CR 10772

EPMs 10596, 10692, 10733, 10764, 11921
JESSIEVALE PROJECT

COMBINED FINAL REPORT
FOR THE PERIOD
ENDED 21 AUGUST 2003

Data presented in
AGD 66 Datum

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November 2003

This Combined Final Report summarises all work carried out by BHP Billiton Minerals Pty Ltd (BHPB) on five EPMs of the Jessievale Project (formerly part of the Naraku Project), Northwest Queensland, for the period to 21 August 2003.

The Jessievale Project area is located within the Ernest Henry magnetic terrane, approximately 60 km north of Cloncurry. The Jessievale Project is considered to be prospective for Iron Oxide Copper Gold (IOCG) mineralisation of the Ernest Henry and Olympic Dam styles. The project area hosts similar Proterozoic lithologies to that at Ernest Henry and is concealed by ~10-200 m of Mesozoic-Cenozoic cover. The area shows a variety of metasedimentary, metavolcanic and intrusive rocks, commonly overprinted by strong IOCG-style alteration.

BHPB carried out airborne magnetic and GEOTEM surveys in the early 1990s, and identified the Middle Creek Prospect as having strong potential for IOCG mineralisation. A joint venture between Noranda Pacific Pty Ltd and BHPB was active from 10 January 2000 to 26 November 2001, with Noranda acting as the project manager. Noranda carried out a significant amount of exploration work, including ground magnetics, ground EM and diamond drilling at the Middle Creek Prospect. Three diamond holes were drilled to test coincident magnetic and TEM anomalies. The holes intersected massive magnetite and strong zones of pyrite-pyrrhotite several metres wide, with only traces of chalcopyrite mineralisation. Noranda consequently withdrew from the Naraku JV in November 2001. BHPB spent the following 18 months seeking a new partner to continue exploration work over this prospective area. A joint venture partner was not secured for the five EPMs, and consequently the tenements were surrendered during mid 2003.

No field exploration work has been carried out on these five tenements since November 2001.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

List of Figures

List of Tables

List of Appendices

1. INTRODUCTION

This Combined Final Report summarises all work carried out by BHP Billiton Minerals Pty Ltd (BHPB) on five EPMs of the Jessievale Project (formerly part of the Naraku Project), Northwest Queensland, for the period to 21 August 2003.

The Jessievale Project is located approximately 60 km north of Cloncurry, Mount Isa Inlier, Northwest Queensland (**Figure 1**). The area is considered to be prospective for Iron Oxide Copper Gold (IOCG) mineralisation of the Ernest Henry and Olympic Dam style. The prospective Proterozoic basement rocks are covered by younger Mesozoic and Cenozoic sediments, which vary in depth from ~10-200 m.

2. TENURE

The Jessievale Project comprises five granted Exploration Permits for Minerals (EPMs 10596, 10692, 10733, 10764 and 11921 - see **Figure 1** and **Table 1**). Tenements are held 100% by BHPB. One tenement (EPM 10596) was acquired from WMC in 1996. All tenements were either allowed to expire on their anniversary dates or surrendered prior to expiry (see **Table 1**).

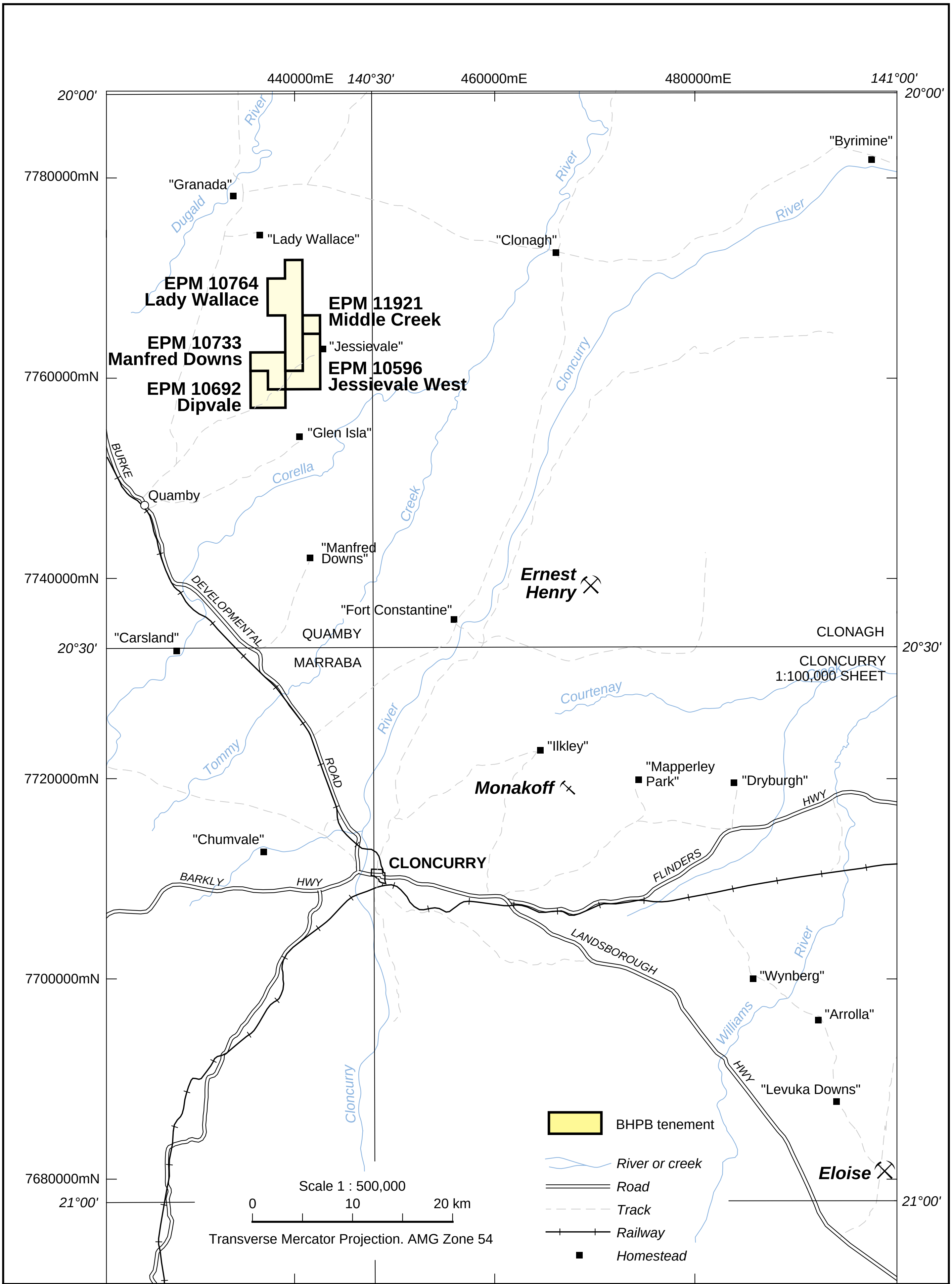
Table 1: Tenement Details

EPM	EPM Name	Sub-Blocks	Grant Date	Expiry / Surrender
10596	Jessievale West	4	31 May 95	Expired 30 May 03
10692	Dipvale	3	22 Aug 95	Expired 21 Aug 03
10733	Manfred Downs	3	22 Aug 95	Expired 21 Aug 03
10764	Lady Wallace	8	19 Oct 95	Surrendered 22 Jul 03
11921	Middle Creek	1	28 Jun 00	Surrendered 22 Jul 03

3. GEOLOGY

The Jessievale Project area is located within the Ernest Henry magnetic terrane, approximately 35 km northwest of the Ernest Henry Mine. The project area hosts similar Proterozoic lithologies to that at Ernest Henry and is concealed by ~10-200 m of Mesozoic-Cenozoic cover. The nearby Ernest Henry deposit has an Identified Mineral Resource of 166 Mt @ 1.1% copper and 0.54 g/t gold.

Aeromagnetic and gravity data suggest that several episodes of granitoid intrusions have occurred at Jessievale, and that magnetite-stable alteration is associated with the last of these episodes (the ~1500 Ma Naraku event).



Prepared : I.Sandl	bhpbilliton — Minerals Exploration, BHP Billiton Limited, ABN 49 004 028 077	Centre : Brisbane
Drawn : C.J.W	JESSIEVALE PROJECT AREA, NORTH WEST QUEENSLAND	Drawing No.: A4-2330
Date : Feb 1999	**LOCATION MAP**	**FIGURE 1**
Revised : March 2003		

Both the Mid-Proterozoic volcano-sedimentary sequences and the various granitoid suites are considered favourable hosts for Cu-Au mineralization. Previous drilling by BHPB in the Jessievale-Naraku area has intersected a variety of metasedimentary, metavolcanic and intrusive rocks, commonly overprinted by strong IOCG-style alteration and sub-economic Cu mineralisation.

Numerous major structures are evident from the geophysical datasets, some of which could be major pathways for mineralising fluids.

4. PREVIOUS EXPLORATION WORK

In 1992, North Ltd drilled a line of shallow percussion holes over a magnetic anomaly now referred to as the Middle Creek Prospect (EPM 10764). A number of holes intersected elevated Cu, with a best intersection of 6 m @ 0.11% Cu and 132 ppm Bi (hole SC64). Follow-up ground EM failed to penetrate the overburden and no further exploration was undertaken by North Ltd. GEOTEM anomaly (BEM092) coincident with the Middle Creek Prospect, was delineated by BHPB in 1995. Noranda later followed up the prospect in joint venture with BHPB (see below).

