mixed assemblage of volcaniclastic sediments, tuffaceous sediments of felsic derivation and more extensive conglomerates, grits, sandstones and shales. These units, previously termed the Gog Range Greywacke, are analogous to the Southwell Subgroup / Tyndall Group / Dundas Group mixed sequence described by Corbett north and north-east of Hellyer.

Unconformably overlying in the north and thrust faulted in the south lies the Cambro-Ordovician siliciclastic sequences including the Roland Conglomerate and Moina Formation sandstones and siltstones. The contact observed on the Cethana dam road (old Lorinna Road) is interpreted as a shallow angle thrust with Dacitic tuffs and tuffaceous sediments immediately north of this feature being heavily ironstained (pyritic) and siliceous. In other exposures the conglomerate abuts volcanics with no evidence of pyritic or siliceous alteration or movement along the contact.

Blanketing much of the prospective geology is the Tertiary Basalt. This unit is of variable thickness due to being extruded on to an incised surface. The present day topography is a product of Pleistocene glaciation and more recent stream erosion.

GOG RANGE (Enclosure 3)

Rocks encountered in the Gog Range area have previously been mapped by Jennings 1958 as Minnow Keratophyre (volcanics) and Gog Range Greywacke (volcanics and sediments) which Noranda has tentatively ascribed to the Southwell Subgroup / Tyndall Group / Dundas Group sequence - see Regional Geology, as at Lake Barrington.

This conclusion was further strengthened after petrographic studies were completed on samples collected during detailed mapping surveys on the gridded area. Rocks are derived from rhyolitic to rhyodacitic magmas and include dominant quartz feldspar phyric

lavas, crystal lithic and vitric tuffs, minor rhyolitic intrusives and subordinate epiclastic sediment horizons. The abundance of quartz-phenocrysts and the relative abundance of large zircons within these volcanics is a diagnostic feature of the Dundas Group - Tyndall Group - Southwell Subgroup felsic lavas and tuffs.

The mapped volcanic/sediment sequence is very proximal and coarse grained in the western portion of the grid grading into finer sequences to the east. Significant Cambrian and possibly overprinted Devonian silica / sericite / pyrite / carbonate alteration containing variable arsenopyrite, scheelite - wolframite, basemetals and gold mineralization is observed at the western, coarser, fragmental portion of the gridded volcanic / sediment pile - Fire Tower Prospect. The outcropping 300m x 100m altered zone which is also variably quartz / carbonate / hematite / pyrite +/- mineralized stock work veined, lies directly over a major north south trending intrusive (Cambrian?) spline itself cut by a major E - W trending basement structure - see Leaman report in previous annual report. Genetically at least, part of the mineralization would appear to be related to the intrusive body, the structure possibly acting as a conduit for fluid flow.

Bedding orientations are scarce, however, when observed they show a generally very steep northerly dip in accordance with those at Lake Barrington. The majority of the prospective sequence is covered by talus material and the resistant silica / carbonate / sericite altered bluffs which boldly outcrop are generally quite massive and textureless. The only good mappable contact is the shale / siltstone epiclastic horizon which directly overlies the alteration / mineralization zone to the north.

Widespread silica-sericite-biotite +/- chlorite alteration is observed regionally over the remainder of the volcanic sequence with local variations in intensity, possibly due to proximity to additional major structures.

The east-west trending sequence of volcanics and epiclastics is in fault contact to the west with Roland Conglomerate although much of this contact is also covered by scree and talus. Roland siliceous, hematitic conglomerate, conformably overlain by Moina siliceous sandstone, is mapped in faulted and possibly unconformable contact south of the volcanic sequence.

Blanketing much of the prospective sequence are widespread slope induced talus and scree deposits. These Quaternary deposits are themselves being eroded by present weathering processes.

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MINERALIZATION

Highly anomalous basemetal and minor to significant noble metal mineralization has been delineated through Noranda and CRAE diamond and percussion drilling surveys over various sections of the MRV within EL 10/88.

The style of mineralization varies from volcanic exhalitive(?) pyrite + minor basemetals at Cethana East and basemetal mineralization within tuffaceous shale (77CC1 98.0 - 100.6 = 2.6 m @ 0.9% Zn + 0.9% Pb) at Cethana West to stringer, veinlet and disseminated mineralization varying from one to two percent (lead + zinc) in the majority of holes drilled at Cethana (best results being from: 77CC1 78.6 - 79.0 = 0.4 m @ 8.3% Zn + 0.2% Pb and 77CC5 37.6 - 38.6 = 1 m @ 0.8% Pb + 3.9% Zn + 1.2% Cu + 185 g/t Ag + 0.5 g/t Au.

Noranda through its detailed ground surveys on the Gog Range Grid (Fire Tower Prospect) has outlined a major and distinctive structurally complex and altered volcanic style of gold mineralization. At this prospect a major quartz / carbonate / hematite stockworked silica - sericite - pyrite - carbonate - gold - arsenopyrite mineralized zone has been delineated hosted by altered epiclastics and possible fragmental rhyolitic volcanics. To date twenty shallow (average per hole - 30 metres) diamond holes have penetrated this zone along 3 cross sections and partially along a longitudinal section, the majority of which encountered significant gold mineralization. Best results are as follows:-

GP-90-1	0 - 24 = 24 m	@ 2.01 g/t Au
GP-90-3	12 - 18 = 6 m	@ 3.55 g/t Au
GP-90-10	1 - 30 = 29 m	@ 3,24 g/t Au
inc	7 - 24 = 17 m	@ 5.37 g/t Au
GP-90-16	20-30.75=2.75m	@ 2.25 g/t Au

Significant basemetal mineralization is associated with the gold zone along with minor cobalt (up to 0.2% Co in rock chips) and tungsten values (up to 0.6% W in drill core).

Highly significant copper-silver-gold stringer style mineralization has been drilled at Lake Barrington (DD82 LB3 156.5 - 172.45 = 15.85 m @ 1.2% Cu, 12 g/t Ag and DD83 LB4 225.8 - 226.3 = 0.5 m @ 4.8% Cu, 36 g/t Ag, 3.2 g/t Au), indicating a markedly different mineralizing environment.

Percussion drilling by CRAE at Staverton encountered significant lead-zinc mineralization within a quartz-sericite altered volcanic sequence (PD83 SP1 20-44 = 24 m @ 0.9% Pb, 0.5% Zn, 10 g/t Ag). No indication of mineralization style was reported.

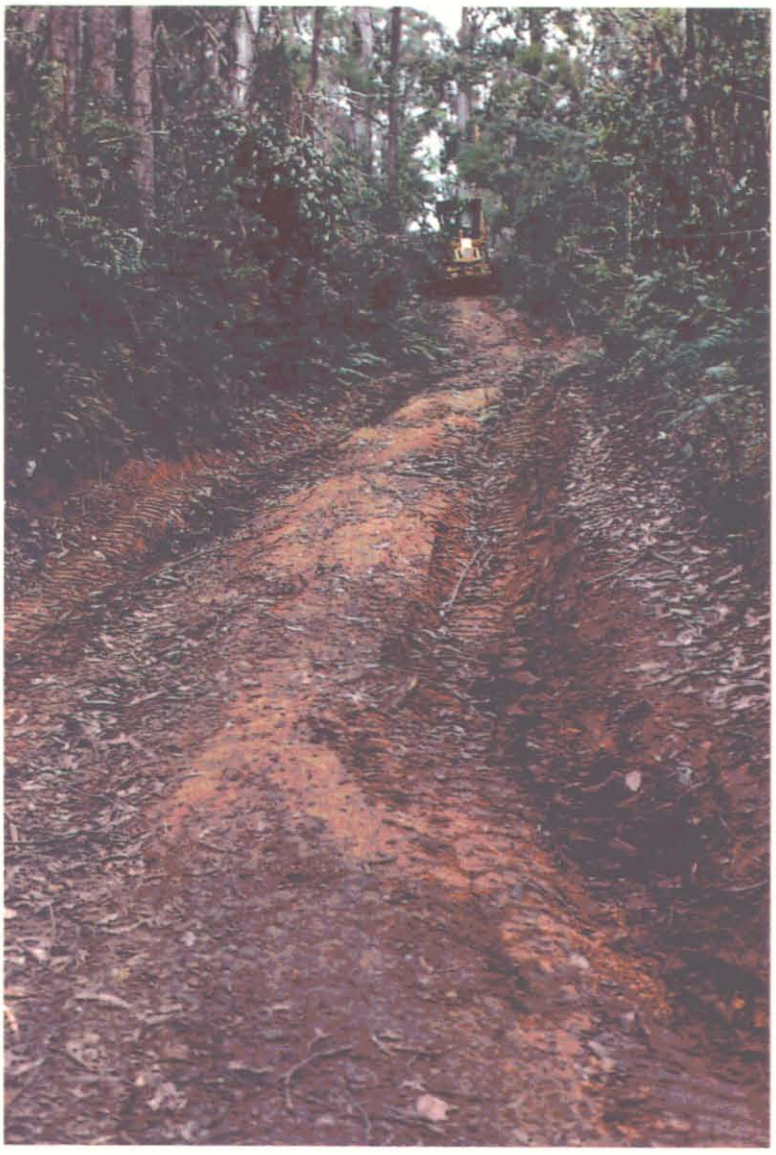
WORK CONDUCTED BY NORANDA

Work conducted during the August 1990 to July 1991 period included IP surveying (dipole-dipole), geological mapping, data compilation and geochemical sampling at Cethana and IP surveying (dipole-dipole), geological mapping data compilation and diamond drilling at the Gog Range Prospect. An additional basemap at 1:5,000 scale was produced for the Cethana Alteration Zone draughted by Coordinated Draughting Services in Perth, Western Australia.

The programme to date has concentrated on both the Gog Range Prospect (Fire Tower Zone) and the Cethana Alteration Zone, and are discussed separately below.

GOG RANGE PROSPECT

The promising 'Fire Tower Gold' prospect located on the western portion of the Gog Range Grid was subjected to further detailed exploration including dipole-dipole IP, geological mapping and man portable diamond drilling surveys.



PHOTOGRAPH 1. Grading eroded section of steep forestry track prior to re-surfacing with gravel.

Access upgrading was also necessary to allow for the increased traffic along the forestry access road to the Fire Tower Prospect. A badly eroded section of the road was graded and 'topped' with gravel and numerous 'grips' were cut at regular intervals to take away excess run off. All previous culverts were also repaired. A section of a fire trail was also upgraded to allow for the more efficient running of the IP and drilling programmes. A log bridge was completed to avoid a boggy creek section cutting the track and a small dam was constructed after consultation with the Forestry and Mines Departments to be used as a drill water supply source.

GEOPHYSICS

Dipole-Dipole IP surveys were completed over lines 22E to 27E centred on the main zone of alteration at the Fire Tower Prospect (Appendix 1). Surtec Geosurveys conducted the programme under the watchful gaze of John Bishop of Mitre Geophysics during July/August 1990, at which time the weather was very poor. Six lines were surveyed using a 25 metre dipole spacing and an identical array to that used at Cethana.

A significant chargeability and resistivity response was observed over the zone of alteration and outcropping mineralisation. The grid lines were close enough to enable the production of meaningful contour plans of the averaged chargeabilities and resistivities after the method described by Fraser (1981). Bishop states that the averaged chargeabilities suggest that one large mineralised zone of strike length +500 metres has been defined with its maximum development close to the centre of the survey at approximately 25E and 25.8E. He further suggests that the response may not be a single simple zone, and this was later

confirmed by consultant geophysicist Papken Zarzavatjian, who states that there appears to be two parallel responses lying approximately 50 metres apart (Fig 2). Bishop also states that the coincident associated zone of high resistivity appears to relate to the zone of silicification and suggests a possible epithermal association. In order to rank the anomalies observed for drilling, Bishop suggested that results be modelled in conjunction with geological and geochemical ordering.

Further investigation has shown the two parallel IP chargeability trends generally lie immediately to the south of and in part semi coincident with the main altered and mineralised Fire Tower zone. The northern IP trend in the vicinity of Line 23E appears to relate to the contact between the hanging wall shale/siltstone sequence and the host mineralised unit. However, on line 24E the main IP trend coincides with a mapped fault and major structural dislocation. The highly anomalous zone of gold mineralised epiclastics occurring near line 25E at 4950N to 4990N shows no significant response yet previous drill holes (GP-90-1 and 2) encountered significant disseminated and stinger veined pyrite and basemetal mineralisation. As the northern IP zone is interpreted to be moderately deep (approx. 60m), the recent drilling would appear to have failed to adequately test the anomalous response.

The southern IP trend in association with semi coincident SP and VLF EM responses also remains untested and mapping shows the anomalous zone lies coincident with intense siliceous alteration which returns only weak rock and soil geochemical values.

PHOTOGRAPH 2. Boldly out-cropping silica/sericite/carbonate altered and basemetal and gold mineralized epiclastics and volcanics at the Fire Tower Prospect.

PHOTOGRAPH 3. Close up of out-crop showing alteration and abundant stockworking and major flat lying quartz/hematite veins (near Stn 22 - assayed 2 metres at 0.99 g/t gold)

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DRILLING

Encouraged by the results of all previous ground surveys during the 1989-90 period, in particular the results returned from three shallow diamond holes (GP-90-1 : 0-8m @ 2.69 g/t Au and GP-90-3 : 5-8m @ 4.04 g/t and 12-18 @ 3.56 g/t Au). Noranda decided to continue the man portable diamond drilling programme in an attempt to better understand the geology, structure and mineralisation.

N. Poltock was again contracted to complete 14 diamond holes totalling 425.25 metres (average 30.38 metres) drilling T/T 46 sized core. Drill water was pumped from a small dam excavated into a creek bed approximately 300 metres south of the prospect. All drill sites were hand levelled using available fallen timber and minor excavation work was carried out, using mattock and shovel. All drilling equipment was hand carted into the drill sites, and some ropeways had to be constructed to aid the lowering of gear down slopes of up to -48^{o}. Sumps were not necessary at the drill sites as water was invariably lost down the intensely fractured holes.

A composite plan at 1:500 scale was produced to compile all available geochemical data for the Fire Tower Prospect to maximise the effectiveness of the proposed drill fence diamond drilling programme (Enclosure 2). The original soil sampling data neatly confines the outcropping mineralised and altered zone which was further defined by the previous detailed channel sampling programme. A very sharp geochemical cutoff is observed directly north of the zone of alteration manifest by interbedded shales, siltstones and minor arkoses, termed the hanging wall sequence. The southern boundary is much more diffuse and illdefined due to the pervasive nature of the alteration.

PHOTOGRAPH 4. Man portable diamond drilling (GP-90-11) on steep, talus covered ground. Fallen timber from site used to form rough drill site with minimal excavation by hand.

Three drill fences were designed to assess the mineralised zone (Sections A - B, C - D, E - F), at approximate 100 metre intervals, and two additional holes were completed along a longitudinal section (Enclosures 3, 4, 5 and 6). The drilling programme was completed and all holes were logged in detail (Appendix 2), and the core half split over 1 metre intervals and dispatched to Analabs at Burnie, Tasmania for assay for Cu, Pb, Zn, Ag, As and Au (Appendix 3). A list of the drilling data with accompanying significant results is tabled below:

Table 1

DRILLHOLE SUMMARY - GOG RANGE

Hole No	Depth	Declination	Significant Results
GP-90-4	TD 27.2 m	-55 GS	< 0.02 throughout
GP-90-5	30.2	-50 GS	20 - 30 = 10 m @ 0.96
			inc 20 - 21 = 1 m @ 3.75
GP-90-6	30.45	-52 GS	6 m @ 1.10
GP-90-7	30.95	-51 GS	2 - 31 = 29 m @ 0.86
			inc 2 - 8 = 6 m @ 2.81
GP-90-8	30.15	-55 GS	1 - 5 = 4 m @ 1.03
GP-90-9	30.45	-49 GS	29-30.45= 1.45m@ 1.07
GP-90-10	30.25	-45 GS	1 - 30 = 29 m @ 3.24
			inc 7 - 24 = 17 m @ 5.37
			and 10 - 13 = 3 m @21.38
GP-90-11	30.45	-44 GN	16 - 19 = 3 m @ 1.18
GP-90-12	30.30	-60 GS	20 - 21 = 1 m @ 1.09
GP-90-13	30.60	-45 GN	27 - 29 = 2 m @ 0.70
GP-90-14	32.30	-60 GS	9 - 10 = 1 m @ 1.19
GP-90-15	30.85	-55 GS	< 0.015 throughout
GP-90-16	30.75	-55 GS	28-30.75= 2.75m@2.25g/tAu
GP-90-17	30.35	-55 GS	25 - 29 = 4 m @ 0.81

The following is a brief summary of the drilled geology and mineralisation encountered from this programme on a section by section basis.

SECTION A - B (Enclosure 3)

Hole GP-90-4 penetrated the 'hanging wall' sequence of shales / siltstones and arkoses although from 10 metres an intense zone of shearing (mylonitisation) was encountered trending sub parallel to the core axis. GP-90-5 also penetrated the 'hanging wall' sequence to 19 metres, then passed through a major ferruginous shear zone into the 'host' altered and mineralised unit below. However, mineralised outcrop (5 metres @ 3.5 g/t Au) occurs only 4 metres south of the Collar, and this was expected to be cut at approximately 5-6 metres downhole. The absence of the 'host' near the top of the hole implies significant local structural dislocation.

Holes GP-90-6, 7 and 8 on the same section all cut highly altered stockworked and veined pyritic epiclastics / volcanics with minor galena / chalcopyrite and abundant hematite and siderite veining. Alteration and the sulphide component in hole 8 appears to deminish downhole.

SECTION C - D (Enclosure 4)

Hole GP-90-15 initially cut the 'hanging wall' epiclastic sequence before passing at 18 metres into a section of unmineralised and weakly stockworked and veined, but moderately altered host? GP-90-16, sited 2-3 metres from boldly outcropping mineralised rocks (8 metres @ 1.3 g/t Au) failed to cut the host sequence until 28 metres after passing through major fault zones at 4 and 9 metres. Hole 17 also cut the mineralised host near its southern limit in an area with little to no outcrop. Again major structural dislocations are implied, perhaps trending north west as evidenced in drillhole GP-90-3, drilled last year, which cut a similar trending mineralised (5m @ 2.82 and 6m @ 3.55 g/t Au) structure. Interestingly, the northern IP zone axis cuts through GP-90-16 directly coincident with the two zones of faulting. No significant increase in sulphide minerals was observed during core logging.

SECTION E - F (Enclosure 5)

GP-90-11 and the initial 20 metres of GP-90-12 intersected the 'hanging wall' sequence of shales / siltstones and minor arkoses between lines 23 and 24E. The host sequence was cut in the basal portion of GP-90-12 as well as in hole GP-90-13 and 14, yet alteration and stockworking is less intense in this portion of the zone. This is mirrored in the paucity of sulphide minerals present and the lower than usual gold contents which range from 0.1 g/t to 1.2 g/t, generally occuring over narrow intervals, from within these holes. The overlying hanging wall sequence appears to be conformable on this section, and the contact dips steeply northwards at from 60-80^{o}. The two previous sections appear to have structural contacts and this may be significant as the better gold grades occur here also.

LONGITUDINAL SECTION (Enclosure 6)

Holes GP-90-9 and 10 were completed on the eastern portion of this section, and both encountered the altered and mineralised host sequence. GP-90-9 initially intersected 28 metres of the hanging wall epiclastic sequence prior to cutting the host and GP-90-10 cut from 1 to 2 metres of the hanging wall sequence. GP-90-10 was sited to test beneath a channel sampled zone assaying 20 metres @ 2.5 g/t Au and the completed hole returned highly significant gold and basemental mineralisation (17 metres @ 5.37 g/t Au) within very pyritic (5-7% Py) strongly stockworked, altered epiclastics? Drilling at the eastern end of this section appears to show the mineralized sequence plunging SE beneath unmineralised cover rock in a zone of poor outcrop yet the IP data appears to be consistent over the projected plunge direction on line 27E. Previous VLF EM surveying by CRAE has showed a coincident EM response with the strong chargeability zone and the projected mineralised horizon on line 27E (Fig. 2).

The man portable drilling programme again proved most successful, achieving more often than not 100% recovery in very difficult terrain, and also highly fractured, veined and altered ground. The majority of holes along the drill fences encountered variable amounts of both disseminated and stringer veined pyrite and basemetal mineralisation with significant gold credits. However, major structural complexities have made it extremely difficult to ascertain the style and predict the location of the gold mineralisation.

The shallow drilling has also failed to test the highly anomalous IP trends observed cutting obliquely across the altered and mineralised horizon. A deep diamond hole is planned to penetrate the widest and most anomalous section of the host horizon beneath GP-90-10 (Enclosure 7). This hole should also cut a significant portion of the northern IP response, though the southern response still remains to be tested.

CETHANA ALTERATION ZONE

Previous multi faceted surveys have helped define a major Cambrian hydrothermal alteration 'system' at Cethana which has been slightly modified by the Devonian deformation period. Two large sections of this 'system' have not been EM surveyed due to the presence of major high tension power lines and extensive scree deposits over 30-40% of the grid have negated detailed geological mapping and geochemical surveys. Previous drilling by CRAE targeted both IP/EM and geochemical anomalies occurring within the upper section of the alteration 'system' and no drilling was completed on the stratigraphic base of the 'system'. Little attention was paid to the along strike potential of the alteration 'ssytem' particularly when covered by extensive scree deposits. Noranda concluded that the prospectivity of the system is high and implemented IP, mapping and geochemical sampling surveys during the period, to generate targets for drilling. Compilation of all zinc soil data onto one base plan and the compilation of all anomalous EM, IP and magnetic data onto the one base was also completed.

Previous CRAE grid lines were recleared and pegged, and extensions to lines cut and pegged prior to the implementation of IP surveys.

GEOPHYSICS

Data Compilation

A compilation plan of CRAE's and Noranda's anomalous geophysical data (Enclosure 8), for both the Cethana East and West prospects is presented at 1:5000 scale as is a compilation plan of CRAE's zinc soil geochemistry (Enclosure 9). The two plans were produced to help synthesise all available data and aid the generation of drill targets.

IP data for the two CRAE prospects had to be 'married' together as data generated was not totally compatible due to the use of different receivers. Noranda's anomalous IP data was also plotted onto the plan. Magnetic data was generally flat and only significant magnetic lows lying coincident with anomalous responses were plotted. Anomalous UTEM responses defined by the CRAE geophysicist as well as Noranda's consultant geophysicist are plotted and gaps in the survey noted.

During the July / August 1990 period, Noranda completed Dipole - Dipole IP surveying in an attempt to repeat and confirm previous CRAE data as well as to generate specific drill targets within the overall alteration 'system' (Enclosure 10). These surveys were in response to recommendations made by P. Zarzavatjian (consultant geophysicist to Noranda) in the annual report for 1988-89 (EL 10/88).

Surtec Geosurveys conducted an 11 line survey during July / August 1990 supervised by John Bishop of Mitre Geophysics (Appendix 1). Both this survey and the survey at Gog Range was carried out using a Scintrex IPR - 8 time domain receiver reading to n=6 with 50 metres dipoles being used. Bishop noted that the data quality was good and that the ever present power lines appeared to have little effect.

A number of responses were recorded which Bishop has classified into two broad groups : strong and weak. Anomalies on lines 21700E and 21800E are very good and the data indicates a significant amount of sulphides being present. This zone has a coincident strong resistivity signature probably due to significant siliceous alteration which Bishop equates to an Epithermal style, although mapping suggests silica - sericite alteration of VMS style is another possibility. Strong responses were also partly

defined at the end of lines 900E and 1100E, which Bishop again states is indicative of significant volumes of sulphide. He also states that weaker anomalies may only indicate differences in resitivity values within parent hosts, however, he states that the response at the northern end of line 500E, extending west to line 300E? is the best of these weaker responses.

End of line responses on 900E and 1100E required detailing as did the along strike potential of the very strong responses delineated on lines 21700E and 21800E. Surtec was again contracted to complete 3 new lines at 200 metres spaced intervals east of the 21700 / 21800E anomaly as well as detailing the end of line responses on 900 and 1100E (Appendix 1). The follow up IP was carried out in April / May 1991 using the same survey specifications as previously.

End of line responses on lines 900 and 1100E were detailed and confirmed with chargeabilities of 45 msecs coinciding with a zone of low resistivities. This confirms the linear CRAE response outlined on Enclosure 8. The anomaly lies coincident with a unit of siliceous interbedded pyritic black shales and siltstones rock chips from which returned moderately anomalous values to 228 ppm Pb and 1189 ppm Zn. The response also has a coincident moderately anomalous lead - zinc soil anomaly.

A significant IP response (chargeabilities to 40 msec with moderate resistivities indicative of silica alteration) was returned directly along strike to the east from the previous zone (21700 - 21800E) outlined by CRAE and Noranda. The anomalous zone now has dimensions of 1200 x 50 - 200 metres and in the area of recent IP work appears to be deep (Enclosure 8). The zone lies coincident with highly altered (silica - sericite - chlorite) stringer mineralised

volcanics returning rock chip values up to 165 ppm Cu, 557 ppm Pb and 995 ppm Zn and 0.02 ppm Au. Soil sampling on lines 22200, 22400 and 22600E also showed a moderate response coincident with the IP and rock chip zone (Enclosure 9). Significantly the central 700 metre portion of the zone remains untested by EM techniques due to a high tension power line.

However, data gleaned from previous CRAE surveys show a coincident 9 channel EM response lying directly coincident with the high chargeability zone and zone of lead/zinc geochemistry on line 22600E. Drilling by CRAE (5 holes), concentrated on a 200 metre slice of this 1200 metre long zone of alteration and anomalous geochemistry and geophysics. Hole 77CC5 returned significant values (1 metre @ 0.8% Pb, 3.9% Zn, 1.2% Cu, 185 g/t Ag and 0.5 g/t Au) from within a shear zone lying within the overall altered and chargeable zone. Other holes hit stratiform to stringer style pyrite mineralisation with weak associated lead, zinc values.

GEOCHEMISTRY

Compilation and redraughting of all previous CRAE zinc soil data with minor Noranda additions from both the Cethana East and West propsects, onto a new 1:5000 Cethana base plan was completed during the period (Enclosure 9). This and the anomalous geophysical compilation data were used to help rate anomalies and target responses for diamond drilling.

A significant geochemical trend is observed coincident with the extensive chargeable zone with associated minor UTEM responses between 21400E and 22600E (Cethana East). Soils assayed up to 2150 ppm Pb, 1720 ppm Zn and 216 ppm Cu against background levels of the order of 50 ppm Pb, 30 ppm

Zn and 25 ppm Cu. More moderate basemetal levels were obtained further to the east and west of the maxima described above with levels of the order of 200 - 400 ppm Pb and 100 - 700 ppm Zn associated with poorly outcropping quartz - sericite - chlorite altered and stringer veined volcanics. Significant sections of the zone are covered by extensive scree deposits negating sampling surveys.

A coincident weak to moderate geochemical and strong IP trend is also located on the western portion of the grid from 19800E to 900E. The bulk of this zone was not surveyed with UTEM due to powerlines and the geology is comprised of an interbedded sequence of siliceous pyritic shales, siltstones and tuffaceous sediments. The geochemical trend lies directly coincident with the IP and prospective geology which appears to grade laterally westward into silica - sericite - pyrite altered volcanics, exposed near the Cethana Dam turnoff. Values ranged up to 1550 ppm Pb and 830 ppm Zn, however, the average values within the zone ranged from 100 to 500 ppm Pb and 100 to 400 ppm Zn.

A further coincident zone of weakly to moderately anomalous IP, UTEM and moderate geochemistry is located between lines 100E and 400E located 200 metres north of the Cethana Road. The zone is manifest by weak lead (up to 290 ppm) and zinc (up to 750 ppm) values over a width of 100 to 200 metres and lies semi coincident with a zone of intense silica - sericite alteration.

Additional geochemistry trends are apparent throughout the grid, however some 30% of the Cethana Zone is covered by extensive scree deposits, which have precluded all sampling by conventional soil techniques. These blank areas were covered by the recent IP surveys in an attempt to screen the zones for possible subscree anomalies worthy of further testing.

EXPLORATION POTENTIAL

Exploration Licence 10/88 shows great potential for the discovery of volcanogenic massive sulphide mineralization within the altered zone at Cethana and possibly at the less explored Staverton prospect.

Noranda also believes the licence holds great promise for the location of volcanic hosted and/or structurally hosted precious metal deposits in particular at the Fire Tower Prospect on the Gog Range Grid.

Additional potential exists in yet to be explored areas, such as the mixed andesitic - rhyolitic - epiclastic altered sequence (Que-Hellyer equivalent ?) north-east of Staverton, and the Lake Barrington Cu/Ag/Au prospect north of Staverton.

EXPLORATION PROGRAMME PROPOSED

1. Cethana Alteration Zone

Data generated by from surveys over the Cethana Alteration Zone has confirmed the prospectivity of the Cambrian hydrothermal system. Recent dipole-dipole IP surveying confirmed previous CRAE data and also upgraded or more completely covered previous responses allowing for more accurate assessment and later rating of anomalies for planned diamond drilling surveys.

The majority of the CRAE responses remaining undrilled lie in distinctly different horizons within the overall altered sequence. Noranda will drill test the best of the coincident geological/geochemical and geophysical responses or where necessary the best of the scree covered dipole - dipole IP anomalies and all holes will be cased and surveyed with downhole EM looking for "near miss" massive sulphide situations.

2. Fire Tower Prospect - Gog Range

Data from the IP survey suggests that chargeable zones may relate to highly sulphidic vein densities at depth (approximately 60 metres) and that high resistivities may relate to silica flooding within the altered zone. None of the 17 shallow diamond drill holes completed over the mineralised zone cut the projected IP horizon and a deeper diamond hole is planned to intersect the northern response as well as cutting projected near surface mineralisation also at depth. The core will be 1/2 split and assayed for basemetals, gold, arsenic, tungsten and cobalt.

3. Staverton Prospect

The altered area at Staverton requires further detailed testing. A programme of regridding, mapping and geochemical sampling should be undertaken followed by infill IP and possibly EM surveying. The best coincident geology / geochemistry / geophysical signature should be diamond drilled. Holes should also be surveyed with down hole EM.

4. Lake Barrington Prospect

A geophysical re-evaluation of CRAE's data has shown the four holes drilled on the copper, silver, gold show failed to test the major IP and Misse and la Masse target, due to being pulled up short. A deeper hole is needed to test this hypothesis. Down hole EM should be completed to test for a near miss massive sulphide situation.

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APPENDIX 1

Interim Report on Induced Polarization Surveys at Cethana and the Gog Range (EL 10/88) J. Bishop August 1990.

MITRE GEOPHYSICS PTY LTD
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AN INTERIM REPORT ON INDUCED POLARISATION SURVEYS AT CETHANA & THE GOG RANGE, (E.L. 10/88)

for

Noranda

by

Dr J.R. Bishop

Nor/MG90/12
August, 1990.

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Figure 19a. Simplified sulphide distribution: Cethana.

Figure 19b. Simplified sulphide distribution: Gog Range.

SUMMMARY

IP surveys have been carried out over two separate areas in northern Tasmania as part of Noranda's exploration program for gold. At Cethana, a number of prospective zones were partially defined. At Gog Range one large zone was well defined. The field results are presented in this interim report, with some sketched and simplified sections of possible sulphide distributions.

INTRODUCTION

E.L. 10/88 (Gowrie Park) is located in the North of Tasmania and covers rocks of the highly mineralised Cambrian Mt Read Volcanics. The licence, held by Noranda Pty Ltd, is split into two sections, about 10kms apart. The western section is referred to as the 'Cethana' area and the eastern as 'Gog Range'.

The ground has been previously explored for base metals, but Noranda is concentrating on the area's potential for gold. As part of their exploration program, two IP surveys have recently been carried out: one in each of the two areas. This report presents the results and gives an initial, qualitative interpretation. No attempt has been made to evaluate any of the earlier geophysics, but it is expected that a subsequent report will integrate the IP results with the previous work and model the data to provide more precise drill targets.

SURVEY DETAILS

Eleven relatively widely spaced lines were surveyed at Cethana. The coverage is shown in Figure 1a, together with the location of the interpreted anomalies. On the Gog Range, a more detailed survey over six lines was carried out. The coverage, together with the averaged chargeability and resistivity contours are shown in Figures 1b & 1c. In both areas, the surveys were along lines re-established from grids cut by the previous licence holder, CRAE. Some of the labelling in the field was wrong (eg, pegs marked 'N' increasing in value to the south), but these have been corrected in the figures.

Both surveys were carried out by Surtec Geosurveys in August, 1990 using a Scintrex IPR-8 time domain receiver, reading to n=6. At Cethana, 50m dipoles were used, with 25m at Gog Range. The data is generally of good quality, with the power lines on the Cethana grid apparently having little effect. However strong telluric noise towards the end of the survey, resulted in several 'no readings' on line 19800E. The results presented here (Figures 2 to 18) are the field plotted pseudosections showing the second slice chargeability (M_{32}) in mV/V and the apparent resistivity in ohm-m. At Gog Range, the lines were close enough to produce meaningful contour plans of the averaged chargeabilities and resistivities after the method described by Fraser (1981) .

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* Fraser, D.C., 1981. Contour map presentation of dipole-dipole IP data. Geophysical Prospecting 29, no. 4.

INTERPRETATION

Cethana

A number of responses were recorded on the Cethana survey. Their locations are indicated on Figure 1a, where they have been classified into two broad groups: strong & weak. In fact the anomalies at the eastern end of the survey, on lines 21700E and 21800E are very good, well defined responses indicating a significant amount of sulphide (excluding the possibility of graphitic shales). The corresponding resistivities are higher on line 21800E and generally unchanged on line 21700E, suggesting that the sulphides are disseminated in a silicified zone (ie, an epithermal style?), which is open to both the east and west. The strong responses at the southern ends of lines 900E and 1100E are only partially defined (ie, end-of-line anomalies), but again a significant volume of sulphide is indicated in a resistive host. (It was appreciated at the end of the survey that further work was required to better define some responses and to close off open-ended prospective zones, however the job was already over budget and it was decided to assess the completed work before planning any extensions.)

Given that there may be only a tenuous relationship between gold and sulphide, the less well developed anomalies may be just as prospective for gold. Most of the responses shown as "weak" in Figure 1a suggest very little sulphide and may merely be reflecting higher resistivities. (The same amount of sulphide in a more resistive rock will usually produce a higher IP effect.) The response at the northern end of line 500E, extending west to line 300E(?), is perhaps the best of the weaker anomalies. Figure 19a shows sketches of simplified interpretation of some of the pseudosections.

Gog Range

The averaged chargeability contours (Figure 1b) suggest that one large mineralised zone has been defined with its maximum development close to the centre of the survey. Inspection of the pseudosections confirms that the highest concentrations of sulphides are likely to lie close to lines 25E and 25.8E, but suggests that they are probably not in a single, simple zone. Thus the type of sketches produced for the Cethana survey are not so easily done here, but an attempt has been made (Figure 19b). The associated resistivities are again high, suggesting a similar geological environment to that at the eastern end of the Cethana grid.

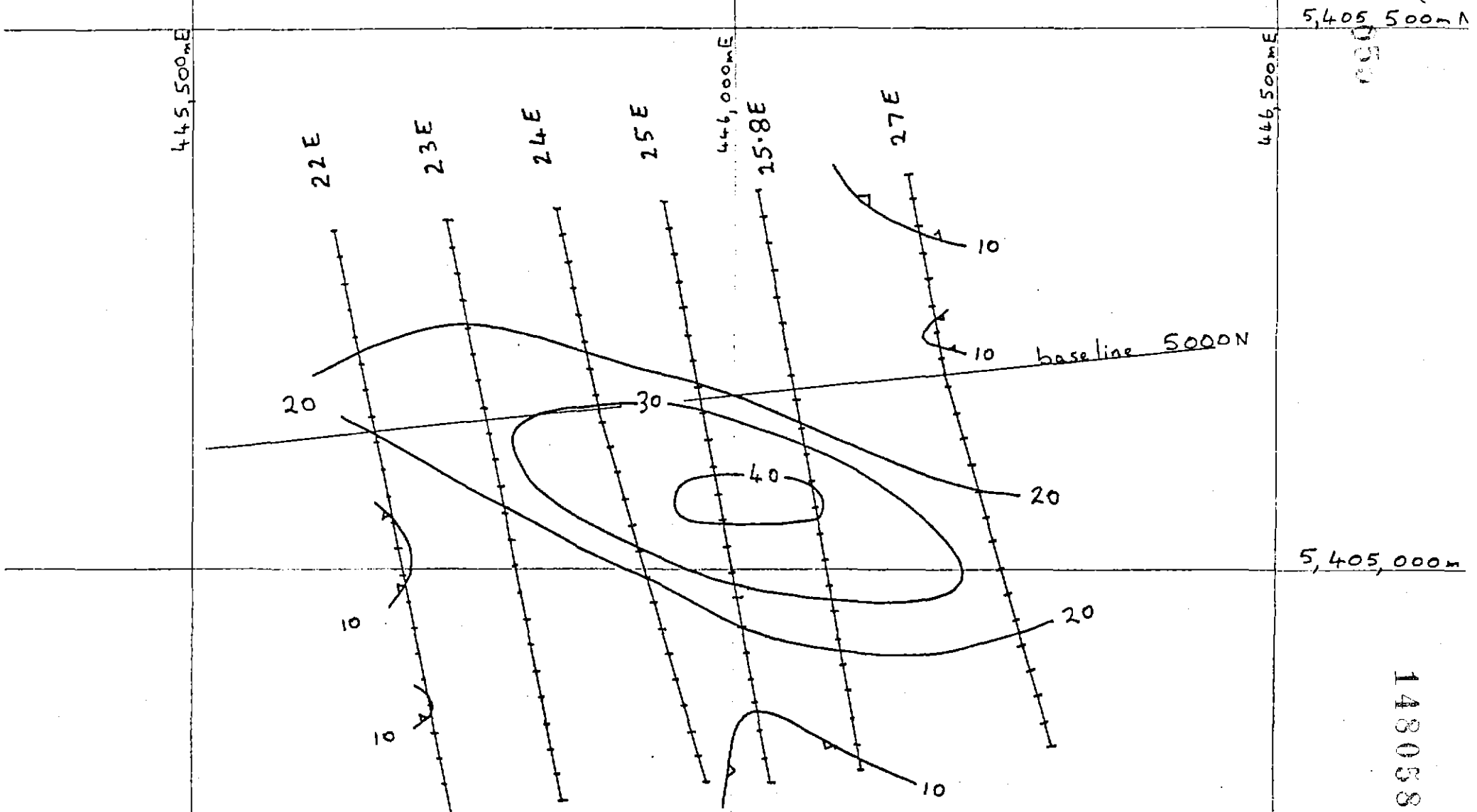
CONCLUSIONS AND RECOMMENDATIONS

The IP surveys have defined prospective zones at both Cethana and Gog Range. At the former, at least two separate areas of significant sulphides have been outlined, with a number of areas reflecting lower sulphide concentrations also defined. The line length and spacing was such that none of the zones have been closed off, but the open-ended zone at the eastern edge of the grid was the best developed. Modelling should produce a more confident understanding of the geology and this is planned in conjunction with an evaluation of the relevant previous geophysics. As an interim measure, some cross-sections have been suggested in Figure 19.

At Gog Range a more detailed survey has defined a zone with a strike length of probably more than 500m. It has not been decisively closed off and may extend to either the east or west. The pseudosections indicate the possibility of two or more separate bodies within the zone and this is indicated in the sketches in Figure 19.

Geochemical (augur) sampling already carried out may indicate that some of the weaker IP zones are as, if not more, important than the stronger responses. Thus the proposed modelling will depend at least partly upon a geological/geochemical ordering of the anomalies.

J.R. Bishop
August, 1990.



Survey by : Surtec
date : Aug. '90.
IP receiver : IPR-8
array : dipole-dipole (n=6)
spacing : 25m

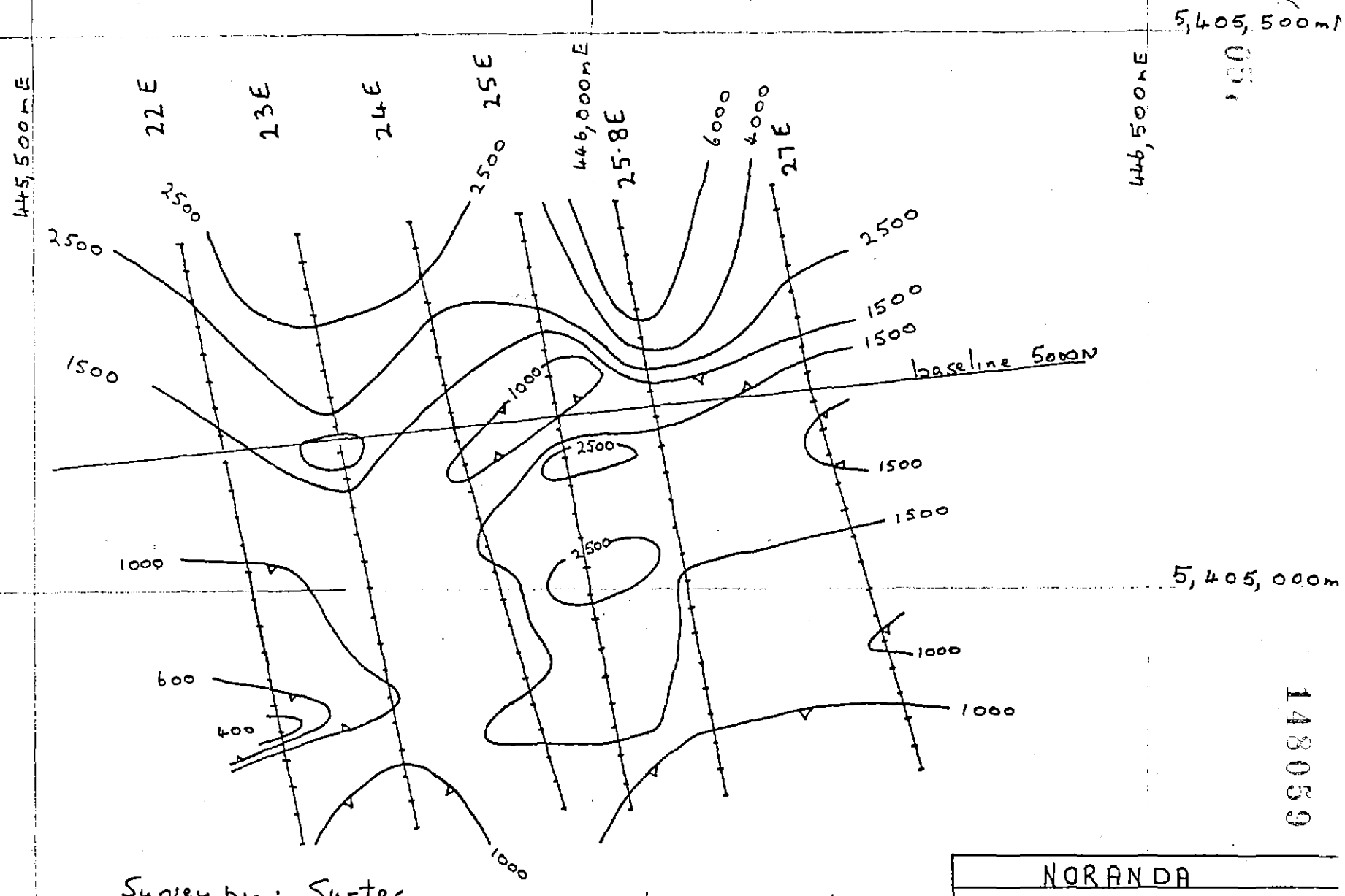
Contours: averaged chargeabilities (mv/v) after Fraser (1981).

NORANDA

E.L. 10/88 Gourie Park

GOG RANGE IP

Chargeability Contours



Survey by : Surtec
date : Aug. '90.
IP receiver : IPR-8
array : dipole-dipole (n=6)
spacing : 25m

Contours: averaged resistivities (ohm-m) after Fraser (1981).