Prior to BHPB's acquisition of EPM 10596 in 1996, WMC had completed an extensive phase of exploration looking for Cu-Au mineralisation of Ernest Henry, Starra and Osborne styles in the region. WMC carried out a significant amount of exploration work in the area. Regional geophysics (aeromagnetics, gravity) were used to identify anomalies that were then detailed with ground geophysics (magnetics, gravity, EM, IP), and in some cases drilling. Gravity data collected by WMC and transferred to BHPB upon acquisition of the tenement is included in **Appendix 1**. The gravity stations are shown in **Figure 2**.

5. EXPLORATION WORK COMPLETED BY BHPB

5.1 Introduction

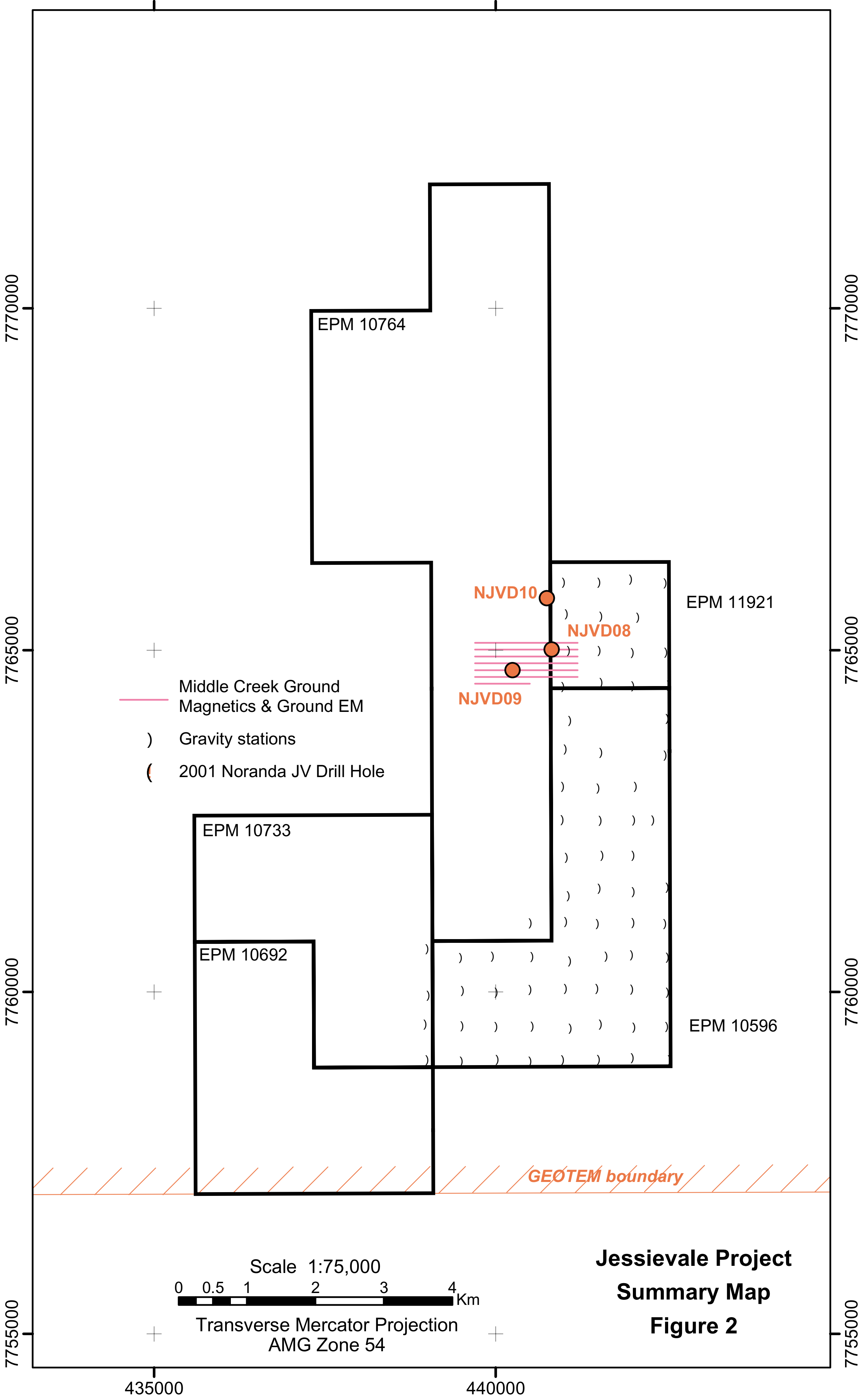
BHPB acquired tenements in the Jessievale/Naraku area in the mid 1990s. The Ernest Henry Mine was being developed during this time. Detailed airborne magnetic and GEOTEM surveys flown by BHPB confirmed the area's prospectivity for IOCG systems.

After some work in the area (mainly on adjacent tenements), BHPB successfully farmed out the Jessievale tenements to Noranda Pacific from 10 January 2000, with Noranda acting as the project manager (Naraku Joint Venture). Details of this work are provided below. Noranda withdrew from the Naraku JV in November 2001 after two years of work.

Following this, BHPB reviewed the results and decided to seek another partner to continue work in this prospective area. A large part of 2002-03 was spent promoting the Naraku Project to other potential joint venture partners. Some adjacent tenements were successfully farmed out. However, the five Jessievale tenements were not joint ventured and therefore surrendered.

5.2 Airborne Magnetics

Geoterrex Pty Ltd flew an open-range airborne magnetic/radiometric survey in April 1991 for BHP. This survey covered a area of approximately 19,000 km^2.



Jessievale Project

Summary Map

Figure 2

The survey covered the Boomarra / Naraku / Jessievale area using 300 and 400 m line spacings in an east-west orientation. A total of 56,679 line km were flown at a height of 70 m.

The Queensland DME permitted a five-year exclusivity arrangement on this data with BHPB. The five-year period has now lapsed and the information is currently available on open file.

5.3 GEOTEM Survey

In July 1995, Geoterrex Pty Ltd flew a 25 Hz GEOTEM survey for BHP Minerals Exploration, over the outcropping to shallowly covered portions of the Boomarra Horst area, including the Jessievale region. The GEOTEM survey covered all EPMs reported herein.

The Queensland DME permitted a five-year exclusivity arrangement on this data with BHP. The five-year period has now lapsed and the information is currently available on open file.

6. EXPLORATION WORK COMPLETED BY NORANDA UNDER JOINT VENTURE

6.1 Introduction

A joint venture between Noranda Pacific Pty Ltd and BHPB was active from 10 January 2000 to 26 November 2001, with Noranda acting as the project manager. Noranda carried out a significant amount of exploration work over two field seasons, including diamond drilling. Work at Jessievale focused on the Middle Creek Prospect. Details of the exploration work completed by Noranda are summarised below. Full results are documented in the 2001 Naraku JV Annual Report (White et al. 2001).

6.2 Ground Magnetics

Ground magnetic surveying was carried out at the Middle Creek Prospect and involved the collection of data every 10 m on seven east–west lines, spaced 100 m apart. Terra Search using Geometrics G856 magnetometers collected a total of 10 line km of data. The aim of the survey was to relocate magnetic anomalies previously outlined by BHP and North Ltd. The ground magnetic grid location, with stacked magnetic profiles, is shown in a figure in **Appendix 2**. The models of two selected magnetic profiles (lines 7764700N and 7765000N) are also given in **Appendix 2**. The location of the prospect is also shown in **Figure 2**. Full details are included in the 2001 Naraku JV Annual Report.

6.3 Ground TEM

Fugro Ground Geophysics collected moving-loop EM data using a 100 m moving-loop Protem system, initially on six east-west lines (total of 7 line km). The location of the grid is shown in **Figure 2**. TEM profiles are presented in **Appendix 3**. The survey was carried out to locate a GEOTEM conductor outlined by BHP.

Two weak conductors coincident with the magnetic highs were located. The western conductor on line 7764750N is interpreted to be the GEOTEM response recognised earlier. Two holes, NJVD008 and NJVD009, were drilled to test the coincident magnetic and EM anomalies (see details below).

Encouraging results from drill hole NJVD008 led to a follow-up, moving-loop EM program on two lines, 300 m and 700 m north of the first grid. Fugro Ground Geophysics undertook this survey (total of 2.7 line km).

Two moderately strong conductors were detected with the western one selected for drill testing by hole NJVD010.

6.4 Drilling

Pontil Drilling completed three diamond drill holes during 2001. Drill hole details are summarised in **Table 2** below. Hole NJVD008 was collared on EPM 11921, and the other two holes were drilled on EPM 10764. Drill hole details and assays are included in **Appendix 4**. Full target details are included in the 2001 Naraku JV Annual Report.

Table 2: Summary of Drill Holes

Hole	Easting	Northing	Locality	Inclination	Azimuth	Depth (m)	Depth to Basement (m)	Date
NJVD008	440820	7765000	Middle Ck	-60	270	285	42.3	6-Jul-01
NJVD009	440250	7764700	Middle Ck	-60	270	204	28	11-Jul-01
NJVD0010	440750	7765750	Middle Ck	-60	270	258	39.3	28-Sep-01

Hole NJVD008 tested a strong magnetic anomaly on the eastern magnetic trend coincident with a weak to moderate TEM anomaly. The hole intersected a sequence of: abite-amphibole-magnetite altered quartz-feldspar-biotite schist; amphibolite-magnetite 'iron formation'; amphibole-biotite-albite altered feldspathic quartzite; and quartz veins with semi-massive pyrite and pyrrhotite. Both the magnetic anomaly and the TEM conductor are explained by the presence of intervals of magnetite-bearing 'iron formation', and zones of semi-massive pyrrhotite and pyrite. Very high magnetic susceptibility readings were obtained from the drill core. Geochemical results were anomalous, but uneconomic. The best copper result was 2 m @ 2800 ppm Cu (188-190 m). An interval of anomalous zinc was also intersected (4m @ 3900 ppm Zn from 244-248 m). The aeromagnetic data shows the alteration and sulfide system to be open to the north.

Hole NJVD009 tested a weak TEM conductor coincident with the western magnetic trend. The hole intersected a sequence of: quartz-feldspar-sericite schists with magnetite-albite-amphibole alteration, and strongly 'red-rock' albite altered quartz-feldspar rocks. The magnetic anomaly is explained by the presence of intervals of semi-massive magnetite associated with widespread 'red-rock' hematite-albite alteration. There were no sulfides intersected in the hole to help explain the source of the weak TEM conductor. No anomalous or elevated base metal values are reported from the selective sampling.

Hole NJVD010

The sulfide mineralisation and associated magnetite-amphibole-albite alteration intersected in hole NJVD008 (above) was followed up with a small moving-loop EM survey. This survey produced two moderate conductors, of which the western one was tested by hole NJVD010.

Ground magnetic data were not collected on the new grid, but the aeromagnetic data show that the conductor lies on the western flank of the magnetic trend and is not coincident with the peak of the anomaly.

Hole NJVD010 intersected a sequence of: banded quartz-feldspar-biotite-garnet meta-sedimentary rocks with up to 2% pyrite and minor chalcopyrite; microgranite; zones of semi-massive pyrrhotite and pyrite; graphite rich fault zones; and massive coarse-grained pyroxene rock with disseminated and blebby pyrite and pyrrhotite. The TEM conductor is explained by the presence of several intervals of semi-massive pyrrhotite and pyrite, as well as some graphite in the fault zones.

Elevated copper values were returned from selective sampling. The best copper intercept was 2 m @ 2120 ppm Cu from 240-242 m . One narrow interval of anomalous lead was also returned (2 m @ 4360 ppm Pb from 102-104 m). The results of the drilling in this hole do not show any improvement in copper mineralisation to the north of hole NJVD008. The 'iron formation' present in NJVD 08 was not intersected in NJVD010, suggesting that the sulfide alteration system is probably cross cutting the regional lithological trend. PVC tubing was placed down the hole for future down-hole EM work. However, no down-hole EM work was conducted.

Shortly after the drilling results were returned and assessed, Noranda withdrew from the joint venture. Noranda rehabilitated all drill sites.

7. CONCLUSIONS

The Jessievale Project is considered to be prospective for Iron Oxide Copper Gold (IOCG) mineralisation of the Ernest Henry and Olympic Dam style.

BHP and Noranda (in joint venture) focused its exploration efforts on the Middle Creek Prospect. Three diamond holes were drilled at Middle Creek to test coincident magnetic and TEM anomalies. The anomalies were explained by a combination of magnetite-bearing 'iron formation', magnetite-albite-amphibole alteration and intervals of semi-massive pyrite and pyrrhotite with traces of chalcopyrite mineralisation. The alteration system exists over a strike length of around 700 m and remains open to the north and at depth. However, the low metal tenor indicates that it is unlikely to develop to economic grades. Noranda withdrew from the Naraku JV in November 2001, shortly after completing the drilling.

Following this, BHPB reviewed the results and decided to seek another partner to continue exploration work on the Naraku Project. A joint venture partner was not secured for the five EPMs, and consequently the tenements were surrendered.

No field exploration work has been carried out on these five tenements since November 2001.

REFERENCES

White M., McLean N., and Mackee G (2001) Annual Report for the Period Ending 14 January 2002. Naraku Joint Venture Project. Noranda Pacific Pty Ltd. EPMs 8608, 10596, 10692, 10733, 10764, 11921, 13283.