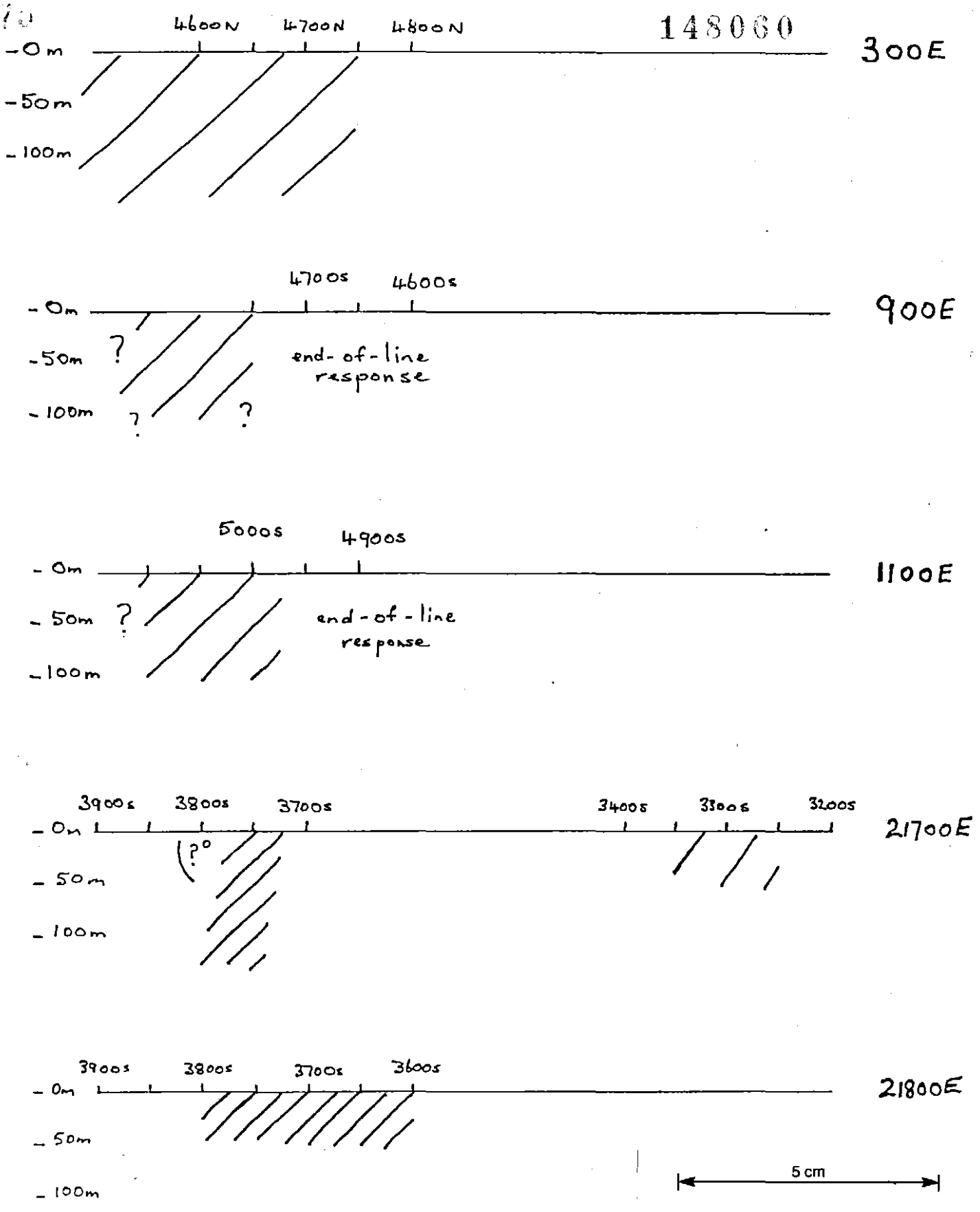
NORANDA

E.L. 10/88 Gowrie Park

GOG RANGE IP

Resistivity Contours

14803



sketched interpretation of IP results

Legend

Increasing sulphide concentration →

ref: Nor/MG90/12

NORANDA

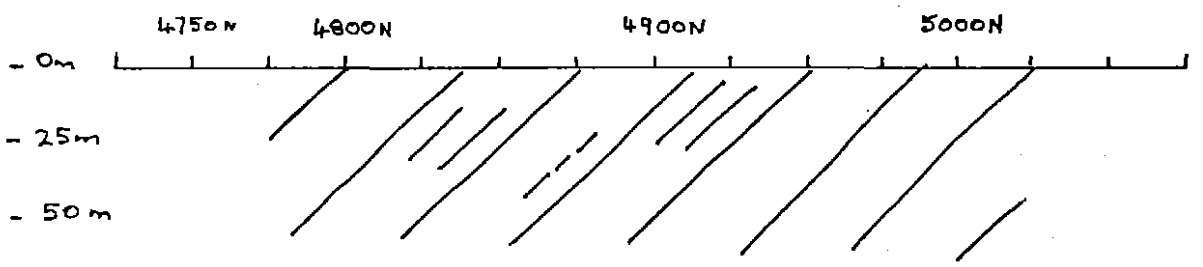
E.L. 10/88 Gourie Park

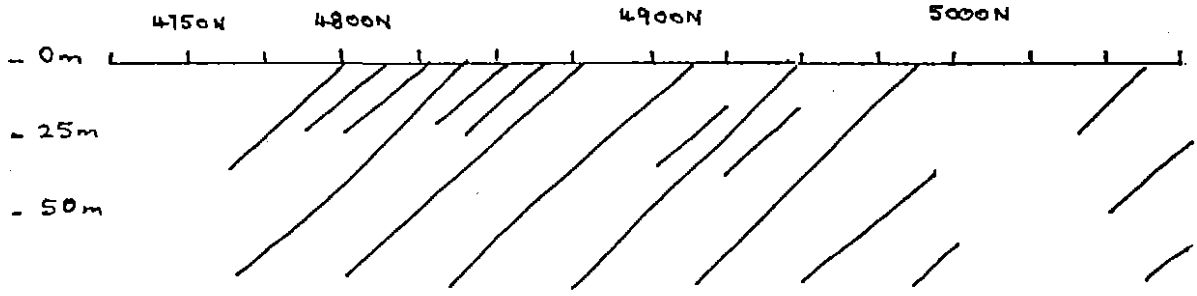
CETHANA

Simplified Sulphide Distribution

scale 1:5000

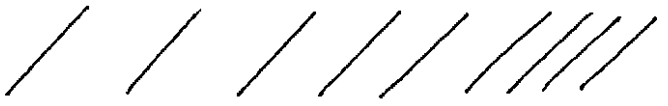
Fig.





sketched interpretation of IP results

Legend



increasing sulphide concentration →

5 cm

NORANDA

E. L. 10/88 Gowrie Park

GOG RANGE

Simplified Sulphide Distribution

ref: Nor/MG90/12

scale 1:2500

Fig. 1c

148062

300E
500E
700E
900E
1100E
19800E
20200E
20400E
20800E
21700E
21800E
429,000E
430,000E
431,000E
5,409,000N
5,408,000N
5,407,000N
5025N
4575N
4775N
4225S
4575S
5025S
2875S
3025S
3325S
3475S
3625S
3175S
3775S
2975S
3350S
3675S (missing)
3925S
(sh)
(dp)
CLAUDE Rd
OLIVERS Rd
5 cm

Survey by : Surtec
date : Aug. '90.
IP receiver : IPR-8
array : dipole-dipole (n=6)
spacing : 50m

Legend

survey coverage

weaker anomaly — stronger anomaly

(dp): deep anomaly

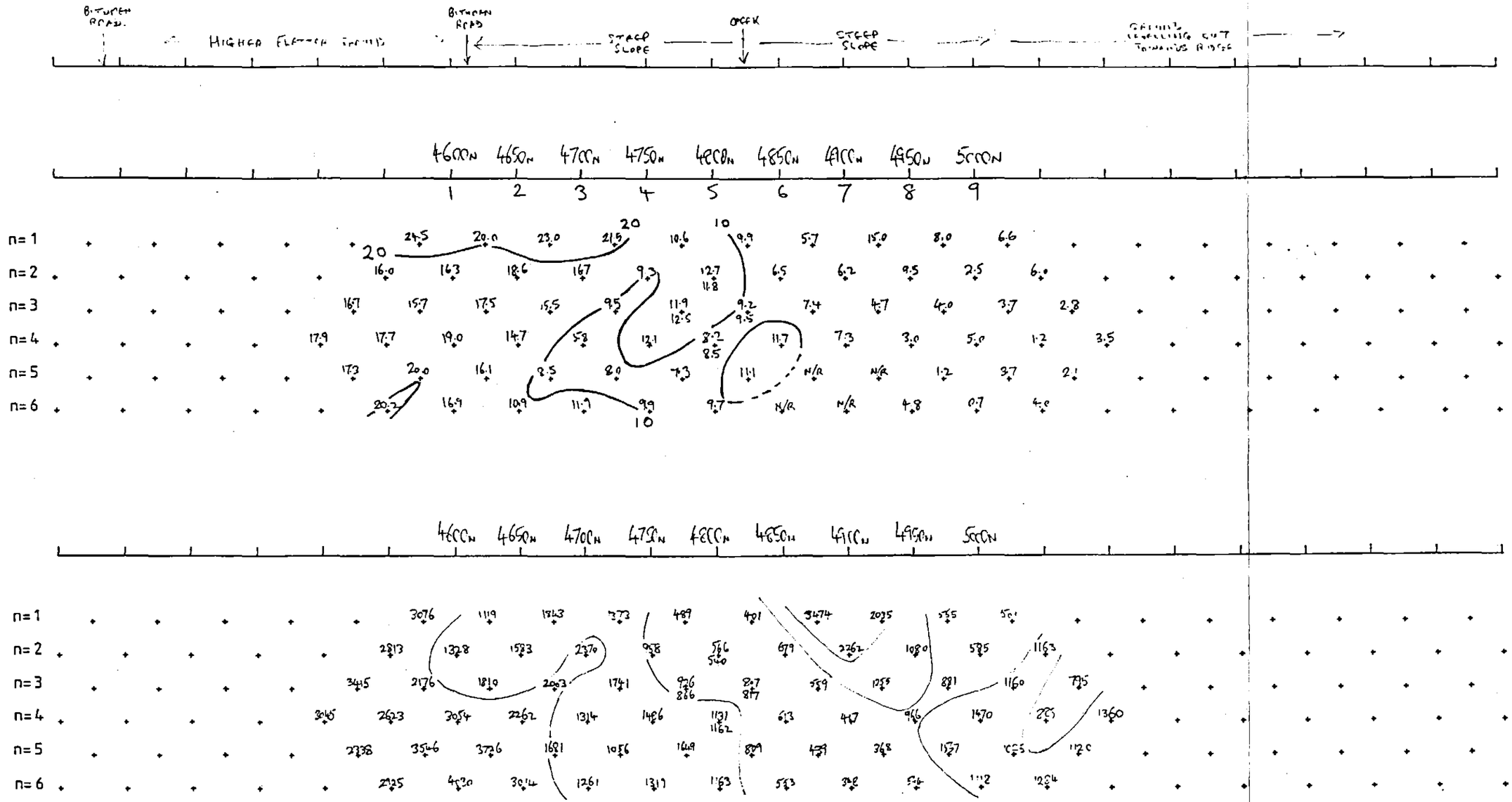
(sh): shallow anomaly

NORANDA

E.L. 10/88 Gowrie Park

CETHANA IP

Survey Coverage & Anomalies



CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

APPARENT RESISTIVITY (ohm-m)

5 cm

EQUIPMENT DETAILS

Transmitter Type: Scintrex IPC8.250W
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: Scintrex IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole-Dipole
Dipole Length: 50m.
Date: 3.8.90
Job No:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

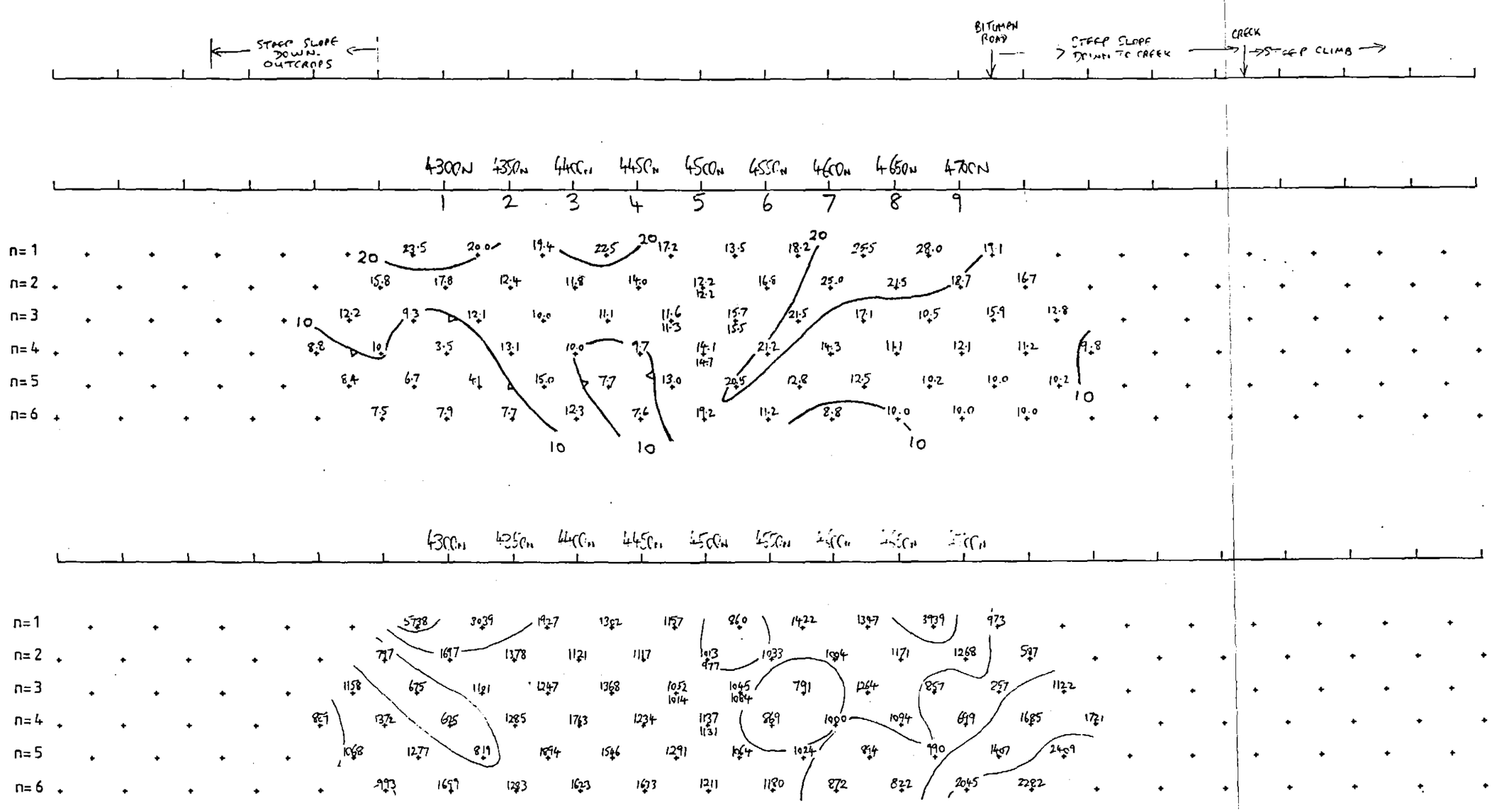
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 300E

Author:		File Number:	Figure Number:
Drawn:			2.
Date:			

148064



EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250w
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 4.8.90
Job N°:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 500E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		3.
Date:	4.8.90		

148065

(NB. 2 major sets of power lines cross line from NNE to SSW)

STEEP SLOPE DOWN

POWER LINE TOWER 20m WEST

POWER LINES O/H

POWER LINE TOWER - 30m EAST

POWER LINES O/H

BITUMEN ROAD

4350N 4400N 4450N 4500N 4550N 4600N 4650N 4700N 4750N

1 2 3 4 5 6 7 8 9

CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

n=1 22.0 21.5 20.5 22.0 20 19.2 15.2 10.9 10 7.5 10.0 15.0

n=2 20 24.0 15.7 14.9 23.5 21.0 14.5 14.3 14.4 10.8 1.8 1.6 4.8

n=3 15.5 18.8 10.0 19.3 19.1 11.0 12.0 13.3 12.9 11.3 12.6 0.1 7.2 2.4

n=4 13.3 12.5 N/R 15.4 12.5 12.0 11.5 13.5 16.0 10.5 5.6 5.7 2.0

n=5 9.5 19.3 N/R N/R 12.5 12.0 15.7 14.5 16.9 4.7 4.0

n=6 18.4 16.2 N/R N/R 11.0 14.0 13.6 20.0 15.5 10 2.5

4350N 4400N 4450N 4500N 4550N 4600N 4650N 4700N 4750N

APPARENT RESISTIVITY (ohm-m)

n=1 1705 2644 1978 1601 2740 543 215 86 233 393

n=2 1139 1469 1355 1451 1731 420 405 335 331 206 67 252

n=3 633 1134 618 1112 1457 333 333 384 387 451 1033 85 325 425

n=4 890 710 110 1583 736 734 331 485 1301 481 440 559 47

n=5 594 781 32 378 448 713 1894 443 1857 723 282

n=6 210 848 234 484 533 1198 498 2646 2748 1015

5 cm

EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250w
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 5.8.90
Job No:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

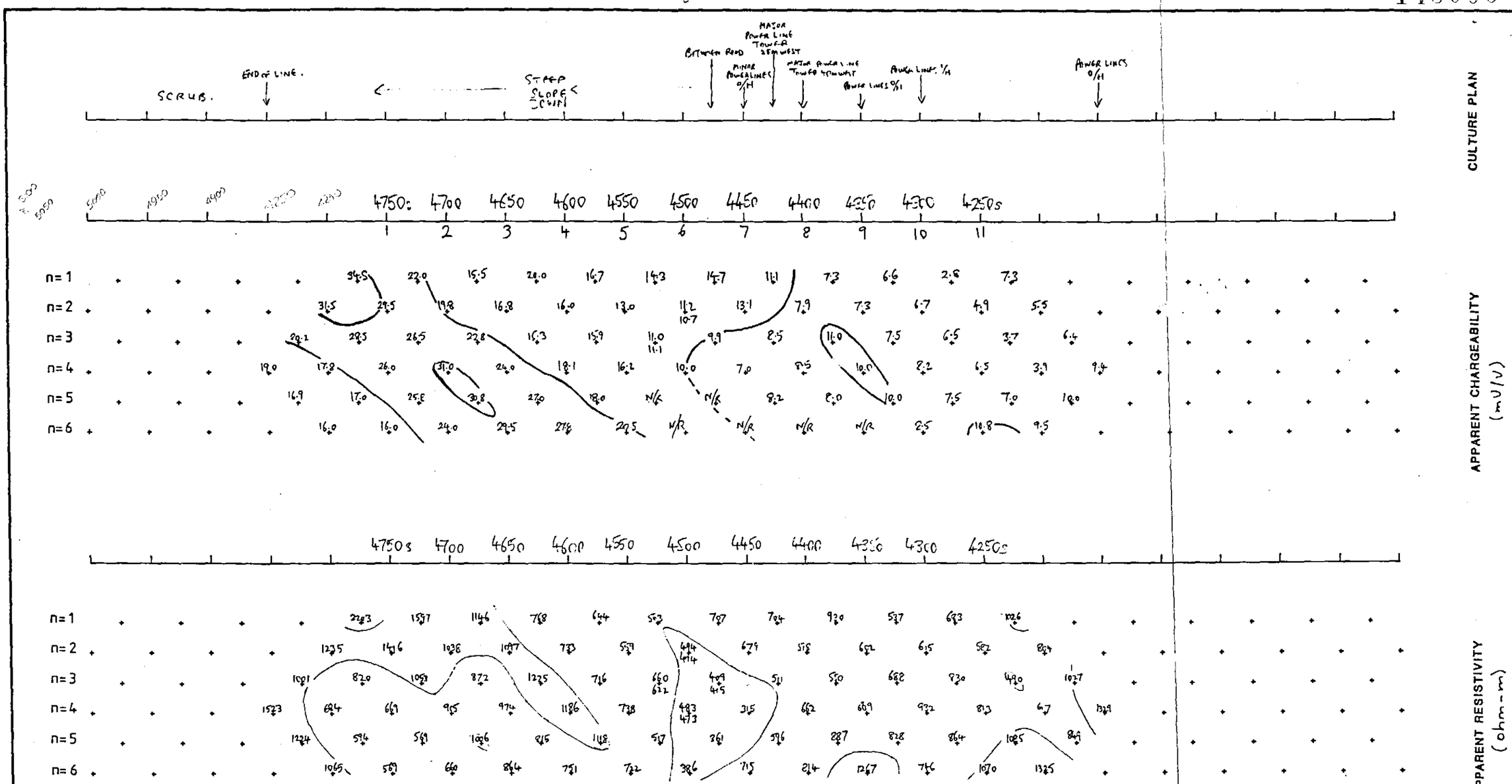
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 700E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		4.
Date:	5.8.90		

148066



EQUIPMENT DETAILS

Transmitter Type: Scintrex IPC8 2.5kw
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: Scintrex IPR8.
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 6·8·90
Job No:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

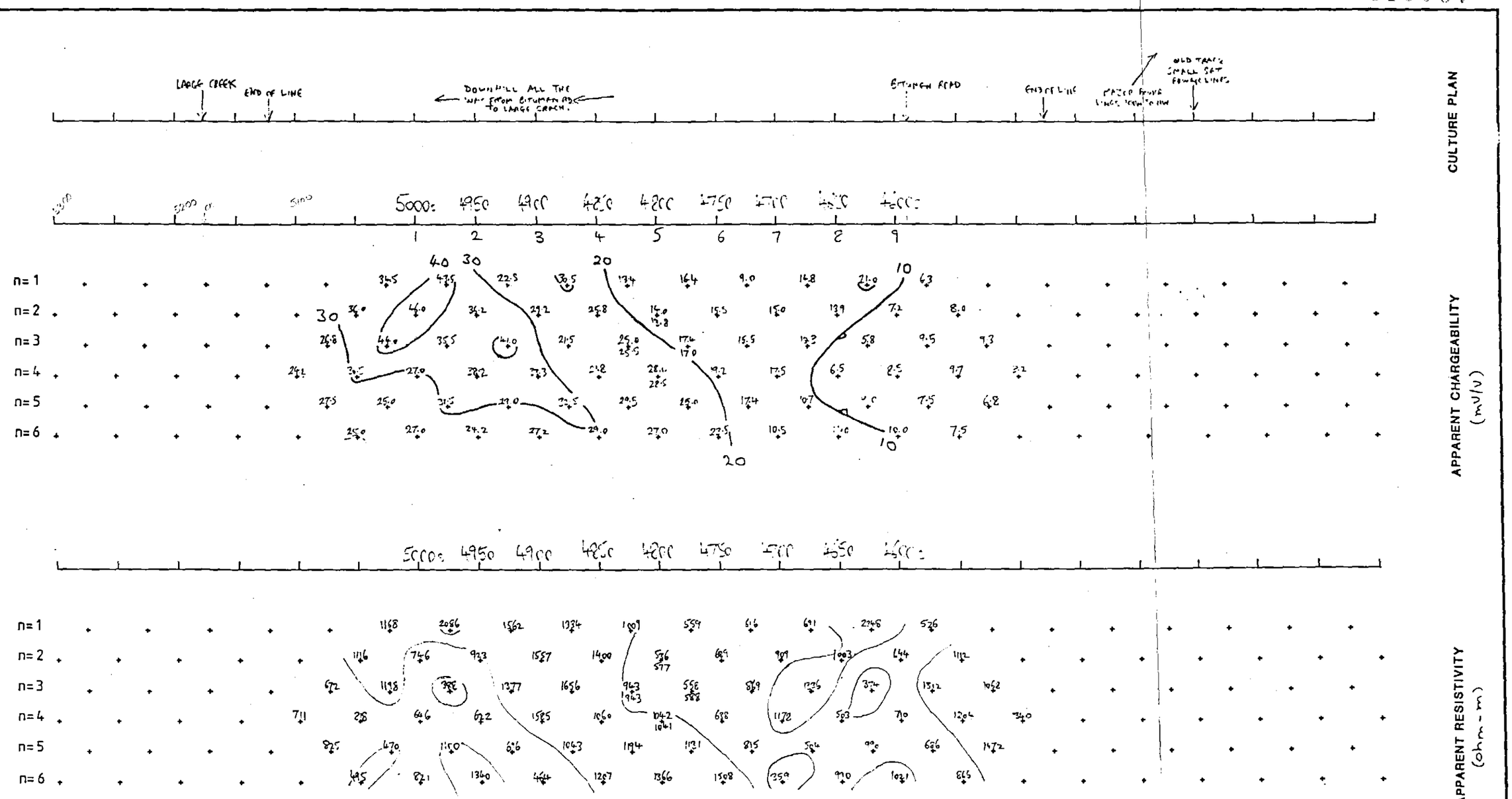
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 900E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		5.
Date:	6.9.90		

148067



CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

APPARENT RESISTIVITY (ohm-m)

5 cm

EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250w
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 7.8.90
Job N°:
Scale: 0 50m

PROJECT NAME: CETHANA E.L. 10/88

CLIENT: NORANDA

ref: Nor/M690/12

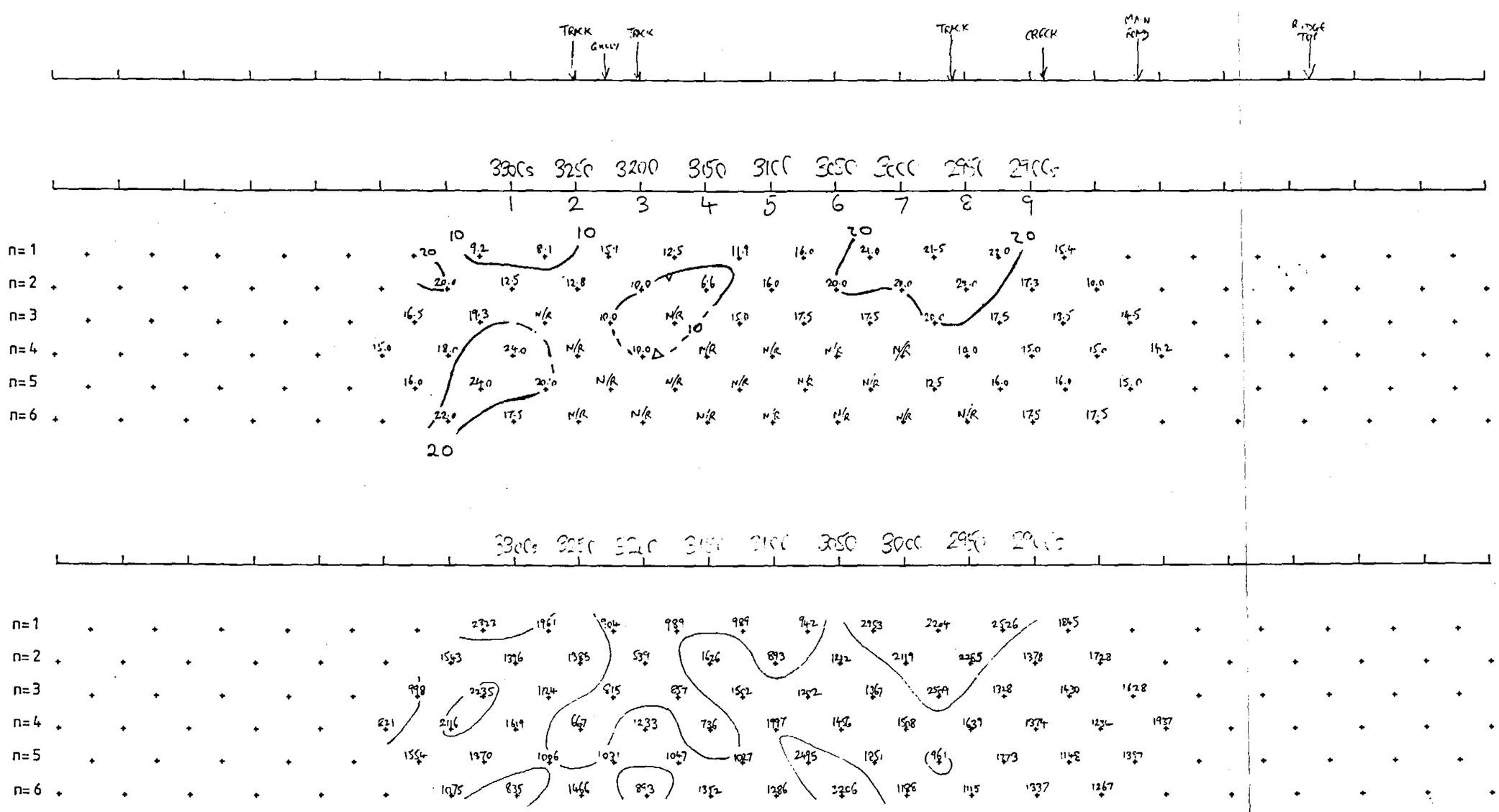
SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 1100E

Author:	C. Litt	File Number:	Figure Number:
Drawn:	C. Litt		6.
Date:	7.8.90		



CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

APPARENT RESISTIVITY (ohm-m)

5 cm

EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250W
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8.
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 15 - 16/8/90
Job N°:
Scale: 0 50m

PROJECT NAME: CETHIANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 19800E

Author:		File Number:	Figure Number:
Drawn:			7.
Date:	16.8.90		

148069

064

E.o.L.

3450S 3400 3350 3300 3250 3200 3150 3100 3050

1 2 3 4 5 6 7 8 9

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

CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

3450S 3400 3350 3300 3250 3200 3150 3100 3050

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

APPARENT RESISTIVITY (ohm-m)

5 cm

EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC7 2.5kw
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR 2
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole - Dipole
Dipole Length: 50m
Date: 14.2.90
Job No:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

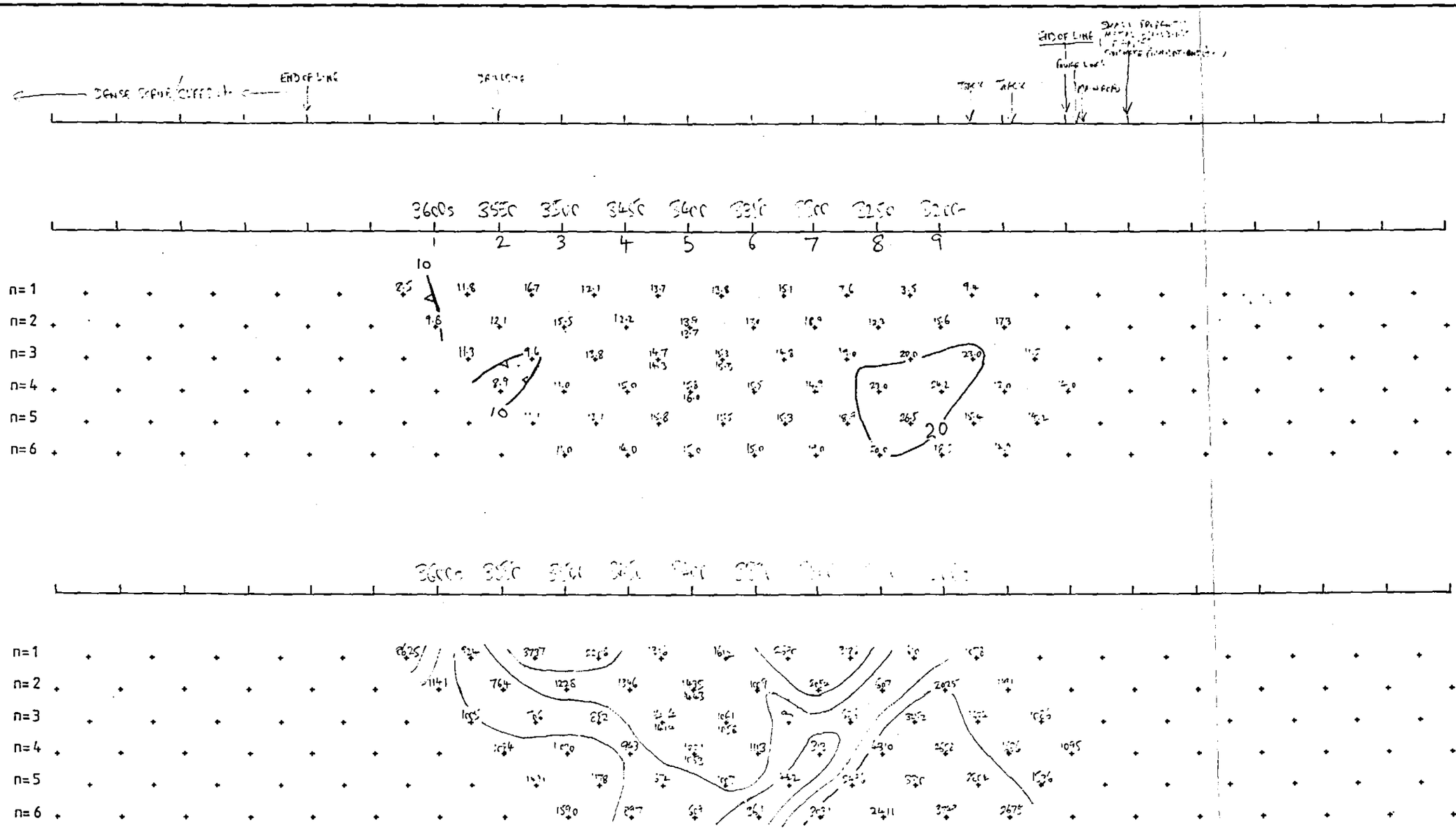
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 20200E

Author:		File Number:	Figure Number:
Drawn:			8.
Date:			

148070



EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 2.0kW
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole - Dipole
Dipole Length: 50M
Date: 13.8.90
Job No:
Scale: 0 50m

PROJECT NAME: CETHANA (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

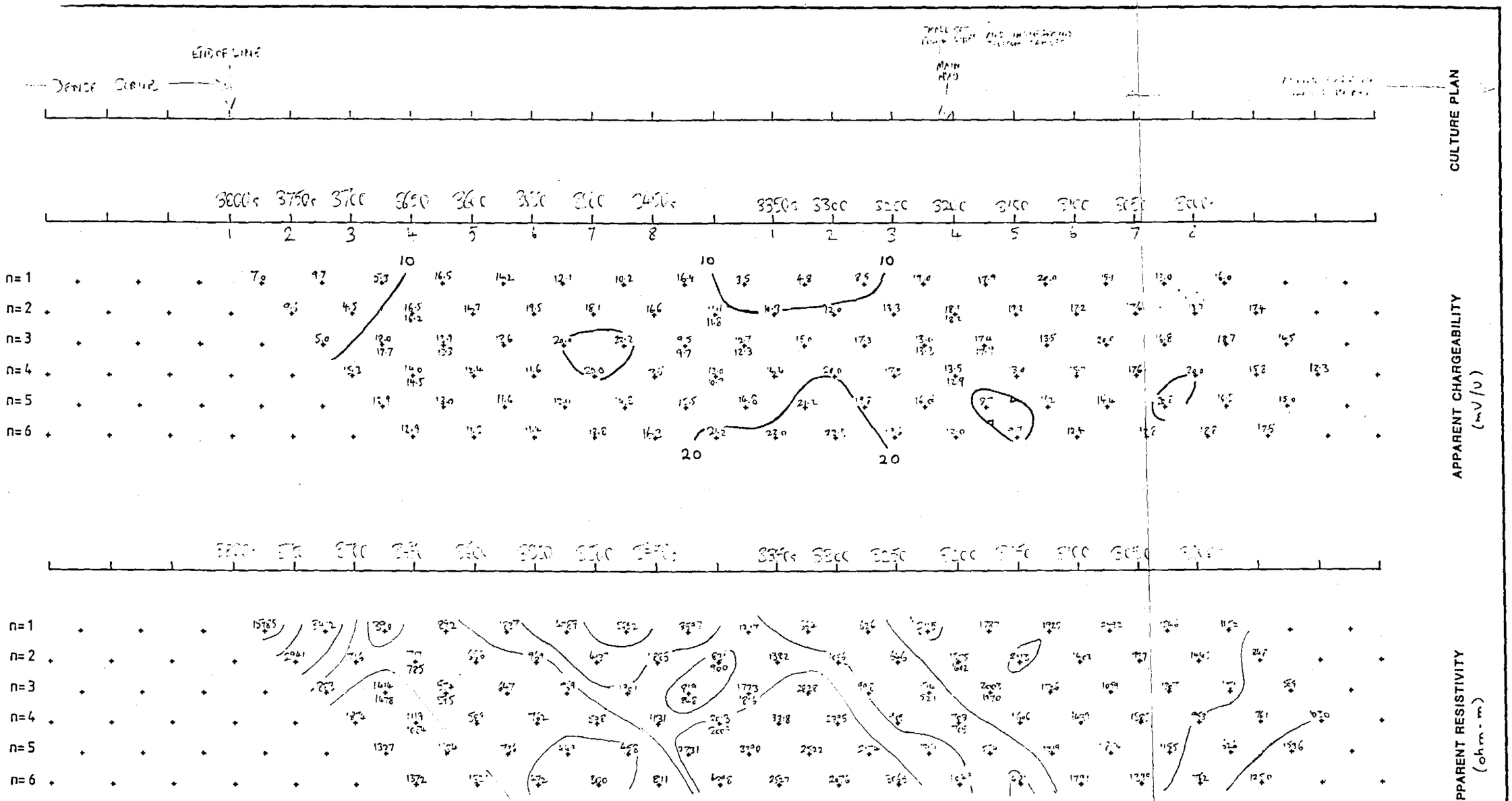
CETHANA

LINE: 20400E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		9.
Date:	13.8.90		

148071

0556



EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC 7 250w
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 10-12/8/90
Job Nº:
Scale: 0 50m

PROJECT NAME: CETHANA E.L. 10/88

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

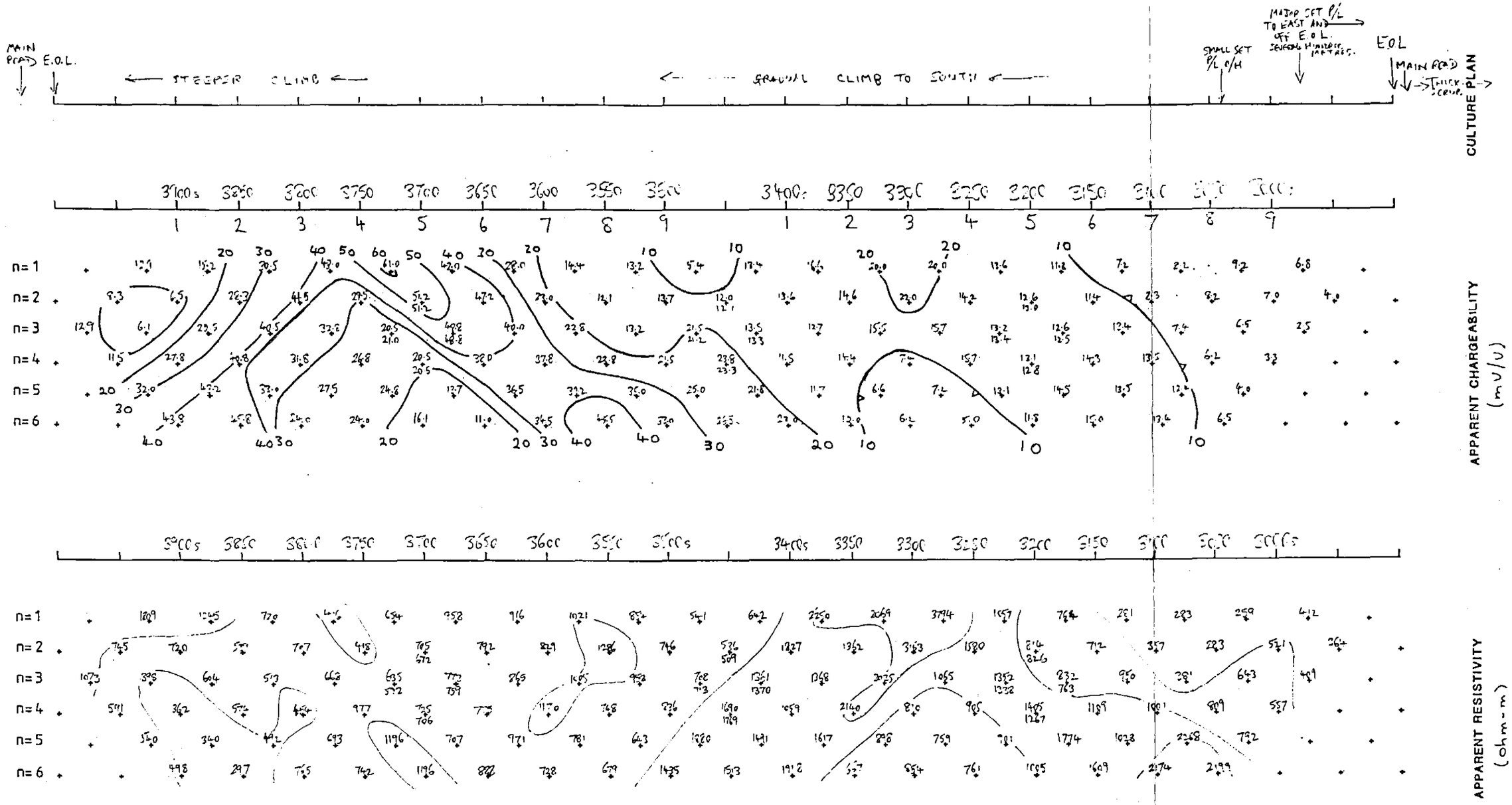
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 20800E

Author:		File Number:	Figure Number:
Drawn:			10.
Date:	12/8/90		

148072



EQUIPMENT DETAILS

Transmitter Type: Scintrex IPC7 2.5kw
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: Scintrex IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50M
Date: 9.8.90/10.8.90
Job N°:
Scale: 0 50m

PROJECT NAME: CETIIANA (E.L. 10/88)

CLIENT: NORANDA

ref. Nor/IN690/12

SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

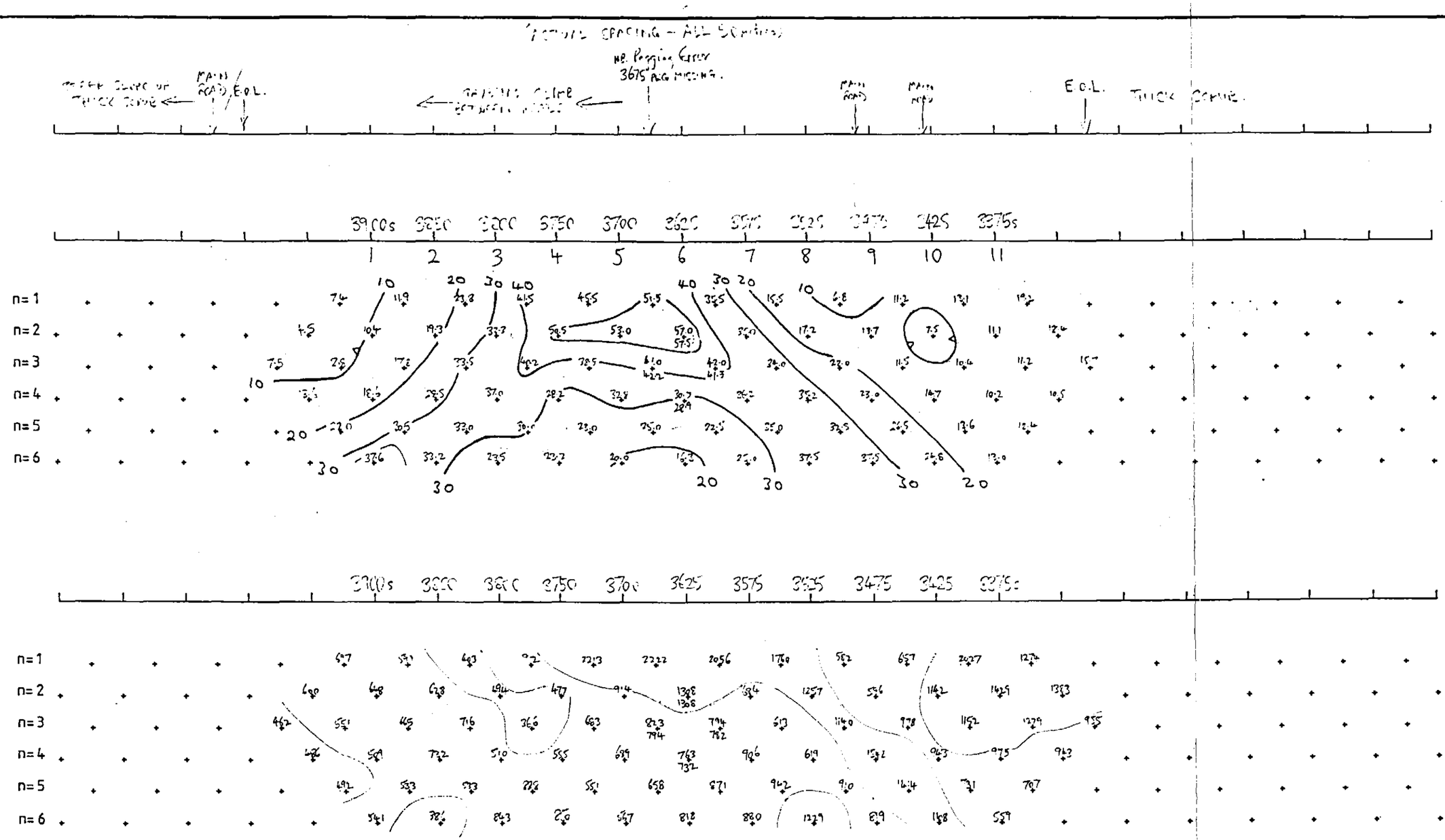
CETHANA

LINE: 21700E

Author:	D.L.IGT	File Number:	Figure Number:
Drawn:	D.L.IGT		11.
Date:	10.8.90		

148073

058



EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250W
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50m
Date: 2.8.90
Job N°
Scale: 0 50m

PROJECT NAME: CETHANA (E.L.10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

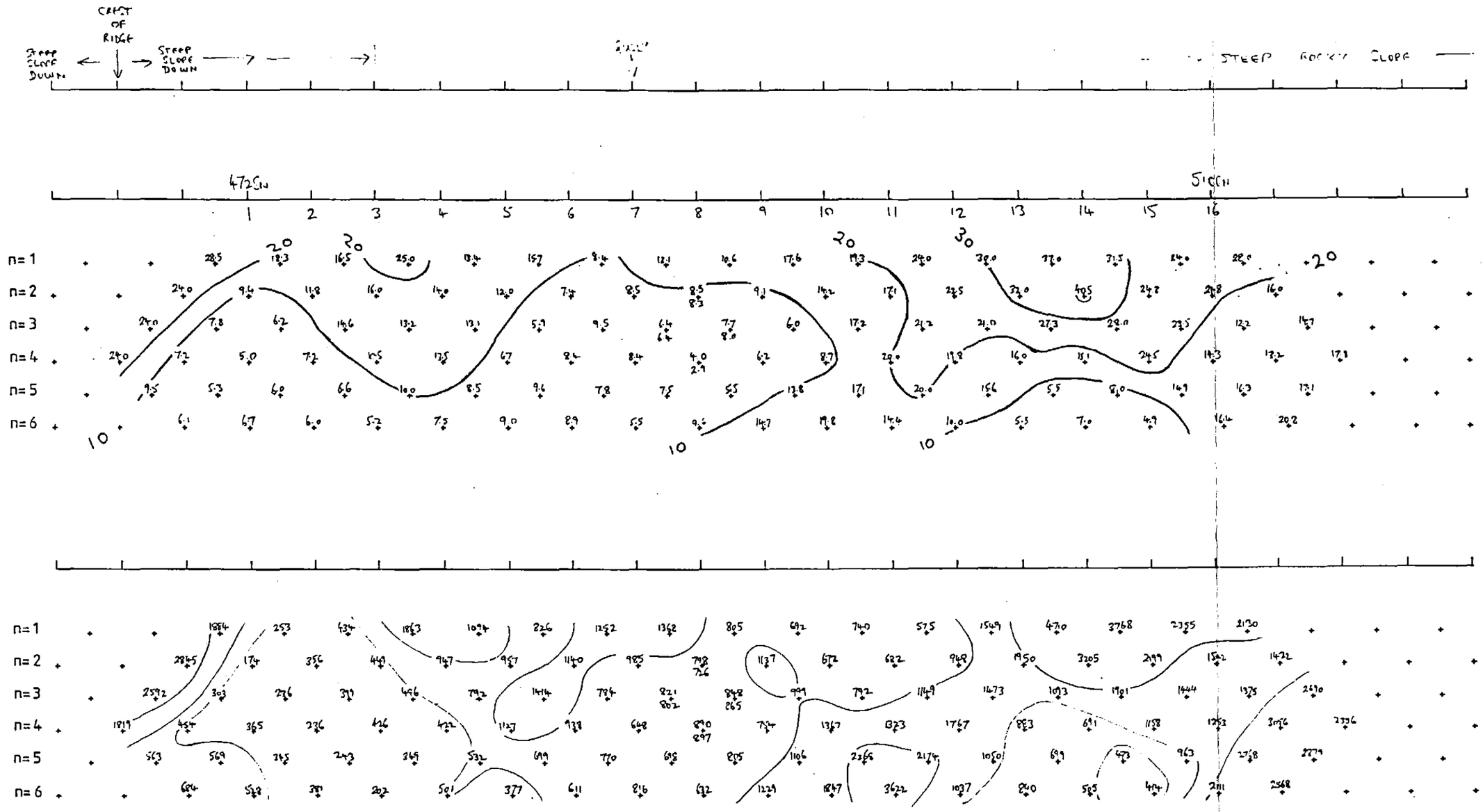
INDUCED POLARISATION & RESISTIVITY

CETHANA

LINE: 21800E

Author:	P. Lech	File Number:	Figure Number:
Drawn:	P. Lech		12.
Date:	2.2.90		

148074



EQUIPMENT DETAILS

Transmitter Type: SCINTREX IPC8 250W
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 1/2 - 8 - 90
Job N°:
Scale: 0 25m

PROJECT NAME: GOG RANGE E.L.10/88

CLIENT: NORANDA.

ref. Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

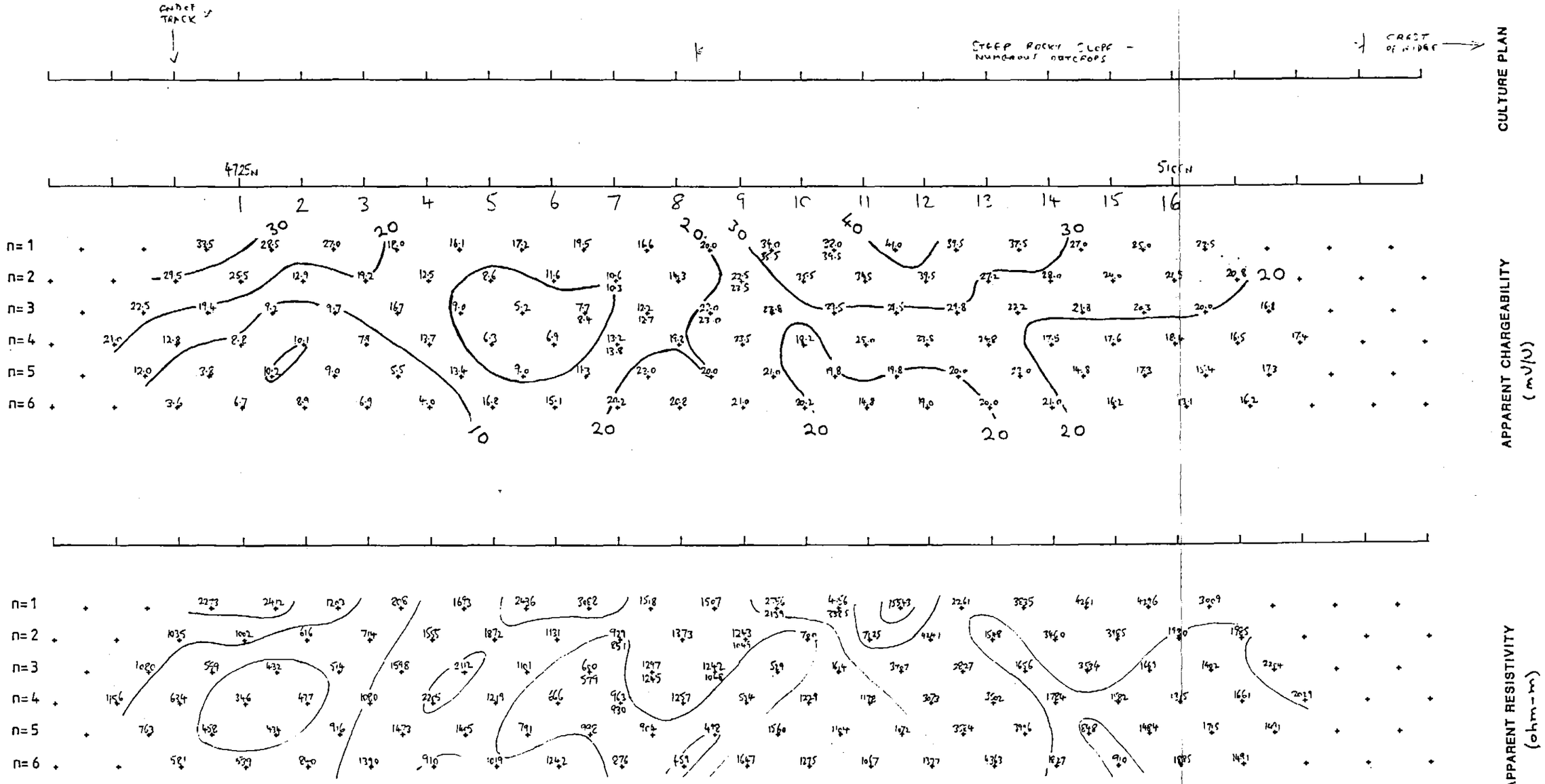
INDUCED POLARISATION & RESISTIVITY

GOG RANGE

LINE: 22E

Author:	P. LIGT	File Number:	Figure Number:
Drawn:	P. LIGT		13.
Date:	2. 2. 90		

148075



EQUIPMENT DETAILS

Transmitter Type: ZONGE / ASCINTREX
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: ASCINTREX IPR2
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 26.7.90 & 1.8.90
Job No.:
Scale: 0 25m

PROJECT NAME: GOG RANGE (E.L. 10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

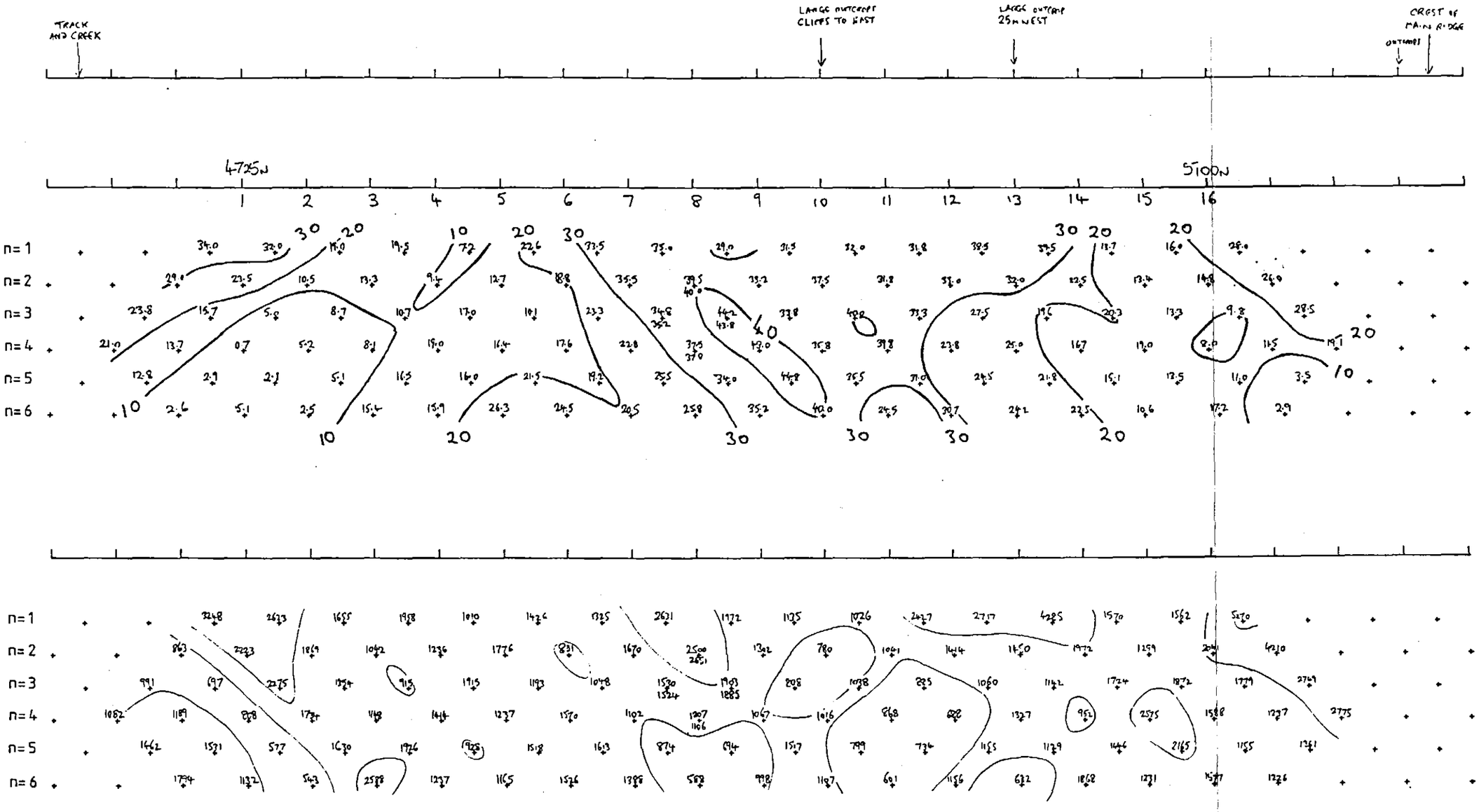
INDUCED POLARISATION & RESISTIVITY

GOG RANGE

LINE: 23E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		14.
Date:	1.8.90		

148076



CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)

APPARENT RESISTIVITY (ohm-m)

5 cm

EQUIPMENT DETAILS

Transmitter Type: ZONGE
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 19.7.90
Job N°:
Scale: 0 25m

PROJECT NAME: GOG RANGE (E.L. 10/88)

CLIENT: NORANDA

ref. Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

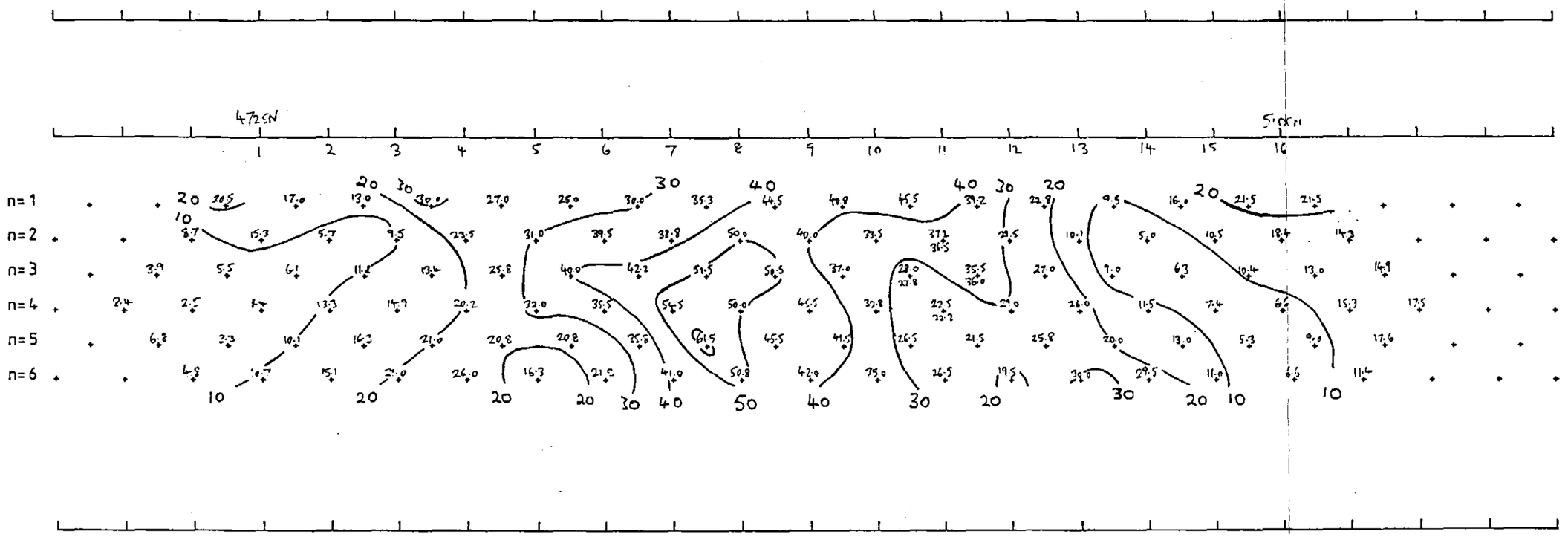
INDUCED POLARISATION & RESISTIVITY

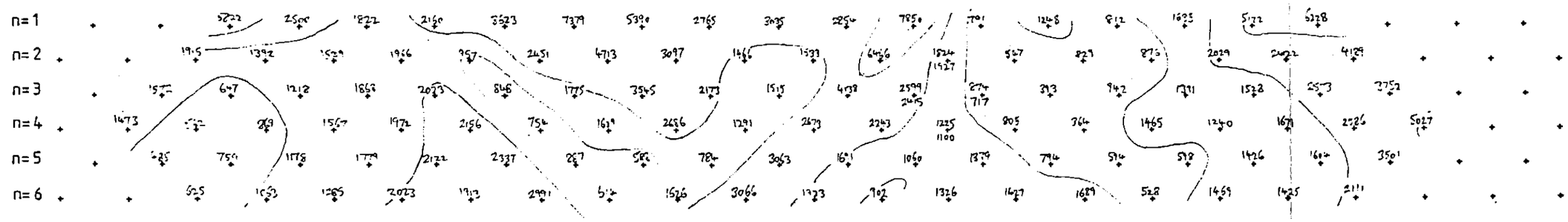
GOG RANGE

LINE: 24E

Author:		File Number:	Figure Number:
Drawn:			15.
Date:			

148077





5 cm

EQUIPMENT DETAILS

Transmitter Type: ZONGE
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 17.7.90
Job No:
Scale: 0 25m

PROJECT NAME: GOG RANGE (E.L 10/88)

CLIENT: NORANDA

ref. Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

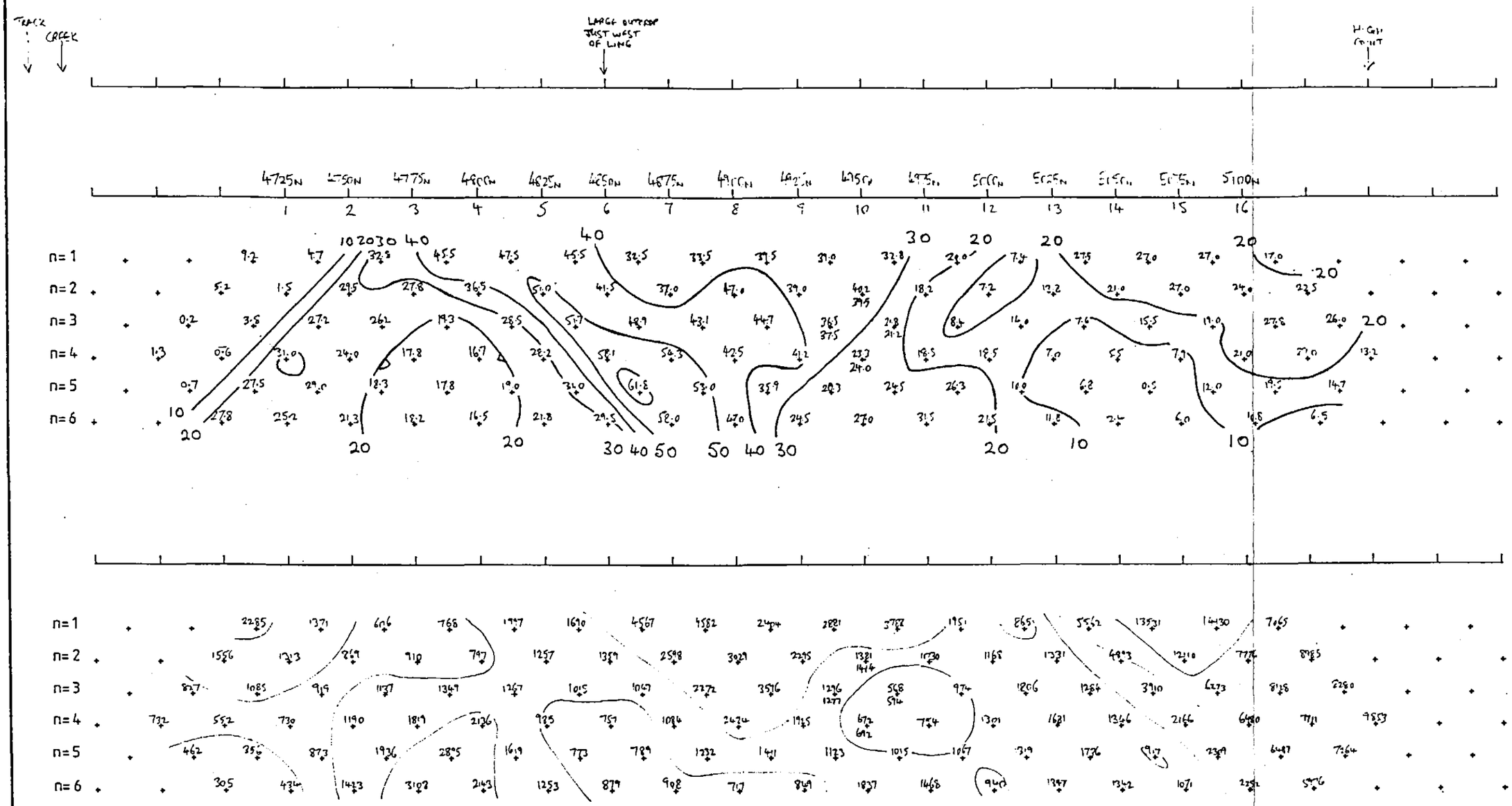
INDUCED POLARISATION & RESISTIVITY

GOG RANGE

LINE: 25E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		16.
Date:	17.7.90		

148078



EQUIPMENT DETAILS

Transmitter Type: ZONGE
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR8
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 13-15/7/90
Job No
Scale: 0 25m

PROJECT NAME: GOG RANGE (E.L. 10/88)

CLIENT: NORANDA

ref. Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

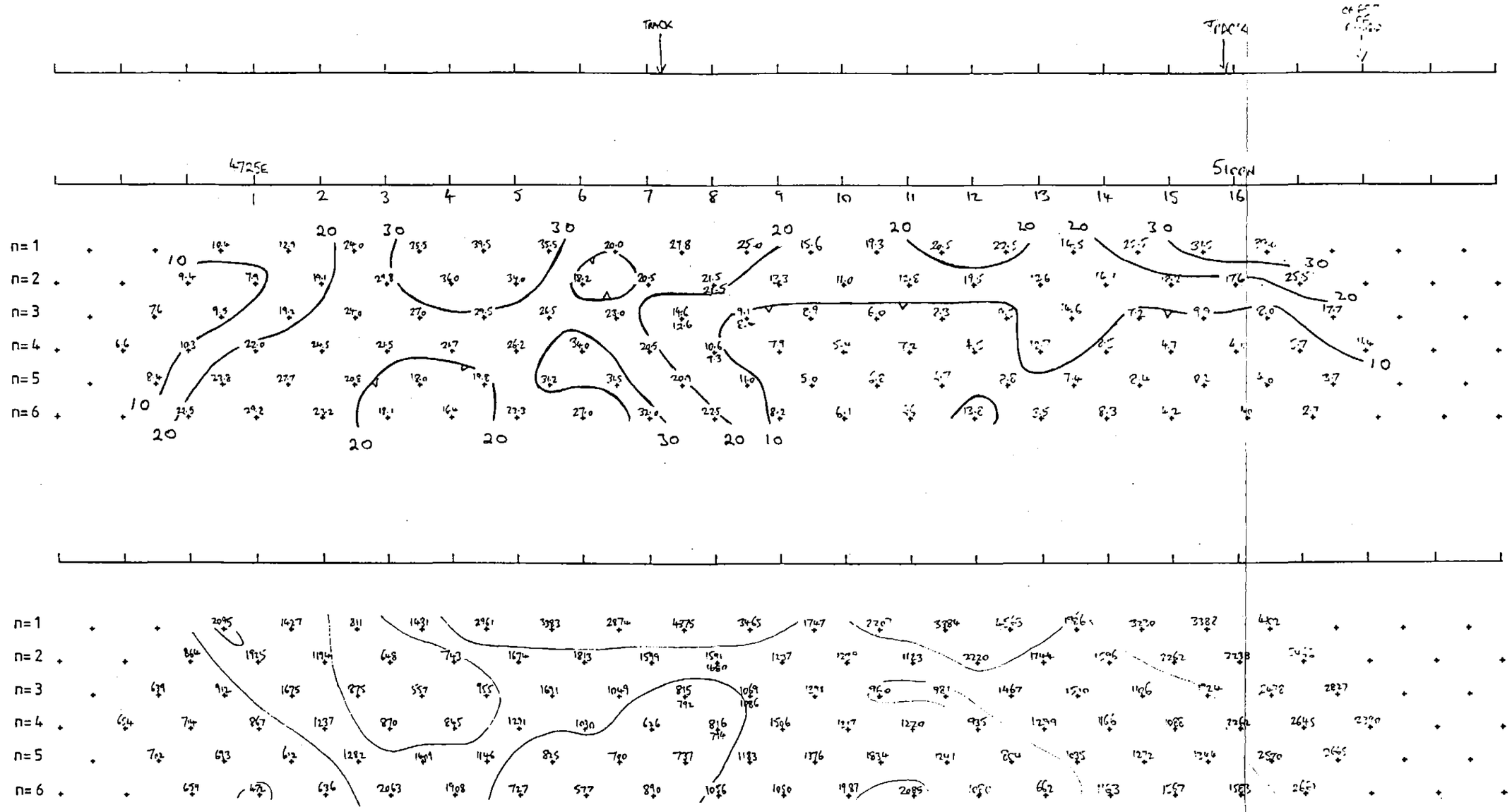
INDUCED POLARISATION & RESISTIVITY

GOG RANGE

LINE: 25·8E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		17
Date:	15-7-90		

148079



EQUIPMENT DETAILS

Transmitter Type: ZONGE
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IRIS
Integration Time:
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 25m
Date: 15-16/7/90
Job N°:
Scale: 0 25 m

PROJECT NAME: GOG RANGE (E.L.10/88)

CLIENT: NORANDA

ref: Nor/MG90/12

SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION & RESISTIVITY

GOG RANGE

LINE: 27E

Author:	P. LIST	File Number:	Figure Number:
Drawn:	P. LIST		18
Date:			

APPENDIX 2

Diamond Drill Hole Logs GP-90-4 to GP-90-17 - Fire Tower Prospect

[redacted]DRI[redacted]PLE[redacted] GP[redacted]-4[redacted] DE[redacted]: [redacted]20 [redacted]tres[redacted]

COORDINATES : DECLINATION :

INTERVAL From	INTERVAL To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
0	3	3	0	Talus Material - not cored.										
3	4	1	95	EPICLASTIC, interbedded sandy and silty, weakly chloritic and poorly bedded. Unit strongly manganese and ferruginous veined and veinleted. Fracture surfaces also covered. Minor schistosity.	Hematite and manganese vein fillings.	Moderate to strong veining as very fine veinlets and veins average < 1 mm.	Core well broken with minor low angle fractures		60	25	105	<0.5		<0.008
4	5	1	100	Ditto: well bedded, bedding approximately 30° to ca.	Ditto.	Moderate Veining	Core weakly to moderately broken.		10	5	95	"		0.015
5	6	1	100	Ditto: 75% of interval is sandy epiclastic (arkosic), remainder being more silty. Good bedding @ 30° to ca.	Most vein infilling is of hematite with some limonite.	Moderate veining overall. Major veins 50-60° to ca av. 2-3 mm width @ 1 vein/10 cm.	Core weakly broken.		5	<5	65	"		0.010
6	7	1	100	Ditto: 50/50 arkose/siltstone	Quartz hematite filled veins.	Mod. veining 60° to ca. some with late stage brecciation. Minor open space gashes Minor micro-fracturing.	Minor slickensiding on low angle (30°) surfaces.		10	<5	65	"		0.015
7	8	1	100	Ditto: becoming more thinly bedded in silty units.	Ditto.	Weak to Mod. veining.	Core mod. broken.		10	<5	70	"		0.010
8	9	1	100	Ditto: more massive, dark grey, silty to fine sandy epiclastic. Core extensively broken, poorly veined. Bedding 25° to ca.	Weak limonite/ hematite on fracture surfaces.	Very weak veining.	Strongly fractured and broken.		5	<5	65	"		0.010

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[redacted] DRILLHOLE [redacted] GP [redacted] 90 [redacted] 4 DEPTH [redacted] : [redacted] 27.20 [redacted] metres [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
9	10	1	100	EPICLASTIC, fine to medium grained, grey - yellow, moderate to strongly veined, poorly bedded, strongly fractured.	Quartz hematite vein infilling with minor manganese filling.	Mod. to strong veining as mass of stringers and veinlets. Most <1mm width. Some at 50-60° to ca others bedding parallel or sub parallel.	Weak to moderately fractured.		5	<5	60	<0.5		0.020
10	11	1	75	Ditto: Core extensively slickensided, poor core recoveries coming into extensive shear zone.	Very weak hematite coated fracture surfaces.	Nil to very weak veining.	Moderate to strong fracturing. Core very broken.		5	<5	65	"		0.020
11	12	1	55	SHEAR ZONE: highly schistose, sericitic clay pugh zone.	Nil.	Nil	Intense shearing, mylonitic zone.		10	<5	70	"		0.020
12	13	1	20	Ditto:	Ditto.	Ditto.	Ditto.		10	<5	60	"		0.015
13	14	1	60	Ditto.	"	"	"		280	<5	55	"		0.015
14	16	2	40	EPICLASTIC, greyish, intensely sheared, sandy epiclastic.	"	"	"		270	<5	60	"		0.015
16	18	2	70	EPICLASTIC, highly fractured, broken, in part sheared and brecciated, greyish arkose.	"	"	Strong shearing and brecciation.		255	<5	75	"		0.015
18	20	2	90	Ditto, with more sericitic/kadinitic mylonitic sections.	"	"	Core well broken.		150	<5	60	"		0.020
20	22	2	45	Ditto, predominantly cream, sericitic quartz rich, epiclastic, sheared, extensively fractured, broken.	"	"	"		480	<5	75	"		0.010

[redacted] 143082

COORDINATES : DECLINATION :

INTERVAL From - To	metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
22 - 24	2	75	EPICLASTIC, minor grey silty clasts or disrupted interbeds with overall arkosic sheared sequence.	Nil	Nil	Strong shearing and brecciation. Core well broken.		255	<5	70	<0.5		0.010
24 - 26	2	20	Ditto, sheared greyish, quartz rich, intensely fractured and broken.	"	"	"		435	<5	70	"		0.010
26 - 27.2	1.2	75	Ditto, more cream, sericitic, and highly sheared.	"	"	"		370	<5	80	"		0.015
E.O.H.			END OF HOLE.										

[redacted] DRILLHOLE [redacted] GP [redacted] 90 - 5 [redacted] DEPTH [redacted] : [redacted] 20 [redacted] etre [redacted] Page: 1/6 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	INTERVAL To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	1.5	1.5	0	TALUS MATERIAL - No Core.										
1.5	2	0.5	100	EPICLASTIC, oxidised, highly weathered, moderate to strongly hematite minor quartz veined, siliceous altered ? silty, buff-orange coloured.	Mainly hematite quartz infilling of veins. Minor manganese coatings.	Mod. to strongly hematite Minor quartz veined and veinleted and brecciated.	Core strongly broken with fractures @ 5-10 cm intervals.		410	30	240	<0.5		0.025
2	3	1	100	Ditto, some veining sub parallel to c.a. others 70-80° to ca. Bedding @ 45° to ca. Unit generally massive to weakly bedded.	Ditto.	Strongly qtz/hematite/manganese veined and veinleted, up to 3mm in width, some leached & open. Bedding parallel to nearly vertical to ca.	Ditto.		350	15	140	"		0.015
3	4	1	100	Ditto, except unit becoming progressively finer bedded with siltstone interbeds (grey) within creamy coloured fine sandy EPICLASTIC. Bedding @ 50° to ca. Minor pyrite, well sorted.	Significant py to 1% in assoc'n with hematite (after iron carbonate) and minor quartz.	Pyrite/hematite quartz veining as thin veinlets 50° to ca and 70-80° to ca. Minor stringers to 1cm width @ low angle to ca. Some vein sets perpendicular to each other.	Core mod broken.		1700	15	170	1.0		0.085
4	5	1	100	Predominantly massive fine sandy EPICLASTIC (4 - 4.6) and interbedded siltstone / sandy EPICLASTIC (4.6-5) All well sorted, bedding @ 55° to ca.	Only minor hematite/manganese/siderite? vein infilling.	Weak veining hematite quartz manganese siderite filled @ 4 to 4.3m generally <2mm (up to 4mm) zone showing minor stockworking.	Core only weakly broken.		230	5	130	<0.5		0.020

[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
5	6	1	100	EPICLASTIC, interbedded silty and sandy units, core strongly veined, Bedding 45° to ca.	Significant hem/qtz/siderite Minor pyrite and Manganese vein infilling.	Strong veining over 3 x 20cm wide zones, some leaching within veins, Veins up to 1cm wide.	Moderately broken core.		860	10	190	1.0	[illegible]	0.050
6	7	1	100	Ditto, well bedded, moderately veined, bedding 48° to ca.	Pervasive limonite hematite alteration and only Minor vein infillings, Minor siderite.	Wk to mod. veining qtz/hematite. Veins have pervasive hematite halo. Vein set @ 15° to ca. other @ 45° to ca. - bedding parallel Vein density of 1 per 5cm.	Core mod. broken fracture surfaces. Hematite coated.		395	25	205	<0.5		0.020
7	8	1	100	Ditto, becoming progressively finer bedded. Interbedded grey siltstone and fine sandy EPICLASTIC. Bedding 45° to ca.	Ditto.	Weak veining overall, otherwise ditto to above 70-80° to ca veins @ 120° to bedding.	Ditto.		195	20	260	"		0.025
8	9	1	100	Ditto, extremely well bedded, rhythmic siltstone / fine sandstone, Bedding 48° to c.a. No veining, core very competent.	Nil.	Very weak veining infilled predominantly by siderite. Unit otherwise very clean.	Core very competent, poorly fractured, Minor bedding plane slippage.		605	10	215	1.0		0.090
9	10	1	100	Ditto, except minor to weak brecciation and associated weak ferruginous veining. Bedding 45° to ca.	Minor hematite/siderite infilling of veins and some tension gashes.	Minor to wk veining (Hem) generally < 1mm associated with wkly brecciated zones. Some siderite gashes @ 15-20° to c.a.	Core badly broken in brecciated zones otherwise quite competent.		245	50	265	<0.5		0.020

[redacted]

[redacted]RIL[redacted]LE[redacted] G[redacted]O-[redacted]DEP[redacted]: [redacted]20 [redacted]res[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
10	11	1	100	EPICLASTIC, thythmically bedded but NIL veining, bedding 45° to ca. Some of siltstone/shale interbeds weakly sericitic.	NIL	NIL	Very competent, unbroken core. Some bedding slippage.		395	30	140	1.0		0.060
11	12	1	100	Ditto, minor micro fracturing.	Ditto	Ditto	Ditto		65	35	210	<0.5		0.010
12	13	1	100	Ditto, core moderately broken, more fractured, bedding 45° to ca.	"	"	Mod. broken ground, limonite coatings on fracture surfaces.		65	40	960	1.0		0.040
13	14	1	100	Ditto to 13.70 m. 13.70 - 14.00. becoming more fissile, carbonaceous, shaley interbeds with siltstone.	"	"	Fissile units intensely broken. Limonite stained fractures after py?		45	40	280	<0.5		<0.008
14	15	1	100	Ditto to 14.50 m. 14.50 - 15.00 Mass flow breccia. with lithic fragments of shale, siltstone and fine sandstone.	Minor weak ferruginous lamellae within shales could be oxidised siderite.	"	Ditto		100	15	195	1.0		0.010
15	16	1	100	Ditto, cut by gash infillings and veins containing siderite. Predominant black siltstone clasts, still quite angular.	Gash infillings and veins filled with coarse grained siderite.	Weak gash veins, thin veins and minor breccia zones.	Core reasonably competent. broken zones in carbonaceous sections.		140	20	305	"		0.050
16	17	1	100	Ditto, possibly crude bedding attitude at 40° to ca.	Minor siderite infilling, minor veining.	Very minor siderite filled gash veins, (tension gash) Minor breccia zones, no set orientations.	Core moderately competent.		265	80	830	2.0		0.025

[redacted] DRILLHOLE [redacted] GP [redacted] 90 - 5 [redacted] DEPTH: [redacted] 20 [redacted] tres [redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
17	18	1	100	Mass Flow Breccia, fine grain sized sections @ 17.5m, Core progressively becoming broken downhole.	Very weak siderite.	Siderite filled tension gashes Minor breccia zones.	Core competent but becoming more fractured.		95	50	885	1.0		0.015
18	19	1	100	Ditto, except progressively more finer grained with interbeds of cream coloured quartz rich sandy epiclastic. Unit veined.	Hem/py (<1%) infilling veinlets 1-3mm width, Hem on fracture surfaces.	Minor veining 1-3mm wide Py oxidising to hematite. Main veining 18.5 to 19.0m.	Core badly broken.		220	70	385	1.0		0.115
19	20	1	100	FERRUGINOUS SHEAR ZONE, major sub parallel ferruginous (minor pyrite) brecciated shear, with minor brecciated rhythmically bedded shale/siltstone.	Minor pyrite <1% but highly significant hematite.	Major sub parallel ferruginous shear zone.	Ditto.		465	175	640	1.0		0.115
20	21	1	100	CHAOTIC MASS FLOW BRECCIA, graded well sorted, fine grained cream sandstone with minor large black shale fragments. Unit cut by py/galena and py/hematite veins and stringers.	Galena to 0.5% as fine disseminations assoc. with py and siderite. within veins. Minor py stringers and veins to 1% Py oxidised to Hem.	Minor to mod veining gn/py siderite veins, vary from 25-45° to ca and py/Hem veins sub parallel to ca. others @ 30-40° to ca. Major veins 1.5 cm width occur roughly every 30cm.	Core quite competent Little fracturing.		505	180	795	8.0		3.750 3.840
21	22	1	100	ARKOSE, well bedded, beige, fine sandy epiclastic with minor thin dark grey interbeds and or fragments. Bedding 40° to c.a.	Tr galena as thin platelets on fracture surfaces Minor Fe/Mn in veined zone @ 21.80m.	Minor to weak veining @ 21.8 comprised of Hem/Mn. Minor microfractures sericite filled.	Ditto.		150	80	140	<0.5		0.040

[redacted] DRILLHOLE [redacted] GP [redacted] 90-5 [redacted] DEPTH [redacted] 30 20 [redacted] metr [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
22	23	1	100	ARKOSE, bedding 38° to c.a.	Galena/pyrite/siderite vein infilled. Other finely disseminated py? Tr cpy.	Gn/Py/Sid vein @ 40°to ca and ≈ 90° to bedding	Very little fracturing. Core competent.		875	120	575	2.0		1.220
23	24	1	100	Ditto, coarse grained, quartz rich, massively bedded.	Tr cpy, minor siderite as coarse disseminations.	NIL	Ditto.		195	140	350	<0.5		0.125
24	25	1	95	Ditto to 24.35 m. 24.35 to 25.00 m, Ferruginous shear zone, highly oxidised, pughy, minor manganese staining on fracture surfaces. Start of altered zone or HOST.	Abundant Hem/Lim manganese infilling of shear zone. Minor relict py (dissem) Minor gn/py in thin carbonate veining.	Major shear zone 24.35 - 25.00 minor relict py, with hem/mn. Shear orientation 30°to ca. Minor gn frag. to 0.5 cm diam. Minor gn/py/sid vein 1-2 mm width in coarse epiclastic.	Sheared zone very broken, poor ground conditions.		670	95	855	3.0		0.970
25	26	1	100	LITHIC TUFF, strongly quartz/carb/sericite altered, moderately veined pyritic, beige-green coloured. Grey green coarse grained fiamme present.	Significant py, very fine disseminations also within fine veinlets. Minor cpy also assoc. along with minor gn. Cpy/gn < 0.5%. Pyrite 1.5%	Unit extensively carb/py/cpy/gn veined and also minor fine qtz/carb/gn veins ≈ 1 mm width @ 90° to ca. Carb stringers and veins	Core very competent, little fracturing.		1100	180	1450	4.0		1.040
26	27	1	100	Ditto,	Ditto. Minor Hem. after pyrite.	Very strong carb. veins/stringers sub parallel to bedding as well as at many other orientations up to 90° to bedding. Some carb. veins with quartz.	Ditto.		340	450	1550	2.0		0.120

[redacted]

[redacted] DRILL HOLE [redacted] GRID - [redacted] DEPTH: [redacted] 20 [redacted] metres [redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
27	28	1	100	LITHIC TUFF, very fractured from 27.85 - 28.0 Some breccia zones siderite cemented.	Major py/cpy/gn vein @ 35° to ca 0.6 cm wide. Abundant fine grained to coarse grained gn/cpy and py disseminated throughout, some blebbs.	V. Strong carb/quartz/py/cpy/gn veining. Pervasive carb. throughout sequence.	Little fracturing except for breccia zone 27.85-28.0. v. broken.		1350	750	1200	2.0		0.260
28	29	1	95	Ditto, strongly carbonate/quartz veined and brecciated, fractured, oxidised, coarse grained.	Minor py, relict surrounded by hematite.	V. Strong veined and brecciated sequence, large hematite vein @ 25-30° to ca ≃ 2cm width	V. broken ground, fracture surfaces hematite coated.		585	980	2450	3.0		0.960
29	30	1	95	Ditto, to 29.85 m. 29.85 - 30.0 m extremely broken fractured, hematitic, goerthitic veined strongly altered epiclastic.	Moderate hematite veining	Ditto. with no major vein, abundant carb/quartz/py. veining and breccia infilling.	V. strong to intensely fractured.		260	1750	2000	2.0		0.530
30	30.2	.20	95	Ditto.	Ditto.	Ditto.	Ditto.		735	2550	1900	4.0		0.535 0.580
E.O.H.				END OF HOLE.										