APPENDIX 1

Gravity Data

STATION	LAT_AGD66	LONG_AGD66	METER_HEIG	OBS_GRAV	ELEVATION	BOUGUER_26	NAME	YEAR
9501000032	-20.2429	140.44955	144.83	9786448.32	144.83	231.17	Jessievale WMC	1995
9501000033	-20.24771	140.44921	145.26	9786445.62	145.26	226.49	Jessievale WMC	1995
9501000034	-20.2522	140.44957	145.05	9786440.48	145.05	218.31	Jessievale WMC	1995
9501000035	-20.25679	140.44954	145.51	9786445.47	145.51	221.52	Jessievale WMC	1995
9501000036	-20.26133	140.44943	145.82	9786445.14	145.82	219.13	Jessievale WMC	1995
9501000037	-20.26574	140.44979	145.67	9786451.07	145.67	222.18	Jessievale WMC	1995
9501000122	-20.24757	140.44476	144.99	9786437.68	144.99	218.1	Jessievale WMC	1995
9501000123	-20.25184	140.44454	145.14	9786440.24	145.14	218.46	Jessievale WMC	1995
9501000124	-20.25636	140.44456	145.3	9786444.22	145.3	220.1	Jessievale WMC	1995
9501000125	-20.2614	140.44485	145.04	9786452.51	145.04	224.93	Jessievale WMC	1995
9501000126	-20.26543	140.44461	145.51	9786447.68	145.51	218.66	Jessievale WMC	1995
9501000127	-20.26566	140.43987	146.43	9786447.67	146.43	220.33	Jessievale WMC	1995
9501000128	-20.261	140.44017	146.05	9786437	146.05	211.64	Jessievale WMC	1995
9501000129	-20.25627	140.4397	145.79	9786429.41	145.79	206.31	Jessievale WMC	1995
9501000130	-20.25203	140.44099	145.74	9786427.66	145.74	206.94	Jessievale WMC	1995
9501000131	-20.26151	140.43593	145.79	9786424.58	145.79	198.41	Jessievale WMC	1995
9501000132	-20.26569	140.43484	146.19	9786426.73	146.19	198.89	Jessievale WMC	1995
9501000133	-20.25625	140.43527	145.7	9786414.43	145.7	191.16	Jessievale WMC	1995
9501000134	-20.2526	140.43587	145.78	9786411.15	145.78	190.18	Jessievale WMC	1995
9501000135	-20.2474	140.43535	144.48	9786408.7	144.48	188.22	Jessievale WMC	1995
9501000136	-20.24397	140.43572	145.22	9786407.37	145.22	190.35	Jessievale WMC	1995
9501000137	-20.23892	140.43546	149.21	9786400	149.21	193.79	Jessievale WMC	1995
9501000138	-20.23867	140.44045	144.71	9786420	144.71	205.09	Jessievale WMC	1995
9501000139	-20.24302	140.44005	143.63	9786422.98	143.63	203.39	Jessievale WMC	1995
9501000140	-20.24766	140.43977	145.69	9786419.51	145.69	201.26	Jessievale WMC	1995
9501000141	-20.2435	140.44483	145.58	9786432.75	145.58	216.72	Jessievale WMC	1995
9501000142	-20.23869	140.44479	143.43	9786434.82	143.43	217.38	Jessievale WMC	1995
9501000143	-20.24757	140.43036	145.83	9786403.28	145.83	185.36	Jessievale WMC	1995
9501000144	-20.25203	140.43059	144.98	9786408.33	144.98	186.12	Jessievale WMC	1995
9501000145	-20.25639	140.43031	146.04	9786407.53	146.04	184.85	Jessievale WMC	1995
9501000146	-20.26123	140.4306	146.28	9786411.35	146.28	186.31	Jessievale WMC	1995
9501000147	-20.26582	140.43029	146.88	9786416.52	146.88	189.97	Jessievale WMC	1995
9501000148	-20.26125	140.42551	148.22	9786402.17	148.22	180.93	Jessievale WMC	1995
9501000149	-20.25673	140.42556	146.64	9786406.41	146.64	184.72	Jessievale WMC	1995
9501000150	-20.25197	140.42507	146.32	9786428.08	146.32	208.54	Jessievale WMC	1995
9501000151	-20.25212	140.4206	146.7	9786421.03	146.7	202.15	Jessievale WMC	1995
9501000152	-20.2565	140.42085	146.02	9786404.16	146.02	181.38	Jessievale WMC	1995
9501000153	-20.26115	140.42078	148.83	9786399.9	148.83	179.92	Jessievale WMC	1995
9501000154	-20.26562	140.42568	146.79	9786412.54	146.79	185.93	Jessievale WMC	1995
9501000155	-20.26582	140.42066	149.88	9786402.74	149.88	182.09	Jessievale WMC	1995
9501000156	-20.26562	140.41585	152.29	9786392.94	152.29	177.15	Jessievale WMC	1995
9501000157	-20.26093	140.41558	150.73	9786394.92	150.73	178.81	Jessievale WMC	1995
9501000158	-20.25707	140.41602	147.12	9786403.87	147.12	182.92	Jessievale WMC	1995
9501000159	-20.25092	140.41591	147.87	9786400.64	147.87	184.77	Jessievale WMC	1995
9501000160	-20.23392	140.4349	149.53	9786405.64	149.53	202.99	Jessievale WMC	1995
9501000161	-20.22953	140.43498	151.53	9786405.57	151.53	209.42	Jessievale WMC	1995
9501000162	-20.22462	140.43536	153.77	9786399.05	153.77	210.19	Jessievale WMC	1995
9501000163	-20.22507	140.44035	153.54	9786397.55	153.54	207.97	Jessievale WMC	1995
9501000164	-20.22977	140.43994	147.69	9786405.04	147.69	201.2	Jessievale WMC	1995
9501000165	-20.23405	140.44022	145.42	9786408.43	145.42	197.62	Jessievale WMC	1995
9501000166	-20.23402	140.44492	145.97	9786425.24	145.97	215.53	Jessievale WMC	1995
9501000167	-20.22956	140.44516	147.72	9786414.38	147.72	210.72	Jessievale WMC	1995
9501000168	-20.23401	140.4476	145.89	9786431.6	145.89	221.74	Jessievale WMC	1995
9501000169	-20.22085	140.43602	155.76	9786389.77	155.76	207.02	Jessievale WMC	1995
9501000170	-20.21635	140.43505	153.82	9786388.44	153.82	204.51	Jessievale WMC	1995
9501000171	-20.21157	140.43585	150.36	9786393.87	150.36	205.93	Jessievale WMC	1995
9501000172	-20.20676	140.43556	147.6	9786398.17	147.6	207.61	Jessievale WMC	1995
9501000173	-20.20254	140.43518	144.72	9786394.79	144.72	201.03	Jessievale WMC	1995
9501000174	-20.20256	140.44015	145.59	9786400.63	145.59	208.58	Jessievale WMC	1995
9501000175	-20.20217	140.44459	145.89	9786406.78	145.89	215.54	Jessievale WMC	1995
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9501000178	-20.21162	140.44016	150.92	9786400.73	150.92	213.86	Jessievale WMC	1995
9501000179	-20.21584	140.4404	154.14	9786404.12	154.14	221.12	Jessievale WMC	1995
9501000180	-20.21629	140.44485	152.96	9786401.76	152.96	216.17	Jessievale WMC	1995
9501000181	-20.21188	140.4448	150.33	9786404.43	150.33	216.25	Jessievale WMC	1995
9501000182	-20.2072	140.44558	148.75	9786397.87	148.75	209.32	Jessievale WMC	1995
9501000183	-20.21189	140.44951	149.84	9786404.04	149.84	214.89	Jessievale WMC	1995
9501000184	-20.21621	140.44984	151.78	9786398.31	151.78	210.45	Jessievale WMC	1995
9501000185	-20.22062	140.44965	149.57	9786404.36	149.57	209.57	Jessievale WMC	1995
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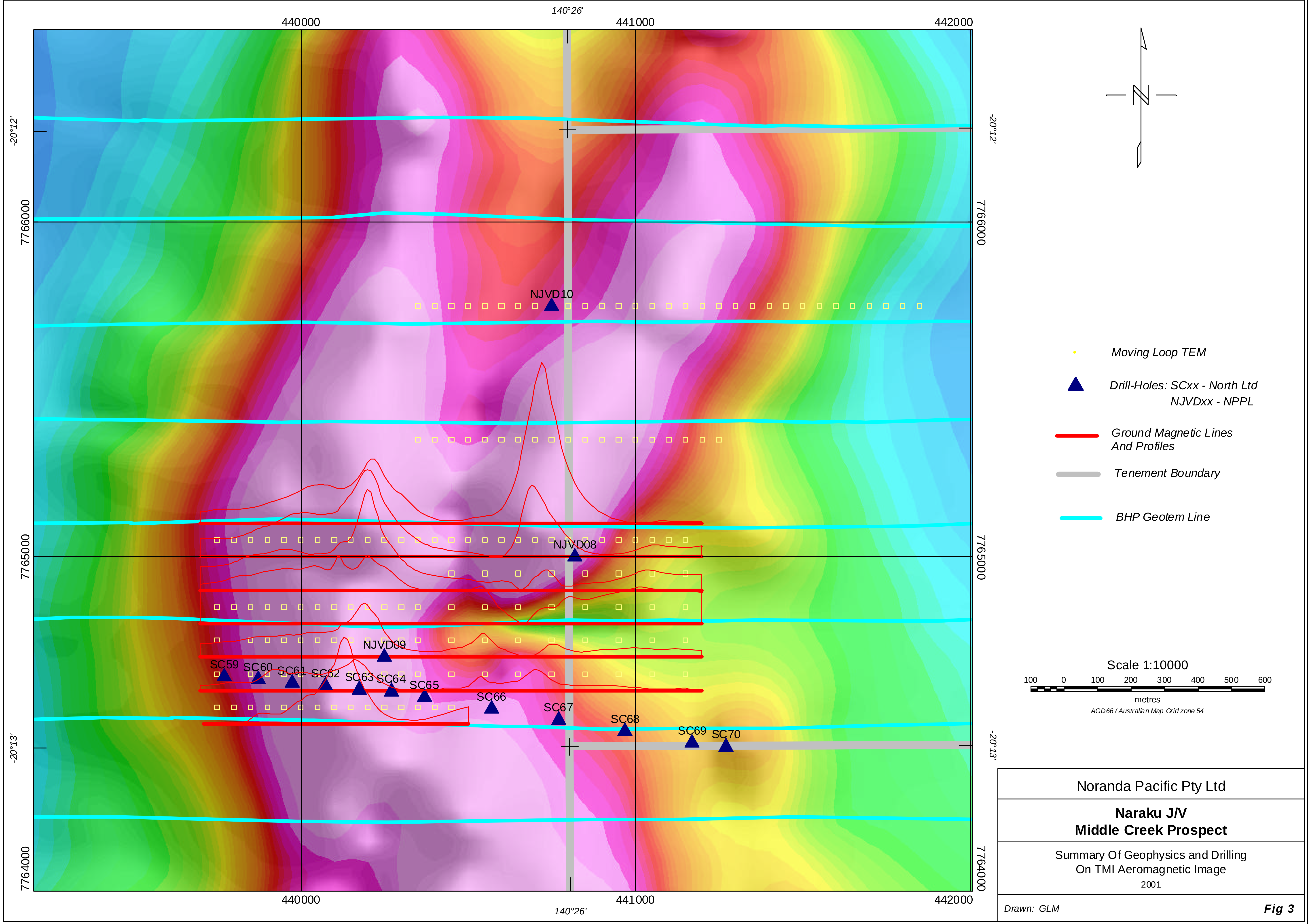
APPENDIX 2