[redacted] 14903 [redacted]

DRILLHOLE [redacted] GP-90-6 [redacted] DEPTH [redacted] 20.45 [redacted] metres [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.7	0.7	0	Talus Material - Not cored.										
0.7	1	0.3	90	ALTERED EPICLASTIC, highly weathered, fine grained, silica/sericite altered, cream/orange coloured, gossanous hem (py) veined.	Minor py, mod to coarse grain size rimmed by hem in veins @ 5° to ca.	Mod veined both at low angle to ca and 70-80° ca.	Strongly fractured.		130	175	260	1.0	720	0.415 0.400
1	2	1	100	Ditto, intensely altered, HW, beige cream coloured, strongly py/hem veined	Py 1½% tr apy.	Mod to strong veining py/hem @ 60° to ca, and as stringers at low angle to ca Py 1-2mm width rimmed by hem	Mod to strong fracturing.		160	10	90	1.0	120	0.030
2	3	1	100	Ditto, abundant py as vein infillings bedding (cherty or vitric tuff inter bed) 30° to ca, rhodocrosite alteration component. Matrix intensely microfract and altered (sericite/carb) Minor brecciation textures.	Py 2%, tr cpy tr apy.	Ditto py @ 15-25° to ca prominent	Ditto.		220	15	60	1.0	300	0.075
3	4	1	100	BRECCIATED VITRIC TUFF, original finely bedded dark grey to beige v. fine grained vitric/ash layers with fine grained volcaniclastics have been intensely microfractured and microfaulted as well as intensely carbonate/sericite altered.	Py 1% tr apy?	Ditto, major hem/Mn layered vein @ 45° to ca @ 3.4m ≃ 2-3 cm width.	Ditto.		165	10	70	<0.5	230	0.070
4	5	1	100	Ditto, some of layers pinkish stained — albitization? Possibly bedding @ 30° to ca.	Ditto.	Ditto, major hem vein @ 35° to ca - 0.5 cm width.	Ditto.		100	5	155	<0.5	170	0.150
5	6	1	100	Ditto, less fine bedded, more massive possibly more siliceous, minor moss agate textured - due to hematite. Possible rhodocrosite veining.	Py 0.5% - Tr apy.	Mod veining, late stage carb @ 80-90° ca. Some hem/py @ 35-40° perpend. to bedding.	Ditto.		35	10	50	<0.5	110	0.050
6	7	1	100	Ditto, more of pinkish albitized v fine grained material. Bedding (laminar) 50° to ca although unit v. microfractured and brecciated. Matrix intensely clay carb altered and microfractured.	Py 1% tr apy.	Ditto, lot of stringer veins sub// to ca py filled or partly so.	Ditto.		70	5	55	<0.5	180	0.205

148090

[redacted] DRILLHOLE [redacted] GP [redacted] 90 - 6 [redacted] DEPTH: [redacted] 30.45 [redacted] metres [redacted]

COORDINATES: DECLINATION:

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
7	8	1	100	BRECCIATED VITRIC TUFF, To 7.10 m 7.10 - 8.0 m dark grey, finely bedded weakly pyritic, chloritic altered, possibly dolomitized (snow flake textured) fine EPICLASTIC. Bedding 15° to ca, dark grey unit intensely stockworked (brittle?) in comparison to cream coloured interbed.	Py 0.5%.	Mod veining. few veins sub // to ca, rest @ 50-60° for hem/py, carb at 60-70° to ca.	Moderate to strong fracturing.		55	5	100	1.0	150	0.305
8	9	1	100	Ditto, becoming progressively more fractured, weathered and oxidised. More prominent py and tr cpy? towards 9 m. Possible bedding @ 50° ca	Py 1%. tr cpy?	Ditto.	Ditto.		470	20	120	1.0	140	0.230
9	10	1	95	Ditto except extremely broken, oxidised and brecciated version. Minor hem / Mn ironstone zones with veining sub // to ca.	Weak py mod to strong hematite.	Strong veining and intense brecciation and minor mylonitization	Intense fracturing		175	5	110	1.0	290	0.190
10	11	1	85	Ditto, with stong hem. veined section from 10 to 10.50m, remainder highly sheared, finely bedded, sericitic altered EPICLASTIC.	Nil Py, strong hem. vein infilling.	Ditto	Ditto.		275	15	165	<0.5	0.	0.345
11	12	1	95	Ditto to 11.5. 11.5 - 12.00 m very strongly pyritic, stock worked (hem rimmed) siliceous sericitic fine grained epiclastic. Heavily dolomitized - snow flake textured.	Ditto. Py to 5%.	Ditto V. strong veining at random orientation (stock worked) Py veins vary from 2-4 mm width.	Ditto. Mod fractured.		150	10	160	<0.5	380	0.135
12	13	1	100	Ditto to 12.25. 12.25 - 13.00m finely bedded dark/grey grey/green and beige vitric tuff or ashy, siliceous, sericitic altered and extensively brecciated and microfractured TUFF. Very pyritic.	Py 2-3%. Py 1 - 1½%.	Ditto Intense veining and micro fracturing of matrix, weak to mod veining otherwise, py/hem @ random orientation	Ditto. Mod to strongly fractured.		170	5	80	1.0	240	0.160

148091

DRILLHOLE [redacted] GP 90 6 [redacted] DEPTH [redacted] 45 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
13	14	1	100	BRECCIATED VITRIC TUFF, as for previous interval except major hem/py veins present. Bedding @ 50° to ca, Abundant breccia textures with cream beige clay/carb matrix.	Py 2-3% as stringers and fine grained vein infillings.	Ditto but strong py/hem veining @ 40° and subll ca.	Mod to strongly fractured.		490	5	105	<0.5	120	0.450
14	15	1	100	Ditto with abundant py veins. Lot of microfaulting (offsets) very weak brecciation in part.	Pyrite 1% as fine grained v thin veinlets or as disseminations.	Major qtz/carb veins @ 50° ca Some hem @ 30° & 55° ca. fine fillagree veins at rand-om orientation (carb/ser filled)	Mod fractured.		105	<5	95	1.0	40	0.550
15	16	1	100	Ditto but very pyritic both in veins and disseminations.	Py 3-4% as fine grained stringers and aggregates. assoc with hem.	strong vein-ing, py/hem @ 50-55° to ca, some @ 80°. fine carb/ser veinlets give stockwork appearance.	Ditto.		180	15	100	1.0	130	0.095
16	17	1	95	Ditto, well brecciated and micro-fractured.	Py 2-3%.	Ditto, prominent qtz/carb (ps) @ 80° to ca. Late stage.	Ditto.		50	25	100	1.0	100	0.425 0.390
17	18	1	100	Ditto, but with coarse grained qtz rich highly altered (sil/ser) TUFF interbed from 17.30 - 17.70 with both contacts being brecciated and v pyritic Lot of brecciation in cherty VITRIC TUFF matrix. bedding? @ 55° to ca.	Py 2-3% as fine stringers and veins. Tr gn.	Matrix strongly stockworked but only mod py/hem veined @ 50-60° to ca others subll to ca.	Ditto.		175	160	140	1.0	130	0.155
18	19	1	100	Very pyritic, weakly layered, brecciated and microfractured dark grey to blk SILTSTONE or SILICEOUS TUFF? matrix dolomitized.	Py 7½ - 10%. as anastamosing veinlets some // to ca others random stockworked well. Tr gn.	V strong veining and in part stockworked. Py veins < 2mm Minor cross cutting qtz/carb @ 60-80° to ca	Ditto		140	80	150	1.0	440	0.225
19	20	1	100	Ditto, slightly more hem with py. Matrix dolomitized, snow flake textured	Py 10-15%.	Ditto	Ditto.		115	40	80	1.0	290	0.185

143092

[redacted] - [redacted] 3[redacted]45 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
20	21	1	100	As for 19-20 except py to 4% with stronger qtz/carb/hem cross cutting veins 2-4mm width to 20.75	Py to 4%. tr cpy.	Ditto for interval 19-20 qtz/carb veins @ 70-80° to ca.	Moderately fractured.		340	10	595	1.0	250	0.105
				20.75 - 21.00 m. Fine grained, green siliceous VITRIC TUFF, massive mod to strongly veined	Minor pyrite.	Ditto.	Ditto.							
21	22	1	100	Ditto better bedded, dark grey, grey green, beige, silica/sericite/ altered, extensively altered/micro-fractured ground mass, brecciated.	Py 2-3% tr cpy, Tr apy?/ sphal	Ditto. Minor chl. veining with carb/qtz Tr py.	Ditto.		390	10	175	<0.5	170	0.460
22	23	1	100	Ditto, extensively brecciated, better chlorite veined, heavily dolomitized.	Py 1% tr apy?/ sphal.	Ditto with more chlorite.	Ditto		75	45	385	<0.5	10	0.805
23	24	1	100	Ditto to 23.70m.	Py 0.5%.	Ditto	Ditto.		50	5	105	2	25	1.190
				23.70 - 24.00 Sandy textured, carb altered, qtz sericite altered, qtz rich coarse grained TUFF.	Py 1-2%. as stringers.	Stringer py veins @ 45° ca.								
24	25	1	100	Ditto to 24.30.					40	<5	110	1.0	25	0.365
				24.30 - 25.00. pyritic extensively carbonate altered (rusty brown colour) dolomitized, strongly veined, micro-fractured. beige grey green VITRIC TUFF weakly layered, brecciated.	Py 2-3%.	Prominent qtz/ Carb veining @ 60-80° to ca Also hem/ py veins @ 25° to ca, minor Mn. Some moss agate textures.	Mod to strongly broken.							
25	26	1	100	Ditto interbedded Sandy textured material and vitric tuff. Prominent moss agate texturing - stockworking hem.	Py 1%.	Ditto. prominent hem/Mn filled fractures & veinlets sub// to ca.	Fracturing sub// to ca.		35	<5	130	1.0	15	1.235
26	27	1	100	Ditto, more abundant py.	Py 3-4%.	Ditto.	Weak to Mod.		35	10	75	1.0	35	0.490
27	28	1	100	Ditto, minor lithic component.	Py 1-2%.	Ditto	Ditto.		30	5	100	4.0	20	2.410
28	29	1	100	Ditto	Ditto tr cpy	Ditto	Ditto		325	5	245	1.0	55	0.310
29	30.45	1.45	100	Ditto	Ditto tr cpy	Ditto	Ditto.		620	<5	135	1.0	15	0.150
									50	<5	110	<0.5	15	0.055

148093

[redacted] DRILL HOLE [redacted] GP [redacted] - 7 [redacted] DE [redacted] : [redacted] 95 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.8	0	0	TALUS MATERIAL, No coring.										
0.8	2	1.2	100	ALTERED EPICLASTIC, oxidised, intensely clay/carbonate/pyrite microfractured and veined, highly altered (carbonate, silica, sericite) and brecciated. Fine grained.	Py to 2.5% fine grained vein infillings in part oxidised to hematite also as fine disseminations. Minor manganese	Intensely veined veinleted and microfractured (clay/carb infilled) Micro-fracturing is stockworked. Py veins @ 30° to ca, others 45-50° to ca, some conjugate sets.	Core mod. broken due to weathering along inteuse fracture faces.		270	30	145	1.0		0.180
2	3	1	100	Ditto, less oxidised.	Ditto	Ditto	Ditto		115	25	75	2.0		3.250
3	4	1	100	Ditto, less oxidised	Slightly less py ≃ 1.5%.	Py/Hem less inteuse but not so carbonate/quartz. Significant py vein sub parallel to ca.	Core competent and weakly fractured.		240	20	80	3.0		2.010
4	5	1	100	Ditto, slightly more oxidised.	fine grained py as vein infillings & as fine disseminations through the matrix Av. 4-5%	Major vein sub parallel to ca of pyrite. Some Hem haloes. up to 1-2cm distant from veins. Other py veins @ 50° ca	Ditto.		230	30	115	7.0		3.180 3.450
5	6	1	100	Ditto, slightly more oxidised, numerous open spaced and leached veins. Unit highly weathered, cream coloured.	Ditto. except lot less py ie 1 to 1.5% Abundant Fe and Manganese oxides.	Intensely veined some of quartz veinlets, porous or leached are mainly 70-80° to ca. Other Hem. veins @ 40° to ca. Up to 10-15 veins / 10cms.	Core slightly more broken.		190	35	100	6.0		3.600
6	7	1	100	Ditto, slightly less oxidised, more pyrite, fracturing more intense.	Pyrite 1.5 - 2%.	Major Hem vein @ 10-15° ca in part sub parallel others 40-50° ca leached fractures and veins @ 70-80° to ca.	Core even more fractured, but holding together		310	25	180	3.0		2.170

148094

DRILLHOLE : GR 90-7 DEPTH : 30.35

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
7	8	1	100	ALTERED EPICLASTIC, highly oxidised, strongly fractured, fine grained, siliceous	Pyrite < 1%	Ditto for vein orientations, most are < 1mm in width, wkly stockworked, 1 vein / cm.	Well fractured moderately broken core.		165	25	70	2.0		2.650
8	9	1	100	Ditto, with more abundant fine hematite veins and veinlets.	Ditto	Ditto	Not as fractured.		380	30	130	1.0		0.470
9	10	1	100	Ditto, minor relict pyrite surrounded by oxidation halo.	Py ≤ 1% as fine grained veinlet infillings and as dark dusty inclusions in matrix.	Mod hem/py/qtz veining at 70° ca major orientation. Some at 15° to ca. Intense microfracturing of matrix infilled with clay or carbonate?	Ditto.		100	25	55	1.0		0.570
10	11	1	100	Ditto, fine grained, siliceous, fractured weak to mod. hem veined, strongly oxidised.	Tr py, some oxidised to hem. Other hem after coarse grained siderite.	Moderately hem/qtz veined and veinleted with major set at 70° to ca generally < 2mm width. Additional set at 30° to ca.	Core badly fractured and broken.		160	20	80	3.0		1.165
11	12	1	100	Ditto, except v. strongly veined, unit cut by sub parallel 2cm wide, weakly laminar goerthite/hematite filled vein. Rest of unit heavily microfractured and filled with clay or fine carbonate. Major veins have pervasive hematite alteration haloes.	Abundant goerthite/hematite, some minor boxworking evident (after siderite). Some manganese patches.	V. strong veining with one major vein, 2cm width, sub // to ca, layered, minor boxworks. Maj. vein cut by later 70-80° ca fine goerthite/hem/qtz veinlets.	Core broken along major vein structure.		20	35	210	1.0		0.570
12	13	1	100	Ditto to 12.40m. 12.40 to 13.0 m Fine grained siliceous altered, mod. py/hem veined volcanic? Unit very strongly microfractured and clay or carbonate infilled.	Ditto to 12.40 12.4 - 13.0m relict Py to 0.5% in veins with hem. haloes. Also fine grained pyritic stringers and hematitic vein infills.	Ditto to 12.4m 12.4 - 13.0m mod. py/hem veined, < 2mm width, various orientations. Minor fillagree qtz veinlets. Core strongly microfractured.	Ditto to 12.4m 12.4 to 13.0m mod. broken core especially along hematite coated fractures.		20	15	155	< 0.5		0.065

[redacted] GE[redacted]0-7[redacted]DE[redacted] 95[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
13	14	1	100	ALTERED VOLCANIC, fine grained, grey green, ashy looking, brecciated carbonate altered. Weakly veined. Matrix strongly microfractured, clay / carbonate infilled ?	Tr py, very minor hem. vein infilling.	V. weak hem veins in 2 narrow zones (over 5 cm) but matrix intensely carb. veined and microfractured.	Weakly broken.		30	15	80	1.0		0.190
14	15	1	100	Ditto, except minor thin discontinuous black siltstone ? interbeds 2-4mm in width.	Tr to minor py Minor hematite infilling.	Weak veining carb/hem v. minor py Veins 25° to ca, others @ 70° to ca.	Core weakly to moderately broken.		10	10	95	1.0		0.035
15	16	1	100	Ditto, except slightly more oxidised and slightly stronger veined.	Ditto.	Moderate veining otherwise ditto.	Ditto.		20	10	60	2.0		0.035
16	17	1	100	Ditto, with the black siltstone interbeds and some sandy siliceous zones. Otherwise fine ashy unit. Intense microfracturing with clay/carb. infilling. Core v. broken becoming strongly oxidised @ 16.75 m.	Tr py, weak hem vein infilling.	Intense micro fracturing, clay carb. infilled, strong coarse crystalline siderite veining (oxid to hem in part) @ 16.4 m roughly @ 45° to c.a.	Mod to strongly broken.		100	15	70	2.0		0.080 0.060
17	18	1	100	Ditto, heavily oxidised, cream pink coloured, mod. pyritic, strongly veined, minor chloritic filled veinlets, some pervasive chloritic alteration.	Pyrite to 2.5% Tr cpy and sphaler. Py as fine grained vein infillings or stringers.	Very strongly py/hem./qtz/chlorite veining, weak stockworking many different vein orientations Some py veins to 3 mm width 0-30° to ca. late stage veins cross cut at 70-80° to ca.	Core moderately broken.		270	80	175	1.0		0.265
18	19	1	100	Ditto, less oxidised, creamy / grey colour, strongly chlorite veined, minor py as finely disseminated grains.	Tr to minor py mod. hem. Some after oxidation of chlorite.	Mod. to strongly hem/qtz/chl veining. Most veins < 2mm in width.	Ditto.		155	15	85	1.0		0.140 0.130

143096

[redacted] DRI[redacted]OLE[redacted] G[redacted]10-[redacted]DE[redacted]: [redacted]95[redacted]

COORDINATES: DECLINATION:

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
19	20	1	100	ALTERED EPICLASTIC, to 19.80 except good strong py veining component. Unit also coarser grained and brecciated in part. 19.80 - 20.0 Very chloritic, grey green massive.	Py to 2.5% as fine grained veins and stringers. Chloritic unit less veined, Tr py. as disseminations.	Mod to strongly veined both py and hem to 19.8m. 19.8 - 20 v weak veining, mainly hem/chlorite.	Core mod. broken.		55	20	155	1.0		0.420
20	21	1	100	Ditto, coarse grained, qtz rich but heavily chloritic altered and chlorite and siderite veined. Tr pyrite.	Tr pyrite.	Strong chlorite and mod. sid. veining. Chl veins < 2mm @ 50° to ca some chl as tension gash infillings. Sid. veins < 5mm some composite veins.	Core weakly broken.		85	10	190	<0.5		0.075
21	22	1	100	Ditto but grey cream, less chloritically altered but still chlorite veined.	Tr disseminated fine grained py.	Mod to strong fine grained chloritic veinlets. Minor to mod. siderite. Chl vein < 1mM @ 35° to ca Sid cross cuts chl in wispy or lenticular form.	Weakly broken.		45	10	105	<0.5		0.265
22	23	1	100	Ditto, some black siltstone clasts? possibly some rhodocrosite? pinkish carbonate. Matrix highly sericite/carb. altered.	Tr to minor py.	Ditto.	Ditto.		30	10	120	<0.5		0.395
23	24	1	100	Ditto, but strongly chlorite veined, some veins contain pyrite also.	Py to 1.5%	Ditto but with stronger py component in veins. Chl/carb veins 60-80° ca Py vein 1cm in width sub // to ca.	Core mod. broken.		75	15	160	2.0		0.830

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
24	25	1	100	ALTERED EPICLASTIC, weakly chlorite altered, coarse grained, pyritic/chl/carb. veined with pinkish carbonate (rhodocrosite?) within strongly altered matrix of clay/carbonate with associated microfracturing.	Minor to 1% py as fine grained vein inclusions associated with chlorite/qtz. Tr cpy.	Mod to strong chl/qtz/py and chl/py and chl/carb veins. Qtz/chl to 6mm width Most 70-80° ca. Many discontinuous in length.	Core strongly broken.		20	15	160	<0.5		0.305
25	26	1	100	Ditto, with fine grained py/apy (shal?)/cpy occurs within 5cm zone of contorted black shale/siltstone, carbonate altered with sulphides disseminated and as small aggregates. Minor fiamme incorporated into matrix.	Py ≈ 1% Tr apy and cpy	Ditto.	Ditto.		65	10	175	<0.5		0.655
26	27	1	100	Ditto, moderately chloritic, possible bedding @ 50 and 38° to ca. with either siltstone or ashy interbeds UNLESS they are clasts?	Tr to minor py	Ditto	Core mod broken.		50	10	250	2.0		0.815 0.805
27	28	1	100	Ditto, less chloritic but chloritic veined and has considerably more black shale interbeds @ 40° to ca. Matrix completely altered to carbonate/sericite.	Minor py (<1%)	Mod veining to 27.95m. @ 70-80 ca mainly chl/qtz and hem/chl Minor low angle veining @ 30° ca 27.95-28m heavily oxidised hem/qtz veined. Major Hem veining @ 20-30° ca to 28.45m. This cut by qtz/hem veins @ 70-80° to ca. Veining from 28.65-28.85m @ 50-70° to ca. Mainly Hem/Qtz	Core weakly broken.		60	10	220	3.0		0.640
28	29	1	100	28.0-28.45 highly oxidised ferruginous altered, hem veined, qtz rich coarse grained EPICLASTIC. 28.45-28.65 Coarse grained, carb/sericite altered intensely microfractured EPICLASTIC 28.65-28.85 as for 28-28.45 28.85-29.00 as for 28.45-28.65.	Tr py as small blebbs.		Ditto.		20	10	200	1.0		0.090

143098

[redacted] DRILLHOLE [redacted] G[redacted]10-[redacted] DEPTH : [redacted]30.95[redacted] m.

COORDINATES : DECLINATION :

INTERVAL From	INTERVAL To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
29	30	1	100	COARSE EPICLASTIC, black shale fragments and other lithologies, grey/cream/green colour. Matrix clay/carb. altered and intensely microfractured. Major Hem. vein @ 29.80 to 30.00 approx. 1.5cm wide sub // to ca.	Nil py, only hem. as vein infilling and pervasive alteration halo around vein.	Mod to strong carbonate veining @ 50-75° ca are late stage and cross cutting. Low angle hem. vein @ 29.80 ± 1.5cm width @ 15-20° to ca.	v weak fracturing good core recoveries little breakage.		1350	5	165	1.0		0.040
30	30.95	.95	100	Ditto, but contains minor pyrite as thin veins. No chlorite veining, mainly carbonate veins. Mainly lithic coarse grained intensely clay/carb. altered.	Py to 0.5% as thin fine grained veins.	Py/hem. veins @ 50-70° ca as are most of the siderite veins.	Core mod. broken.		20	30	190	<0.5		0.075
E.O.H.				END OF HOLE.										

143099

[redacted] DRILLHOLE : GP-10-8 [redacted] DEPTH : 30.15 m [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.7	0	0	Talus Material - Not cored.										
0.7	2	1.3	95	ALTERED EPICLASTIC, highly weathered oxidised, coarse grained, siliceous, ferruginous and manganiferous and strongly veined. Pervasive hematite alteration around veins as haloes.	Hem / Manganese as fracture coatings.	Strong hem/mn Minor chl veined Major Hem vein sub// to ca up to 1.5 cm width Another set @ 70° to ca Hem / chl. Some leaching.	Ground well fractured and badly broken.		160	55	175	2.0		1.335
2	3	1	100	Ditto.	Minor py and Tr to minor cpy as coarse disseminis. with carb. veins and hem veins.	Ditto.	Ditto.		240	15	150	2.0		1.185
3	4	1	100	Ditto, except for increasing chlorite component in matrix and also chlorite veining. 3.40 - 3.60m major chlorite zone.	Gossanous lim/ manganiferous veins through Sequence. Tr py as fine disseminis	Ditto except chlorite veining predominant.	Ground well fractured but less broken than above.		345	85	450	1.0		0.860
4	5	1	100	Ditto, strongly ferruginous, fractured, hematite/chlorite veined pyritic in part, coarse grained, qtz rich.	Minor py as fine disseminations within veins.	Strongly hem/ chl/py/qtz/mn veined. Pervasive hem alth halo surround veins. Major veins @ 20-30° ca. Late Stage cross cutting thin chl veins @ 70° ca.			280	35	175	1.0		0.720
5	6	1	100	Ditto, less ferruginous more chloritic altered in matrix and more qtz/chl veining. Matrix clay/carb altered and extensively microfractured.	Tr to minor py. Tr cpy.	Mod veining, late stage cross cutting chl/qtz Minor epidote + cpy in thin <2 mm veins @ 70° to ca. Major ferrug veins 0.5 cm wide @ 25-40° to ca.	Ground fractured but not badly broken.		205	5	140	1.0		0.295

146100

[redacted] DRILL HOLE [redacted] G[redacted]0-8 [redacted] DEPTH : [redacted] 15 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
6	7	1	100	ALTERED EPICLASTIC, but even more chloritic.	Py < 1%	Mod veining as for 5-6m	Ground fractured but not badly broken.		90	5	295	1.0		0.175
7	8	1	100	Ditto, but less chloritic, creamy grey green, extremely fractured, possible rhodocrosite, minor gossanous zones.	Py 2-3% as fine grained vein infilling and/or blebby accumulations.	Core mod. to strongly veined py/carb/chl minor hem. @ 60-80° to ca. Minor gossanous patch @ 7.05m	Badly broken.		20	15	160	2.0		0.990
8	9	1	100	Ditto very fine grained, minor spotted texture due to chloritic? patches, fine pyrite veining, significant carbonate veining and alteration, sericitic groundmass.	Py 1 - 1.5% as fine vein infillings and fine dissemminations.	Minor fine grained veinlet pyrite assoc. with qtz veining. Mod to strong carb. veining sometimes tr py.	Mod. broken.		55	10	80	1.0		0.05
9	10	1	95	Ditto to 9.4 metres. 9.4 - 10.0m BRECCIA / EPICLASTIC, lithic component to 1.5 cm diam. Matrix carb./sericite altered, fragments sub-rounded fiamme style (c. grained, volc. some black siltstone, vitric volcanic)	To 9.4m minor py as fine vein fillings and fine dissemminations. 9.4 - 10.0 tr py Minor hem in veins and gossanous @ 9.4 - 9.60m.	Significant qtz/sil veining with pervasive carb altn out from vein. Intense micro-fracturing with pervasive infilling of carb/sericite alteration material.	Core badly broken from 9.4 - 9.8m. Otherwise mod broken.		100	20	220	<0.5		0.010
10	11	1	100	LITHIC EPICLASTIC BRECCIA, and coarse qtz rich epiclastic, intensely carb/sericite altered and microfractured. Core weakly hematite veined.	Tr to minor py weak hematite veining.	Weak hem. veining generally 2-4 mm width @ 25-35 to ca. Some veining sub//. Hem fracture coatings	Core weakly to moderately broken.		30	60	340	<0.5		<0.008 <0.008
11	12	1	100	ALTERED EPICLASTIC, predominantly coarse grained, quartz rich, sheared, intensely carbonate/sericite altered and microfractured. Some large lithic fragments. Shear direction @ 25 - 30° to ca.	Tr py Massive hematite vein 11.4 - 11.50 m.	Intense carb/sericite veining and pervasive alteration in microfractured matrix. Hem. vein @ 45° ca. from 11.4 - 11.5 m.	Ditto.		20	20	240	<0.5		<0.008

14810

[redacted] DRILLHOLE : [redacted] DEPTH : [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
12	13	1	100	ALTERED EPICLASTIC, with some quite large lithic fragments 20 cm diameter. Shearing @ 40° to ca.	NIL.	Intense carb/sericite veining and pervasive alteration in microfractured matrix.	Weakly broken.		60	10	120	<0.5		<0.008
13	14	1	100	Ditto, intense carbonate alteration creating brecciation texture (angular fragments ?)	Tr py as very fine grained aggregates and veinlets.	Ditto, minor 2cm wide Hem vein @ 30° to ca. @ 13.6 m.	Ditto.		85	5	100	<0.5		<0.008
14	15	1	100	Ditto to 14.20 m 14.20 - 15.00 coarse grained quartz rich, intensely veined with hematite and moderate to strong chlorite from 14.80 - 15.00 m. Intense carb/sericite alteration of matrix.	Tr py as fine grained aggregates and vein infillings.	Strong hem veining after chl and py. Veining @ 65° to ca and 35° to ca (90° to former) others at 25-30° ca.	Core moderate to strongly broken.		95	20	160	<0.5		<0.008
15	16	1	100	Ditto, but more chloritic with matrix weakly chloritic and chloritic veined. Minor pyrite. Moderate hematite alteration predominantly after chlorite.	Minor pyrite, mod hematite veining and pervasive alteration.	Ditto with more chlorite in matrix (dark grey green).	Ditto.		35	20	175	<0.5		<0.008
16	17	1	100	Ditto to 16.25 m. 16.25 - 17.00 very fine grained, hornfelsed ? chloritic, carbonate rich, chlorite veined grey green and fine grained EPICLASTIC. Minor ellipsoidal voids quartz filled.	Nil pyrite	Mod strong chl/hem/carb veining @ 30° ca. and 65-75° to ca. generally <1 mm in width.	Ditto		30	15	180	<0.5		<0.008
17	18	1	100	Ditto to 17.20 m. 17.20 - 18.00 m coarse grained, quartz rich, chloritic, EPICLASTIC. Strongly veined and oxidised.	Strongly hematitic both as pervasive alteration and as vein infilling. Some oxidation of chlorite.	Strong hem veined and hem/chl veined, minor carb/ser in heavily oxidised Zone. Main vein direction @ 70° ca 2-3mm in width, other @ 30° ca. Both Hem filled.	Core mod. broken.		840	10	160	1.0		0.035

[redacted] DR[redacted] OL[redacted] [redacted] 90[redacted] DE[redacted] : [redacted] 30. [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
18 -	19	1	100	ALTERED EPICLASTIC, less oxidised, and less chloritic veined. Matrix still chloritic. Major qtz/carb trace py veining @ 70° to ca 2-4 mm width with 1 vein / 1-2 cm.	Tr to minor py as inclusions or aggregates in qtz/carb veins. Some disseminated fine grained py also. Hematite after siderite & py.	Mod to strong carb/qtz/minor py veining @ 70° ca 2-4 mm width others @ 30° to ca. Some chlorite veining to 18.4 m then absent.	Core mod. broken and fractured.		475	5	130	<0.5		<0.008
19 -	20	1	100	Ditto to 19.20 19.20 - 19.80 Hornfelsed? very fine grained, spotted weakly chloritic EPICLASTIC. Chlorite/hem veined. 19.80 - 20.0 coarse grained wkly chloritic quartz rich EPICLASTIC.	Tr py, Tr cpy, strong hematite component infilling veins.	Strong hem/chl/carb tr py, cpy veining predominantly @ 60-70° ca and av 0.5 - 2mm width. Othe set @ 30-35° ca. Hem. pervasive alth as vein halo.	Core weakly broken.		80	5	155	<0.5		<0.008
20 -	21	1	100	Ditto, moderate carb and quartz / chlorite veined minor pyrite. Veining in part oxidised to hematite.	Tr py, significant hem veining and infilling. Weak pervasive alteration of chlorite veins.	Significant to strongly veined overall. Hem tr py @ 40° to ca (.5 - 1.5cm width) others @ 30° ca some sub // to ca. Fine carb/qtz/chl veins cross cut other veins and occur @ 70° to ca.	Ditto. Fractured surfaces hematite coated.		65	20	145	<0.5		<0.008
21 -	22	1	100	Ditto, cream coloured siderite containing minor amounts of cpy, tr py. Carbonate coarsely crystalline, groundmass intensely microfractured and carb/ser altered.	Minor cpy, tr py.	Major hematite (py) zone @ 21.25 to 21.50m @ 20° ca ≃ 5-7 cm width, brecciated. Rest of core as for 20-21.	Ditto.		385	30	215	1.0		<0.008

143193

[redacted]DRI[redacted]DLE[redacted] G[redacted]90-[redacted] DE[redacted]: [redacted]. 19[redacted]m. [redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore-scence	Assays Cu	Pb	Zn	Ag	As	Au
22	23	1	100	ALTERED, VEINED EPICLASTIC, coarse grained, quartz rich, strongly veined, weakly chloritic, groundmass weakly lithic.	Minor cpy, Tr py.	Major hem/py zone @ 22.5m av width of 4 cm @ ≃ 20° ca. Remainder of veins carb/chl (in part oxidised) late stage cross cutting. Some have cpy component.	Core weakly broken, mod. fractured hematite coated surfaces.		940	10	175	2.0		0.010 <0.008
23	24	1	100	Ditto, intensely carbonate (siderite) altered, matrix with psuedo breccia textures from alteration.	Ditto.	Ditto.	Ditto.		380	10	180	1.0		<0.008
24	25	1	100	Ditto, but moderately hematite veined and altered @ 24.4 - 24.6 m. Significant cpy/carb/quartz veining also. Ground mass intensely microfractured and intensely carbonate altered.	Mod cpy, ≃ 1% py Significant hem vein infilling and pervasive alteration.	Major hem/py/cpy zone @ 24.4 to 24.6m. coarse grained sulphides, cpy assoc with later stage veins. Minor thin chl veins.	Ditto.		- SNR -					
25	26	1	100	Ditto, lithic, coarse grained, quartz rich, weakly chloritic intensely carbonate altered.	Tr py, Tr cpy.	Ditto, hem(py) vein shows bleaching out from vein centre.	Weakly broken core.		210	5	150	<0.5		<0.008
26	27	1	100	Ditto, but more cream coloured, sideritic, chloritic veined, lithic and qtz rich. Brecciated by carbonate veining.	Tr py varying up to 2% locally (as vein infillings) Tr to Minor cpy as fine grained disseminations and fine veinlets.	Ditto.	Weakly to moderately broken.		520	10	145	1.0		<0.008
27	28	1	100	Ditto, strongly fractured, strongly carbonate/pyrite/hematite/sericite trace to minor cpy veined quartz rich, coarse grained, minor chlorite veined.	Major hem/py trace cpy vein @ 27.25m Major qtz/hem/gossanous vein @ 27.8m.	Major hem/py tr cpy vein @ 27.25m @ 30° ca. Qtz/hem vein @ 45° to ca @ 27.8 metres. Fine Siderite/py (cpy) veinlets @ 70-80° ca. Minor chlorite veining.	Core strongly broken and badly fractured		330	30	170	1.0		<0.008

14810[illegible]

DRILLHOLE : GP-10-8 DEPTH : 30.15m

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
28	29	1	100	ALTERED EPICLASTIC, to 28.25 weakly chlorite veined. 28.25 - 29.00 m highly oxidised qtz/ hem/ py veined coarse grained qtz rich lithic EPICLASTIC.	Tr - minor py, very strong hem/qtz vein infilling. Tr cpy, locally py up to 5%.	Very strong qtz/ hem/chl/cpy-Py veining in part stockworked. Veins up to 2cm width. av 1-3mm Majority of veins @ 70° to ca some @ 50°. One major vein @ 28.3 to 28.50m @ 25-30° to ca.	Core mod. broken.		1450	15	195	2.0		0.020
29	30	1	100	Ditto to 29.90 29.90 - 30.00 chloritic/sericitic and carbonitic lithic coarse grained quartz rich massive EPICLASTIC.	Ditto to 29.90 Py and cpy in qtz/ hem veins - coarsely crystalline.	Ditto.	Ditto.		550	15	230	1.0		0.015
30	30.15	.15	100	Ditto.	Ditto	Ditto	Ditto							
EOH				END OF HOLE.										

DRILLHOLE : GP-90-9 DEPTH : 30.45 m

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.3	0.3	0	Talus Material - not cored.										
0.3	1	0.7	100	EPICLASTIC (Hanging wall Sequence) Interbedded siltstones and fine to coarse grained arkosic sandstones, highly weathered, oxidised, well bedded, 45° to c.a. Minor hematization, manganiferous fracture coatings. Laminar bedding from mm to a few cms in width.	NIL	NIL	Poorly cored sequence due to badly broken and fractured ground.		130	15	165	1.0		<0.00
1	2	1	100	Ditto.	Ditto.	V weak hem veinleting, cross cutting bedding @ low angle.	Moderately broken, strongly fractured.		125	15	225	<0.5		<0.00
2	3	1	100	Ditto, more massive siliceous sandy units.	Tr py as thin veinlet assoc. with hematite.	Ditto.	Ditto.		60	10	205	<0.5		<0.008
3	4	1	100	Ditto, less sandy more silty, bedding 45° to ca to 35° to ca.	Tr py with hem. as vein infilling or fracture coating.	Ferruginous zone 3.4 - 4.0 poorly veined pervasive hem alteration through matrix.	Ditto.		40	10	285	1.0		<0.00
4	5	1	100	Ditto, bedding 45° to c.a.	Ditto.	Weak hem veining Ditto without ferrug. zone.	Ditto.		40	5	245	1.0		<0.00
5	6	1	100	Ditto.	Ditto.	Ferrug. zone @ 5.9m @ 90° to c.a. bedding. 1.5cm width. Hem filled microfractures.	Ditto some manganese fracture coatings.		40	10	225	1.0		<0.00
6	7	1	100	Ditto, slightly less oxidised, slightly more thinly interbedded, bedding 40° to c.a.	Ditto.	Ditto.	Ditto.		65	10	170	1.0		<0.008
7	8	1	100	Ditto, more fresh, light grey to cream coloured.	Ditto.	Minor ferrug clots and veins some sub // ca others have random orientation.	Ditto.		60	10	70	1.0		<0.008

143106

[redacted]DRI[redacted]OLE[redacted] G[redacted]90[redacted] DE[redacted]H : [redacted]50. [redacted]m

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
8	9	1	100	EPICLASTIC, interbedded massive cream/grey and dark grey/black siliceous fine grained cherty sandstone. Unit mod. to strongly hematite veined and veinleted. Pervasive hematite alteration in part.	Nil py. Abundant hem filled veins.	Mod to strongly hem veined generally < 2mm width, some orientations sub// to ca. others at 40° to ca. Slightly stockworked overall.	Core mod. broken. Fracture surfaces hem. coated.		70	20	135	1.0		<0.00
9	10	1	100	Ditto to 9.65 m. minor brecciation bedding? @ 50° to ca – laminar unit. 9.65 – 10.00 m light grey, in part massive to well bedded hematite veined fine grained siliceous sandstone EPICLASTIC	Ditto.	Ditto.	Ditto.		85	10	180	1.0		0.01
10	11	1	100	Ditto to 10.20 m, bedding 60° ca and graded bedding indicates sequence right way up. 10.20 – 11.00 extremely broken, siliceous and chloritic altered, strongly hematitic, strongly veined, interbedded coarse grained sandstone? and fine grained siliceous sandstone. EPICLASTICS. Unit in part brecciated.	Nil. Strong pervasive hematite alteration and vein infilling, Mod to strong oxidised py to 1.5% as large aggregates or blebbs as well as vein infillings	Nil Mod to strg veining @ 20–30° to ca as well as 70–80° (late stage veins)	Ditto. Strongly broken ground.		100	40	125	1.0		0.19
11	12	1	100	BLACK SHALE, sheared laminated ferruginous, minor siltstone interbeds to 11.40 m. 11.40 – 12.00 m coarse grained quartz rich siliceous, sericitic EPICLASTIC, moderately hematite altered and veined weakly pyritic.	Nil. Tr pyrite as fine disseminations and vein infillings, pervasive hematite alteration haloes surround veins.	Nil. Mod veining @ 20°, 40, 65° to ca, 1 vein / 2–5 cm.	Badly broken ground. Hem along shear planes.		180	15	65	1.0		0.02 0.02
12	13	1	100	Ditto, except fiamme rich? tuff? interbed, very schistose quartz sericite altered, qtz crystals quite crystalline, many sericitic lithic vitric tuff fragments. Weakly veined, schistosity @ 70° to ca.	Minor hem. vein infilling Tr pyrite	Weak hematite veining @ 30°, 55° and 75° to ca. 7–8 / metre.	Moderately broken.		70	<5	55	1.0		<0.00

143107

[redacted] DRILLHOLE [redacted] 90 [redacted] DEPTH : 50.45 m.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
13	14	1	100	Ditto, same colour (grey-cream-green), odd black shale fragment, mod. microfracturing and clay infilling, fiamme are coarse grained quartz / sericite altered green, qtz rich rhyolite tuff fragments varying in size from <1cm to >10 cm.	Tr py Minor hematite vein infilling.	Weak hematite veining generally @ 70° ca up to 1cm width. Section 12.35 - 12.65 strongly veined. Hem. predominantly sub // to ca.	Core weak to moderately broken.		50	<5	60	1.0		<0.00
14	15	1	100	Ditto to 14.40 m.	2 py veins to 0.5cm parallel to schistosity (bedding?) @ 14.35.	2 bedding? // veins @ 58° to ca. @ 14.35 m. Py fine to med grained.	Ditto.		60	15	115	1.0		<0.00
				14.40 - 15.00 extremely oxidised and strongly veined and hematitic quartz rich sericitic, siliceous rhyolitic tuff? / VOLCANICLASTIC ?	Minor gossanous clots after pyrite, massive to coarsely crystalline. Hem / qtz vein infilling.	Strongly veined and pervasively hematized. Major veins sub // to ca or at low angle, other at 70-80° to ca. and are cross cutting.	Ditto with Minor to mod manganese coatings on fractures.							
15	16	1	100	Ditto to 15.20.	Ditto.	Ditto.	Core mod to strongly broken		120	20	115	1.0		0.180
				15.20 - 16.00 sheared, interbedded, black schistose shale and fine siliceous EPICLASTIC. Unit mod. hematitic and brecciated.	Tr erythrite? on fracture and shear surfaces. Tr py.	Hem veining sub // to ca.	Ditto.							
16	17	1	90	ALTERED EPICLASTIC, 16 - 16.75 m extremely altered, oxidised, clay / Sericite, quartz rich, well sorted, coarse sandy EPICLASTIC. Orange cream stained due to hematization.	One major hem vein @ 6.30m sub // to ca. Nil py	Weakly hem vein.	Core badly broken, poor recovery.		90	25	200	1.0		<0.008
				16.75 - 17.00 SILICEOUS EPICLASTIC, siliceous fine grained to medium grained qtz rich sandstone/epiclastic, Strongly hematite veined.	NIL py, mod to strong hem. infilling of veins.	Veining @ 45° to ca and 25° to ca with 1 vein / cm.	Ditto.							

[redacted] DRILLHOLE [redacted] GP [redacted] 70-7 DEPTH : [redacted] 50.45m.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
17	18	1	100	Ditto to 17.15m. 17.15 - 18.00m extremely altered/ oxidised clay/sericite quartz rich well sorted, coarse sandy arkosic EPICLASTIC. Leisgang rings 90° to probable bedding. Some veining // to Leisgang rings.	Core weakly mineralized and veined.	Very weakly veined, minor hematite as Leisgang rings.	Badly fractured good coring.		50	35	130	1.0		<0.00
18	19	1	100	INTERBEDDED EPICLASTICS, interbedded black massive siltstones and coarse grained, quartz rich arkosic well bedded sandstone or volcaniclastic. Some lithic component to unit.	Minor hematite vein filling. Nil py.	Core mod veined, some tension gash veins, minor brecciation. Many of veins qtz/hem @ 75° to ca others at 30° ca. later // to lithological contacts.	Core moderately broken.		90	70	115	1.0		<0.00
19	20	1	100	Ditto to 19.30 19.30 - 20.00 SHALE, sheared, very well laminated, microfractured, veined minor siltstone interbeds	Patchy hem. bleb, minor hem filled veins.	Core mod qtz/ hem veined. Some pervasive hematite alteration thru matrix.	Strongly broken.		75	25	130	1.0		<0.008
20	21	1	100	Ditto, bedding 30° to ca, minor cherry red oxide pervasive throughout (hematite?)	Nil py, minor to mod hem.	Very weak veining.	Badly broken ground, Hem on fracture surfaces.		85	10	90	1.0		<0.008
21	22	1	100	Ditto.	Ditto.	Ditto.	Ditto.		95	15	45	1.0		<0.008 <0.008
22	23	1	100	Ditto, bedding parallel to ca.	Ditto.	Ditto.	Ditto		105	30	45	1.0		<0.008
23	24	1	100	Ditto, bedding 15° to ca.	Ditto.	Ditto.	Ditto.		90	30	60	1.0		<0.008
24	25	1	100	Ditto, bedding 45° to ca	Ditto.	Ditto.	Ditto.		120	20	45	1.0		0.010
25	26	1	100	Ditto, folding quite evident in core, rip up clasts also evident, bedding 35° to ca, unit microfaulted. and brecciated.	Ditto.	Moderate hem/ carb filled veins and fractures.	Ditto.		120	25	65	1.0		<0.008
26	27	1	100	Ditto, low amplitude folding evident with fold axes perpendicular to ca.	Ditto.	Ditto.	Ditto.		80	20	30	1.0		<0.008

148109

DRILLHOLE : DEPTH :

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
27	28	1	100	SHALE / SILTSTONE, bedding averages 45 - 40° to c.a.	Nil py, minor hematite.	Veins hematite/ carb filled, some coarsely crystalline.	Badly broken ground.		85	20	50	1.0		<0.008
28	29	1	100	Ditto to 28.50 m. 28.50 - 29.00 m sheared, highly oxidised, ferruginous quartz rich, sericitic, schistose volcaniclastic or TUFF. Fiamme, quite prominent although flattened and oxidised grey / beige / orange.	Ferruginous. Hem/carb. vein infilling	Weak veining overall, hem/ carb minor qtz infilling.	Moderately broken core.		70	20	30	1.0		<0.008
29	30	1	100	Ditto.	Tr py, cpy	Intense micro-fracturing of matrix infilled with sid/sericite.	Ditto.		2700	35	75	4.0		1.065
30	30.45	.45	100	Ditto except very sulphidic with large wispy aggregates of pyrite (oxidised to hem), disseminated py, dissem. galena as well as arseno-pyrite. Trace chalcopyrite in cross cutting veins.	Py - 7½ - 10%. Gn/Apy to 0.5%. Tr cpy in late stage cross cutting veins.	Ditto. Pyrite veining @ 35° to ca up to 0.5 - 1cm width. lenticular. Cross cutting veins 1-2MM wide @ 65-75° to ca py tr cpy and hematite.	Ditto.							
E.O.H.				END OF HOLE.										

143110

DRILLHOLE : GP-90-10 DEPTH : 30.25 m.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.4	0	0	Talus Material - not cored.										
0.4	1	0.6	90	INTERBEDDED SHALE/SILTSTONE, Contorted, finely interbedded (laminar) black shale, cream grey siltstone, mod to strongly qtz/hem minor cpy veined, pervasively hematite altered (part of matrix). Large shale raft at contact to host sequence? Bedding 30° to ca.??	Minor fine grained py as thin veinlets and disseminations minor cpy as coarse grained aggregates in association with qtz/carb veins - late stage.	late stage cross cutting veins @ 75° to ca up to 0.8 cm width. comprised of qtz/carb/cpy. Other veins at random.	core badly broken.		865	25	490	2.0	CELL	0.195 0.175
1	2	1	95	Ditto to 1.6 metres. 1.6 - 2.0 metres (HOST) ALTERED EPICLAST. containing large proportion of breccia fragments (angular) in vein filling. Matrix of sericite/carbonate.	Minor py. occurs as large aggregates as well as fine disseminations. Tr cpy.	Veining fairly random, breccia zone has no clear cut contacts.	Ditto.		1550	50	135	2.0		0.390
2	3	1	100	Ditto to 2.10 metres. 2.10 - 3.0 Fine grained, siliceous, massive beige/brown, weakly to moderately veined, broken EPICLASTIC, weakly brecciated, minor cherry red hematite alteration.	Qtz/hematite as vein infilling. Minor relict unoxidised pyrite.	Qtz/hem veining weak/mod. Some sections have 1 vein/cm most < 2mm width. late stage veins @ 65-70° to ca. prominent.	Ditto.		120	10	80	1.0		0.010
3	4	1	100	Ditto except veining moderate to strong, quite pyritic (veins to 1cm width), at high angle to ca. Sections of core coarser grained still qtz rich & siliceous.	Py to 3-4% as veins up to 2.5cm width av 1cm assoc with qtz and hematite.	Mod to strong veining, Major pyrite veins 1cm av width @ 70° to ca. More oxidised veins of qtz/hematite.	Ditto.		85	20	85	2.0		0.040
4	5	1	100	Ditto to 4.35 metres. 4.35 - 5.00 m coarse grained qtz/rich siliceous, hematitic lithic grey/beige hematite veined, fiamme rich EPICLASTIC. Matrix intensely microfractured clay/carbonate infilled.	Moderate hematite veining and infilling.	Mod. to strong veining @ 30° to ca others @ random orientation and lastly @ 70° to ca and cross cutting	Strong fracturing, Moderately broken.		45	10	100	1.0		<0.008
5	6	1	100	Ditto.	Tr py, pervasive hem halo surrounding veins. Hem as vein infillings.	Ditto.	Ditto.		75	20	105	1.0		<0.008

DRILLHOLE : GP-90-10 DEPTH : 30.25 m.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
6	7	1	100	ALTERED EPICLASTIC, coarse grained, quartz, rich siliceous, hematitic, lithic, grey beige, hematite veined. Matrix is extensively microfractured and clay/carb. altered.	Tr py, minor hem as vein filling and pervasive alteration. Minor manganese.	Mod to strong veining @ 30° ca. late stage @ 70° to ca. 2 large low angle hematitic filled qtz/carb veins.	Strong fracturing Moderately broken.		245	15	135	1.0		0.015
7	8	1	100	Ditto, except quite sulphidic with strong pyrite veining generally at low angle to sub parallel to c.a.	Py @ 5-7½% with minor to mod. Apy Tr to minor Cpy. (Apy or Gn?)	Large low angle (30°) py minor apy veins in part sub // to ca Minor stockworking. Some sulphides oxidised and leached	Weakly broken Moderately fractured.		880	30	120	3.0		3.260 3.280
8	9	1	100	Ditto, schistose, quartz-sericite-carb altered, minor black shale clasts. Moderately sulphidic, schistosity 40° to ca.	Minor gn assoc with py vein with gn being transposed along schistosity. Tr sphalerite with py as fine wispy veinlets. Py 1-2% as veins and disseminations.	Matrix intensely microfractured Many carb/sid. infilled tension gashes. Some oxidised qtz/hem veining @ 70-80 to ca.	Weakly broken. Schistosity at 40° to ca.		90	30	140	2.0		0.510
9	10	1	100	Totally oxidised hematised sulphidic section of above.	Py ≈ 5%. bt of pervasive hematite and manganese throughout matrix.	Most of py veins are .5cm width and are 70-60° to ca. as are hem/mn. Py also as random stringers.	Weak to moderately broken.		450	80	330	1.0		0.585
10	11	1	100	Ditto, abundant pyrite and minor cpy trace malachite. Some veining sub // to ca. others at low angle and some @ 70° to ca and are cross cutting. Some gossanous patches associated with oxidised sulphide zones.	Py-10% with cpy @ 0.5%. Malachite also visible after cpy. in vughy ironstone section. Py as fine to coarse grained aggregates locally up to 25% over 10cm assoc with angular hematite stained qtz rubble.	Much of py as granular habit assoc with angular qtz frags. and as vein infillings @ 30° to ca or more random orientation. Some sub // to ca.	Ditto.		6750	70	260	15.0		30.000
11	12	1	100	ALTERED EPICLASTIC, less oxidised fresher light grey, finer grained, siliceous and sericitic, qtz rich in part, also lithic. Strong qtz/carb/cpy veined and carb/py veined.	Py 5-7½% as py/carb veins at low angle to ca. Cpy as minor component of cross cutting veins.	Stringery py as weak stockworking. Major orientation @ low angle to ca. Qtz/carb veins @ 65-70 ca. and @ 30° to ca.	Weakly broken.		4670	270	495	15.0		21.000

DRILLHOLE : GP-90-10 DEPTH : 50.25m.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
12	13	1	100	ALTERED EPICLASTIC, slightly more oxidised, very strongly sulphidic, Py rimmed by hematite.	Py - 15% as coarse grained vein fillings and stringers. Tr to minor gn. Tr cpy	V. Strongly veined stringery sulphide system. Some stringer Py material sub// to schistosity low angle veining 20° to ca @ 12.8m. Minor breccia zones. (tr to minor gn) Cross cutting veins to 3-4 mm width of qtz/carb/(cpy)	Weakly broken.		2560	2230	8950	20.0		13.150
13	14	1	100	ANGULAR BRECCIA, (13.00 - 13.50) breccia fragments < 1cm diam, minor galena as fine grained cross cutting quartz veinlets. 13.50 - 14.00 extensively and intensely qtz/carb veined, brecciated in part fine grained siliceous EPICLASTIC. Pink colour due to rhodocrosite?	Gn minor to 0.5% Tr pyrite. Tr Cpy.	Very strong qtz/carb veining @ 60-70° to ca which cut earlier qtz/gn veinlets (< 1mm) Matrix to breccia is carbonate minor sericite. Veining @ 1-2 veins per cm.	Ditto.		200	2350	1200	5.0		0.640
14	15	1	100	SILICEOUS EPICLASTIC / VITRIC TUFF, Interbedded green/grey dark grey vitric tuff or cherty siliceous EPICLASTICS contorted or strongly folded, similar to earlier black shales in hole 9. Abundant siderite veins cut by thin qtz/gn rich veinlets.	Gn to 0.5% Py Minor to mod.	Majority of veining at high angle to ca, some breccia zones with no distinct contacts. Only Minor hem veining veining at 25-40° ca.	Ditto.		160	1800	610	5.0		1.280
15	16	1	90	Ditto, in part highly contorted and brecciated. Unit strongly qtz/carb/minor gn/py/cpy veined. Unit strongly fractured and weakly hematite veined.	Gn to 0.5% as vein infilling and fine disseminations. Minor disseminated py. and vein infillings. Tr cpy associated with gn in carb/qtz veins.	Unit strongly veined, qtz/carb @ high angle to ca, later translucent qtz/gn veins at high angle. Vein density of 1-5 per cm. Vary in width from 3mm to hair like.	Ditto.		180	2300	1450	5.0		1.415

DRILLHOLE : GP-90-10 DEPTH : 30.25 m.