Ground Magnetic Images and Plots



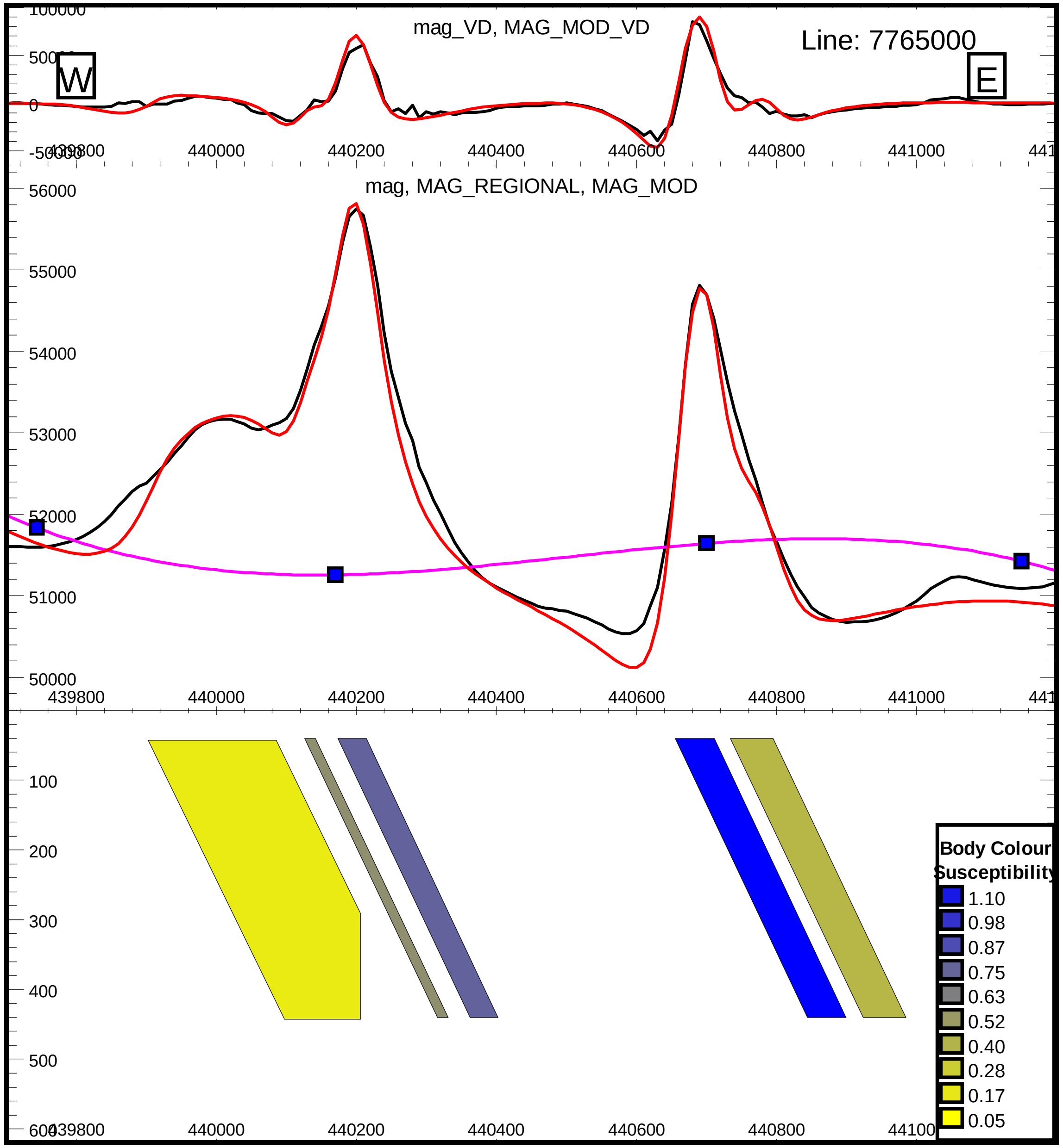
Noranda Pacific Pty Ltd

Naraku J/V
Middle Creek Prospect

Summary Of Geophysics and Drilling
On TMI Aeromagnetic Image
2001

Drawn: GLM **Fig 3**

Middle Ck Ground Magnetics - Line 7765000N Model



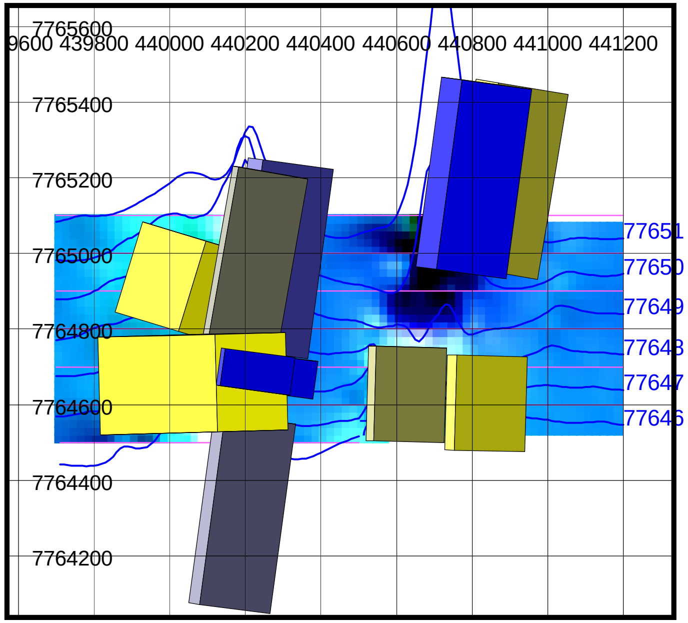


Fig 4

geodiscovery group pty ltd ModelVision Pro - Wed May 23 08:09:37 2001

Middle Ck Ground Magnetics - Line 7764700N Model

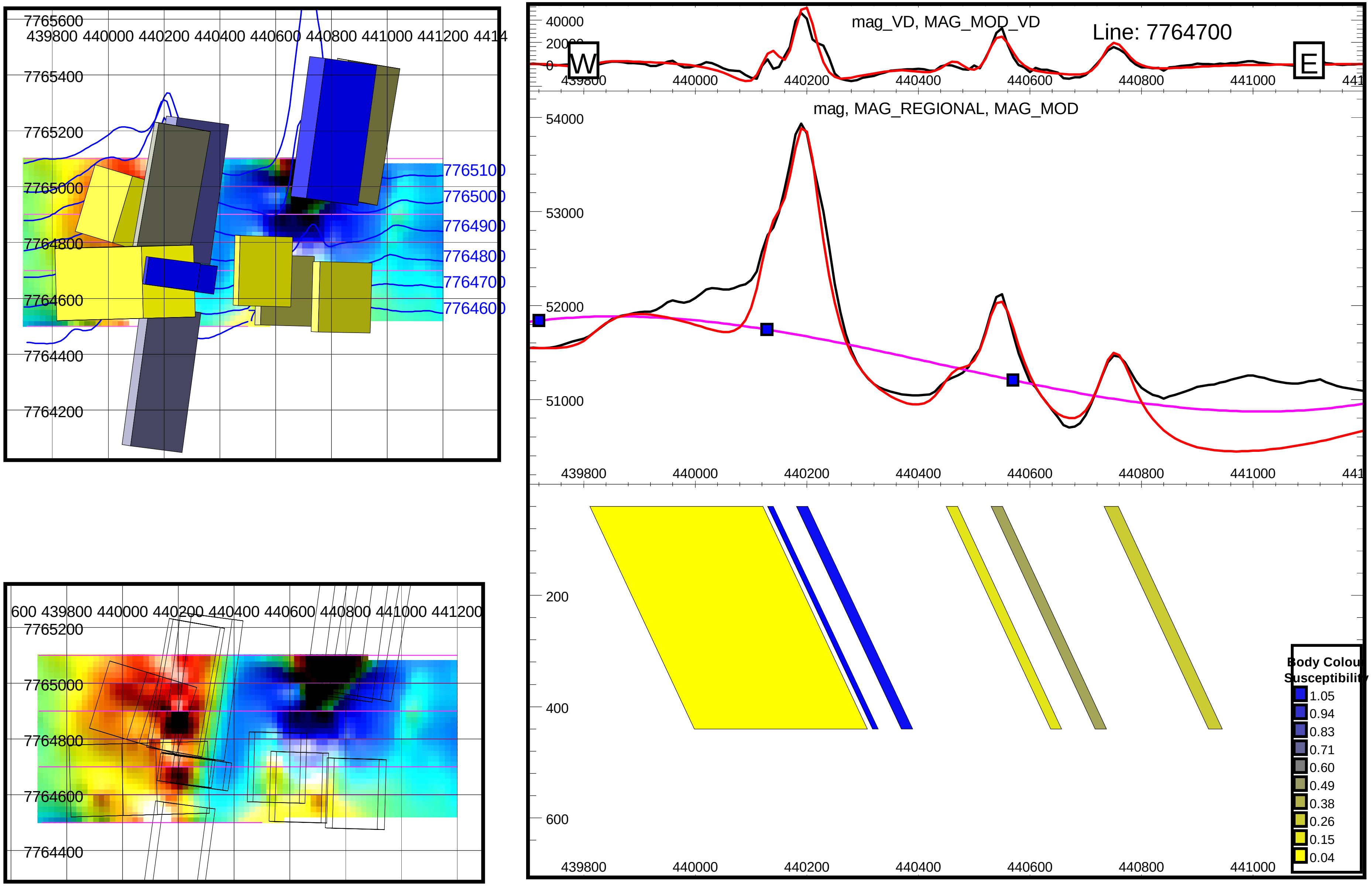
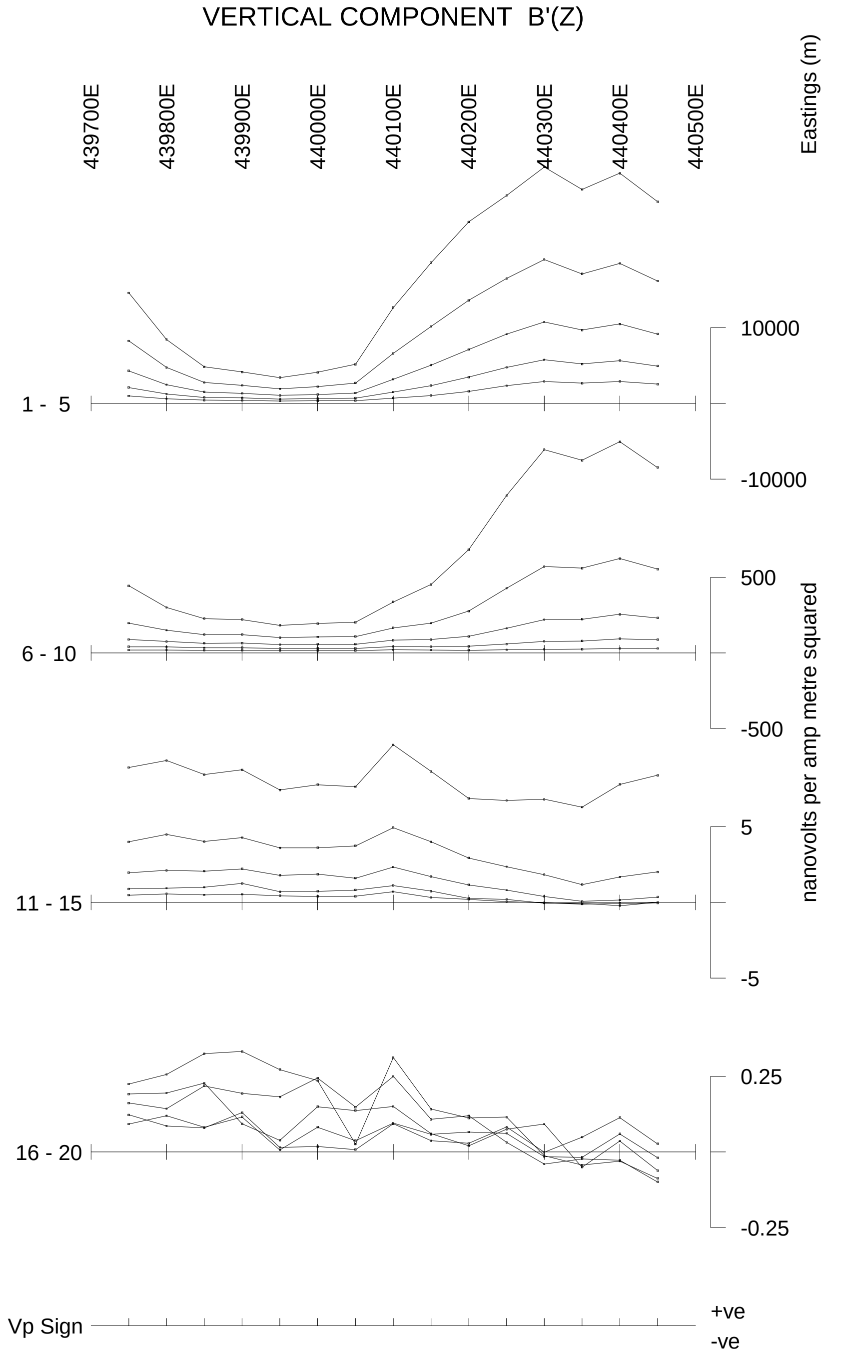