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
16	17	1	100	SILICEOUS EPICLASTIC/ VITRIC TUFF, more brecciated than previous interval, breccia matrix of siderite, breccia frags. comprised of angular host material. Intense microfracturing and carbonate/silica infilling. Wk gn min.	Gn in minor amounts in same form as for previous interval. Py to 1%.	Unit strongly veined, qtz/carb at high angle to ca. Brecciation overprint is common and microfracturing also significant.	Core weakly to moderately broken.		100	1900	1550	6.0		2.720 2.630
17	18	1	100	Ditto to 17.90m. with breccia zone containing weak galena mineralized. Matrix of breccia being carbonate. Unit also hem veined 17.90 - 18.00 m Non breccia, but contorted.	Minor gn as fine disseminations or wispy veinlets. Minor py, hematite	Intense brecciation overprinted by moderate veining @ 25-40° to ca. rimmed by pervasive hematite.	Ditto.		140	3100	1600	5.0		1.450 1.370
18	19	1	100	Ditto, grey green, siliceous vitric tuff or cherty epiclastic, highly contorted, intensely microfractured and carbonate infilled. Unit pervasively dolomitized ? snow flake textured, mod carbonate/hematite veined.	Trace gn, sl, py	Some of hem veining @ 30-45° to ca. Carbonate veins also at 45° to ca.	Weakly broken.		65	370	410	2.0		0.840
19	20	1	100	Ditto, well bedded @ 55° to ca, unit cut by coarsely crystalline pyrite vein and hematite @ 19-19.45 m. Snowflake texture still prominent. Intense microfracturing and carbonate infilling.	Py in vein as coarse grained aggregates Av 2-3%. Gn minor component Minor Cpy.	Major py vein + hem ≥ 2cm width @ 10-15° to ca. Other hem/qtz veins @ 50° to ca.	Weak to moderately broken.		2050	700	825	9.0		4.590
20	21	1	100	Ditto, with thin dark grey interbeds. Core mod. to strongly carb/qtz minor hematite veining. Intense microfracturing of ground mass, carbonate infilled, weak snowflake texture.	Tr to minor gn Tr py.	Majority of qtz/carb and carb veins @ high angle to ca (60-80°) V minor hem veins sub// to ca along with some of carbonate veins.	Weakly broken.		55	550	340	7.0		7.290
21	22	1	100	Ditto, more intense carbonate veining, sub parallel to ca. Bedding 46° to ca. Minor pink rhodocrosite? Some open space fractures and veins. Siderite coarsely crystalline. Intense microfracturing of matrix - snowflake textured.	Minor py and gn. Trace cpy.	Major proportion of qtz/carb veining is sub// to ca, varying from 1mm to 4mm width. Late stage veins @ 70-80° to ca. Unit strongly veined overall - stockworked.	Ditto.		85	1200	1150	3.0		0.540

DRILLHOLE : DEPTH :

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
22	23	1	100	SILICEOUS INTERBEDDED EPICLASTIC, bedding 30° to ca, intense carbonate veining and microfracturing of matrix.	Minor py, gn, Trace cpy.	Partly stockworked, qtz/carb veined with less of veins sub parallel to ca.	Weakly broken.		80	130	195	2.0		0.245
23	24	1	100	Ditto, but more massive with less of dark grey interbeds. Unit pale grey green – still snowflake textured.	Tr py, Tr gn	Ditto more hematite vein infilling.	Moderate to strongly broken.		20	135	180	3.0		1.740
24	25	1	100	Ditto with major leached and veined zone @ 24.75 – 25.00 manifest by hematite filled veins – stockworked texture.	Tr py mod hem infilling of veins.	Ditto, major stockworked zone hematite infilled from 24.75–25.00 leached by water – minor open space fractures.	Ditto.		25	50	185	<0.5		0.340
25	26	1	100	Ditto, showing slightly more oxidation than previous interval. Intense Microfracturing evident, manifest by offsetting laminar interbeds. Still minor pervasive snow flake texture.	Tr py	Ditto, without stockwork zone. Core moderately veined overall	Ditto.		25	85	160	<0.5		0.030
26	27	1	100	Ditto, fresher unit, finely interbedded, bedding 45° to ca, core moderately to strongly veined predominantly carb/qtz filled minor gn/py. Intense microfracturing of matrix, carbonate healed.	Minor gn/py trace iron poor pale yellow/green sphalerite as coarse disseminations.	Unit strongly carb/qtz veined minor gn and py occurring also. Some internal vein brecciation some veining // to ca but majority occurring @ 60–80° to ca varying from 1–4mm width	Very weak fracturing Weakly broken.		30	325	510	2.0		0.785
27	28	1	100	Ditto, bedding 35° to ca, minor pinkish rhodocrosite.	Tr py, gn.	Ditto.	Ditto		25	245	340	1.0		0.540
28	29	1	100	Ditto, less interbedding, v pyritic 28.25–.70 Matrix intensely microfractured and carbonate healed.	Py ≈ 4% overall, locally up to 7%. Py coarse–medium grained aggregates within strongly veined zone.	Unit strongly qtz/carb/py veined Py aggregates sit at junctions of fractures and low pressure areas.	Ditto		20	160	110	1.0		0.360

[redacted]DRIL[redacted]LE[redacted] G[redacted]- 10[redacted]DEP[redacted]: [redacted]25[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
29	30	1	100	SILICEOUS INTERBEDDED EPICLASTIC, very pyritic, matrix intensely micro-fractured, carbonate healed. to 29.40. 29.40 - 30.0 m Interbedded vitric tuff or CHERTY EPICLASTIC, snowflake textured, dolomitized. Bedding 30° to c.a.	Py averages 2-3% Tr py.	Unit strongly qtz/carb/ py veined. Py as coarse grained aggregates.	weakly fractured.		30	165	100	1.0		0.145
30	30.25	.25	100	Ditto.	Ditto.	Ditto.	Ditto.							
E.O.H.				END OF HOLE.										

[redacted]RILLHOLE : GP[redacted]-11 [redacted] DEPTH : [redacted]50.10 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	INTERVAL To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.65	0	0	Talus Material - Not cored.										
0.65	1	.35	90	EPICLASTIC, hangingwall sequence of oxidised brown, moderately hematite manganese veined and fracture coated, in part gossanous, sandy arkosic and interbedded fine silty material.	Hematite/manganese infilling of veins.	Moderately veined, @ 30° to ca. others @ 60-70° to ca.	fracture surfaces Hem/Manganese coated. Badly broken		190	15	195	1.0		<0.008
1	2	1	90	Ditto, massive unit, well sorted to weakly graded arkosic epiclastics with minor interbedded fine grained siltstones.	Ditto	very weakly veined.	Ditto.		100	5	105	1.0		<0.008
2	3	1	100	Ditto, weak bedding in otherwise well sorted textureless unit, bedding 37° to ca.	Ditto minor qtz/hem gossanous veining.	Ditto minor qtz/hem gossanous vein @ 25° ca. cut by later hem veins @ 70° to ca.	Core badly broken.		165	<5	130	<0.5		<0.008
3	4	1	100	Ditto, unit very massive, well sorted, textureless small <1cm lithic fragments caught up occaissionally. Still oxidised brown.	weak hematite vein infilling.	Very weak hematite veining at high angle to core axis.	Ditto.		170	<5	85	<0.5		<0.008 <0.008
4	5	1	100	Ditto, except some dark grey green unoxidised material present. Trace bedding @ 50° to c.a.	Ditto	Ditto	Ditto		140	<5	150	<0.5		<0.008
5	6	1	100	Ditto, with some ferruginous veining between (5.2-5.4m) after carbonate (siderite?) Fresher grey arkosic epiclastic cut by siderite/minor pyrite veining.	Pyrite as minor component of siderite veining.	Carb. veining @ 45° to ca 2-4mm in width from 5.4-5.9m.	Ditto		85	<5	135	<0.5		<0.008
6	7	1	100	Ditto but more oxidised, lithic fragments also visible <1cm diameter, very weak veining.	Minor hematite as vein infilling.	Very weak to NIL veining.	Ditto.		105	<5	115	<0.5		<0.008

14117

[redacted]DRI[redacted]LE [redacted]GP[redacted]11 [redacted]DE[redacted]: [redacted]10 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
7	8	1	100	EPICLASTIC, oxidised medium to coarse grained, sandy, massive, textureless arkose. Brown in colour minor fresh grey green sections.	Minor hematite vein infilling	Very weak veining	Well fractured, badly broken.		40	<5	120	1.0		<0.008
8	9	1	100	Ditto but predominantly grey green and fresh.	Ditto	Ditto	Moderately broken. Hem on fractures.		90	<5	105	1.0		<0.008
9	10	1	100	Ditto, except fine laminations near 10m giving bedding @ 10° to c.a.	Ditto	Ditto	Ditto.		45	<5	95	1.0		<0.008
10	11	1	100	Ditto, 50/50 fresh / oxidised.	Ditto	Minor veining @ 45° to ca ≈ 2-3 mm width.	Ditto.		190	<5	125	1.0		<0.008
11	12	1	100	Ditto, predominantly all oxidised, extremely fractured, badly broken, ferruginous, medium grained, massive textureless, minor veining, well sorted.	Minor qtz/hem vein infilling.	V. weak veining @ 30° to ca ≈ 1cm width, qtz/hem filled.	Extremely fractured. Badly broken.		595	<5	120	1.0		<0.008
12	13	1	100	Ditto, minor laminar bedding parallel to ca. (due to folding?) Unit medium grained.	Minor hematite and manganese as thin vein infilling.	very weak hematite infilled veinlets	Extremely fractured. Hem/Mn coatings on fractures.		200	<5	140	1.0		<0.008
13	14	1	100	Ditto, bedding unknown - being very massive unit, fine to medium grained very uniform.	Ditto.	Ditto.	Ditto.		245	<5	175	1.0		<0.008 <0.008
14	15	1	100	Ditto, weak bedding @ 10? to c.a.	Ditto.	Ditto.	Ditto.		280	<5	150	1.0		<0.008
15	16	1	100	Ditto, bedding 20° to ca. also becoming increasing coarser grained - arkosic, but overall still massive bedded.	Ditto.	Ditto.	Moderately fractured.		300	<5	110	<0.5		<0.008
16	17	1	100	Ditto to 16.65m. 16.65 - 17.00m finer grained, poorly laminated silty epiclastic, bedding 10° to ca.	Ditto.	Ditto.	Ditto.		350	<5	140	<0.5		1.220

148118

[redacted]DRIL[redacted]LE[redacted] G[redacted]0-[redacted]DEP[redacted]: [redacted]10 [redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
17	18	1	100	INTERBEDDED EPICLASTIC, interbedded fine silty epiclastic and medium to coarse grained arkosic epiclastics. Grey-brown in colour, extremely broken, weakly veined.	Hem / mn as vein infillings.	Weak veining at random orientation.	Extremely fractured, Hem/mn on fracture surfaces.		255	<5	150	<0.5		0.970
18	19	1	100	Ditto, trace carbonate infilling of open space (voids), bedding 30° to ca.	Ditto.	Ditto	Ditto.		210	<5	155	1.0		1.340
19	20	1	100	Ditto, carbonate veined - altered? coarse to medium grained arkosic epiclastic, fresher grey / green coloured with weathered carbonate veining prominent.	hematite/carb. infilling of veins.	Weak to mod veining 1-3mm wide hem/carb. veins prominent @ 70° to ca. Veining offset by microfaulting	Strong fracturing. Mod to strongly broken.		675	<5	85	1.0		0.015
20	21	1	100	Ditto, less carbonate veining	hematite infilling of veins.	veining weak overall, hem. infilled veins @ 40-45° to ca 1-2mm in width.	Ditto.		575	<5	65	<0.5		<0.008
21	22	1	100	Ditto, except lithologies fine to med. grained, possible bedding sub parallel to c.a.	Ditto.	Very weak veining	Ditto.		235	<5	90	1.0		<0.008
22	23	1	100	Ditto, 50/50 fresh/ oxidised, weak bedding laminations 20° to c.a.	Ditto.	Ditto.	Moderately fractured.		115	<5	75	<0.5		<0.008
23	24	1	100	Ditto, predominantly fresh grey green interbedded fine silty epiclastic and fine to medium grained arkosic epiclastics, bedding @ 15° to ca.	Hematite/carb. vein infilling.	Weak veining 1-2mm width, some @ 60-70° others @ 5-15° to ca	Ditto.		240	<5	55	1.0		<0.008
24	25	1	100	Ditto, some sections more coarser grained, sedimentary structures graded bedding and ripple marks indicate right way up. Minor ferrug. zone @ 24 to 24.15 m, bedding 20° to c.a.	Weak hematite infilling of veins,	Very weak veining.	Ditto. Fracture surfaces hematite coated.		110	<5	60	1.0		<0.008

143119

[redacted]DRI[redacted]PLE[redacted] G[redacted]O-[redacted]DE[redacted]: [redacted]10[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
25 -	26	1	100	EPICLASTIC, massive to weakly bedded fine to coarse grained grey green arkosic epiclastic.	hematite vein infilling.	very weak veining, hem filled.	Moderately fractured, surfaces hem coated.		50	<5	45	1.0		<0.008
26 -	27	1	100	Ditto, slightly finer grained.	Ditto.	Ditto	Ditto		40	<5	50	1.0		<0.008
27 -	28	1	100	Ditto, slightly more coarser grained, from 27.5 to 28.0 more oxidised.	Minor carb/hem. infilling of veins.	Weak hematite carbonate veins @ 30° to c.a.	Moderately fractured and strongly broken.		185	< 5	55	<0.5		<0.008
28 -	29	1	100	Ditto, totally oxidised brown, massive to very weakly bedded, ≃ 10° to ca, medium to coarse grained arkosic epiclastic.	Minor hematite vein infilling	Very weak hem veining.	Ditto. Fracture surfaces hem. coated.		110	<5	100	1.0		<0.008
29 -	30.10	1.1	100	Ditto, 50/50 fresh to oxidised coarse to medium grained arkosic epiclastic. Minor qtz/hem (py) vein at 30.00 metres.	Tr py/minor hem. as vein filling.	Weak to mod veining (hem) perpendicular to bedding, some offset by micro-faulting or bedding slip. Qtz/hem/py vein @ 25° to ca is 2-3cm width.	Ditto.		50	<5	80	1.0		<0.008 <0.008
E.O.H.				END OF HOLE.										

143120

[redacted] DRILLHOLE [redacted] GP [redacted] 30-12 [redacted] DEPTH [redacted] 30.10 m. [redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.6	0.6	0	Talus Material - Not cored.										
0.6	1	0.4	90	EPICLASTIC, highly fractured, oxidised moderately to strongly veined, inter-bedded fine grained cherty? epiclastic and medium grained massive arkosic epiclastic. (Hangingwall Seq)	Hematite vein infilling.	Mod to strong hem. veining in cherty and brittle unit. Most veins 55-65 to ca.	Highly fractured and strongly broken.		190	<5	125	1.0		<0.008
1	2	1	90	Ditto, less fine grained and veined and fractured material.	Ditto.	Weak to mod. veining.	Ditto.		100	<5	130	1.0		<0.008
2	3	1	100	Ditto, weakly bedded medium to coarse grained, oxidised arkosic epiclastic, bedding @ 70° to ca.	Ditto.	Ditto.	Ditto.		85	<5	130	1.0		<0.008
3	4	1	95	Ditto, interbedded fine grained siltstone and medium grained arkosic epiclastic.	Ditto	Weak to mod. hem filled veining @ 65° and 40° to ca.	Ditto.		95	<5	80	<0.5		<0.008
4	5	1	100	Ditto, bedding 46° to c.a.	Ditto	Very weak veining	Ditto.		95	<5	120	<0.5		<0.008
5	6	1	100	Ditto, 50/50 oxidised to fresh material, fine to medium grained epiclastic weakly to poorly laminar bedded. Bedding 40° to ca. Some sand diapirs perpendicular to bedding.	Ditto	Very weak veining, one @ 52° to ca ≈ 2-3mm width hematik filled.	Moderately broken.		25	<5	90	<0.5		<0.008
6	7	1	100	INTERBEDDED EPICLASTIC, thickly interbedded, lithic, coarse to med. grained arkose and sandy siltstones oxidised brown or minor fresh grey green coloured. Weak veining. Bedding 50° to ca.	Ditto.	Weak veining @ 25° ca perpend to bedding, other veining bedding parallel.	Ditto, fracture surfaces both hem/mn coated.		45	<5	105	<0.5		<0.008
7	8	1	100	Ditto.	Ditto.	Ditto	Mod to strongly broken.		65	<5	100	<0.5		<0.008
8	9	1	100	Ditto. bedding 45° to ca.	Ditto.	Ditto, minor, ferrug breccia zone.	Ditto.		135	<5	185	<0.5		<0.008
9	10	1	100	Ditto.	Ditto	Ditto.	Ditto.		80	<5	185	<0.5		<0.008 <0.008

14312

[redacted] DRIL[redacted] LE [redacted] G[redacted] 50-12 DEP[redacted]: 50.10[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
10	11	1	100	EPICLASTIC, bedding 80° to c.a. core badly broken and strongly fractured, moderately veined, some carbonate infilled.	Minor carbonate/ hematite vein infilling.	Weak to mod coarse grained carbonate/hem veining @ 45° ca. and 25° ca.	Core strongly fractured.		140	<5	145	<0.5		<0.008
11	12	1	100	INTERBEDDED EPICLASTIC, light grey, rhythmically bedded siltstone and fine to medium grained arkose. 50/50 oxidised to fresh material. Bedding 52° to ca, sandy units partly replaced by pervasive hematite	Very minor hem. as fracture surface coatings and vein infilling	Very weak veining	Core mod broken.		150	5	130	<0.5		<0.008
12	13	1	100	Ditto, some microfaulting, bedding 50° to ca.	Ditto.	Fine filigree veinlets sub perpend to bedding hem filled.	Ditto.		25	10	110	1.0		<0.008
13	14	1	100	Ditto, bedding ≈ 45° to ca, major sheared breccia zone from 13.55 to 13.95metres.	Carbonate/hem/ minor pyrite in breccia zone.	Major sheared wkly pyritic / hem breccia shearing @ 30° to ca, Hematite filling pressure shadow areas.	Ditto.		55	10	160	1.0		<0.008
14	15	1	100	Ditto, laminar bedded, black siltstone and dark grey arkosic med. to coarse grained epiclastic. strongly microfaulted, strong fractured. Bedding 50° to ca.	weak hem/carb minor to trace py as vein infilling.	weak to mod. low angle carb/ hem veining perpend. to ca. Minor py replacing or dissem. within coarse grey qtz rich sandy epiclast near 15m zone.	strongly fractured and hem / py coated fracture surfaces.		75	25	160	<0.5		<0.008
15	16	1	100	Ditto, abundant pyrite replacing? sand epiclastic unit. Bedding @ 55° to ca. obvious microfaulting, mod. veined.	Pyrite 1–2% strong hematite vein infilling.	Py veins @ 25° to ca & 55° ca sub perpend. to bedding. Other veining random.	Moderate to strongly fractured.		90	50	160	1.0		<0.008

143122

[redacted]DRI[redacted]LE[redacted] G[redacted]O-[redacted]DE[redacted]: [redacted]50. 10[redacted]

COORDINATES: DECLINATION :

INTERVAL From	INTERVAL To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
16	17	1	100	EPICLASTIC, arkosic with minor siltstone to 16.10. 16.10 - 16.20 Major contact zone heavily brecciated. 16.20 - 17.00 yellow orange coarse grained quartz/feldspar/chlorite? well sorted? arkose, minor lithic fragments.	Tr pyrite minor hematite.	very weak veining.	Core mod to strongly broken and fractured.		60	10	200	1.0		<0.008
17	18	1	100	BLACK SHALE / SILTSTONE, highly contorted black shale / siltstone, dark grey fine grained epiclastic, moderately veined. Brecciated zone from 17.00 - 17.10 (contact zone)	Tr py, mod. hematite vein filling.	Mod. veining Some sub // (20-30°) to ca. others at random orientation. Py vein @ 40° to ca.	Core highly fractured.		85	15	115	1.0		<0.008
18	19	1	100	Ditto, minor quartz rich sections, slumped and contorted, moderately pyrite/hematite veined.	Py 1-3% as stringer style veins @ low angle or sub parallel to ca.	Pyrite veins rimmed with hematite. Other veins @ 60-70° to ca.	Moderately fractured.		160	25	70	1.0		<0.008 <0.008
19	20	1	100	Ditto	Ditto	Ditto	Ditto		170	25	135	1.0		<0.008
20	21	1	100	Ditto to 20.25m. 20.25 - 21.00m ALTERED EPICLASTIC/ VOLCANICLASTIC, (Host) oxidised cream/orange/grey coarse grained qtz rich, lithic. Rounded and sub angular fragments set in quartz/ sericite/carbonate matrix, strongly hematite/carbonate/qtz veined.	Tr pyrite Tr py to minor. Abundant hematite/ carbonate/quartz as vein filling.	Ditto Strong veining overall, most hem/mn infilled others leached. Veins @ 50-60°, 70-80° ca (late stage) some sub // to ca. Vary widths from 0.2 to 3mm. 1 vein/cm.	Ditto. Ditto.		125	30	260	1.0		1.085
21	22	1	100	Ditto, less oxidised grey to dark grey, coarse grained lithic qtz rich, cut by mod to strong veining. Minor py veining. Weak shear orientation.	Ditto.	Ditto	Ditto.		70	20	245	1.0		0.030

[redacted]DRIL[redacted]LE[redacted] GE[redacted]D-I[redacted]DEP[redacted]: [redacted]0 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
22	23	1	100	ALTERED EPICLASTIC / VOLCANICLASTIC, light grey, strongly sheared, groundmass carbonate/sericite altered lithic, coarse grained, quartz rich. Fiamme up to 2-3 cm diameter not squashed but rounded. Core strongly fractured.	Tr py, moderate hematite generally as vein infilling.	Moderate veining, strongly fractured. Veining 40-45° ca a few sub // to c.a.	Strongly fractured with surfaces hem coated.		175	25	230	1.0		<0.008
23	24	1	100	Ditto, strongly silica/carbonate/chlorite/hematite altered, schistose qtz rich lithic epiclastic/volcaniclastic? Weakly pyritic but moderately to strongly veined.	Py 0.5-1% as fine grained vein infilling with hematite haloes.	Mod to strong veined, 55-70° to ca, Minor sub// veining to ca, most <3mm width hematite filled.	Ditto.		90	15	185	1.0		<0.008
24	25	1	100	Ditto, brown and grey green, qtz rich and coarse grained. Strongly chlorite veined, minor pyrite.	Minor py veining most chl/hem infilled.	Ditto except veins hem/chl or chlorite filled.	Ditto		70	30	225	1.0		<0.008
25	26	1	100	Ditto.	Ditto	Ditto.	Ditto.		70	<5	210	1.0		<0.008 <0.008
26	27	1	100	Ditto, 50/50 oxidised to fresh strong carbonate alteration of matrix matrix intensely microfractured, mod to strong qtz/carb/hem veining Minor py.	Minor py as fine grained patches with veins. Veins generally qtz/carb/hem infilled.	Mod to strong veining 55° to ca c4mm width, others <1mm same orientation. Some sub // to ca others @ 30° to ca.	Moderately fractured.		180	10	155	1.0		0.030
27	28	1	100	Ditto, except more schistose, Minor pink rhodocrosite, veining with siderite and quartz. Pervasive hematitization als haloes around veins.	Py <1% otherwise ditto	Ditto, lot of carb. infilled veining, remainder with hem some with py.	Ditto.		30	<5	85	1.0		0.035

[redacted]DRI[redacted]LE[redacted] G[redacted]0-[redacted]DE[redacted]: [redacted]10[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
28 -	29	1	100	ALTERED EPICLASTIC / VOLCANICLASTIC, coarse grained, qtz rich, lithic, strongly siliceous / carbonate altered. Less schistose, strongly hematite minor pyrite veined. Minor dolomitization? Strong microfracturing and carbonate alteration of matrix.	Py <1%. Hem/qtz infilling prominent.	Mod to strong quartz/hem, hem/py veining veins ≤ 4MM width @ 30°, 40°, 50°, 80° to ca, some are conjugate to each other. Late stage at 80° to ca fine, carb. filled. 4-5 veins/cm.	Moderately fractured.		40	<5	65	<0.5		0.025
29 -	30.10	1.10	100	Ditto, extremely quartz/carbonate altered pyritic quartz rich, strongly carbonate veined. Stockworked.	Py 2-3% as fine grained aggregates and wispy veinlets	Unit strongly stockworked with fine carb. and pyrite veinlets. Also cut by larger hem/py veins most sub // to ca.	Weakly fractured.		55	10	145	1.0		0.050
E.O.H.				END OF HOLE.										

[redacted]DRI[redacted]LE[redacted] GP[redacted]-13[redacted] DE[redacted]: [redacted]60 [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	0.2	0.2	0	Talus material, not cored.										
0.2	1	0.8	100	ALTERED EPICLASTIC, strongly oxidised, highly weathered, siliceous/sericitic/carbonate altered, weakly pyritic, moderately hematitic veined quartz rich, lithic. Matrix intensely microfractured and carbonate/sericite altered.	Py to 1% as fine grained aggregates Hem and Mn vein infilling.	Mod to strongly veined with stockworked hem/qtz/py zones	Strongly fractured, Hem/Mn coated		100	10	130	1.0		0.270
1	2	1	100	Ditto, 50/50 oxidised/unoxidised coarse grained, massive, well sorted, possible dolomitization. Intense microfracturing.	Minor py, mod hem/carb infilling of veins.	Mod veined 50-60° to ca 3-4 mm wide some sub // to ca.	Ditto.		90	5	125	1.0		0.070
2	3	1	100	Ditto, except moderately chloritic imparting hematitic brown/orange colouration. Core intensely veined and fractured. Unit lithic? Intensely altered (weathered) making identification difficult.	Nil pyrite strongly hem/Mn vein infilling.	Very strong fine veining and stockworking hem/mn infilled at 60° to ca. and conjugate set at 50-55° to the first. Up to 10 veins/cm locally.	Ditto.		160	<5	145	3.0		0.885
3	4	1	100	Ditto, less weathered, definite lithic fragments and strongly veined with hematite.	Ditto.	Ditto.	Ditto.		90	<5	155	1.0		0.200
4	5	1	100	Ditto	Ditto	Ditto	Ditto.		30	<5	80	1.0		0.370
5	6	1	100	Ditto, weakly pyrite veined but strongly hematite veined (stockworked) Minor fresh sections of core 90% oxidised. Minor hem breccia zones up to 5 cm width.	Minor py as fine grained vein infilling.	Strongly stock-worked hem (py) infilled. Conjugate pairs @ 50-60° to ca others @ 70-80° and few at 30° to ca. Some infilled with qtz/hem, others leached/porous	Ditto.		30	<5	80	1.0		0.320 0.340

[redacted]DRI[redacted]PLE[redacted] GD[redacted]90-[redacted]2[redacted] DE[redacted]: [redacted]29.60[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
6	7	1	100	ALTERED EPICLASTIC, weakly pyritic sericitic, siliceous and carbonate altered, stockworked, with matrix intensely microfractured.	Minor py as fine grained vein infilling.	Strongly stock-worked as for 5-6m.	Mod to strongly fractured.		35	<5	110	<0.5		0.495
7	8	1	100	Ditto, predominantly fresh, wkly chloritic, ghosty textured, qtz rich lithic epiclastic. Moderately veined, unit mottled grey/green.	Pyrite to 0.5% Hem vein infilling and carbonate vein infilling.	Mod hem/carb/ pyrite veins to 1-2mm @ 40-65° to ca with 1-2 veins/5cm interval.	Ditto fracture faces hem. coated.		25	10	105	1.0		0.210
8	9	1	100	Ditto, except stronger veining, weak dolomitization and stronger pyrite, chlorite veining prominent.	Pyrite to 1% as fine to med grained sulphide infilling of veins.	Strong chl/hem/ py/carb veining in part stock-worked and occaissionally gossanous. 1-2 veins/cm, most <2mm width. @ 40-50 to ca some @ 10-20° ca.	strongly fractured.		25	15	160	1.0		0.030
9	10	1	100	Ditto, predominantly oxidised, badly broken, chloritic, siliceous, in part brecciated, mod dolomitized, lithic.	qtz/chl/hem infilling of veins and breccia zones. Some hem after pyrite.	Ditto except some breccia zones. Oriented 40-50° ca and some @ 60-70° to ca.	Ditto.		50	10	430	<0.5		<0.008
10	11	1	100	Ditto, but predominantly fresh, unoxidised, coarse lithic ghosted (welded?) tuff / epiclastic. Qtz grains rounded, moderate dolomitization or pale sphalerite? Trace pyrite.	Ditto + Tr py. Mod. dolomite (sphalerite)?	Ditto.	Ditto.		125	<5	130	<0.5		<0.008
11	12	1	100	Ditto, fresh, strongly siliceous, chloritic carbonitic altered weakly qtz rich, mod lithic. Matrix ghosted, micro-fractured and carbonate infilled.	Minor py, fine grained vein filling Minor aggregates. lot of coarsely crystalline siderit	Mod veined carb/ hem/py/chl. 65-70° to ca @ 1 vein/cm Most < 3 mm in width.	Mod to strongly fractured.		150	<5	140	1.0		0.040

14827

[redacted]DRI[redacted]DLE[redacted] ([redacted]10-[redacted] DE[redacted]: [redacted]60[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
12	13	1	95	Ditto to 12.60 m except strongly ddomitized, matrix intensely micro fractured and infilled with carb/dol.	Minor py.	Mod veined as for 11-12. abundant rhodocrosite.	Moderately fractured.		65	<5	130	2.0		0.240
				12.60 - 13.00 oxidised, brecciated, strongly veined hematitic version of above. Poorer recoveries in intensely fractured zone.	Matrix of veins and breccia predominantly hematitic	Random stock-working and breccia infilling by hematite.	Intensely fractured zone.							0.270
13	14	1	100	Ditto to 13.55 m.	Ditto	Ditto	Ditto.		130	<5	270	1.0		0.020
				13.55 - 14.00 m Dark grey, qtz rich, chloritic / carbonitic altered, fragmental epiclastic with large clasts of fine grained dark grey silty material. Moderate ddomitization of matrix.	Trace pyrite.	Strong chlorite/ carbonate veining @ 30° - 40° to c.a.	Moderately fractured.							
14	15	1	100	CHAOTIC SLUMP BRECCIA, some clasts sub rounded, others quite angular, some fragments very sericitic, others chloritic, some pyrite clasts or py volcanic clasts. Unit strongly micro-fractured and carbonate infilled.	Minor py.	Hem/carb/ minor py and chl/carb veins @ 80° to ca and 50-55° to ca Minor slicken-sliding.	Ditto.		465	15	170	1.0		0.625
15	16	1	100	Ditto, dark grey green, chloritic, carbonitic and also siliceous. Slightly less fragmental breccia appearance.	Py to 1-1½% Tr Apy? Pyrite aggregates and vein infilling	Intensely micro-fractured and carb/minor chl infilled. Py veining common in matrix.	Ditto.		45	30	260	1.0		0.035
16	17	1	100	Ditto, lithic, fine to medium grained grained epiclastic.	Pyrite to 1% as fine grained w/spy veinlets or fine aggregates.	Ditto, late stage tension gashes @ 60-70° to ca other carbonate veins @ 10-30° ca.	Weakly fractured.		50	<5	115	<0.5		0.080
17	18	1	100	Ditto,	Pyrite to 1% Tr Apy, Cpy.	Ditto. major low angle carb/chl vein / vein breccia 0.6cm - 1cm wide @ 15° ca.	Ditto.		70	15	220	1.0		0.030

148128

[redacted]DRI[redacted]PLE[redacted] G[redacted]D - I[redacted]DE[redacted]: [redacted]50[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
18	19	1	100	ALTERED EPICLASTIC, dark grey, chloritic / carbonitic / siliceous altered, qtz phyric, lithic fine to medium grained. 18.10 - 18.45 strongly broken, fractured and moderately veined, mod lithic (blk siltstone clasts).	Pyrite to 1% Tr Apy, Cpy.	Strongly carb/chl/py veining at random orientation. Most are 1-2mm width.	Weak to moderate fracturing other than strongly fractured zone @ 18.10 to 18.45m.		165	10	155	<0.5		0.020
19	20	1	100	Ditto, predominantly lighter grey, slumpy mass flow BRECCIA - SLUMPED EPICLASTIC. Fiamme? present, unit intensely microfractured and carbonate infilled. Unit weak to moderately chlorite altered and weakly veined.	Py to 0.5% Tr Cpy.	Very weak veining, intense microfracturing of matrix.	Ditto.		50	<5	80	<0.5		<0.008
20	21	1	100	Ditto to 20.30 m. 20.30 - 21.00 m massive dark grey, medium grained moderately quartz rich, strongly microfractured, chloritic and siliceous ALTERED EPICLASTIC.	Py ≤ 1% Tr Cpy.	Weak to mod veining @ 45°-55° to ca pred. carb/pyrite and py/hem @ 80° ca.	Weak fracturing.		95	<5	170	<0.5		0.050
21	22	1	100	Ditto, except poorly microfractured, and carbonate infilled, strongly chloritic and chlorite veined.	Tr py	Very weak veining, fine chlorite (py) @ 60-70° to ca.	Moderately fractured.		30	<5	175	<0.5		0.045
22	23	1	95	Ditto, more fine grained wispy pyrite, highly fractured ground - poorer recoveries.	Pyrite to 0.5% as fine grained wispy veinlets.	Mod veining. One large qtz/chl/hem vein sub // ca. Other chl, py/hem, & chl/hem at random orientat.	Moderately to strongly fractured.		80	10	235	<0.5		0.050
23	24	1	95	Ditto to 23.5 m. 23.50 - 24.00 m LITHIC ALTERED EPICLASTIC, small fiamme, qtz rich, siliceous, massive, fragments have ghosted boundaries, weak dolomitization.	Py 1%, Tr cpy, Apy. Ditto.	Veining varies from weak to mod. Mainly carb/py Minor cpy/apy and also fibrous chlorite. gash veins, others @ 40° ca and 70° some sub // ca.	Strongly fractured. Weakly fractured.		195	25	210	<0.5		0.070

[redacted]DRI[redacted]LE[redacted] G[redacted]IO-[redacted]DE[redacted]: [redacted]60[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
24	25	1	100	LITHIC ALTERED EPICLASTIC, chloritic siliceous, small fiamme rich (ghosted boundaries) weakly dolomitized.	Pyrite ≃ 1% Tr cpy	Ditto, most chlorite veins @ low angle ca (≃ 20°) Some contain cpy. Large calcite vein @ 80° ca.	Weakly fractured.		160	70	170	<0.5		<0.008
25	26	1	100	Ditto, lithic component finer grained, unit carbonate and chlorite veined, in part microbrecciated matrix carbonate healed, minor microfaulting	Ditto minor Apy	Unit strongly chl/py/carb and carb/rhodocrosite/py veined. Major orientat. 35-45° to ca.	Ditto.		100	25	165	<0.5		<0.008
26	27	1	100	Ditto, contains both large and small subrounded black siltstone fragments. Matrix cut by intense microfractures carbonate healed. Minor pyrite as wispy veinlets.	Ditto NIL cpy or apy.	Mod veining minor py/chl/carb veins @ 28° to ca carb/chlorite @ 35° ca.	Ditto.		85	35	125	<0.5		<0.008
27	28	1	100	Host rock totally obliterated by intense infusion of quartz/carb./chlorite plus associated sulphides. Possible pale brown to honey brown sphalerite, arsenopyrite as pinkish grey sulphide. Chalcopyrite also present as coarse clots in veins. Minor black shale clasts.	Py 1%, Apy 1%? Minor cpy, Trace sphalerite.?	Intensely gash and tension veined. qtz/cal/sid/rhodocros/chl veined	Weakly to mod fractured.		385	120	145	1.0		0.420 0.395
28	29	1	100	Ditto, but less intensely altered and veined, qtz rich (rounded grains) lithic epiclastic. Fine grained sulphide assoc with black shale fragment sph? or apy	Py 1-1½% Apy 1% Minor cpy. Tr spl Tr gn.	Ditto.	Ditto.		105	430	1700	3.0		0.970
29	30	1	100	Ditto, grey green, sericitic and siliceous qtz rich lithic epiclastic. Intense microfracturing of matrix, carb altered. (both siderite and rhodocrosite)	Py <1% Tr Apy Tr cpy, Tr spl, Tr gn	Major py ± base metal vein @ 75° to ca 2-3mm width are parallel to blk shale parting. Weak to mod cal/sid/py veining @ 60-70 ca. 1-3mm width @ 1 vein / 5 cm.	Ditto.		40	30	425	<0.5		0.010
30	30.60	0.60	100	Ditto, fragmental, fiamme coarsely crystalline sericitic/chloritic volcanic. Some black shale clasts as well.	Tr to minor py. Tr apy.		Ditto							
E.O.H.				END OF HOLE.										

[redacted]RI[redacted]LE[redacted] G[redacted]-[redacted] DE[redacted]: [redacted]E. 30[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	3.5	3.5	0	0-3 Log Pad to ground level. 3-3.5 Talus Material - not cored.										
3.5	4	0.5	90	ALTERED EPICLASTIC, strongly oxidised, beige-orange-cream coloured, ferruginous, strongly veined and weakly brecciated, siliceous and sericitic.	Hem vein infilling.	Mod veined unit qtz/hem infilled @ 60° to ca. Major breccia @ 40° to ca.	Core strongly fractured.		55	<5	70	1.0		0.095
4	5	1	100	Ditto, qtz rich, coarse grained, well sorted, pervasively hematitized, stockwork veined, with matrix intensely microfractured (clay/carb infilled).	Minor py within major qtz/hem veins. Tr Cpy assoc with pyrite.	Mod to strg qtz hem veined minor Mn/py tr cpy. as fine wispy veinlets within hematite veins @ 40° to ca. Major vein sub // to ca.. Late stage veins @ 80° to ca.	Moderate to strongly fractured.		130	<5	120	3.0		0.265
5	6	1	100	Ditto, minor lithic fragments.	Nil sulphide. Hem vein infilling Minor Mn.	As above without py, some sections with intense stockworking.	Ditto.		155	10	110	2.0		0.595
6	7	1	100	STOCKWORKED ZONE, intensely veined, ferruginous from 6-6.5m highly fractured, broken, hem/qtz infilled, altered EPICLASTIC. 6.5-7.0 m. fresh to oxidised (35/65) qtz rich intensely microfractured clay carbonate altered, pervasive hematite altered, Minor chlorite veined and quartz/hem veined.	Vein infilling hem/qtz/carb/chl.	Major zone of stockworking, very ferruginous from 6-6.5 Mod to strong hem/chl/carb/clay veining from 6.5-7m. Superimposed on intense microveining of matrix most of veining @ 60° to ca.	Extremely fractured through broken zone from 6-6.5m. Mod broken and fractured otherwise.		145	<5	150	1.0		0.300

143131

[redacted]DRI[redacted]PLE[redacted] GI[redacted]D - I[redacted] DE[redacted]: [redacted]2. 3[redacted]

COORDINATES: DECLINATION : 148132 Page: 2/5

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
7	8	1	100	ALTERED EPICLASTIC, intense matrix microfracturing and clay carbonate alteration, some pervasive hematite alteration. Large qtz grains to 5mm diam, sections chlorite altered as well as chlorite veined.	Minor py. Abundant hem infilling of veins. (oxidised py? and chlorite?)	Unit strongly veined with majority @ 50-70° to ca. Some sections stock-worked. Veins @ 1/cm varying in width from <0.5mm to 1cm.	Mod fractured		100	<5	120	2.0		0.285
8	9	1	100	Ditto, minor pyrite veining, some Manganese dendrites through oxidised coarse grained siliceous zone.	Ditto.	Ditto, some brecciation over narrow zones.	Ditto.		60	5	100	1.0		0.165
9	10	1	100	Ditto, possible rhodocrosite (pinkish alteration mineralogy) minor lithic fragments - black shale.	Ditto except Nil py.	Ditto except Many veins @ 40° to ca then others cross cutting @ 80° ca Strongly veined overall 1-2 veins per cm varying from 0.5 to 2-3 mm.	Ditto.		35	<5	135	1.0		1.190
10	11	1	100	ALTERED EPICLASTIC/VOLCANIC, predominantly cream coloured, weakly oxidised, lithic, quartz rich, fine to medium grained. Quartz predominantly angular (crystalline) not rounded. Matrix significantly clay/carbonate altered snow flake textured. Mod to strongly hem/qtz veined, sericitic and weakly chloritic.	qtz/hem minor hem/carbonate vein infilling. Hematite rimming veins.	Mod to strong hematite/qtz veining varying to stockwork-ing.	Ditto.		90	5	120	2.0		0.260
11	12	1	95	Ditto except unit is quite lithic (siltstone and vitric tuff frags - rounded to sub angular) and quartz rich (rounded - coarse grained).	Ditto.	Ditto. not as stockworked. Veining @ 30-40° to ca others @ 10-20° to ca.	Mod to strongly fractured.		135	<5	125	1.0		0.060
12	13	1	100	Ditto with some chloritic patches of alteration.	Ditto.	Ditto	Ditto.		105	15	125	3.0		0.20
13	14	1	95	Ditto, chlorite increasing	Tr py, Ditto.	Ditto	Ditto.		100	5	120	2.0		1.315

[redacted]DRI[redacted]LE[redacted] ([redacted]90-[redacted] DE[redacted]: [redacted]30[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
14	- 15	1	95	ALTERED LITHIC EPICLASTIC, more strongly leached, oxidised, hematitic strongly veined, broken, siliceous granular quartz rich, lithic, fine to medium grained.	Nil sulphide Strong hem/qtz vein infilling	As for 14-15 some brecciation, some narrow zones of stockwork.	Extensively fractured Very broken ground.		50	<5	165	2.0		0.460 0.490
15	- 16	1	95	Ditto, minor rhodocrosite, strongly ferruginois interval, leaching of veined material, badly fractured grand.	Ditto.	Ditto.	Ditto.		90	<5	160	2.0		0.415
16	- 17	1	95	ALTERED EPICLASTIC, extremely fractured, granular textured, coarse grained, qtz/albite? tuff or EPICLASTIC. Strongly siliceous and weakly sericitic, strongly ferruginous, mod to strongly veined, veins extensively leached.	Ditto	Ditto	Ditto.		45	5	65	1.0		<0.008
17	- 18	1	80	ALTERED TUFF? pinkish orange granular textured qtz/albite? weakly sericitic, strongly siliceous TUFF. Minor pervasive Manganese deudrites, core extensively fractured.	Very weak hem and qtz/hem vein infilling.	Very weak veining, Minor pervasive Manganese	Ditto. Manganese coatings on fracture surfaces.		35	10	50	1.0		<0.008
18	- 19	1	70	ALTERED VITRIC? TUFF, more abundant manganese staining, fine to coarse clots of apple green sericitic alteration? fine grained siliceous matrix.	Ditto	Ditto	Ditto.		35	5	90	1.0		<0.008
19	- 20	1	80	Ditto to 19.70m. 19.70 - 20.00m Major sheared and brecciated zone, poor recoveries.	Ditto.	Ditto	Ditto.		10	<5	65	1.0		<0.008
20	- 21	1	65	SHEAR ZONE, major brecciated, mod hem/clay matrixed shear. Angular host rock and qtz fragments prominent. Mod hematite veining - NO qtz veining. Shear foliation @ 35° to ca some veining parallel to this.	Modevak hem vein infilling.	Mod hem. veining at random orientations. Some sub// to ca others parallel to foliation (35° to ca)	Ditto.		35	10	60	1.0		<0.008

[redacted]DRI[redacted]PLE[redacted] G[redacted]O-[redacted]DE[redacted]: [redacted]BO[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
21	22	1	90	ALTERED PORPHYRITIC TUFF? pinkish beige, fine grained, qtz/albite?/sericite porphyritic – qtz crystals, angular, up to 5mm length, tuff. Strongly altered, very siliceous, strongly fractured and broken. Some Mn associated with hematitic sections.	Tr py in tuff matrix. Minor py associated with hem. veining.	Weak to mod hem/py/qtz veining. Sub // to ca others 60-65° to ca. Some gossanous	Strongly fractured.		60	10	85	1.0		<0.008
22	23	1	100	Ditto, less broken, abundant patches of siderite alteration, core strongly and randomly fractured. 22.4-22.7m fractures pyrite healed. Weak qtz (tr py) veining. Matrix intensely microfractured and altered.	22.4-22.7 Py 4-5% otherwise tr to Minor py. Minor clots or patches at fracture junctions.	Weak qtz veining @ 52° to ca Hem vein ≈ 4mm width @ 70° to ca.	Mod to strong fracturing. Mod broken core.		20	<5	70	1.0		<0.008
23	24	1	100	Ditto with pyritic zone.	Tr to Minor py	Ditto, Major hem vein @ 30° to ca.	Ditto		30	5	50	1.0		<0.008
24	25	1	100	Ditto.	Ditto	Ditto, minor thin <1mm qtz veins + fine clay/carb filled veins.	Ditto		65	5	40	1.0		<0.008
25	26	1	100	Ditto, 25.00 – 25.50m. tr to Minor py. 25.50 – 26.00 m pyrite 2-3%, unit becoming more beige coloured than pink, fine grained matrix.	Tr to Minor py Py 2-3% 25.5-26.0 metres.	Ditto, Some py veins @ 70° to ca, clay/carb veins @ 75° to ca other py veins @ 30° Remainder random	Ditto		85	<5	35	2.0		0.030
26	27	1	100	Ditto, pyrite averages 3-4% as fine grained veinlets, discontinuous lamellae and aggregates. Some as fracture infilling. Some of large qtz grains are well rounded.	Py 3-4% as fine grained vein lamellae and aggregates.	Mod py, some py/sericite veining @ either 30 and 70° to ca up to 1.5 mm width. Wk hem.	Moderately fractured.		105	<5	45	1.0		<0.008

[redacted]DRI[redacted]PLE[redacted] [redacted]90[redacted]DE[redacted]: [redacted]30[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
27	28	1	100	ALTERED TUFF, beige-pink, weakly to moderately albitized ? qtz porphyritic fine grained weakly sheared (granular textured) qtz/albite/sericite/carb tuff. Unit moderately pyritic tr cpy.	Py 4-5% as fine fracture infillings and veinlet infilling. Tr cpy.	Mod qtz/carb ± py tr cpy veining mod to strong qtz/pyrite veinletting	Mod to strongly fractured.		140	5	65	2.0		<0.008
28	29	1	100	Ditto except part of pyritic section hematite altered / rimmed.	Py ± 5-7½ % as for previous interval Tr cpy	Py veining and veinletting have random orientation to ca. Some py/ser subll to ca.	Ditto.		445	15	920	3.0		<0.008
29	30	1	100	Ditto, less sheared, (no veal granular texture) pink to brown coloured, fine grained massive.	Py 1-2% Tr cpy	Sericite ± py fracture infilling and minor py veinletting and veining. Minor qtz/carb ± tr cpy late stage qtz/carb veining is cross cutting.	Core weakly fractured.		115	5	350	2.0		<0.008
30	31	1	100	Ditto	Ditto,	Ditto	Core moderately broken.		100	5	1850	1.0		<0.008
31	32.3	1.3	100	Ditto	Ditto	Ditto	Ditto.		25	10	65	1.0		<0.008
E.O.H.				END OF HOLE.										

14813

[redacted]DRI[redacted]LE[redacted] G[redacted]O-[redacted]DEP[redacted]: [redacted]85[redacted]tre[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0 -	3.5	3.5	0	Scree Material - No core.										
3.5 -	4	0.5	90	EPICLASTIC (Hanging Wall Unit) beige, coarse grained, well sorted, qtz rich, lithic (grey green siltstone clasts) arkosic EPICLASTIC. Weakly pyritic, partly hematized, mod veined.	Minor to 0.5% py. as medium grained disseminations and discontinuous stringers.	Mod veining with minor to mod. replacement or pervasive alteration of vein walls with abundant hem.	Mod to strongly broken.		35	30	170	1.0		<0.008
4 -	5	1	90	Ditto to 4.80 with mod to strong hematite veining. 4.8 - 5.0m finely bedded extremely fractured / broken shalely siltstone, grey white interbeds. Bedding 80° ca.	Tr py mod hem.	Mod to strong hem veining some @ 25° to ca, some hem as leisgang rings due to weathering.	Extremely fractured in part from 4.5 to 5.0m.		35	85	510	1.0		<0.008
5 -	6	1	100	INTERBEDDED EPICLASTICS, interbedded black shale / grey siltstone and minor beige, quartz rich, coarse grained well sorted and rounded arkosic EPICLASTICS. Brecciated in part, moderately hematite veined.	Moderate hematite Manganese minor carbonate vein infilling.	Moderate veining @ 20-30 to ca, others @ 45° to ca Some stringer veining giving stock-working appearance.	Moderately fractured.		55	140	635	1.0		0.010
6 -	7	1	100	LITHIC EPICLASTIC, massive to wkly interbedded beige fiamme rich (olive green wispy frags parallel to bedding) quartz rich (rounded, well sorted) lithic weakly pyritic EPICLASTIC.	Minor to 0.5% Py as fine to med. grained disseminations.	Tr to weak qtz/carb veining @ 80-90° to ca.	Core weakly fractured.		10	45	145	1.0		<0.008
7 -	8	1	100	Ditto to 7.6 metres. 7.6 - 8.0m mod to strongly sericitic/ carbonate altered, beige green lithic (black siltstone frags) quartz rich, minor feldspar (pinkish colour) rich arkosic EPICLASTIC.	Ditto	Weak to moderate as above.	Ditto.		15	15	80	1.0		<0.008
8 -	9	1	100	Ditto, except slightly more pinkish with strong sericite / carbonate alteration and minor veining. More massive, less lithic component.	Minor pyrite	Tr to weak as above.	Ditto.		10	15	85	1.0		<0.008

143136

[redacted]DRI[redacted]OLE[redacted] G[redacted]0-19[redacted] DE[redacted]H: [redacted]50.8[redacted] metres.

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
9	10	1	100	ARKOSIC EPICLASTIC, massive, speckled, cream / grey as for 8-9m.	Minor py. Tr red brown sphalerite in qtz/carb vein.	Weak to mod veining 80-90° to ca, most qtz/carb, tr sphal (red/brn)	Weakly fractured.		15	15	75	1.0	[illegible]	<0.008
10	11	1	100	Ditto, minor lithic component of grey/green siltstone as rounded clasts not as massive, more weakly bedded not obvious @ 45° to ca.	Minor py	Ditto.	Ditto.		20	20	190	1.0		<0.008
11	12	1	100	INTERBEDDED EPICLASTICS, interbedded speckled grey / cream, qtz rich, arkosic EPICLASTIC and well bedded to laminar black shales and grey siltstone Bedding 45° to ca.	Ditto	Ditto	Ditto		35	35	275	1.0		<0.008 <0.008
12	13	1	100	Ditto, with less arkose, more interbedded siltstone / shale. Flame structures indicate sequence right way up Bedding 35° to c.a.	Ditto.	Tr bedding parallel fine qtz/carb veinlets. Others perpendicular to bedding.	Ditto.		40	20	335	1.0		<0.008
13	14	1	100	SHALE / SILTSTONE, rhythmically interbedded black shale and grey siltstone. Bedding 45° to ca. Minor fine sandy interbeds.	Minor to 1% py as fine wispy veinlets parallel to bedding or perpendicular to bedding.	Nil qtz/carb veining tr to Minor py fine veinlets (0.2 mm width) parallel and perpend to bedding.	Ditto.		40	40	180	1.0		<0.008
14	15	1	100	Ditto, highly contorted, brecciated, quite pyritic, Minor siltstone clasts.	Py to 2½% as stringers, discontinuous lamellae and fine veinlets	Mod py stringers and veins some with minor qtz carb gangue! Orvented 60-70° to ca.	Ditto.		245	200	1700	1.0		<0.008
15	16	1	100	Ditto, Minor dolomitization.	Ditto py except up to 4%.	Ditto other sections quite stringery.	Ditto		275	120	1000	1.0		0.010

[redacted]DRI[redacted]LE[redacted] G[redacted]D-1[redacted] DE[redacted]: [redacted]85[redacted]trees[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
16	17	1	100	SHALE / SILTSTONE, to 16.40m, contorted, minor dolomitized, pyritic. 16.40-17.0m. Weakly bedded to massive black to dark grey SHALE/ SILTSTONE sequence, minor breccia interbeds.	Ditto to 16.4 with py to 2%. 16.4 - 17.0 Minor py.	Mod py stringers and veins some with minor qtz carb gangue @ 60-70° to ca.	Weakly fractured.		360	465	455	1.0		0.015
17	18	1	100	Ditto, moderately pyritic, pyrite/carb veining. Minor grey/green siltstone clay carbonate stockworked/microfractured.	Py 1½% although locally to 3%.	Ditto.	Ditto.		160	20	210	1.0		<0.008
18	19	1	100	SILTSTONE, grey green weakly bedded to massive siltstone, minor black shale lamellae, minor qtz/ carbonate veins to 1cm width @90° to ca. Bedding 70° to ca.	Tr pyrite.	Minor qtz/carb veining @ 90° to ca with veins to 1cm width.	Ditto.		15	10	165	1.0		<0.008
19	20	1	100	Ditto, with minor beds of feldspar qtz rich lithic arkose, speckled cream / grey. Bedding 57° to ca. Arkose being sericite/carbonate/py altered. Massive siltstones show little visible alteration.	Tr to minor py	Very weak fine carb veinlets.	Ditto.		25	10	130	1.0		<0.008
20	21	1	100	ALTERED EPICLASTIC (Host sequence) fiamme rich, quartz sericite/carbonate altered, pyritic, coarse grained weakly bedded lithic EPICLASTIC. Pumiceous fragments pale grey green to bottle green sericite/chlorite altered, Some of qtz grains rounded.	Minor pyrite.	Trace carb veinleting	Strongly fractured.		50	5	70	<0.5		<0.008
21	22	1	100	Ditto, minor pink albitization? qtz grains to 3-4mm, well rounded Some lithic clasts, Some large fiamme to 5cm diam, Pyritic minor chalcopyritic.	Pyrite to 0.5% Minor cpy assoc with qtz/carb veins.	Wk qtz/carb veining @ 20-30° and 50° to ca. also at 80-90° Vary in width from 1-2mm to 1cm. Coarsely crystalline cpy assoc. with some veins.	Ditto.		335	10	135	1.0		<0.008

[redacted]DRI[redacted]LE[redacted] G[redacted]0-[redacted] DE[redacted]: [redacted]85[redacted]metres

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
22 -	23	1	100	ALTERED EPICLASTIC, less fiamme component, more beige/grey/green in colour. Increasing chlorite component from 22.7 - 23.0m.	Pyrite to 0.5% Minor cpy assoc with qtz/carb veins.	As for 21-22.	Strong fracturing.		215	<5	105	<0.5		<0.008
23 -	24	1	100	Ditto with pervasive dolomitization 23.60 - 23.95m major zone of brecciation, leaching, sugary textured silicification and hematite coating of fracture surfaces and grain surfaces.	Tr to minor py	Ditto no visible cpy, veining very stringery and discontinuous, no definite orientation.	Ditto.		125	5	105	<0.5		<0.008
24 -	25	1	100	Ditto, weakly fiamme rich, lithic siliceous/sericitic/carbonitic altered qtz rich EPICLASTIC.	Ditto as fine disseminations or aggregates.	Very weak qtz/carb. veining.	Ditto.		300	<5	65	1.0		0.010
25 -	26	1	100	Ditto, matrix fine grained, very siliceous and seritcitic, possibly dolomitized. Minor albitization?	Tr cpy	Ditto	Ditto		435	<5	45	1.0		<0.008
26 -	27	1	100	Ditto, minor small black siltstone lithic fragments. Bedding? @ 70° to ca. Slightly more pumiceous fragments present also.	Ditto.	Ditto, most of qtz/carb veins @ 70-90° others @ 20-30° to ca. Some have py + cpy.	Ditto.		250	5	55	<0.5		<0.008
27 -	28	1	100	Ditto, more of lithic component, fiamme tend to be beige/green in colour. Matrix of unit also beige.	Tr to minor py.	Ditto. without cpy.	Ditto		80	5	110	<0.5		<0.008
28 -	29	1	100	Ditto, with minor ashy? or vitric tuff frags in EPICLASTIC.	Tr py.	Tr veining	Ditto		80	<5	80	1.0		<0.008
29 -	30	1	100	Ditto with increase in dolomitization and also fine fillagree veinletting carbonate infilled.	Ditto.	Ditto, fillagree veining, carb infilled assoc with dolomitiz'n	Ditto.		375	15	175	1.0		<0.008
30 -	30.85	0.85	100	Ditto.	Ditto	Ditto	Ditto.		120	85	75	<0.5		<0.008
E.O.H.				END OF HOLE.										

[redacted] DRI[redacted]OLE [redacted] GR[redacted]-10[redacted] DEP[redacted]: [redacted]5.75[redacted]tres[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0	2	2	0	Talus Material - No core										
2	3	1	95	ALTERED EPICLASTIC, quartz, sericite, carbonate altered, lithic (fiamme rich) quartz rich (coarse grained, rounded) qtz / carb veined EPICLASTIC. Beige grey in colour, fiamme pale green, some dark grey (chloritic?)	Tr to minor py	Weak to minor qtz/carb. veined (some hem. replaced) unit. Most 1-3mm in width @ 70-90° to ca. Veins @ interval of 1-2 per 5cm.	Core mod. fractured.		40	25	140	<0.5		<0.008
3	4	1	100	Ditto, pumiceous fragments very coarse grained, some vitric or ashy frags also present. Minor py associated with hematite veins.	Minor py assoc with hem veins.	Ditto.	Ditto.		55	10	115	1.0		<0.008
4	5	1	100	Ditto, badly fractured from 4.3-4.7m This zone moderately hematitic.	Ditto	Ditto.	Ditto except 4.3-4.7m strongly fractured.		50	15	190	1.0		<0.008
5	6	1	100	Ditto but less fractured, lithic, wkly pumiceous sericitic/carbonitic altered	Ditto.	V. weak qtz/carb. veining.	Ditto without broken zone		50	10	90	1.0		<0.008
6	7	1	100	Ditto.	Ditto	Ditto	Ditto		50	5	85	1.0		<0.008
7	8	1	100	Ditto	Ditto	Ditto	Ditto		30	5	65	<0.5		<0.008
8	9	1	100	ALTERED LITHIC EPICLASTIC, very carbonated (siderite?) quartz sericite altered, qtz rich (rounded coarse grained), lithic fragmental.	Minor to 0.5% py as thin veins or as disseminated aggregates. Fine grained. Tr gn? Tr pyrite.	Weak py veining and v. weak qtz carb veining	Ditto		25	<5	75	<0.5		<0.008
9	10	1	90	Ditto to 9.15m. but very broken. 9.15-9.80 FAULT BRECCIA, hematitic cement, angular fragments, minor clay component but extensively leached. 9.80 - 10.00 as for 9.00 to 9.15m.		Major breccia or fault zone 9.15-9.80 with v. badly broken zone strongly leached.	Strongly fractured and broken. Moderate Recoveries.		10	15	170	<0.5		<0.008

143140

[redacted]DRI[redacted]LE[redacted] GR[redacted]0 - 1[redacted] DE[redacted]: [redacted].75[redacted]otre[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
10 -	11	1	100	ALTERED LITHIC EPICLASTIC, lithic weakly pumiceous, quartz rich (sub rounded, coarse grained) sericite/carbonate/silica altered veined EPICLASTIC, wkly dolomitized.	Tr py.	Wk qtz/carb veining, some leached @60-90° to ca being 1-2 mm av width.	Moderate fractured. fractures hematite coated.		15	20	235	<0.5		<0.008
11-	12	1	100	Ditto.	Minor py as thin vein infillings to 0.5% Tr reddish brown sphalerite.	Weak to mod. thin py veinlets @ 20-30° to ca. qtz/carb @ 70-90° to ca. 1-3mm width	Ditto.		10	15	265	1.0		<0.008
12 -	13	1	100	Ditto unit strongly clay carbonate altered and moderately pyritic.	Py 1-1½%.	Mod veining qtz/carb as above. Py infilled veins also at same orientation 70° to ca.	Weakly fractured.		20	10	200	1.0		<0.008
13 -	14	1	100	Ditto, finer grained, qtz/chlorite veined (late stage - cross cutting) Intense microfracturing and clay infilling of porfious of matrix	Py 1½%. as stringers and fine grained disseminations.	Ditto. veins generally ≤1.5 mm (qtz-chl) @ 70-90° to ca. Wk qtz/carb @ similar orientation.	Ditto.		25	5	140	<0.5		<0.008
14 -	15	1	100	Ditto but with lithic fragments (vitric tuff, siltstone etc) up to 1 to 1½ cm diam, some frags pyritic.	Minor pyrite	Wk qtz/carb veining but intense microfracturing of matrix.	Ditto		10	10	135	1.0		<0.008
15 -	16	1	100	Ditto.	Ditto.	Ditto	Ditto		15	5	80	<0.5		<0.008
16 -	17	1	100	Ditto, minor black siltstone and shale clasts.	Ditto.	Ditto	Ditto		35	10	165	1.0		<0.008
17-	18	1	100	Ditto, less shale/siltstone clasts, heavily dolomitized, intensely microfractured - clay/carb infilled.	Ditto.	Ditto.	Ditto.		10	5	80	1.0		<0.008

[redacted]RIL[redacted]LE [redacted] GR[redacted]0 - 1[redacted] DEP[redacted]: [redacted]75[redacted]tres[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
18	19	1	100	ALTERED LITHIC EPICLASTIC, lithic fragments predominantly shale and siltstone, matrix heavily microfractured and intensely clay/carb. veinleted.	Py to 0.5%, some sections to 2% over 5cm's.	Weakly to mod veined qtz/carb infilled, av width 1-2MM @ 70-90° to c.a.	Weakly fractured.		10	<5	115	1.0		<0.008
19	20	1	100	Ditto strongly silica/sericite/carb. altered, qtz rich weakly pumiceous and moderately veined.	Minor to 1% py as thin vein infillings and disseminated aggregates. Tr apy? (gn?)	Mod qtz/carb (rhodocrosite) veining, Some py veining also @ 80-90° to ca.	Ditto.		15	5	95	<0.5		0.025
20	21	1	100	Ditto, majority of clasts are of vitric tuff or fine volcanic, some siltstone and coarse grained tuff.	Minor py to 0.5% Tr apy.	Ditto, less rhodocrosite.	Ditto.		20	5	130	1.0		0.020
21	22	1	100	Ditto, siltstone and black shale fragments, angular and flattened?	Ditto, no apy	Weak qtz/carb veining, v weak py vein infilling	Ditto.		165	10	280	1.0		0.470
22	23	1	100	Ditto with large coarse grained weakly chloritic/sericitic pumiceous fragments.	Ditto tr cpy in qtz/carb veins.	Ditto qtz/carb veins 1-5MM width @ 70-90°	Ditto.		180	10	575	1.0		0.020
23	24	1	100	Ditto.	Py to 0.5% tr cpy tr sphalerite (pale honey brown)	Py veining @ 30° ca 1-1½ MM wide, weak to mod. thin qtz/carb/(cpy) veins <2MM @ 70-90°	Ditto.		235	5	160	1.0		<0.008
24	25	1	100	Ditto with abundant vitric tuff or cherty fragments some showing albitization?	Py to 1% tr cpy.	Ditto.	Ditto.		150	10	230	1.0		0.020
25	26	1	100	Ditto, slightly more siliceous, possibly albitized, more moderately qtz/carb veined.	Py to 1% Tr cpy. Tr apy.	Mod qtz/carb veined @ 35-45° to ca others @ 70-90° to ca.	Ditto.		65	10	185	1.0		<0.008
26	27	1	100	Ditto, mod to strongly qtz/carb veined, intensely silica/sericite/carbonate altered qtz rich fine to medium grained. Abundant v. angular clasts of siltstone (these are also veined and dolomitized) some of which contain diss. cpy. Matrix intensely microfractured.	Py <1% Minor cpy locally to 0.2% also Minor very pale pink sphalerite to 0.2%? (apy?)	Mod/strong qtz/carb/py veined 2-3MM width for qtz/carb, py <1.5MM. @ 20-30° to ca. Qtz/carb 70-90° some @ 20-30° to ca.	Ditto.		150	5	105	1.0		0.010

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[redacted]DRI[redacted]PLE[redacted] G[redacted]0 -[redacted]DE[redacted]: [redacted]75[redacted]ves[redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
27 -	28	1	100	ALTERED LITHIC EPICLASTIC, increasing sphalerite component, slightly less cpy.	Py ≈ 1%. Minor cpy sphalerite to 0.1%. (fine grained, diss.)	As for 26-27	Weakly fractured.		145	30	500	1.0		0.130
28 -	29	1	100	SILTSTONE, dark grey, massive, textureless, carbonaceous, pyritic siltstone extensively py/(cpy)/sph/ carbonate veined (stockworked) and brecciated. Minor thin interbeds of siliceous sandy grits with minor jasper fragments (red siliceous frags) snowflake textured due to dolomitization.	Pyrite ≈ 5% Cpy 0.1%. Sphalerite (some pale coarsely cryst alline late stage, rest silvery fine grained dissem. clots – apy??) to 0.5%.	Section strongly qtz/carb/py/(cpy)(sph) stockworked. Most of veins < 2mm in width. Late stage cross-cutting veins @ 70-90° generally contain cpy.	core mod. to strongly fractured.		345	65	2200	4.0		1.040 1.035
29 -	30	1	100	Ditto slightly more brecciated, and more intensely carbonate veined. No interbeds of siliceous grits, strong snowflake texture.	Pyrite ≈ 6% cpy 0.4%. sphal. 0.3%. (apy?)	Ditto except slightly more intensely veined and mineralized.	Ditto.		1850	40	755	10.0		4.050
30 -	30.75	0.75	100	Ditto, but with reoccurrence of coarse siliceous grit interbeds and siliceous cherty siltstones (weakly laminated) Unit very pyritic.	Py ≈ 7½ % Cpy ≈ 0.5% sphal 0.1% (Apy?)	Ditto except some of veining looks like tension gash infill. Strongly stockworked. Py veins to 5mm width.	Ditto.		1700	40	165	4.0		1.235
E.O.H.				END OF HOLE.										

[redacted]RIL[redacted]LE[redacted] G[redacted]O-[redacted]DEP[redacted]: [redacted]35 [redacted]res[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
0 -	1.65	1.65	0	Talus Material - Not cored.										
1.65 -	2	0.35	100	LAMINAR VITRIC TUFFS, snow flake textured, qtz phyric (ghosted!) fine grained siliceous/sericitic, laminated bedded @ 40° to ca. Unit strongly qtz/carb/py/hematite stockworked.	Py 2-3% as fine stringers or veinlets with oxidised rims of hematite.	Strong veining qtz/carb sub parallel to bedding, Minor py @ 35° to ca, Minor stockworking over narrow sections	Weakly to moderately fractured.		30	15	105	2.0		0.260
2 -	3	1	100	Ditto to 2.4 m. 2.4 to 3.0 m py/apy/carb healed BRECCIA ZONE, host being massive, black siliceous vitric tuff? containing minor fine grained disseminated apy and cream coloured vitric tuff clasts to 5cm width.	Py to 1%, apy to 0.5% both as fine disseminations and thin stringers or breccia filling associated with carbonate.	Pyrite veins @ 60° to ca which are cross cut by qtz/carb veins at similar orientation (not quite conjugate) possible shear orientation sub parallel to ca.	Ditto.		65	20	265	2.0		0.320
3 -	4	1	100	Ditto to 3.4 m. includes large clast of laminar bedded siliceous vitric tuff? weakly contorted. 3.4 - 4.0 m VITRIC TUFF, beige coloured, snow flake alteration textured, brecciated veins prominent sub parallel to ca generally <1cm width.	Tr py and apy, as fine grained disseminations.	Strongly veined major brecciated qtz/carb host rock veins sub // to ca. Late stage qtz/carb veins @ 60-80° to ca.	Mod fractured @ 25° to ca hematite coated, others @ 60-90°.		90	30	335	3.0		0.095
4 -	5	1	100	Ditto, more intensely fractured, broken, albitized (pink staining) microfractured and pyrite veined, very fine grained. Minor sections show snow flake textured alteration	Minor py to 1% Tr apy.	Ditto. Py veins @ 60-80° to ca partly oxidised to hem. others @ 45° to ca. Carb qtz veins @ 50-60° to ca. Some @ 15° - low angle	Strongly fractured and broken Some at low angle.		30	15	205	1.0		0.055 0.075
5 -	6	1	100	Ditto, less sulphide, less strongly veined very strong to intense carb/sericite/silica alteration of the vitric tuff matrix.	Tr py Tr apy	Moderately veined.	Moderately fractured.		20	<5	70	1.0		0.040

[redacted]DRI[redacted]LE[redacted] G[redacted]-T[redacted]DE[redacted]: [redacted]35[redacted]etre[redacted]

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Rec-overy	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluore scence	Assays Cu	Pb	Zn	Ag	As	Au
6	7	1	100	BRECCIATED VITRIC TUFF? to 6.5m, brecciated version of interval 5-6 m with carb/sericite matrix pinkish stained vein's 2-3 mm width @ 40° ca. 6.5-7.0. ALTERED VITRIC TUFF, less brecciated, strongly veined (minor py/sericite/carb). Minor oxidised ferruginous zone @ 6.95-7.0 minor oxidised py to hematite.	Py locally to 1% but overall < 0.5% py.	Mod to strongly veined, pink coloured @ 40° to ca 2-3 mm width, py sericite veining @ 30° to ca more random in orientation. Some cross cutting chl/qtz @ 70° to ca.	Mod to Strongly fractured.		5	<5	75	1.0		0.095
7	8	1	100	ALTERED EPICLASTIC, coarse grained qtz rich, chloritic veined, beige grey strongly veined (qtz/carb, qtz/chl, minor py) siliceous/sericitic altered.	Minor to 1% py as fine grained vein infillings	Ditto, pred qtz/carb to 60° ca, chl/qtz @ 70° to ca cut by qtz/carb. Minor py 1-2 mm @ 15-20° to ca.	Weakly fractured @ 30° to ca and 75° to ca.		40	10	100	1.0		0.420
8	9	1	90	Ditto to 8.30 m.	Ditto	Ditto.	Ditto							
				8.30 - 9.00 m chloritic/siliceous weakly pyritic altered, mod veined coarse to medium grained qtz rich epiclastic.	Fine to med grained py to 1%.	Mod qtz/carb veined, minor orange stained qtz veined 1-3 mm width @ 50°-75° to ca.	Moderately fractured.		95	15	155	1.0		0.960
9	10	1	100	Ditto to 9.30 m	Ditto	Ditto	Ditto		40	25	160	1.0		0.160
				9.30 - 10.00 ALTERED TUFF?, beige cream, coarse grained, qtz rich (angular, moderately sorted) sericitic/siliceous/hematite (dusty brown) altered, pyrite veined. Minor small lithic fragments.	Minor py to 0.5% Tr cpy? assoc with finely diss py vein infilling	Mod to strongly qtz/chl/hem veined @ 60° to ca, av 1 mm width, hem/carb @ 20° ca 90° to former. Qtz/carb vein's to 0.5 cm width	Mod to strongly fractured either at 20° or 60° to ca.							
10	11	1	100	Ditto, except more carbonate veined, (oxidising to hematite) possibly with weak shear orientation, more lithic fragments than above section, brownish reddish coloured. Minor rhodocrosite? vein infilling.	Py as v fine grained vein infillings 1-3 mm in width averaging 1%. Cpy assoc with late carbonate veins.	Ditto, cross cutting qtz/carb/cpy @ 60-80° ca 1 mm to 1.5 cm width Py veining 1-3 wth @ 20° ca and hem/carb same orientn. Av. 5 veins/10 cm	Moderate fractures As above.		135	20	105	2.0		0.090

[redacted]DRI[redacted]OLE[redacted] G[redacted]D - 1[redacted] DE[redacted] : [redacted] Metres.

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
11	12	1	100	ALTERED TUFF ? greenish/beige to green coloured, less pyritic, contains finer grained sections of tuff and has more of pinkish coloured veins - rhodocrosite. Minor pervasive dolomitization.	Minor py, tr cpy.	Strongly veined qtz/carb/rhodocrosite? vein @ 20° to ca, Unit contains more of fine cross cutting qtz/chl/py veins than previous section.	Moderately fractured.		25	5	120	1.0		0.130
12	13	1	100	Ditto, except unit varies in colour from grey green to green and beige. Strongly veined and silica/sericite/carbonate altered, weakly pyritic, dark grey green colouration - due to fine chlorite. Minor lithic component.	Ditto, tr apy? or sphal?	Ditto, less of qtz/chl veins Minor stockworking of matrix over narrow widths.	Ditto, Strongly fractured zone @ 12.80 - 12.90		20	5	200	1.0		0.020
13	14	1	100	Ditto except unit more beige coloured strongly dolomitized, Minor pyritic, weakly lithic, Minor qtz/chl veining (late stage) Matrix extensively carbonate altered.	Ditto.	Mod veining prominent veins being chl/qtz @ 60-80° to ca.	Moderate fractured.		20	15	85	1.0		0.240
14	15	1	100	Ditto, Minor brecciation from 14.5 to 14.6 m. Minor wispy discontinuous black sheared fragments. Pyritic with veins to 4 mm width, Minor black siltstone fragments (1-2 mm diam)	Py to 0.5%. Tr apy or sphal?	Mod to strong veining, Py @ low angle ~20° to ca some @ 50-60° ca. Chl/qtz veins @ 60° to ca (90° to py)	Strongly broken.		25	35	300	2.0		0.245 0.240
15	16	1	100	Ditto, to 15.30 metres. 15.30-16.00m chloritic/sericite/carb altered, dark grey green coloured, fine to coarse grained, qtz rich (rounded) in part, weakly dolomitized, strongly qtz/carbonate veined EPICLASTIC. Minor to 0.5% apy or sph.	Tr py, Tr cpy in qtz/carb veins and minor apy or sphalerite. as medium grained disseminations.	Ditto with qtz/carb veins prominent @ 80-90° ca. Other sericite/carb/apy? veins @ 60° ca. Where veining intense get brecciation texture.	Weakly to moderately fractured.		45	15	180	1.0		0.115
16	17	1	90	Ditto, less coarse grained and qtz rich, less chloritic, more lighter grey green colour, Minor beige (in heavily carb/hem altered areas), Minor snow flake textured, (dolomitization?) Minor pink rhodocrosite veins.	Tr py Tr apy/sphal	Ditto, large low angle 20° thick 1-1½ cm carb/qtz Minor sulphide @ 25° to ca.	Ditto.		10	5	210	1.0		0.070 0.065

[redacted] DRI[redacted] DLE[redacted] G[redacted] O - [redacted] DE[redacted] : [redacted] 65 [redacted] etres [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
17	18	1	100	ALTERED TUFF ? as for previous Sections except finer grained, massive, dark grey green coloured.	Tr py, Tr apy / sphal ?	Strong veining as for previous intervals with 15 veins / 10cm.	Weakly to moderately fractured.		15	25	300	1.0		0.030
18	19	1	100	ALTERED EPICLASTIC, coarse grained, qtz rich (sub rounded - mod well sorted) intensely clay (sericite) / carb / silica altered, beige green coloured. Matrix heavily dolomitized.	Tr to Minor py.	Strong veining qtz/carb @ 60-80° to ca, other weak dil veins also @ 80-90 ca Some gash filled zones. V. Minor hem veins @ 20° to ca.	Weakly fractured.		30	< 5	150	2.0		0.780
19	20	1	100	Ditto, more lithic (numerous black siltstone and vitric tuff frags). Core mod py veined, Tr sphal ? Weak snowflake textured - dolomitization.	Py 1%, Tr apy/sphal Py as v fine grained vein infillings.	Ditto, py veins @ 40° to ca, OR 10° to ca // to hem/carb for the latter. Main carb/qtz veins @ 80° ca. (late stage)	Ditto Main orientation @ 25° ca. others @ 60-70° to ca.		45	5	120	1.0		0.260
20	21	1	100	Ditto, increasing lithic component, beige coloured.	Tr - Minor py. Tr cpy in late stage qtz/carb veins. Tr to Minor sphal? or apy. with py in low angle vein orientation	Ditto.	Ditto.		80	< 5	105	1.0		0.520
21	22	1	100	Ditto, lithic volc frags + siltstone and vitric tuffs, possible large ghosted fiamme 20 cm width, darker coloured, brown green, coarser grained quite prominent. Core intensely altered, sericite / carb for matrix.	Minor py Tr apy / sphal ?	Mod to strong veining. Thin qtz/carb 1-2mm // to shear orientation @ 50° to ca. Other qtz/carb veins to 1 cm width these @ 90°. Rhodocrosite / py vein @ 5° ca. and other carb/sericite veins @ 15° to ca	Mod fract. @ 25-30° ca. some @ 60° ca.		10	< 5	80	1.0		1.370
22	23	1	100	Ditto.	Ditto with py to 0.5%, Tr cpy, Tr apy.	Ditto	Ditto.		45	< 5	60	1.0		0.030

[redacted] DR[redacted] DLE[redacted] G[redacted] O-[redacted] DE[redacted] : [redacted] 35 [redacted] tres [redacted]

COORDINATES : DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
23	24	1	100	ALTERED EPICLASTIC, as for previous intervals.	Py 1-2% tr to Minor cpy, tr apy sphal? Cpy assoc with fine grained py + hem/lik veins.	Ditto py as stringers @ low angle to ca or assoc with carb veins @ 30° to ca with assoc cpy.	Strongly fractured.		1150	<5	85	3.0		0.305
24	25	1	100	Ditto, except matrix more pale green coloured, heavily qtz/carb veined (av ½ - 1cm width) Minor vein open spaces, slightly less qtz rich, finer grained, slightly less lithic.	Py Minor to 0.5% Tr apy.	Ditto with abundant and very prominent qtz/carb veins @ high angle to ca. more akin to tension gash infill.	Ditto.		145	<5	140	1.0		0.090
25	26	1	100	Ditto, beige coloured, intensely clay/carb altered matrix, snow flake textured, strongly pyrite veined.	Py 2% as 2-3mm wide veins @ 40, 60 and 70° ca, Py very fine grained tr apy assoc with py	Ditto with prominent pyrite veins @ 40, 60 and 70° to ca, large qtz/carb vein 2½ cm wide @ 80° to ca. Minor low angle veins @ 25° to ca. Show offsetting Moderately to Strongly veined.	Mod fractured.		25	<5	190	2.0		1.190
26	27	1	100	Ditto except unit extensively fractured and broken (25°-30° orients). Minor pink albitized? tuff frags, small siltstn frags also. Qtz grains up to 1 cm. av 1-2mm. sub rounded in nature.	Minor py tr apy.		Intense fracturing, v. broken core		35	<5	135	2.0		050
27	28	1	100	Ditto, beige/green, finer grained, (cherty in part?) sil/ser/carb altered, Minor lithic frags, matrix intensely altered, and microveined (clay/carb). Section of core dark brown hem stained veins after siderite.	Ditto.	Ditto weak py carb @ 10-15° ca late stage cross-cutting qtz carb @ 70° to ca. Minor stockworking.	Strong fracturing from 27-27.40 Moderate to 28.0 m.		100	10	375	2.0		0.2[illegible]
28	29	1	100	Ditto, to 28.55 m except abundant py Minor cpy and apy/sphal as fine to med grained aggregates, clusters and fine disseminations. 28.55 - 29.00 LITHIC EPICLASTIC, dark grey matrixed, lithic, qtz rich, chloritic/carb/ser altered. Matrix intensely fractured and altered. Mineralized frags?	Py 1½% - 2% Cpy tr - Minor Apy tr.	Mod veining Major 1-3 mm clay/carb/py veins @ 35-40° to ca Rest of matrix intensely stockworked, clay/carb veined	Ditto.		1025	<5	345	6.0		1.2[illegible]

[redacted] 14813[illegible]

[redacted] DRILL HOLE [redacted] GRID - [redacted] DEPTH: [redacted] 35 [redacted] metres.

COORDINATES: DECLINATION :

INTERVAL From	To	Metre	% Recovery	GEOLOGICAL LOG	MINERALIZATION	VEINING	FRACTURES	Fluorescence	Assays Cu	Pb	Zn	Ag	As	Au
29 -	30.35	1.35	100	LITHIC EPICLASTIC, as for 28-29 but becoming finer grained for qtz component, matrix very fine grained dark grey green, weakly chlorite veined, dolomitized.	Py ½%, tr cpy, in qtz/carb veins (late stage) Tr apy.	As for 28-29	Moderate fracturing.		165	<5	165	3.0		0.100
									140	<5	250	4.0		0.120
E.O.H.				END OF HOLE.										