Fig 5

APPENDIX 3

TEM Profiles



PROTEM

MOVING TRANSMITTER SURVEY

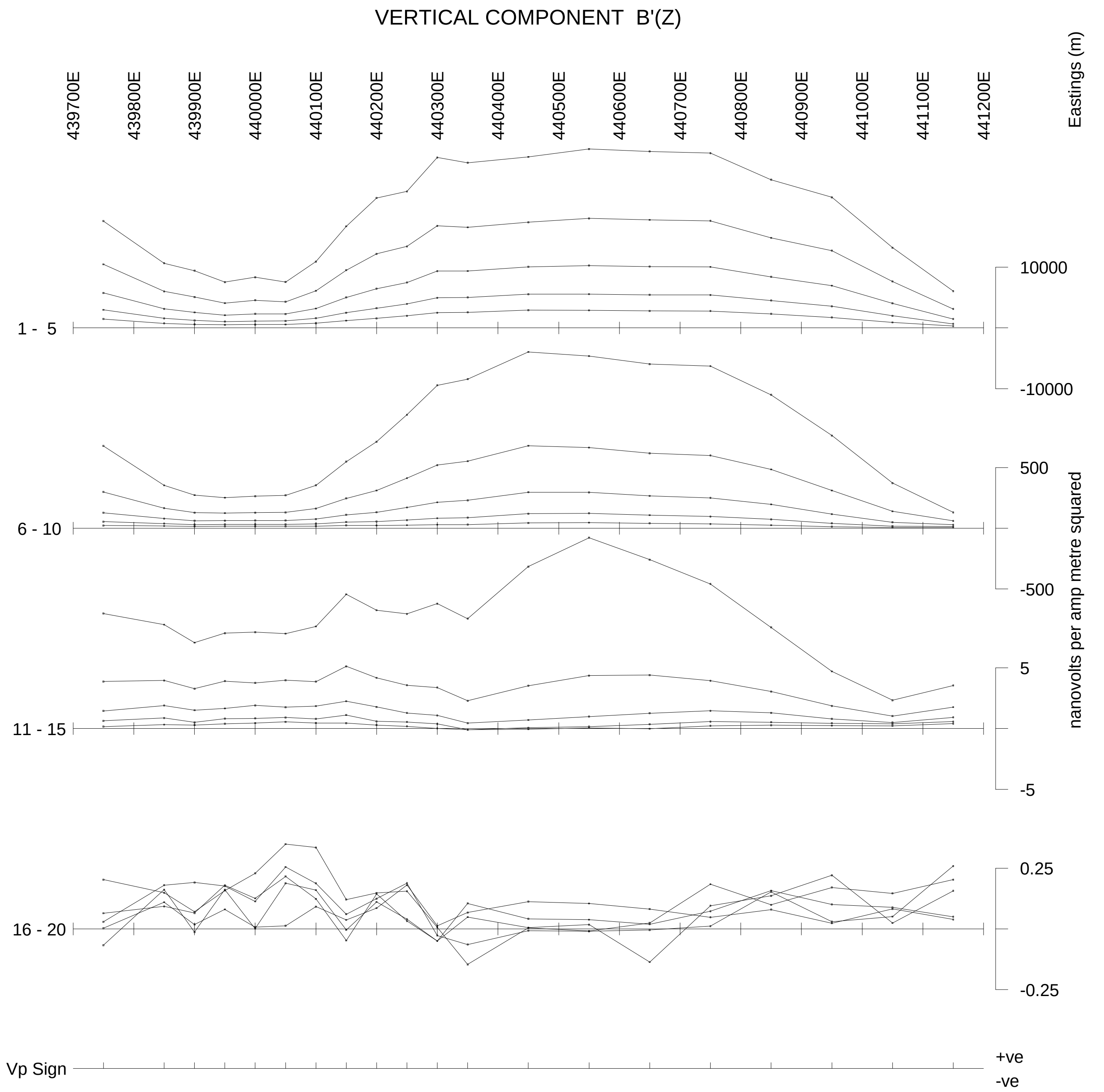
ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

TX LOOP SIZE	: 100m x 100m
TX TURN OFF TIME	: 0.0900 milliseconds
FIRST GATE TIME	: 881.300 ms after ramp
CURRENT	: 17.50 amps
FREQUENCY	: 2.50 Hz
INTEGRATION TIME	: 60 seconds
SYNC MODE	: CRYSTAL
HORIZONTAL SCALE	: 1 :10000
SURVEYED BY	: RJP
DATE	: 12/05/2001

PROJECT NO. 3-694

CLIENT	: Noranda Pacific Pty Ltd
PROJECT	: Middle Creek
AREA	: Cloncurry, Qld
LINE	: 7764550N Z-Component



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

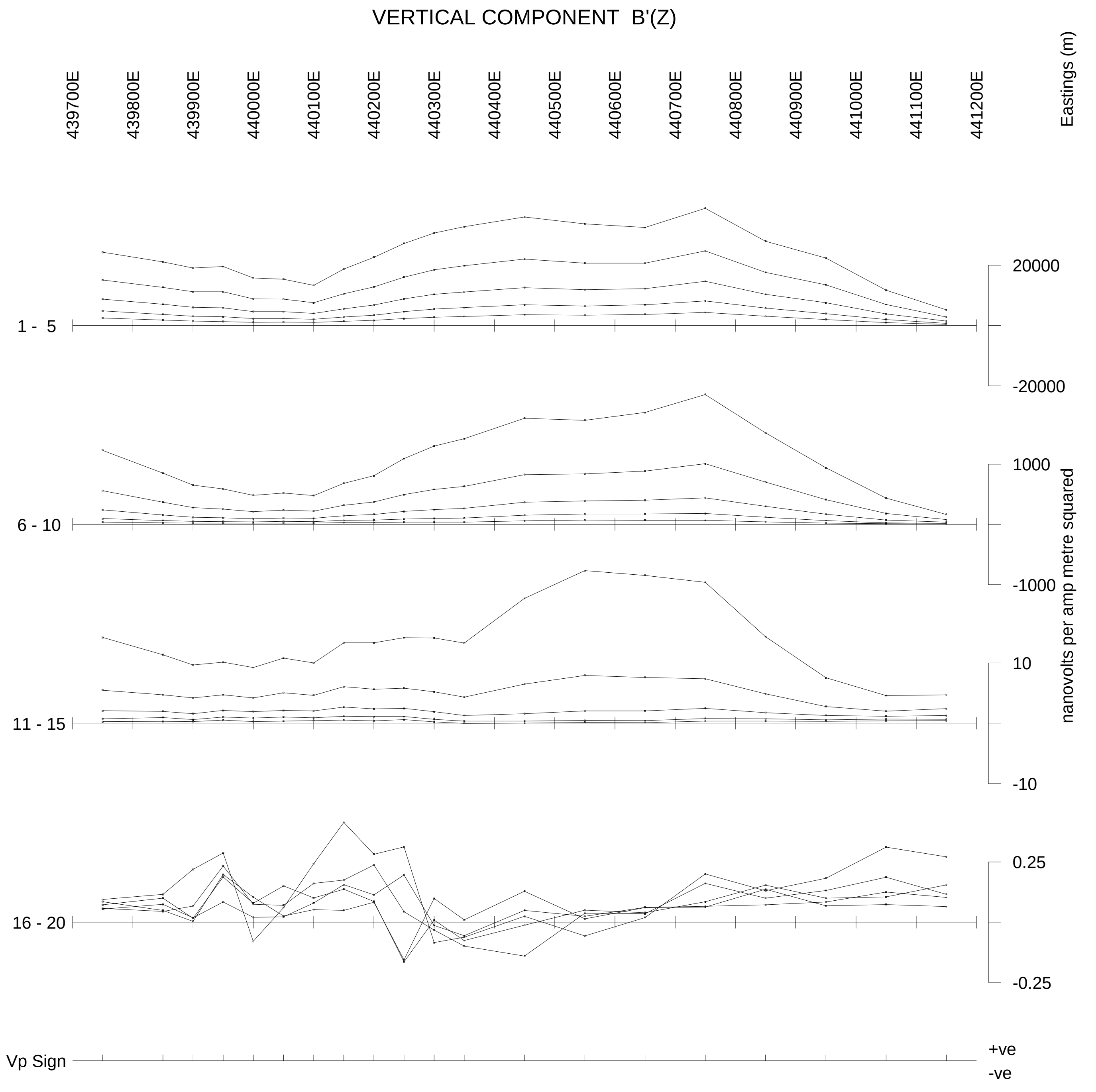
TIME DERIVATIVE OF FLUX DENSITY(B')