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APPENDIX 3

Analytical Data Sheets - Analabs

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

A Division of Inchcape Inspection & Testing Services Aust PL

Phn: (004) 316 837 | 14 Thirkell St Cooee Tas 7320 | Fax: (004) 318 890

ANALYTICAL REPORT No. 999.59.08.07442

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr.P.Jones
Noranda Pty.Ltd.,
Saddle Road,
Kettering
Tasmania 7155

ORDER No.	PROJECT
0012	Gowrie Park

DATE RECEIVED	RESULTS REQUIRED
12/10/90	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	02/11/90	1	31

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
<225,497/527	DC Prep: 006,010,012,013,016	Cu,Pb,Zn,Ag/101
<225,497/527	DC	Au,AuChk/309
<225,497/527	DC	As,W/401

RESULTS TO
Mr.P.Jones
Noranda Pty.Ltd.,
Saddle Road,
Kettering
Tasmania 7155

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

148152

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	999.59.08.07442	02/11/90	0012	1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	AuChk	As	W	GP-90-6 Firetower
1	225497	130	175	260	1.0	0.415	0.400	720	56	0.7- 1.0
2	225498	160	10	90	1.0	0.030	—	120	43	1 - 2
3	225499	220	15	60	1.0	0.075	—	300	50	2 - 3
4	225500	165	10	70	<0.5	0.070	—	230	34	3 - 4
5	225501	100	5	155	<0.5	0.150	—	170	48	4 - 5
6	225502	35	10	50	<0.5	0.050	—	110	39	5 - 6
7	225503	70	5	55	<0.5	0.205	—	180	50	6 - 7
8	225504	55	5	100	1.0	0.305	—	150	56	7 - 8
9	225505	470	20	120	1.0	0.230	—	140	26	8 - 9
10	225506	175	5	110	1.0	0.190	—	290	48	9 - 10
11	225507	275	15	165	<0.5	0.345	—	270	50	10 -11
12	225508	150	10	160	<0.5	0.135	—	380	56	11 - 12
13	225509	170	5	80	1.0	0.160	—	240	58	12 - 13
14	225510	490	5	105	<0.5	0.450	—	120	67	13 - 14
15	225511	105	<5	95	1.0	0.550	—	40	25	14 - 15
16	225512	180	15	100	1.0	0.095	—	130	25	15 - 16
17	225513	50	25	100	1.0	0.425	0.390	100	35	16 - 17
18	225514	175	160	140	1.0	0.155	—	130	44	17 - 18
19	225515	140	80	150	1.0	0.225	—	440	32	18 - 19
20	225516	115	40	80	1.0	0.185	—	290	23	19 - 20
21	225517	340	10	595	1.0	0.105	—	250	37	20 - 21
22	225518	390	10	175	<0.5	0.460	—	170	44	21 - 22
23	225519	75	45	385	<0.5	0.805	—	10	41	22 - 23
24	225520	50	5	105	2.0	1.190	—	25	36	23 - 24
25	225521	40	<5	110	1.0	0.365	—	25	33	24 - 25

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	999.59.08.07442	02/11/90	0012	2 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	AuChk	As	W	GP-90-6
1	225522	35	<5	130	1.0	1.235	--	15	52	25-26
2	225523	35	10	75	1.0	0.490	--	35	46	26-27
3	225524	30	5	100	4.0	2.410	--	20	46	27-28
4	225525	325	5	245	1.0	0.310	--	55	26	28-29
5	225526	620	<5	135	1.0	0.150	--	15	44	29-30
6	225527	50	<5	110	<0.5	0.055	--	15	29	30-30.45
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	2	20	
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GX401	GX401	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

Analabs - A Division of Inchcape Inspection & Testing Services

Phone (004) 31 6837 | 14 Thirkell St. Cooee Tas 7320 | Fax No. (004) 31 8890

ANALYTICAL REPORT No. 110600.60.07835

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:

Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

ORDER No.	PROJECT
0013	Gowrie Park

DATE RECEIVED	RESULTS REQUIRED
20/11/90	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	06/12/90	1	107

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
225528/634	dc	Au,Au(R)/GG309
225528/634	dc Prep: GP005,GP009,GP016	Cu,Pb,Zn,Ag/GA101

RESULTS TO

Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07535	06/12/90	0013	1 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-4
1	225528	60	25	105	<0.5	<0.008	--	--	3-4
2	225529	10	5	95	<0.5	0.015	--	--	4-5
3	225530	5	<5	65	<0.5	0.010	--	<0.008	5-6
4	225531	10	<5	65	<0.5	0.015	--	--	6-7
5	225532	10	<5	70	<0.5	0.010	--	--	7-8
6	225533	5	<5	65	<0.5	0.010	--	--	8-9
7	225534	5	<5	60	<0.5	0.020	--	--	9-10
8	225535	5	<5	65	<0.5	0.020	--	--	10-11
9	225536	10	<5	70	<0.5	0.020	--	--	11-12
10	225537	10	<5	60	<0.5	0.015	--	--	12-13
11	225538	280	<5	55	<0.5	0.015	--	--	13-14
12	225539	270	<5	60	<0.5	0.015	--	--	14-16
13	225540	255	<5	75	<0.5	0.015	--	--	16-18
14	225541	150	<5	60	<0.5	0.020	--	--	18-20
15	225542	480	<5	75	<0.5	0.010	--	--	20-22
16	225543	255	<5	70	<0.5	0.010	--	--	22-24
17	225544	435	<5	70	<0.5	0.010	--	--	24-26
18	225545	370	<5	80	<0.5	0.015	--	--	26-27.2
19	225546	410	30	240	<0.5	0.025	--	--	GP-90-5 1.5-2
20	225547	350	15	140	<0.5	0.015	--	--	2-3
21	225548	1700	15	170	1.0	0.085	--	--	3-4
22	225549	230	5	130	<0.5	0.020	--	--	4-5
23	225550	860	10	190	1.0	0.050	--	0.030	5-6
24	225551	395	25	205	<0.5	0.020	--	--	6-7
25	225552	195	20	260	<0.5	0.025	--	--	7-8

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
-- = element not determined

AUTHORISED OFFICER

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No	PAGE
	110600.60.07535	06/12/90	0013	2 OF 6

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-5	
1	225553	605	10	215	1.0	0.090	--	--	8-9	
2	225554	245	50	265	<0.5	0.020	--	--	9-10	
3	225555	395	30	140	1.0	0.060	--	--	10-11	
4	225556	65	35	210	<0.5	0.010	--	--	11-12	
5	225557	65	40	960	1.0	0.040	--	--	12-13	
6	225558	45	40	280	<0.5	<0.008	--	--	13-14	
7	225559	100	15	195	1.0	0.010	--	--	14-15	
8	225560	140	20	305	1.0	0.050	--	--	15-16	
9	225561	265	80	830	2.0	0.025	--	--	16-17	
10	225562	95	50	885	1.0	0.015	--	--	17-18	
11	225563	220	70	385	1.0	0.115	--	--	18-19	
12	225564	465	175	640	1.0	0.115	--	--	19-20	
13	225565	505	180	795	8.0	3.750	3.840	--	20-21	
14	225566	150	80	140	<0.5	0.040	--	--	21-22	
15	225567	875	120	575	2.0	1.220	--	--	22-23	
16	225568	195	140	350	<0.5	0.125	--	--	23-24	
17	225569	670	95	855	3.0	0.970	--	--	24-25	
18	225570	1100	180	1450	4.0	1.040	--	--	25-26	
19	225571	340	450	1550	2.0	0.120	--	--	26-27	
20	225572	1350	750	1200	2.0	0.260	--	--	27-28	
21	225573	585	980	2450	3.0	0.960	--	--	28-29	
22	225574	260	1750	2000	2.0	0.530	--	--	29-30	
23	225575	735	2550	1900	4.0	0.535	0.580	--	30-30.2	
24	225576	270	30	145	1.0	0.180	--	--	GP-90-7 0.8-2	
25	225577	115	25	75	2.0	3.250	--	--	2-3	

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
-- = element not determined

AUTHORISED OFFICER

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07535	06/12/90	0013	3 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-7	
1	225578	240	20	80	3.0	2.010	—	—	3-4	
2	225579	230	30	115	7.0	3.180	—	3.450	4-5	
3	225580	190	35	100	6.0	3.600	—	—	5-6	
4	225581	310	25	180	3.0	2.170	—	—	6-7	
5	225582	165	25	70	2.0	2.650	—	—	7-8	
6	225583	380	30	130	1.0	0.470	—	—	8-9	
7	225584	100	25	55	1.0	0.570	—	—	9-10	
8	225585	160	20	80	3.0	1.165	—	—	10-11	
9	225586	20	35	210	1.0	0.570	—	—	11-12	
10	225587	20	15	155	<0.5	0.065	—	—	12-13	
11	225588	30	15	80	1.0	0.190	—	—	13-14	
12	225589	10	10	95	1.0	0.035	—	—	14-15	
13	225590	20	10	60	2.0	0.035	—	—	15-16	
14	225591	100	15	70	2.0	0.080	0.060	—	16-17	
15	225592	270	80	175	1.0	0.265	—	—	17-18	
16	225593	155	15	85	1.0	0.140	—	0.130	18-19	
17	225594	55	20	155	1.0	0.420	—	—	19-20	
18	225595	85	10	190	<0.5	0.075	—	—	20-21	
19	225596	45	10	105	<0.5	0.265	—	—	21-22	
20	225597	30	10	120	<0.5	0.395	—	—	22-23	
21	225598	75	15	160	2.0	0.830	—	—	23-24	
22	225599	20	15	160	<0.5	0.305	—	—	24-25	
23	225600	65	10	175	<0.5	0.655	—	—	25-26	
24	225601	50	10	250	2.0	0.815	0.805	—	26-27	
25	225602	60	10	220	3.0	0.640	—	—	27-28	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

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ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07535	06/12/90	0013	4 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-7	
1	225603	20	10	200	1.0	0.090	—	—	28-29	
2	225604	1350	5	165	1.0	0.040	—	—	29-30	
3	225605	20	30	190	<0.5	0.075	—	—	30-30.95	
4	225606	160	55	175	2.0	1.335	—	—	GP-90-8 0.7-2	
5	225607	240	15	150	2.0	1.185	—	—	2-3	
6	225608	345	85	450	1.0	0.860	—	—	3-4	
7	225609	280	35	175	1.0	0.720	—	—	4-5	
8	225610	205	5	140	1.0	0.295	—	—	5-6	
9	225611	90	5	295	1.0	0.175	—	—	6-7	
10	225612	20	15	160	2.0	0.990	—	—	7-8	
11	225613	55	10	80	1.0	0.050	—	—	8-9	
12	225614	100	20	220	<0.5	0.010	—	—	9-10	
13	225615	30	60	340	<0.5	<0.008	—	<0.008	10-11	
14	225616	20	20	240	<0.5	<0.008	—	—	11-12	
15	225617	60	10	120	<0.5	<0.008	<0.008	—	12-13	
16	225618	85	5	100	<0.5	<0.008	—	—	13-14	
17	225619	95	20	160	<0.5	<0.008	—	—	14-15	
18	225620	35	20	175	<0.5	<0.008	—	—	15-16	
19	225621	30	15	180	<0.5	<0.008	—	—	16-17	
20	225622	840	10	160	1.0	0.035	—	—	17-18	
21	225623	475	5	130	<0.5	<0.008	—	—	18-19	
22	225624	80	5	155	<0.5	<0.008	—	—	19-20	
23	225625	65	20	145	<0.5	<0.008	—	—	20-21	
24	225626	385	30	215	1.0	<0.008	—	—	21-22	
25	225627	940	10	175	2.0	0.010	<0.008	—	22-23	

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110400.60.07535	06/12/90	0013	5 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-8	
1	225628	380	10	180	1.0	<0.008	—	<0.008	23 - 24	
2	225629	SNR	—	—	—	—	—	—	24 - 25	
3	225630	210	5	150	<0.5	<0.008	—	—	25 - 26	
4	225631	520	10	145	1.0	<0.008	—	—	26 - 27	
5	225632	330	30	170	1.0	<0.008	—	—	27 - 28	
6	225633	1450	15	195	2.0	0.020	—	—	28 - 29	
7	225634	550	15	230	1.0	0.015	—	—	29 - 30.15	
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20	SNR =	SAMPLE NOT RECEIVED								
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	0.008		
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GG309		

Results in ppm unless otherwise specified
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Phone (004) 31 6837 | 14 Thirkell St. Cooee Tas 7320 | Fax No. (004) 31 8890

ANALYTICAL REPORT No. 110600.60.07556

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

ORDER No.	PROJECT
0014	Gowrie Park

DATE RECEIVED	RESULTS REQUIRED
28/11/90	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
7	12/12/90	1	150

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
225635/784	DC Prep: GP005,GP009,SP016	Cu,Pb,Zn,Ag/GA101
225635/784	DC	Au,Au:1/GG309,Au/RAW,Au/Wt
225635/784	DC	Au(R),Au(S)/GG309

REMARKS

RESULTS TO
Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

RESULTS TO

RESULTS TO

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	1 OF 7

TUBE No.	SAMPLE No	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-9	
1	225635	<0.008	—	—	1.0	130	15	165	0.3-1	
2	225636	<0.008	—	—	<0.5	125	15	225	1-2	
3	225637	<0.008	—	—	<0.5	60	10	205	2-3	
4	225638	<0.008	—	—	1.0	40	10	285	3-4	
5	225639	<0.008	—	—	1.0	40	5	245	4-5	
6	225640	<0.008	—	—	1.0	40	10	225	5-6	
7	225641	<0.008	—	—	1.0	65	10	170	6-7	
8	225642	<0.008	—	—	1.0	60	10	70	7-8	
9	225643	<0.008	—	—	1.0	70	20	135	8-9	
10	225644	0.010	—	—	1.0	85	10	180	9-10	
11	225645	0.190	—	—	1.0	100	40	125	10-11	
12	225646	0.020	0.020	—	1.0	180	15	65	11-12	
13	225647	<0.008	—	—	1.0	70	<5	55	12-13	
14	225648	<0.008	—	—	1.0	50	<5	60	13-14	
15	225649	<0.008	—	—	1.0	60	15	115	14-15	
16	225650	0.180	—	—	1.0	120	20	115	15-16	
17	225651	<0.008	—	—	1.0	90	25	200	16-17	
18	225652	<0.008	—	—	1.0	50	35	130	17-18	
19	225653	<0.008	—	—	1.0	90	70	115	18-19	
20	225654	<0.008	—	—	1.0	75	25	130	19-20	
21	225655	<0.008	—	—	1.0	85	10	90	20-21	
22	225656	<0.008	<0.008	—	1.0	95	15	45	21-22	
23	225657	<0.008	—	—	1.0	105	30	45	22-23	
24	225658	<0.008	—	—	1.0	90	30	60	23-24	
25	225659	0.010	—	—	1.0	120	20	45	24-25	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	2 OF 7

TUBE No.	SAMPLE No.	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-9	
1	225660	<0.008	—	—	1.0	120	25	65	25-26	
2	225661	<0.008	—	—	1.0	80	20	30	26-27	
3	225662	<0.008	—	—	1.0	85	20	50	27-28	
4	225663	<0.008	—	—	1.0	70	20	30	28-29	
5	225664	1.065	—	—	4.0	2700	35	75	29-30.45	
6	225665	0.195	—	0.175	2.0	865	25	490	GP-90-10 0.4-1	
7	225666	0.390	—	—	2.0	1550	50	135	1-2	
8	225667	0.010	—	—	1.0	120	10	80	2-3	
9	225668	0.040	—	—	2.0	85	20	85	3-4	
10	225669	<0.008	—	—	1.0	45	10	100	4-5	
11	225670	<0.008	—	—	1.0	75	20	105	5-6	
12	225671	0.015	—	—	1.0	245	15	135	6-7	
13	225672	3.260	3.280	—	3.0	880	30	120	7-8	
14	225673	0.510	—	—	2.0	90	30	140	8-9	
15	225674	0.585	—	—	1.0	450	80	330	9-10	
16	225675	30.000	—	—	15.0	6750	70	260	10-11	
17	225676	21.000	—	—	15.0	4670	270	495	11-12	
18	225677	13.150	—	—	20.0	2560	2230	8950	12-13	
19	225678	0.640	—	—	5.0	200	2350	1200	13-14	
20	225679	1.280	—	—	5.0	160	1800	610	14-15	
21	225680	1.415	—	—	5.0	180	2300	1450	15-16	
22	225681	2.720	—	2.630	6.0	100	1900	1550	16-17	
23	225682	1.450	1.370	—	5.0	140	3100	1600	17-18	
24	225683	0.840	—	—	2.0	65	370	410	18-19	
25	225684	4.590	—	—	9.0	2050	700	825	19-20	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
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A Division of Inchcape Inspection and Testing Services Australia Pty Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	3 OF 7

TUBE No.	SAMPLE No	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-10	
1	225685	7.290	--	--	7.0	55	550	340	20-21	
2	225686	0.540	--	--	3.0	85	1200	1150	21-22	
3	225687	0.245	--	--	2.0	80	130	195	22-23	
4	225688	1.740	--	--	3.0	20	135	180	23-24	
5	225689	0.340	--	--	<0.5	25	50	185	24-25	
6	225690	0.030	--	--	<0.5	25	85	160	25-26	
7	225691	0.785	--	--	2.0	30	325	510	26-27	
8	225692	0.540	--	--	1.0	25	245	340	27-28	
9	225693	0.360	--	--	1.0	20	160	110	28-29	
10	225694	0.145	--	--	1.0	30	165	100	29-30.25	
11	225695	<0.008	--	--	1.0	190	15	195	GP-90-11 0.65-1	
12	225696	<0.008	--	--	1.0	100	5	105	1-2	
13	225697	<0.008	--	--	<0.5	165	<5	130	2-3	
14	225698	<0.008	<0.008	--	<0.5	170	<5	85	3-4	
15	225699	<0.008	--	--	<0.5	140	<5	150	4-5	
16	225700	<0.008	--	--	<0.5	85	<5	135	5-6	
17	225701	<0.008	--	--	<0.5	105	<5	115	6-7	
18	225702	<0.008	--	--	1.0	40	<5	120	7-8	
19	225703	<0.008	--	--	1.0	90	<5	105	8-9	
20	225704	<0.008	--	--	1.0	45	<5	95	9-10	
21	225705	<0.008	--	--	1.0	190	<5	125	10-11	
22	225706	<0.008	--	--	1.0	595	<5	120	11-12	
23	225707	<0.008	--	--	1.0	200	<5	140	12-13	
24	225708	<0.008	<0.008	--	1.0	245	<5	175	13-14	
25	225709	<0.008	--	--	1.0	280	<5	150	14-15	

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	4 OF 7

TUBE No.	SAMPLE No.	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-11	
1	225710	<0.008	--	--	<0.5	300	<5	110	15-16	
2	225711	1.220	--	--	<0.5	350	<5	140	16-17	
3	225712	0.970	--	--	<0.5	255	<5	150	17-18	
4	225713	1.340	--	<0.008	1.0	210	<5	155	18-19	
5	225714	0.015	--	--	1.0	675	<5	85	19-20	
6	225715	<0.008	--	--	<0.5	575	<5	65	20-21	
7	225716	<0.008	--	--	1.0	235	<5	90	21-22	
8	225717	<0.008	--	--	<0.5	115	<5	75	22-23	
9	225718	<0.008	--	--	1.0	240	<5	55	23-24	
10	225719	<0.008	--	--	1.0	110	<5	60	24-25	
11	225720	<0.008	--	--	1.0	50	<5	45	25-26	
12	225721	<0.008	--	--	1.0	40	<5	50	26-27	
13	225722	<0.008	--	--	<0.5	185	<5	55	27-28	
14	225723	<0.008	--	--	1.0	110	<5	100	28-29	
15	225724	<0.008	<0.008	--	1.0	50	<5	80	29-30.10	
16	225725	<0.008	--	--	1.0	190	<5	125	GP-90-12 0.6-1	
17	225726	<0.008	--	--	1.0	100	<5	130	1-2	
18	225727	<0.008	--	--	1.0	85	<5	130	2-3	
19	225728	<0.008	--	--	<0.5	95	<5	80	3-4	
20	225729	<0.008	--	--	<0.5	95	<5	120	4-5	
21	225730	<0.008	--	--	<0.5	25	<5	90	5-6	
22	225731	<0.008	--	--	<0.5	45	<5	105	6-7	
23	225732	<0.008	--	--	<0.5	65	<5	100	7-8	
24	225733	<0.008	--	--	<0.5	135	<5	185	8-9	
25	225734	<0.008	<0.008	--	<0.5	80	<5	185	9-10	

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	5 OF 7

TUBE No.	SAMPLE No.	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-12	
1	225735	<0.008	—	—	<0.5	140	<5	145	10-11	
2	225736	<0.008	—	—	<0.5	150	5	130	11-12	
3	225737	<0.008	—	—	1.0	25	10	110	12-13	
4	225738	<0.008	—	—	1.0	55	10	160	13-14	
5	225739	<0.008	—	—	<0.5	75	25	160	14-15	
6	225740	<0.008	—	—	1.0	90	50	160	15-16	
7	225741	<0.008	—	—	1.0	60	10	200	16-17	
8	225742	<0.008	—	—	1.0	85	15	115	17-18	
9	225743	<0.008	—	<0.008	1.0	160	25	70	18-19	
10	225744	<0.008	—	—	1.0	170	25	135	19-20	
11	225745	1.085	—	—	1.0	125	30	260	20-21	
12	225746	0.030	—	—	1.0	70	20	245	21-22	
13	225747	<0.008	—	—	1.0	175	25	230	22-23	
14	225748	<0.008	—	—	1.0	90	15	185	23-24	
15	225749	<0.008	—	—	1.0	70	30	225	24-25	
16	225750	<0.008	<0.008	—	1.0	70	<5	210	25-26	
17	225751	0.030	—	—	1.0	180	10	155	26-27	
18	225752	0.035	—	—	1.0	30	<5	85	27-28	
19	225753	0.025	—	—	<0.5	40	<5	65	28-29	
20	225754	0.050	—	—	1.0	55	10	145	29-30.1	
21	225755	0.270	—	—	1.0	100	10	130	GP-90-13 0.2-1	
22	225756	0.070	—	—	1.0	90	5	125	1-2	
23	225757	0.885	—	—	3.0	160	<5	145	2-3	
24	225758	0.200	—	—	1.0	90	<5	155	3-4	
25	225759	0.370	—	—	1.0	30	<5	80	4-5	

Results in ppm unless otherwise specified
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	6 OF 7

TUBE No.	SAMPLE No.	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn	GP-90-13	
1	225760	0.320	0.340	—	1.0	30	<5	80	5-6	
2	225761	0.495	—	—	<0.5	35	<5	110	6-7	
3	225762	0.210	—	—	1.0	25	10	105	7-8	
4	225763	0.030	—	—	1.0	25	15	160	8-9	
5	225764	<0.008	—	—	<0.5	50	10	430	9-10	
6	225765	<0.008	—	—	<0.5	125	<5	130	10-11	
7	225766	0.040	—	—	1.0	150	<5	140	11-12	
8	225767	0.240	—	0.270	2.0	65	<5	130	12-13	
9	225768	0.020	—	—	1.0	130	<5	270	13-14	
10	225769	0.625	—	—	1.0	465	15	170	14-15	
11	225770	0.035	—	—	1.0	45	30	260	15-16	
12	225771	0.080	—	—	<0.5	50	<5	115	16-17	
13	225772	0.030	—	—	1.0	70	15	220	17-18	
14	225773	0.020	—	—	<0.5	165	10	155	18-19	
15	225774	<0.008	—	—	<0.5	50	<5	80	19-20	
16	225775	0.050	—	—	<0.5	95	<5	170	20-21	
17	225776	0.045	—	—	<0.5	30	<5	175	21-22	
18	225777	0.050	—	—	<0.5	80	10	235	22-23	
19	225778	0.070	—	—	<0.5	195	25	210	23-24	
20	225779	<0.008	—	—	<0.5	160	70	170	24-25	
21	225780	<0.008	—	—	<0.5	100	25	165	25-26	
22	225781	<0.008	—	—	<0.5	85	35	125	26-27	
23	225782	0.420	—	0.395	1.0	385	120	145	27-28	
24	225783	0.970	—	—	3.0	105	430	1700	28-29	
25	225784	0.070	—	—	<0.5	40	30	425	29-30.60	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07556	12/12/90	0014	7 OF 7

TUBE No.	SAMPLE No.	Au	Au(R)	Au(S)	Ag	Cu	Pb	Zn		
1										
2										
3										
4										
5										
6										
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16										
17										
18										
19										
20										
21										
22	DETECTION	0.008	0.008	0.008	0.5	5	5	5		
23	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
24	METHOD	GG309	GG309	GG309	GA101	GA101	GA101	GA101		
25										

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

Analabs - A Division of Inchcape Inspection & Testing Services

Phone (004) 31 6937 | 14 Thirkell St, Cooee Tas 7320 | Fax No. (004) 31 8890

ANALYTICAL REPORT No. 110600.60.07563

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

ORDER No.	PROJECT
0015	Gowrie Park

DATE RECEIVED	RESULTS REQUIRED
03/12/90	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES
5	19/12/90	1

TOTAL No. OF SAMPLES: 116

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
225785/900	DC Prep: GP005,GP009,GP011,GP016	Au,Au(R),Au(S)/GG309,Au/RAW,Au/WT
225785/900	DC	Cu,Pb,Zn,Ag/GA101

RESULTS TO
Mr. P Jones
Noranda Pty. Ltd.,
Saddle Road

Kettering Tas 7155

RESULTS TO

RESULTS TO

REMARKS

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07563	19/12/90	0015	1 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-14	
1	225785	55	<5	70	1.0	0.095	—	—	3.5-4	
2	225786	130	<5	120	3.0	0.265	—	—	4-5	
3	225787	155	10	110	2.0	0.595	—	—	5-6	
4	225788	145	<5	150	1.0	0.300	—	—	6-7	
5	225789	100	<5	120	2.0	0.285	—	—	7-8	
6	225790	60	5	100	1.0	0.165	—	—	8-9	
7	225791	35	<5	135	1.0	1.190	—	—	9-10	
8	225792	90	5	120	2.0	0.260	—	—	10-11	
9	225793	135	<5	125	1.0	0.060	—	—	11-12	
10	225794	105	15	125	3.0	0.201	—	—	12-13	
11	225795	100	5	120	2.0	1.315	—	—	13-14	
12	225796	50	<5	165	2.0	0.460	0.490	—	14-15	
13	225797	90	<5	160	2.0	0.415	—	—	15-16	
14	225798	45	5	65	1.0	<0.008	—	—	16-17	
15	225799	35	10	50	1.0	<0.008	—	—	17-18	
16	225800	35	5	90	1.0	<0.008	—	—	18-19	
17	225801	10	<5	65	1.0	<0.008	—	—	19-20	
18	225802	35	10	60	1.0	<0.008	—	—	20-21	
19	225803	60	10	85	1.0	<0.008	—	—	21-22	
20	225804	20	<5	70	1.0	<0.008	—	—	22-23	
21	225805	30	5	50	1.0	<0.008	—	—	23-24	
22	225806	65	5	40	1.0	<0.008	—	—	24-25	
23	225807	85	<5	35	2.0	0.030	—	—	25-26	
24	225808	105	<5	45	1.0	<0.008	—	—	26-27	
25	225809	140	5	65	2.0	<0.008	—	—	27-28	

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty Ltd

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07563	19/12/90	0015	2 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-14	
1	225810	445	15	920	3.0	<0.008	--	--	28-29	
2	225811	115	5	350	2.0	<0.008	--	--	29-30	
3	225812	100	5	1850	1.0	<0.008	--	--	30-31	
4	225813	25	10	65	1.0	<0.008	--	--	31-3230	
5	225814	35	30	170	1.0	<0.008	--	--	GP-90-15 3.5-4	
6	225815	35	85	510	1.0	<0.008	--	--	4-5	
7	225816	55	140	635	1.0	0.010	--	--	5-6	
8	225817	10	45	145	1.0	<0.008	--	--	6-7	
9	225818	15	15	60	1.0	<0.008	--	--	7-8	
10	225819	10	15	85	1.0	<0.008	--	--	8-9	
11	225820	15	15	75	1.0	<0.008	--	--	9-10	
12	225821	20	20	190	1.0	<0.008	--	--	10-11	
13	225822	35	35	275	1.0	<0.008	<0.008	--	11-12	
14	225823	40	20	335	1.0	<0.008	--	--	12-13	
15	225824	40	40	180	1.0	<0.008	--	--	13-14	
16	225825	245	200	1700	1.0	<0.008	--	--	14-15	
17	225826	275	120	1000	1.0	0.010	--	--	15-16	
18	225827	360	465	455	1.0	0.015	--	--	16-17	
19	225828	160	20	210	1.0	<0.008	--	--	17-18	
20	225829	15	10	165	1.0	<0.008	--	--	18-19	
21	225830	25	10	130	1.0	<0.008	--	--	19-20	
22	225831	50	5	70	<0.5	<0.008	--	--	20-21	
23	225832	335	10	135	1.0	<0.008	--	--	21-22	
24	225833	215	<5	105	<0.5	<0.008	--	--	22-23	
25	225834	125	5	105	<0.5	<0.008	--	--	23-24	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty Ltd

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No	PAGE
	110600.60.07563	19/12/90	0015	3 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-15	
1	225835	300	<5	65	1.0	0.010	--	--	24-25	
2	225836	435	<5	45	1.0	<0.008	--	--	25-26	
3	225837	250	5	55	<0.5	<0.008	--	--	26-27	
4	225838	80	5	110	<0.5	<0.008	--	--	27-28	
5	225839	80	<5	80	1.0	<0.008	--	--	28-29	
6	225840	375	15	175	1.0	<0.008	--	--	29-30	
7	225841	120	85	75	<0.5	<0.008	--	--	30-30.85	
8	225842	40	25	140	<0.5	<0.008	--	--	GP-90-16 2-3	
9	225843	55	10	115	1.0	<0.008	--	--	3-4	
10	225844	50	15	190	1.0	<0.008	--	--	4-5	
11	225845	50	10	90	1.0	<0.008	--	--	5-6	
12	225846	50	5	85	1.0	<0.008	--	--	6-7	
13	225847	30	5	65	<0.5	<0.008	--	--	7-8	
14	225848	25	<5	75	<0.5	<0.008	--	--	8-9	
15	225849	10	15	170	<0.5	<0.008	--	--	9-10	
16	225850	15	20	235	<0.5	<0.008	--	--	10-11	
17	225851	10	15	265	1.0	<0.008	--	--	11-12	
18	225852	20	10	200	1.0	<0.008	--	--	12-13	
19	225853	25	5	140	<0.5	<0.008	--	--	13-14	
20	225854	10	10	135	1.0	<0.008	--	--	14-15	
21	225855	15	5	80	<0.5	<0.008	--	--	15-16	
22	225856	35	10	165	1.0	<0.008	--	--	16-17	
23	225857	10	5	80	1.0	<0.008	--	--	17-18	
24	225858	10	<5	115	1.0	<0.008	--	--	18-19	
25	225859	15	5	95	<0.5	0.025	--	--	19-20	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
-- = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07563	19/12/90	0015	4 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-16	
1	225860	20	5	130	1.0	0.020	—	—	20-21	
2	225861	165	10	280	1.0	0.470	—	—	21-22	
3	225862	180	10	575	1.0	0.020	—	—	22-23	
4	225863	235	5	160	1.0	<0.008	—	—	23-24	
5	225864	150	10	230	1.0	0.020	—	—	24-25	
6	225865	65	10	185	1.0	<0.008	—	—	25-26	
7	225866	150	5	105	1.0	0.010	—	—	26-27	
8	225867	145	30	500	1.0	0.130	—	—	27-28	
9	225868	345	65	2200	4.0	1.040	—	1.035	28-29	
10	225869	1850	40	755	10.0	4.050	—	—	29-30	
11	225870	1700	40	165	4.0	1.235	—	—	30-30.75	
12	225871	30	15	105	2.0	0.260	—	—	GP90-17 1.65-2	
13	225872	65	20	265	2.0	0.320	—	—	2-3	
14	225873	90	30	335	3.0	0.095	—	—	3-4	
15	225874	30	15	205	1.0	0.055	0.075	—	4-5	
16	225875	20	<5	70	1.0	0.040	—	—	5-6	
17	225876	5	<5	75	1.0	0.095	—	—	6-7	
18	225877	40	10	100	1.0	0.420	—	—	7-8	
19	225878	95	15	155	1.0	0.960	—	—	8-9	
20	225879	40	25	160	1.0	0.160	—	—	9-10	
21	225880	135	20	105	2.0	0.090	—	—	10-11	
22	225881	25	5	120	1.0	0.130	—	—	11-12	
23	225882	20	5	200	1.0	0.020	—	—	12-13	
24	225883	20	15	85	1.0	0.240	—	—	13-14	
25	225884	25	35	300	2.0	0.245	0.240	—	14-15	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07563	19/12/90	0015	5 OF 5

TUBE No	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	GP-90-17	
1	225885	45	15	180	1.0	0.115	--	--	15-16	
2	225886	10	5	210	1.0	0.070	--	0.065	16-17	
3	225887	15	25	300	1.0	0.030	--	--	17-18	
4	225888	30	<5	150	2.0	0.780	--	--	18-19	
5	225889	45	5	120	1.0	0.260	--	--	19-20	
6	225890	80	<5	105	1.0	0.520	--	--	20-21	
7	225891	10	<5	80	1.0	1.370	--	--	21-22	
8	225892	45	<5	60	1.0	0.030	--	--	22-23	
9	225893	1150	<5	85	3.0	0.305	--	--	23-24	
10	225894	145	<5	140	1.0	0.090	--	--	24-25	
11	225895	25	<5	190	2.0	1.190	--	--	25-26	
12	225896	35	<5	135	2.0	0.500	--	--	26-27	
13	225897	100	10	375	2.0	0.260	--	--	27-28	
14	225898	1025	<5	345	6.0	1.295	--	--	28-29	
15	225899	165	<5	165	3.0	0.100	--	--	29-30	
16	225900	140	<5	250	4.0	0.120	--	--	30-30.35	
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	0.008		
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GG309		

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty Ltd

Analabs - A Division of Inchcape Inspection & Testing Services

Phone (004) 31 6837 | 14 Thirkell St. Coogee Tas 7320 | Fax (004) 31 8890

ANALYTICAL REPORT No. 110600.60.07973

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr. P Jones
Noranda Pty Ltd
P.O. Box 287
KETTERING TAS 7155

ORDER No.	PROJECT
P. Jones	

DATE RECEIVED	RESULTS REQUIRED
13/05/91	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
1	21/05/91	1	13

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
01/13	RO Prep: GP005,GP009,GP011,GP019	Cu,Pb,Zn,Ag/GA101
01/13	RO	Au,Au(R),Au(S)/GG109,Au/RAW,Au/Wt

REMARKS

RESULTS TO
Mr. P Jones
Noranda Pty Ltd
P.O. Box 287
KETTERING TAS 7155

RESULTS TO
Noranda Pty Ltd
278 Stirling Highway
CLAREMONT W.A. 6010

RESULTS TO

AUTHORISED OFFICER

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07973	21/05/91	P. Jones	1 OF 1

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	Cethana	
1	01	40	28	37	<0.5	<0.008	--	--	428700-5407800	
2	02	30	5	32	<0.5	<0.008	--	--	428560-5407850	
3	03	65	8538	114	12.5	0.290	0.270	--	428540 5407870	
4	04	50	15	24	<0.5	<0.008	--	<0.008	428550 5407900	
5	05	25	226	144	<0.5	<0.008	--	--	1100E 5075 S	
6	06	55	155	79	<0.5	<0.008	--	--	1100E 4970S	
7	07	165	557	70	<0.5	0.020	0.030	--	22600E / 0950S.	
8	08	45	214	37	<0.5	<0.008	--	--	22400E/ 0815S	
9	09	30	170	28	<0.5	<0.008	--	--	900E/ 5045S.	
10	10	15	7	18	<0.5	<0.008	--	--	900E/ 4965S	
11	11	140	<5	91	<0.5	<0.008	<0.008	--	900E/ 4860S	
12	12	30	96	1189	<0.5	<0.008	--	--	900E/ 4780S	
13	13	20	37	273	<0.5	<0.008	--	--	428120 540800	
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	0.008		
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GG309		

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

Analabs - A Division of Inchcape Inspection & Testing Services

Phone (004) 31 6837 | 14 Thirkell St. Cooee Tas 7320 | Fax (004) 31 8890

ANALYTICAL REPORT No. 110600.60.07995

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr. P Jones
Noranda Pty Ltd
P.O. Box 267
KETTERING TAS 7155

ORDER No.	PROJECT

DATE RECEIVED	RESULTS REQUIRED
21/05/91	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	30/05/91	1	40

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
14,15,225901/38	SO Prep: BP005,BP009,BP011,BP018	Cu,Pb,Zn,Ag/BA101
14,15,225901/38	SO	Au,Au(R),Au(S)/BB309,Au/RAW,Au/WT

REMARKS

RESULTS TO
Mr. P Jones
Noranda Pty Ltd
P.O. Box 267
KETTERING TAS 7155

RESULTS TO
Noranda Pty Ltd
278 Stirling Highway
CLAREMONT W.A. 6010

RESULTS TO

AUTHORISED OFFICER

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07995	30/05/91		1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)		
1	14	61	220	995	<0.5	<0.008	—	—	22600E/ 0775 S	
2	15	47	64	833	<0.5	<0.008	—	—	22600E/ 0850S	
3	225901	12	29	94	<0.5	<0.008	—	<0.008	22200E/ 0775 S	
4	225902	<5	13	32	<0.5	<0.008	—	—	0750 S	
5	225903	6	16	22	<0.5	<0.008	—	—	0725 S	
6	225904	6	21	25	<0.5	<0.008	—	—	0700S	
7	225905	12	18	32	<0.5	<0.008	—	—	0675S	
8	225906	<5	52	30	<0.5	<0.008	—	—	0800 S	
9	225907	12	46	23	<0.5	<0.008	—	—	0825 S	
10	225908	17	110	86	<0.5	<0.008	—	—	0650 S	
11	225909	21	69	64	<0.5	<0.008	—	—	0625 S	
12	225910	26	18	12	<0.5	<0.008	<0.008	—	0600 S	
13	225911	10	41	19	<0.5	<0.008	—	—	0575 S	
14	225912	24	69	20	<0.5	<0.008	—	—	0850S	
15	225913	10	149	14	<0.5	<0.008	—	—	0875 S	
16	225914	10	142	25	<0.5	<0.008	—	—	0900 S	
17	225915	7	34	38	<0.5	<0.008	—	—	0925 S	
18	225916	8	202	24	<0.5	<0.008	—	—	0950 S	
19	225917	5	16	26	<0.5	<0.008	—	—	22400 E/ 1050 S	
20	225918	11	143	61	<0.5	<0.008	—	—	0850S	
21	225919	9	171	45	<0.5	<0.008	—	—	0825 S	
22	225920	7	60	31	<0.5	<0.008	<0.008	—	0787½S	
23	225921	12	70	52	<0.5	<0.008	—	—	0775 S	
24	225922	21	83	50	1.4	<0.008	—	—	0675 S	
25	225923	34	105	83	<0.5	<0.008	—	—	0650S	

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	110600.60.07995	30/05/91		2 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)		
1	225924	47	131	772	<0.5	<0.008	—	—	22600 E/ 0750 s	
2	225925	103	1442	570	<0.5	0.015	0.012	—	0775 s	
3	225926	13	38	43	<0.5	<0.008	—	—	0800 s	
4	225927	43	64	144	<0.5	<0.008	—	—	0825 s	
5	225928	30	113	73	<0.5	<0.008	—	—	0850 s	
6	225929	72	261	120	<0.5	<0.008	—	—	0875 s	
7	225930	56	483	101	<0.5	<0.008	—	—	0900 s	
8	225931	16	75	47	<0.5	<0.008	—	—	0925 s	
9	225932	17	82	45	<0.5	<0.008	—	—	0950 s	
10	225933	15	81	43	<0.5	<0.008	—	—	0975 s	
11	225934	19	85	41	<0.5	<0.008	—	—	1000 s	
12	225935	36	112	91	<0.5	<0.008	—	—	1025 s	
13	225936	7	51	40	<0.5	<0.008	<0.008	<0.008	1050 s	
14	225937	5	17	30	<0.5	<0.008	—	—	1100 s	
15	225938	<5	39	20	<0.5	<0.008	—	—	1200 s	
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	0.008		
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GG309		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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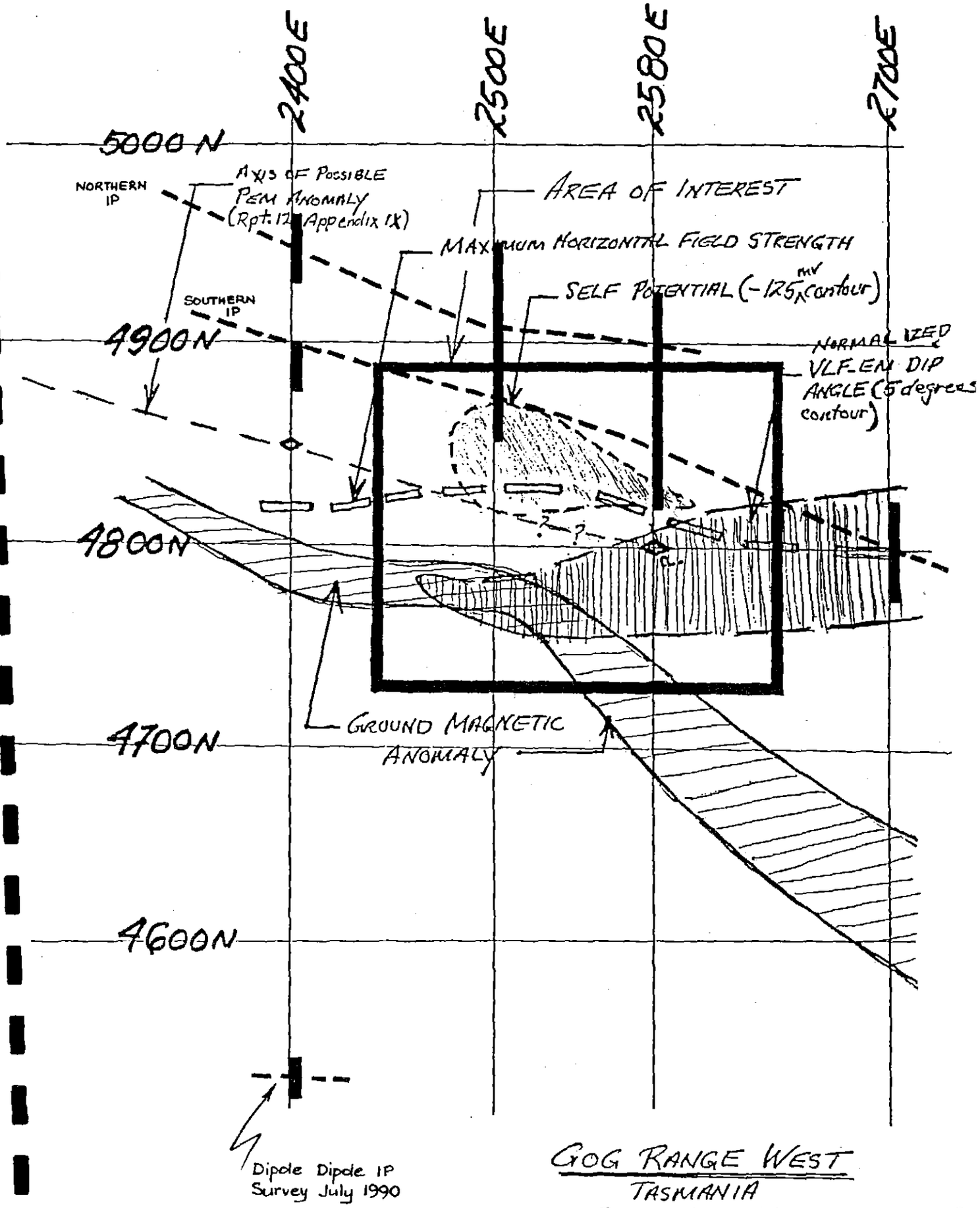

GOG RANGE WEST
TASMANIA
Scale 1:2500

FIG 2.

This diagram forms a part of a report by R.A. TARZAVATJIAN - 1988

APPENDIX 4

✓

Follow up IP at Cethana (EL 10/88) J. Bishop May 1991.

91-3290B

148181

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MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

Memo to: P.A. Jones

from: J.R. Bishop

Date: 20th May, 1991.

SUBJECT: FOLLOW UP IP AT CETHANA

Phil,

The follow up IP at Cethana has been completed. The work was again carried out by Surtec, using the same survey specifications as previously (ie, an IPR-8 receiver using a 50m dipole-dipole array to n=6).

Anomalies previously defined at the southern ends of lines 900E and 1100E were confirmed and fully defined. A strong anomalous zone at the eastern end of the grid was traced for another 800m with a further three lines (22,200E, 22,400E and 22,600E). Copies of the new data are attached.

An interpretation of all of the IP has been proposed to define drill targets -primarily for gold. However as was earlier recommended (Bishop, 1990)*, it is suggested that the IP data should be integrated with the earlier work of CRAE's as well as with your recent mapping and geochemical sampling. This evaluation would recognise the area's potential for base, as well as precious, metal mineralisation.

J.R. Bishop

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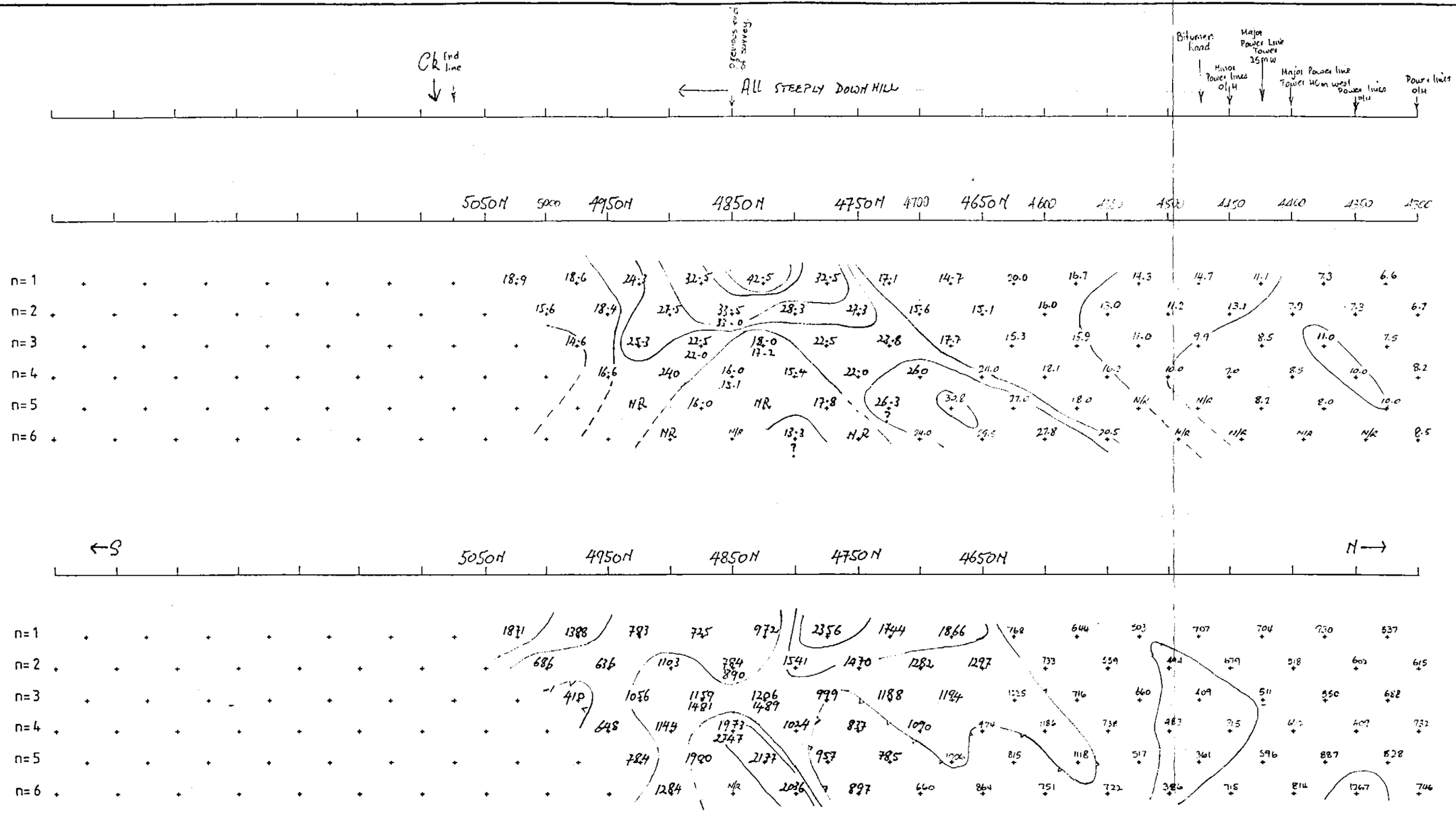
* Bishop, J.R., 1991. An interim report on IP surveys at Cethana & the Gog Range (E.L. 10/88). Mitre Geophysics report 90/12 for Noranda.

1 / 3



EQUIPMENT DETAILS

Transmitter Type: ZONGE GGT-2.5
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR-8
Integration Time: 650 - 1170 msec.
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50 m
Date: 9 - 5 - 91
Job N°:
Scale: 0 50 m

NORANDA

SURTEC GEOSURVEYS PTY LTD

CETHANA W.