TX LOOP SIZE	: 100m x 100m
TX TURN OFF TIME	: 0.1300 milliseconds
FIRST GATE TIME	: 881.300 ms after ramp
CURRENT	: 19.00 amps
FREQUENCY	: 2.50 Hz
INTEGRATION TIME	: 60 seconds
SYNC MODE	: CRYSTAL
HORIZONTAL SCALE	: 1 :10000
SURVEYED BY	: RJP
DATE	: 09/05/2001

[redacted]

PROJECT NO.
3-694

CLIENT	: Noranda Pacific Pty Ltd
PROJECT	: Middle Creek
AREA	: Cloncurry, Qld
LINE	: 7764650N Z-Component



PROTEM

MOVING TRANSMITTER SURVEY

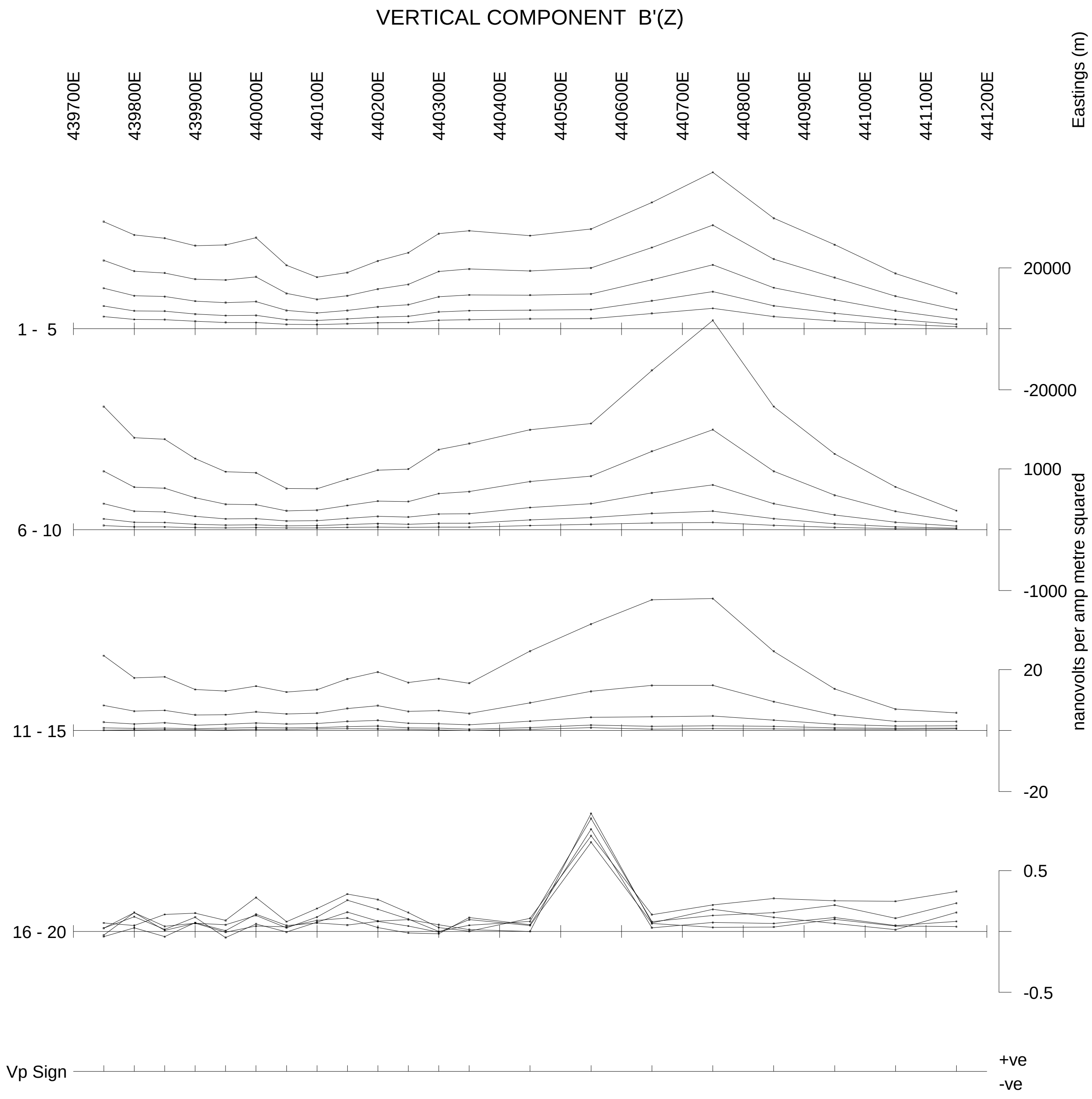
ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

TX LOOP SIZE	: 100m x 100m
TX TURN OFF TIME	: 0.1300 milliseconds
FIRST GATE TIME	: 881.300 ms after ramp
CURRENT	: 19.00 amps
FREQUENCY	: 2.50 Hz
INTEGRATION TIME	: 60 seconds
SYNC MODE	: CRYSTAL
HORIZONTAL SCALE	: 1 :10000
SURVEYED BY	: RJP
DATE	: 09/05/2001

PROJECT NO.
3-694

CLIENT	: Noranda Pacific Pty Ltd
PROJECT	: Middle Creek
AREA	: Cloncurry, Qld
LINE	: 7764750N Z-Component



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

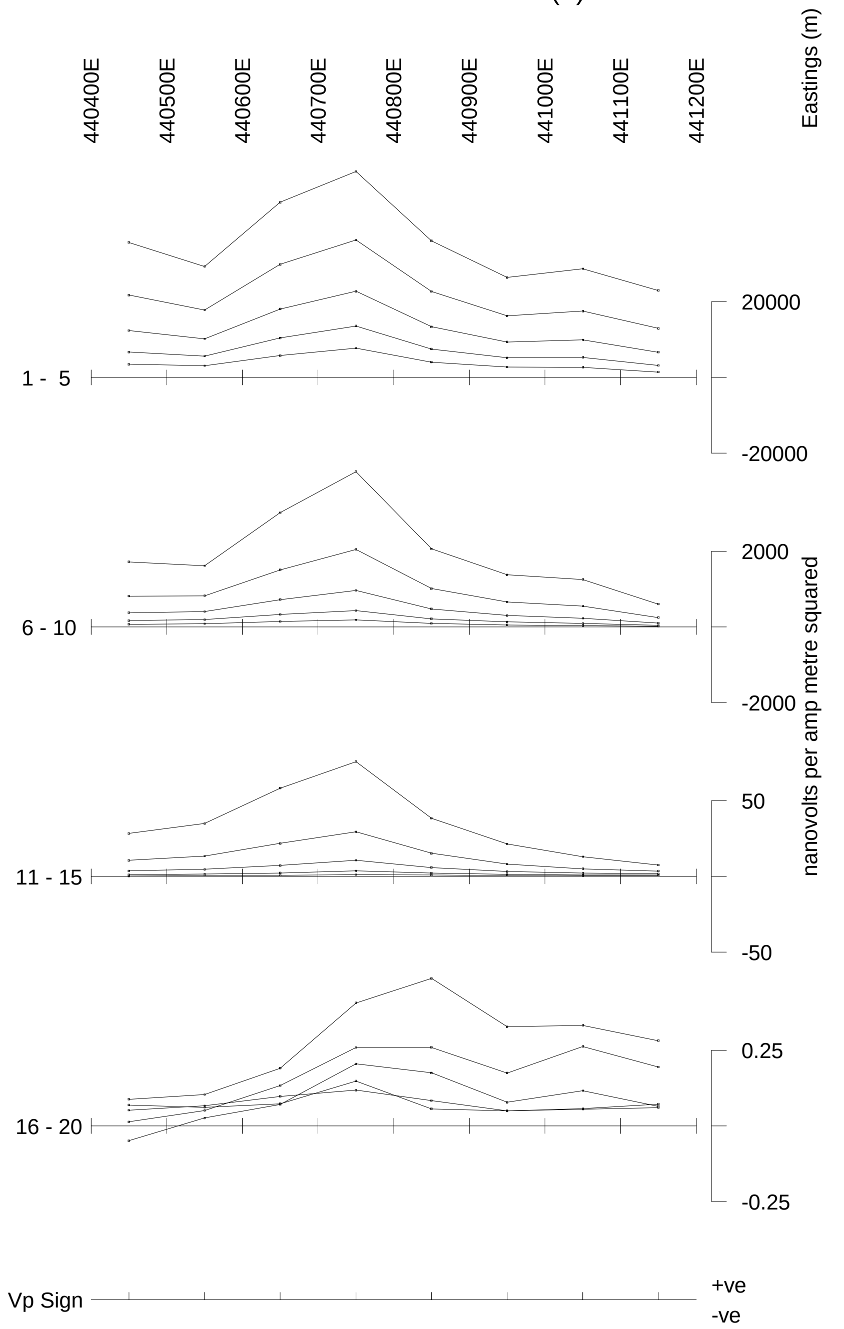
TX LOOP SIZE	:	100m x 100m
TX TURN OFF TIME	:	0.0900 milliseconds
FIRST GATE TIME	:	881.300 ms after ramp
CURRENT	:	19.50 amps
FREQUENCY	:	2.50 Hz
INTEGRATION TIME	:	60 seconds
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1 :10000
SURVEYED BY	:	RJP
DATE	:	10/05/2001