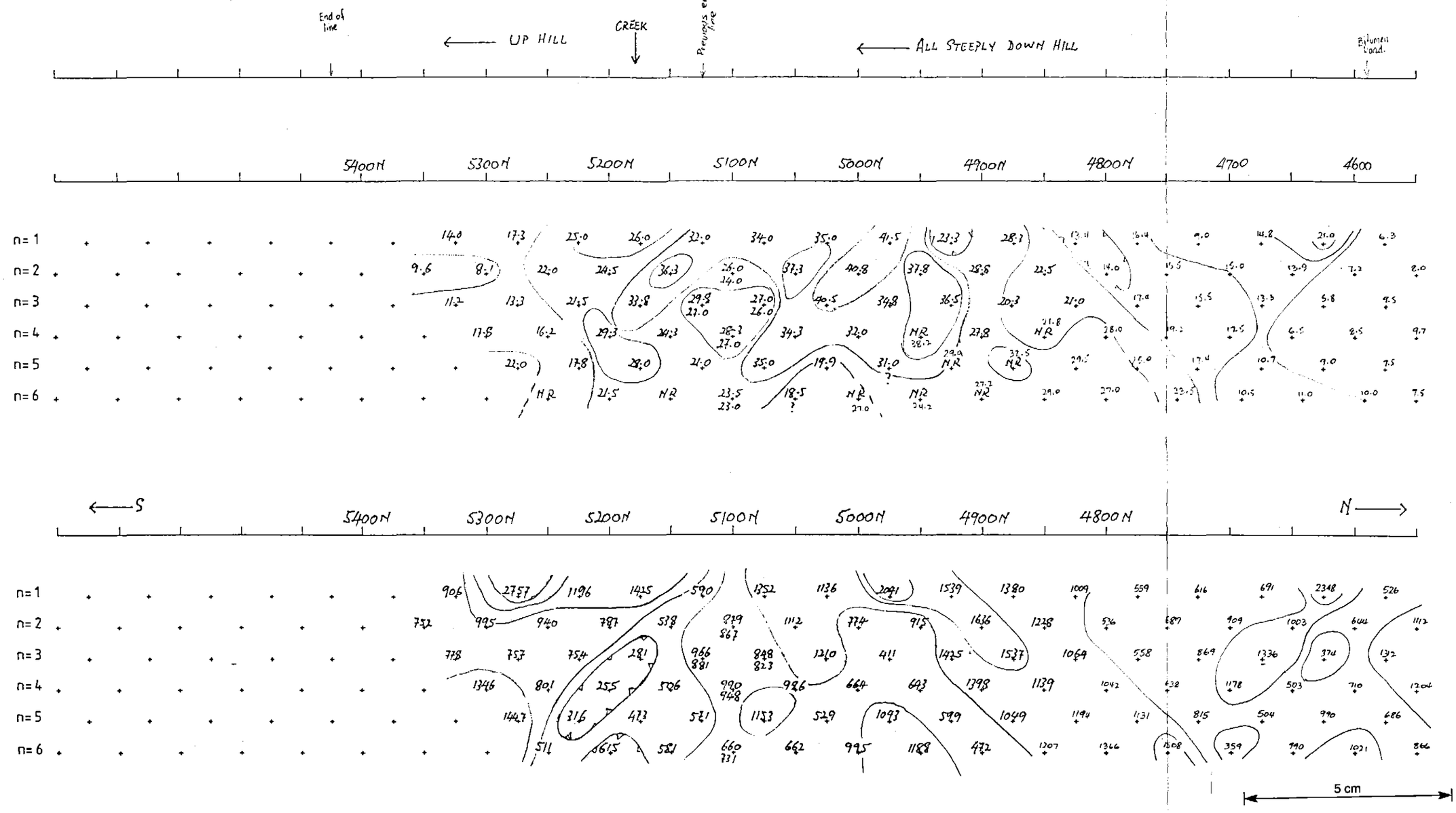
INDUCED POLARISATION & RESISTIVITY

DIPOLE – DIPOLE ARRAY

LINE: 900 E

Author	R. BENNETT	File Number	Figure Number
Drawn	R. BENNETT		
Date	10 - 5 - 91		

148183



CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)
CONTOUR INTERVAL : 10 mV/V

APPARENT RESISTIVITY (ohm-metres)
CONTOUR INTERVAL: Log. (15, 25, 40, 60, 100)

EQUIPMENT DETAILS

Transmitter Type: ZONGE GGT-2.5
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR-8
Integration Time: 650 - 1170 msec.
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50 m
Date: 8-5-91
Job N°:
Scale: 0 — 50 m

NORANDA
SURTEC GEOSURVEYS PTY LTD

CETHANA W
INDUCED POLARISATION & RESISTIVITY
DIPOLE – DIPOLE ARRAY

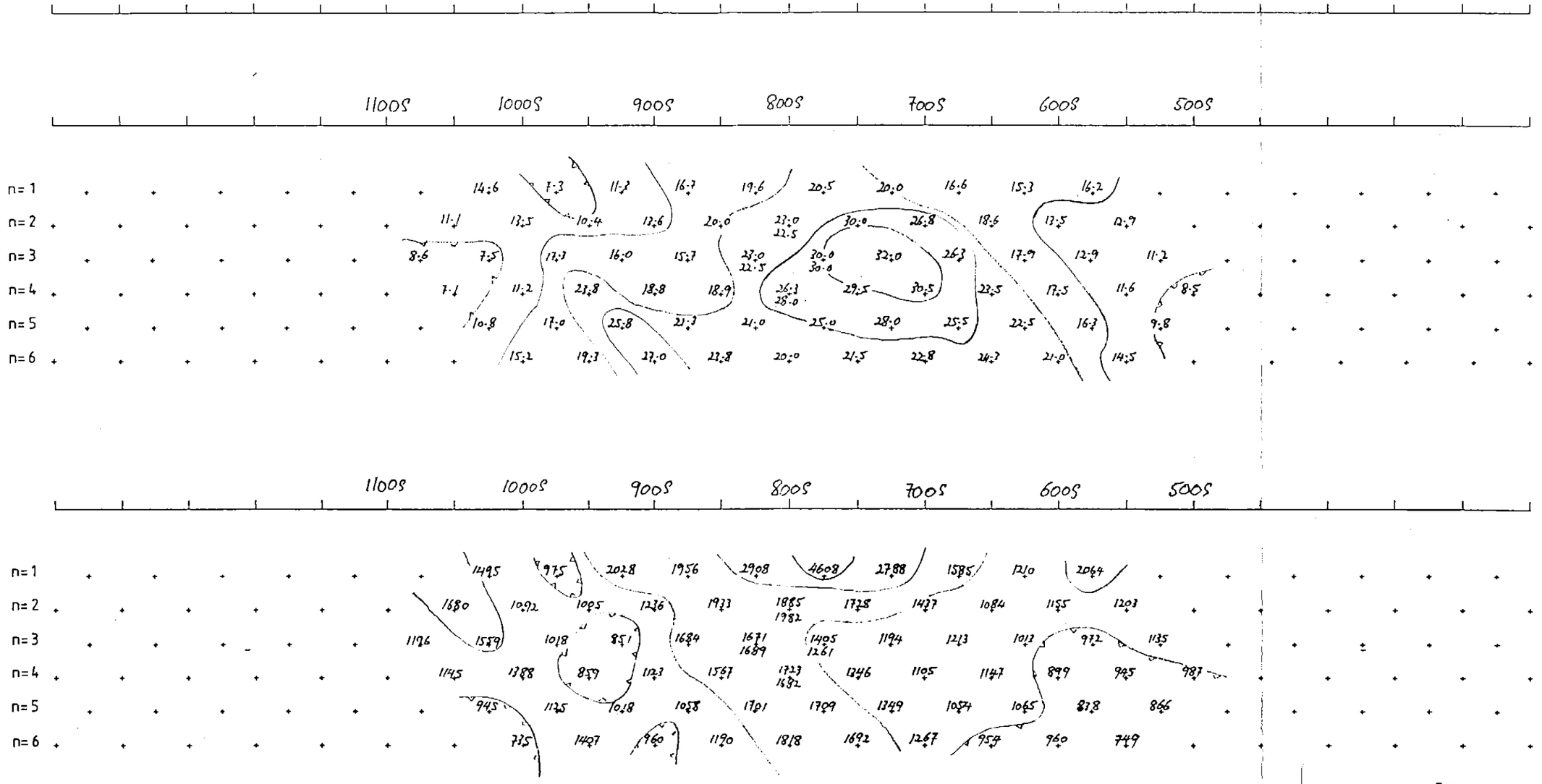
LINE: 1100 E

Author	R. BENNETT	File Number	
Drawn	R. BENNETT		
Date	10-5-91		Figure Number

148184

CULTURE PLAN

APPARENT CHARGEABILITY (mV/V)
CONTOUR INTERVAL : 10 mV/V



APPARENT RESISTIVITY (ohm-metres)
CONTOUR INTERVAL : LOG (15, 25, 40, 60, 100)

5 cm

EQUIPMENT DETAILS

Transmitter Type: ZONGE GGT-2.5
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR-8
Integration Time: 650 - 1170 msec.
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50 m
Date: 4-5-91
Job N°:
Scale: 0 50 m

NORANDA
SURTEC GEOSURVEYS PTY LTD
CETHANA E.
INDUCED POLARISATION & RESISTIVITY
DIPOLE – DIPOLE ARRAY
LINE: 22200 E.

Author	R. BENNETT	File Number	Figure Number
Drawn	R. BENNETT		
Date	4-5-91		

ROAD ↓

SLOPE DOWN ⟶

12005 11005 10005 9005 8005 7005 6005 5005

n=1 6·5 4·4 6·4 21·5 37·8 31·5 26·5 24·5 24·5 19·8
n=2 10·5 6·1 4·5 21·3 31·3 30·5 28·0 34·8 31·3 26·5 21·3 16·5
n=3 9·7 9·6 6·8 19·9 23·0 25·3 24·0 21·8 22·1 36·5 34·0 23·0 20·0 12·2
n=4 7·3 9·1 23·5 22·5 15·8 19·9 22·0 22·0 36·3 29·0 22·0 18·7 13·5
n=5 8·9 24·8 29·3 16·0 18·4 21·5 22·0 22·0 22·9 23·0 17·4
n=6 23·0 29·5 21·5 15·5 18·3 20·0 19·5 34·3 26·0 N.R

12005 11005 10005 9005 8005 7005 6005 5005

n=1 831 1692 856 1587 1530 1806 1336 999 709 790
n=2 1264 1390 1822 765 1208 1058 1030 1043 1131 835 969 903
n=3 1084 1750 1579 1361 863 1102 1190 1269 1234 1100 1113 1013 954 632
n=4 1473 1854 1215 1353 885 1435 1398 1492 1143 1363 951 655 978
n=5 1512 1310 1269 1312 1014 1632 1585 1411 1268 847 1050
n=6 1073 1383 1156 1449 1166 1693 1877 1223 840 1024

APPARENT CHARGEABILITY (mV/V) CULTURE PLAN
CONTOUR INTERVAL : 10 mV/V.

APPARENT RESISTIVITY (ohm-metres)
CONTOUR INTERVAL: LOG (15, 25, 40, 60, 100)

5 cm

EQUIPMENT DETAILS

Transmitter Type: ZONGE GGT-2.5
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR-8
Integration Time: 650 - 1170 msec.
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50 m
Date: 3 - 5 - 91
Job N°:
Scale: 0 —— 50 m

NORANDA

SURTEC GEOSURVEYS PTY LTD

CETHANA E.

INDUCED POLARISATION & RESISTIVITY

DIPOLE – DIPOLE ARRAY

LINE: 224OOE

Author	R. BENNETT	File Number	Figure Number
Drawn	R. BENNETT		
Date	3-5-91		

ROAD ↓ SLOPE DOWN ⟶

1300S 1200S 1100S 1000S 900S 800S 700S 600S

n=1 4·1 8·8 19·5 19·8 31·5 34·3 25·5 26·0 22·5 17·1
n=2 6·6 6·2 14·7 20·0 27·3 27·3 26·8 39·5 26·0 20·5 20·7 13·8
n=3 10·2 12·8 15·8 22·3 21·8 24·8 29·8 29·5 36·5 23·3 19·1 19·6 17·0
n=4 17·6 14·7 17·3 19·5 29·5 26·5 30·0 30·8 23·0 20·5 17·6 12·3
n=5 20·1 16·3 14·8 22·3 30·0 26·0 23·0 19·6 15·2 16·9 14·1
n=6 19·4 16·1 22·5 22·3 24·3 24·5 28·8 21·0 19·3 15·4

APPARENT CHARGEABILITY (mV/V)
CONTOUR INTERVAL : 10 mV/V.

1300S 1200S 1100S 1000S 900S 800S 700S 600S

n=1 889 1439 3018 2216 1615 5847 1626 1287 1260 903
n=2 1551 1111 1477 1773 1190 833 792 1162 1445 866 1389 1362
n=3 1652 1217 1445 1674 940 871 1610 1508 1272 1162 967 1810 1290
n=4 1728 1173 1553 1274 1359 1744 1529 1649 1073 1238 215 2138 1679
n=5 1622 1237 1172 2309 1703 1329 1230 1606 1033 2064 1170
n=6 1686 913 1862 2156 1824 1508 1524 1369 1365 1448

APPARENT RESISTIVITY (ohm-metres)
CONTOUR INTERVAL: LOG. (15, 25, 40, 60, 100)

5 cm

CULTURE PLAN

EQUIPMENT DETAILS

Transmitter Type: ZONGE GGT-2.5
Timing Sequence: 2 sec. on / 2 sec. off
Receiver Type: SCINTREX IPR-8
Integration Time: 650 - 1170 msec.
I.P. Measured Over One Current

SURVEY DETAILS

Array: Dipole – Dipole
Dipole Length: 50 m
Date: 30/4/91
Job N°:
Scale: 0 50

NORANDA

SURTEC GEOSURVEYS PTY LTD

CETHANA E.

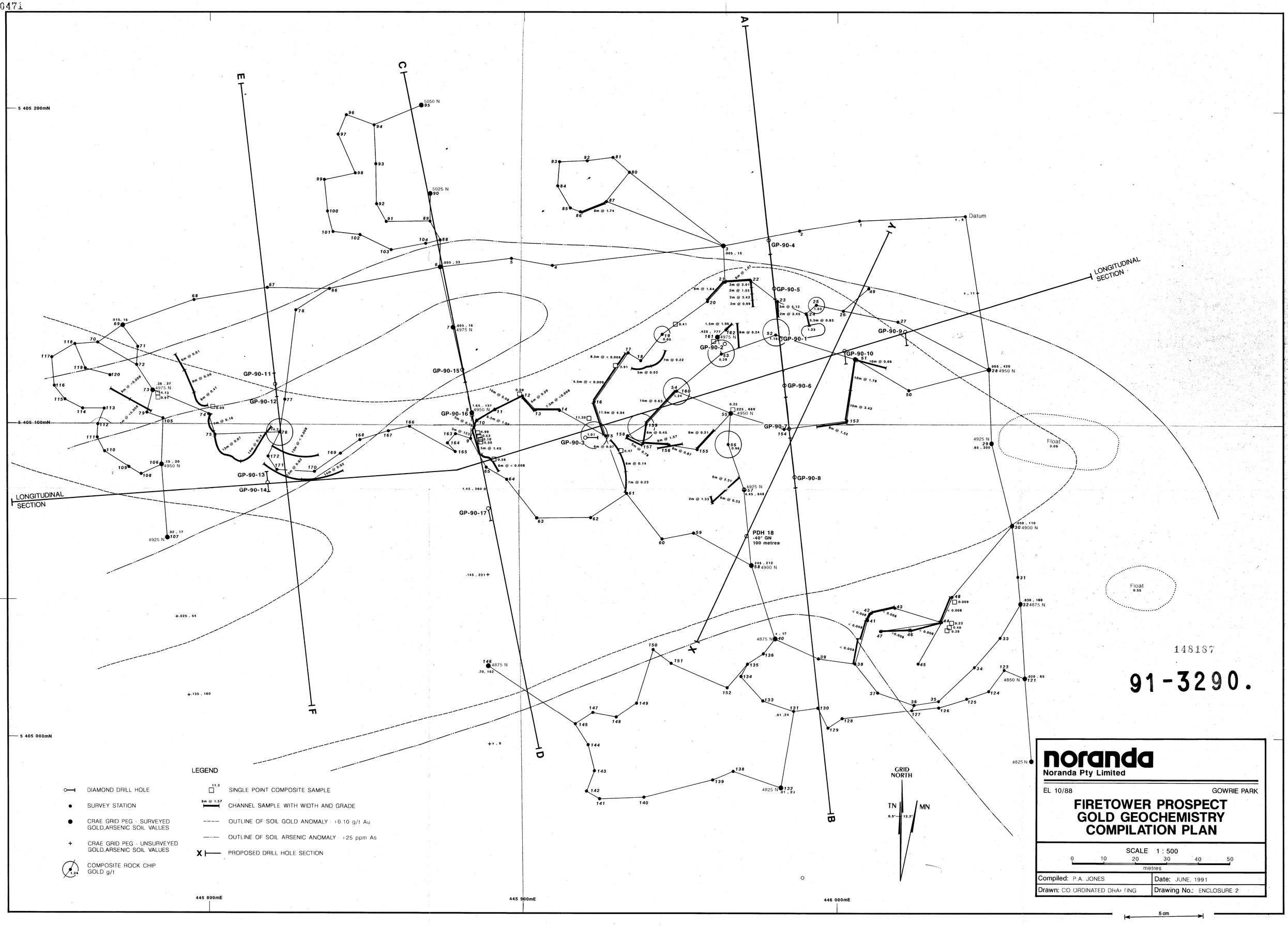
INDUCED POLARISATION & RESISTIVITY

DIPOLE – DIPOLE ARRAY

LINE: 22600 E

Author	R. BENNETT	File Number	Figure Number
Drawn	R. BENNETT		
Date	1-5-91		

10471



148187

91-3290.

noranda
Noranda Pty Limited

EL 10/88 GOWRIE PARK

FIRETOWER PROSPECT GOLD GEOCHEMISTRY COMPILATION PLAN

SCALE 1 : 500
0 10 20 30 40 50
metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO ORDINATED DRAFTING	Drawing No.: ENCLOSURE 2

5cm

16470

noranda

148188

E.L. 10/88 – PARTS 1 & 2
CETHANA AREA
LOCATION PLAN

DRAWN BY :	P.J.
DRAFTSMAN :	T.G.D.S.
DATE :	May '90
REVISIONS :	
FILE No.	NORC25TB

5 cm

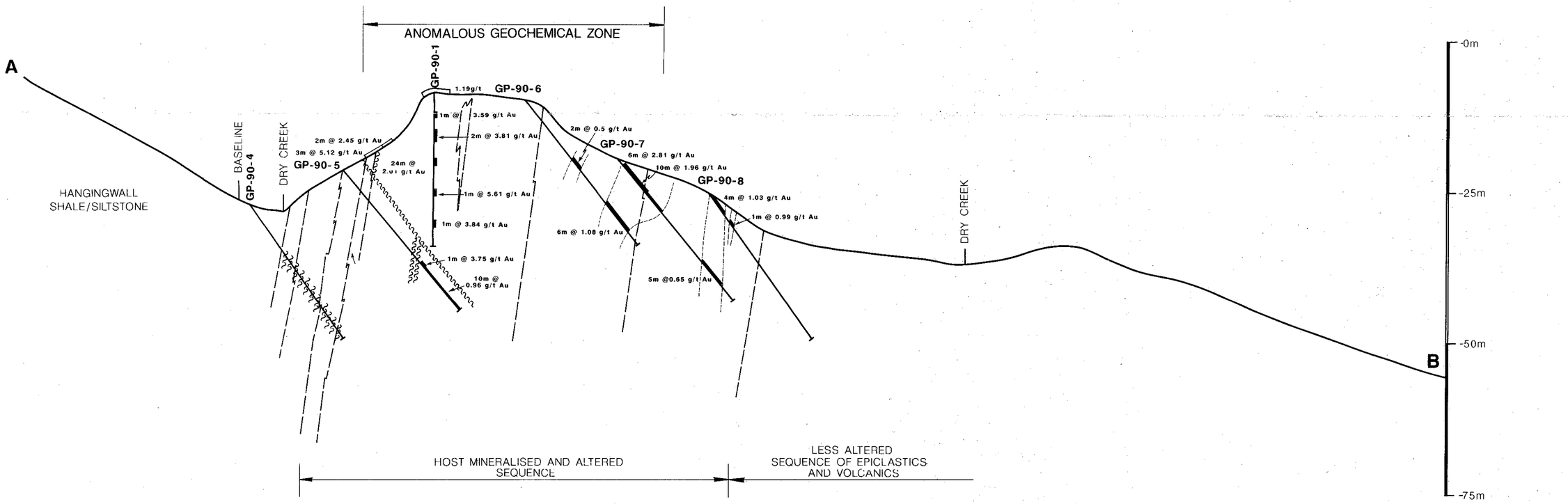
SCALE 1 : 25,000 (500 0 500 1000 METRES)

ENCLOSURE 1

GRID CONVERGENCE 0.5° · GRID/MAGNETIC 12.6°

N.W. Coast Computer Aided Drafting Centre. Phone (004 354365)
Fax. (004 354495)

10472



LEGEND

GP-90-5

12m @ 0.96 g/t Au

DIAMOND HOLE WITH WIDTH AND GRADE GOLD g/t

INTENSE SHEARING

FAULT

GEOLOGICAL CONTACT

143189

91-3290.

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Noranda Pty Limited

EL 10/88 GOWRIE PARK

FIRETOWER PROSPECT GEOLOGICAL SECTION A - B

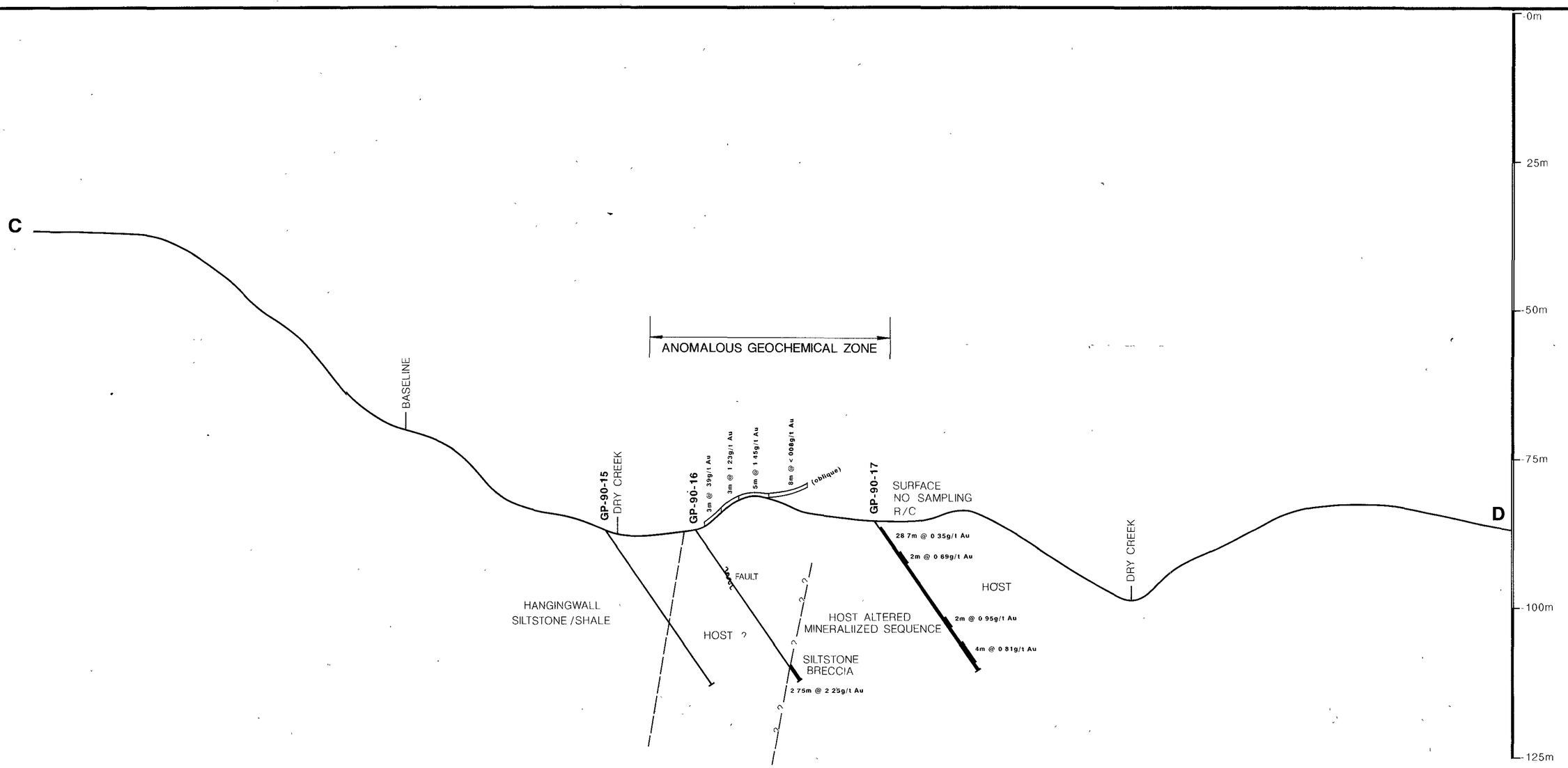
SCALE 1 : 500

0 10 20 30 40 50

metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 3

5 cm



LEGEND

HANGINGWALL SEQUENCE - INTERBEDDED SHALES / ARKOSES / SILTSTONES

HOST - WEAKLY ALTERED AND MINERALIZED EPICLASTICS AND VOLCANICS

STRONGLY ALTERED AND MODERATELY MINERALIZED EPICLASTICS AND VOLCS

GEOLOGICAL CONTACT

FAULT ZONE

GP-90-16
2 75m @ 2 25g/t Au

DIAMOND DRILL HOLE WITH WIDTH AND GRADE GOLD g/t

148190

91-3290.

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EL 10/88 GOWRIE PARK

FIRETOWER PROSPECT
GEOLOGICAL SECTION C - D

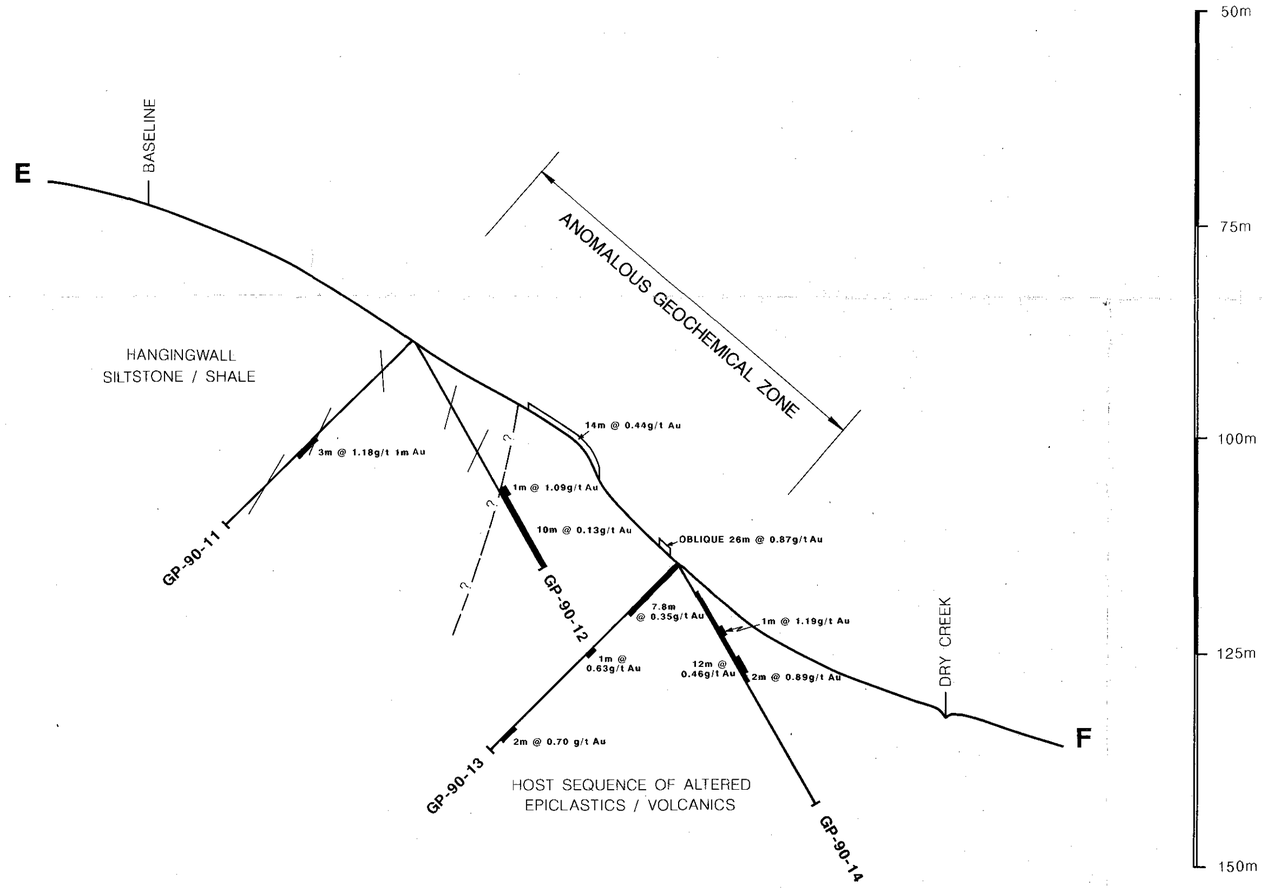
SCALE 1 : 500

0 10 20 30 40 50
metres

Compiled: P A JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 4

5 cm

10474



148191

91-3290.1

LEGEND

HANGINGWALL SEQUENCE - SHALES / SILTSTONES / ARKOSES

HOST - ALTERED / MINERALIZED EPICLASTICS AND VOLCANICS

GEOLOGICAL CONTACT

GR-90-13

2m @ 0.70 g/t Au

DIAMOND HOLE WITH WIDTH AND GRADE
GOLD g/t

DIAMOND HOLE WITH BEDDING ALTITUDE

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EL 10/88 GOWRIE PARK

FIRETOWER PROSPECT
GEOLOGICAL SECTION E - F

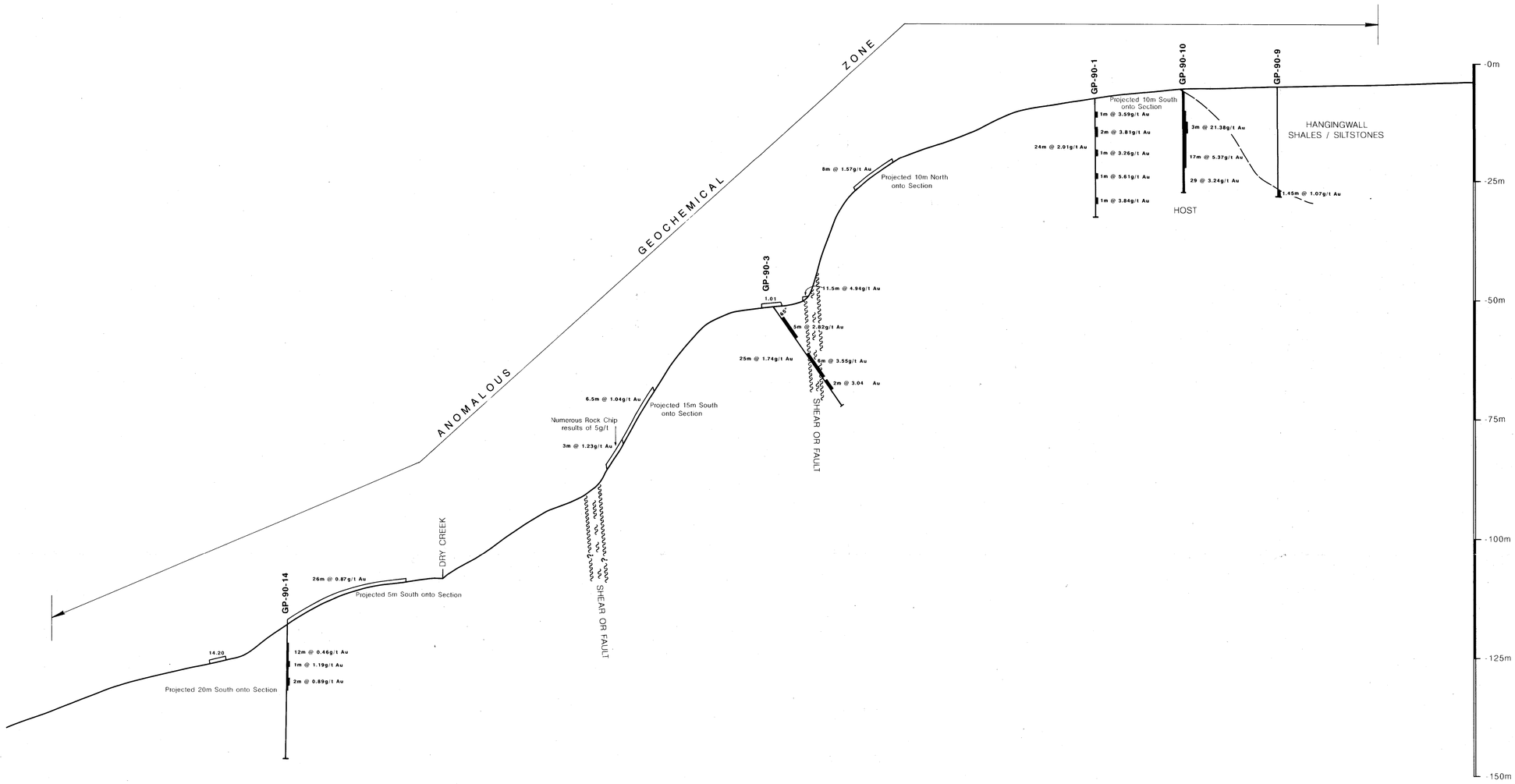
SCALE 1 : 500

0 10 20 30 40 50
metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 5

5 cm

10475



LEGEND

HANGINGWALL SEQUENCE - SHALES / SILTSTONES / ARKOSES

HOST - ALTERED / MINERALIZED EPICLASTICS AND VOLCANICS

GEOLOGICAL CONTACT

SHEAR ZONE / FAULT

GP-90-3
2m @ 3.04 g/t Au
DIAMOND HOLE WITH WIDTH AND GRADE
GOLD g/t

26m @ 0.87 g/t Au
CHANNEL SAMPLING WIDTH AND GRADE
GOLD g/t

1.01
COMPOSITE SAMPLE
GOLD g/t

91-3290.

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148192

EL 10/88 GOWRIE PARK

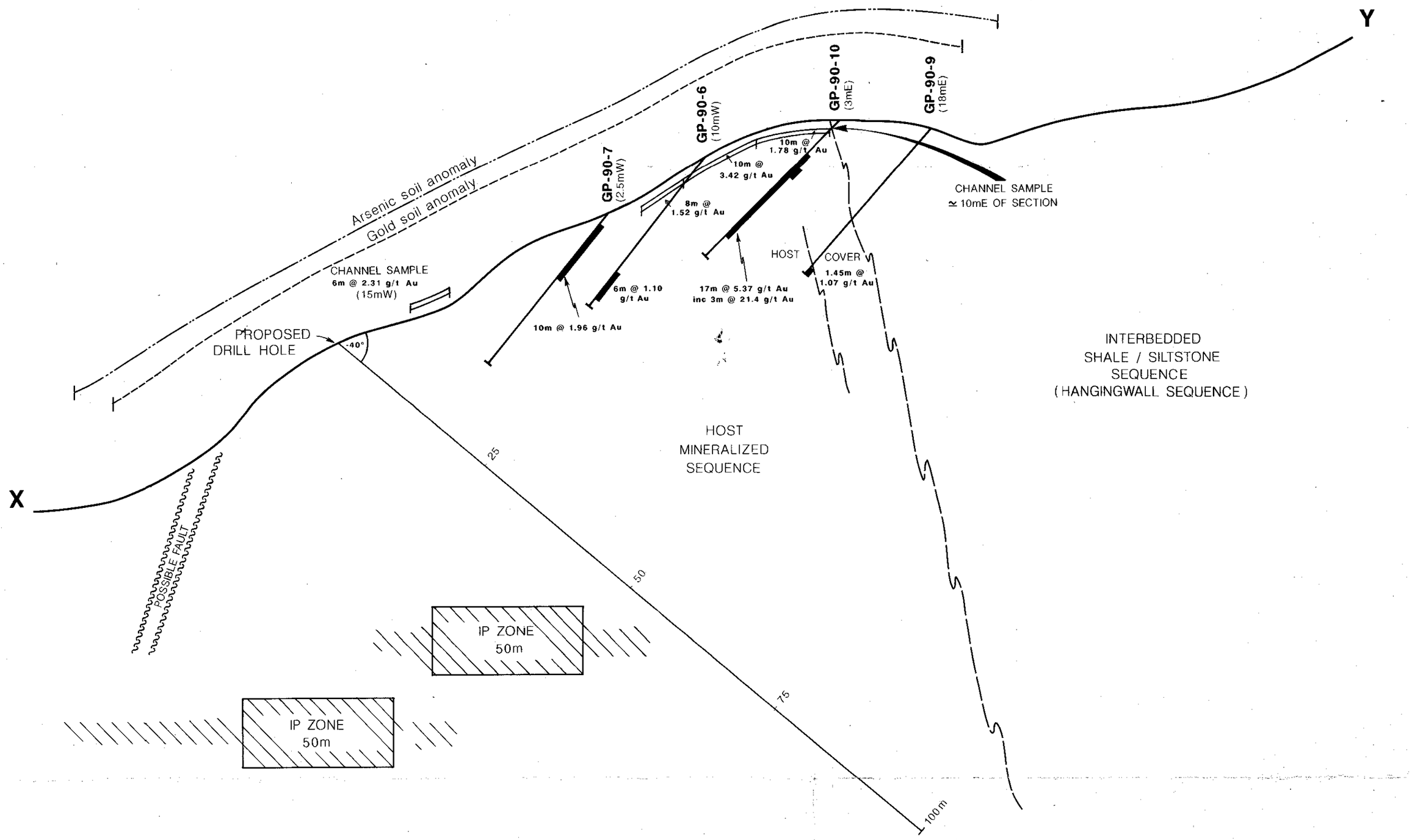
FIRETOWER PROSPECT LONGITUDINAL SECTION

SCALE 1 : 500

0 10 20 30 40 50
metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 6

5 cm



LOCATION : 5 405 065mN, 445 970mE

BEARING : 013 magnetic

DECLINATION : -40°

AIM : To test the down dip extent of mineralization in GP-90-10 and its possible downplunge extent , evidenced from IP and surface geochemistry.

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EL 10/88 GOWRIE PARK

FIRETOWER PROSPECT
PROPOSED DRILL SECTION X - Y

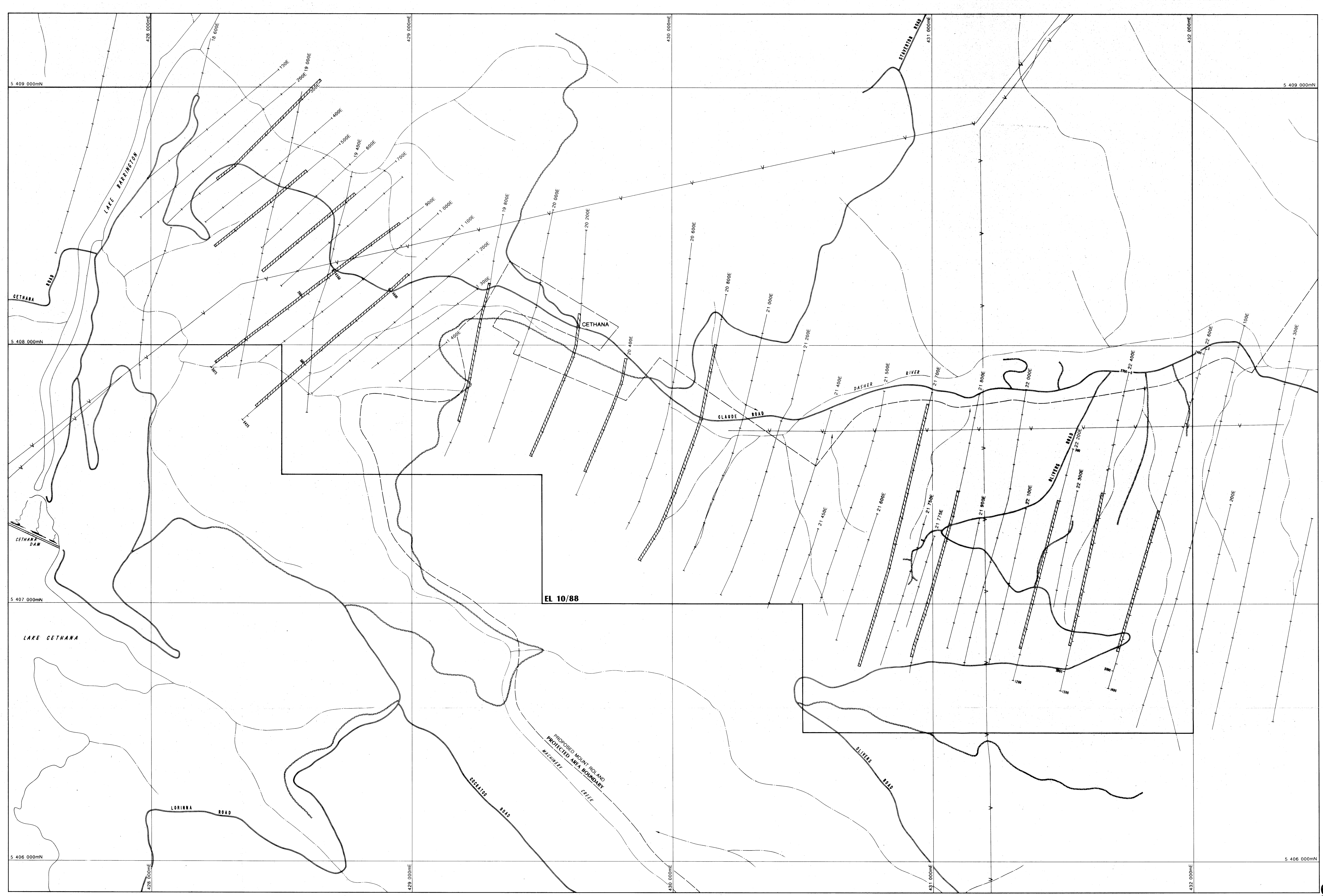
SCALE 1 : 500

0 10 20 30 40 50
metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 7

5 cm

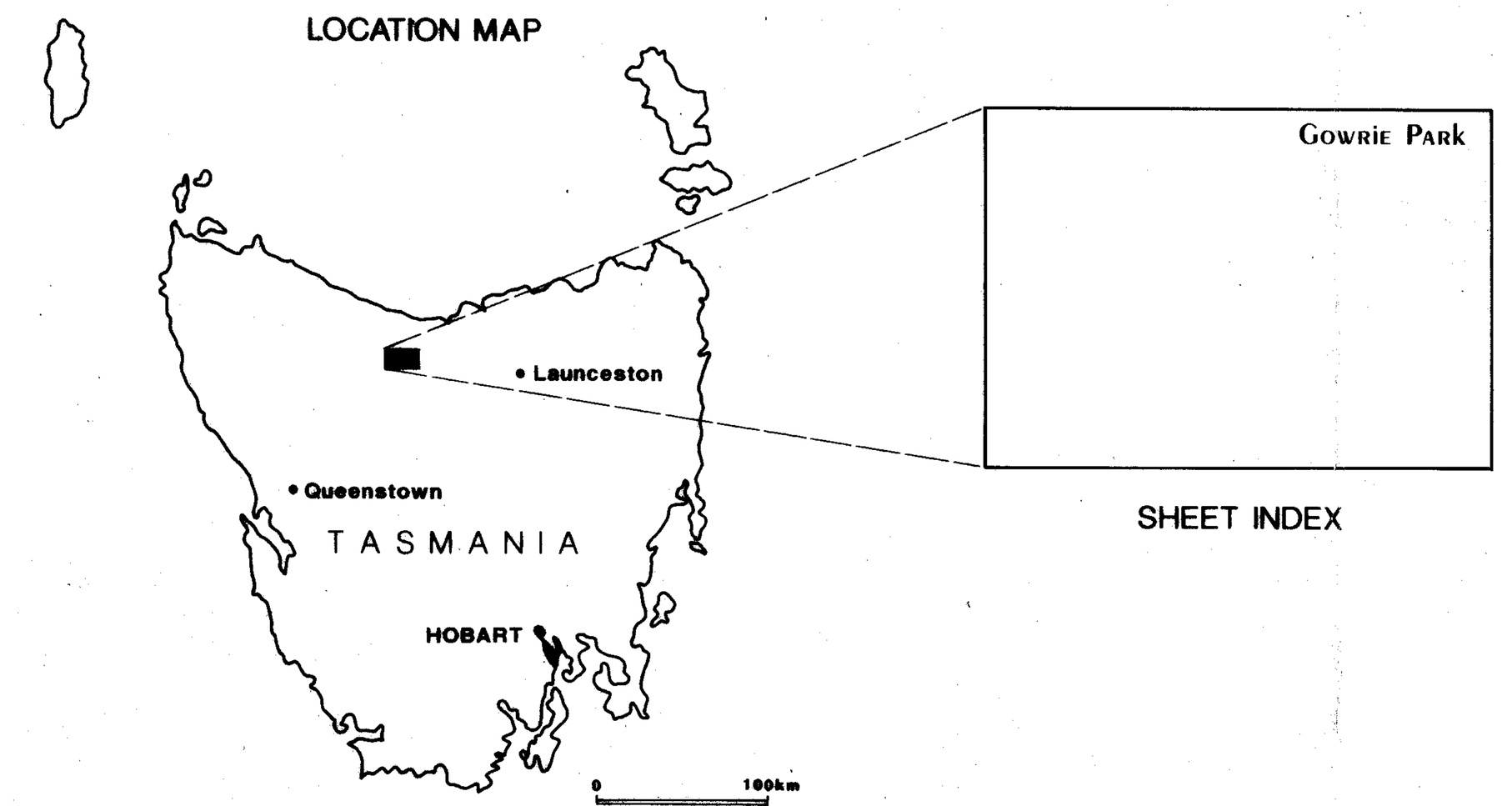
10477



148194

91-3290.

LOCATION MAP



SHEET INDEX

LEGEND

- ROAD SEALED
- ROAD UNSEALED
- RIVER
- GRID LINE
  - CRAE GRID
  - NORANDA GRID
- POWER LINE
- DIPOLE - DIPOLE IP COVERAGE (1990-1991) 50m DIPOLES

GRID NORTH
TN
MN

noranda
Noranda Pty Limited

EL 10/88 GOWRIE PARK

CETHANA ALTERATION ZONE DIPOLE - DIPOLE I.P. LOCATION PLAN

SCALE 1 : 5 000
0 100 200 300 400 500 metres

Compiled: P.A. JONES	Date: JUNE, 1991
Drawn: CO-ORDINATED DRAFTING	Drawing No.: ENCLOSURE 10

5 cm