[redacted]

PROJECT NO.
3-694

CLIENT	:	Noranda Pacific Pty Ltd
PROJECT	:	Middle Creek
AREA	:	Cloncurry, Qld
LINE	:	7764850N Z-Component

VERTICAL COMPONENT B'(Z)



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

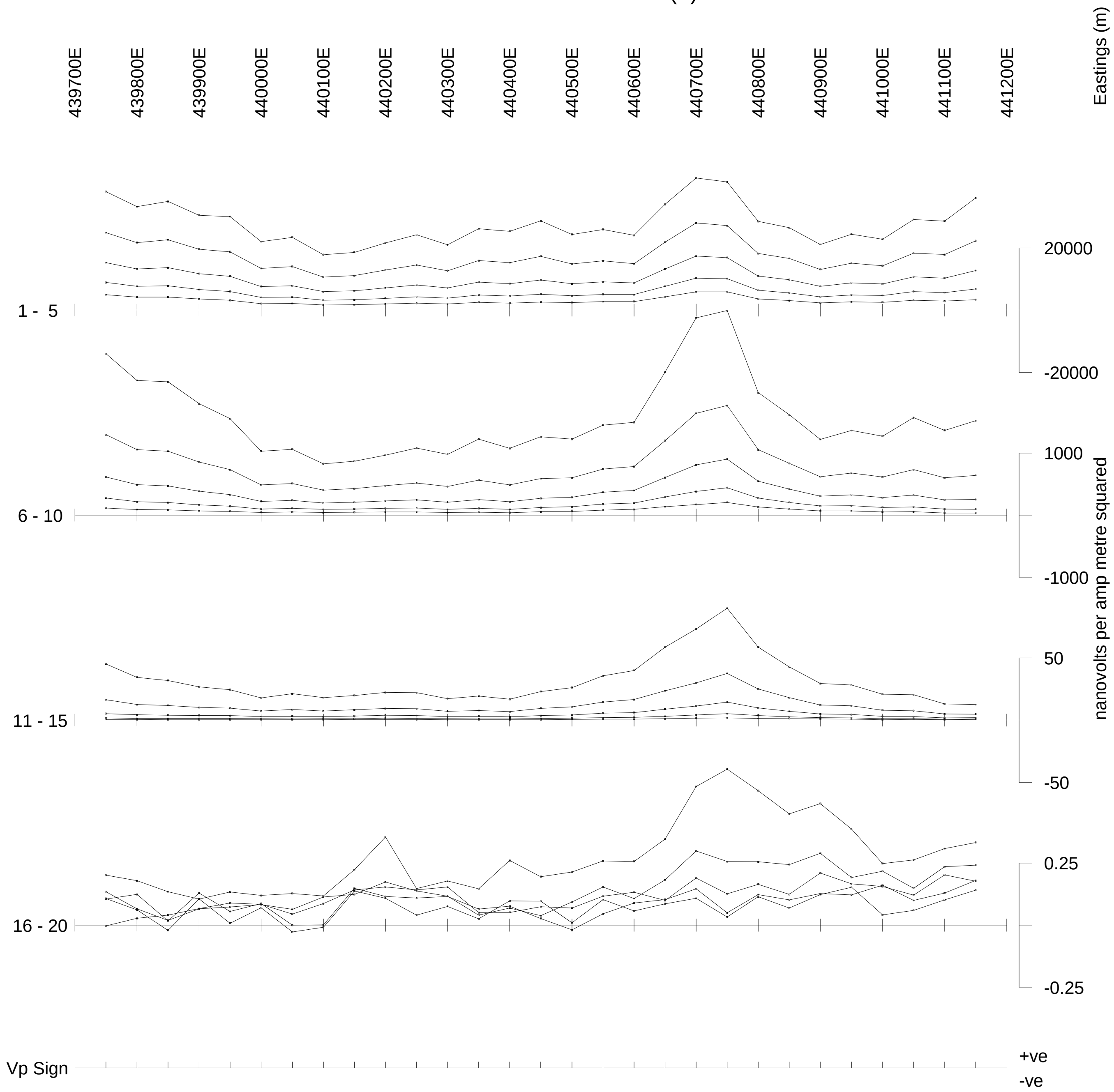
TX LOOP SIZE	: 100m x 100m
TX TURN OFF TIME	: 0.0900 milliseconds
FIRST GATE TIME	: 881.300 ms after ramp
CURRENT	: 19.00 amps
FREQUENCY	: 2.50 Hz
INTEGRATION TIME	: 60 seconds
SYNC MODE	: CRYSTAL
HORIZONTAL SCALE	: 1 :10000
SURVEYED BY	: RJP
DATE	: 10/05/2001

[redacted]

PROJECT NO.
3-694

CLIENT	: Noranda Pacific Pty Ltd
PROJECT	: Middle Creek
AREA	: Cloncurry, Qld
LINE	: 7764950N Z-Component

VERTICAL COMPONENT B'(Z)



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

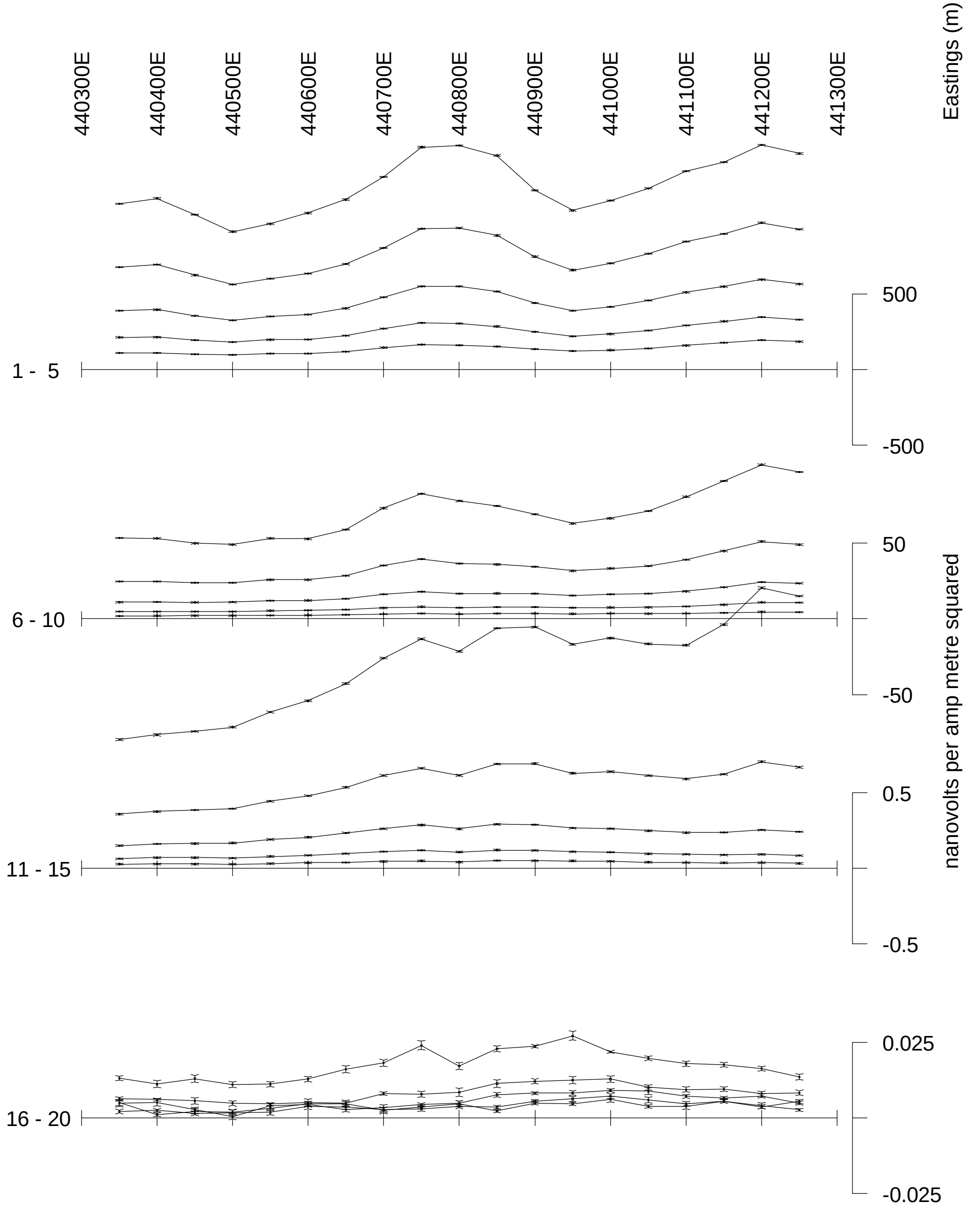
TX LOOP SIZE	:	100m x 100m
TX TURN OFF TIME	:	0.0900 milliseconds
FIRST GATE TIME	:	881.300 ms after ramp
CURRENT	:	19.50 amps
FREQUENCY	:	2.50 Hz
INTEGRATION TIME	:	60 seconds
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1 :10000
SURVEYED BY	:	RJP
DATE	:	11/05/2001

[redacted]

PROJECT NO.
3-694

CLIENT	:	Noranda Pacific Pty Ltd
PROJECT	:	Middle Creek
AREA	:	Cloncurry, Qld
LINE	:	7765050N Z-Component

VERTICAL COMPONENT B'(Z)



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

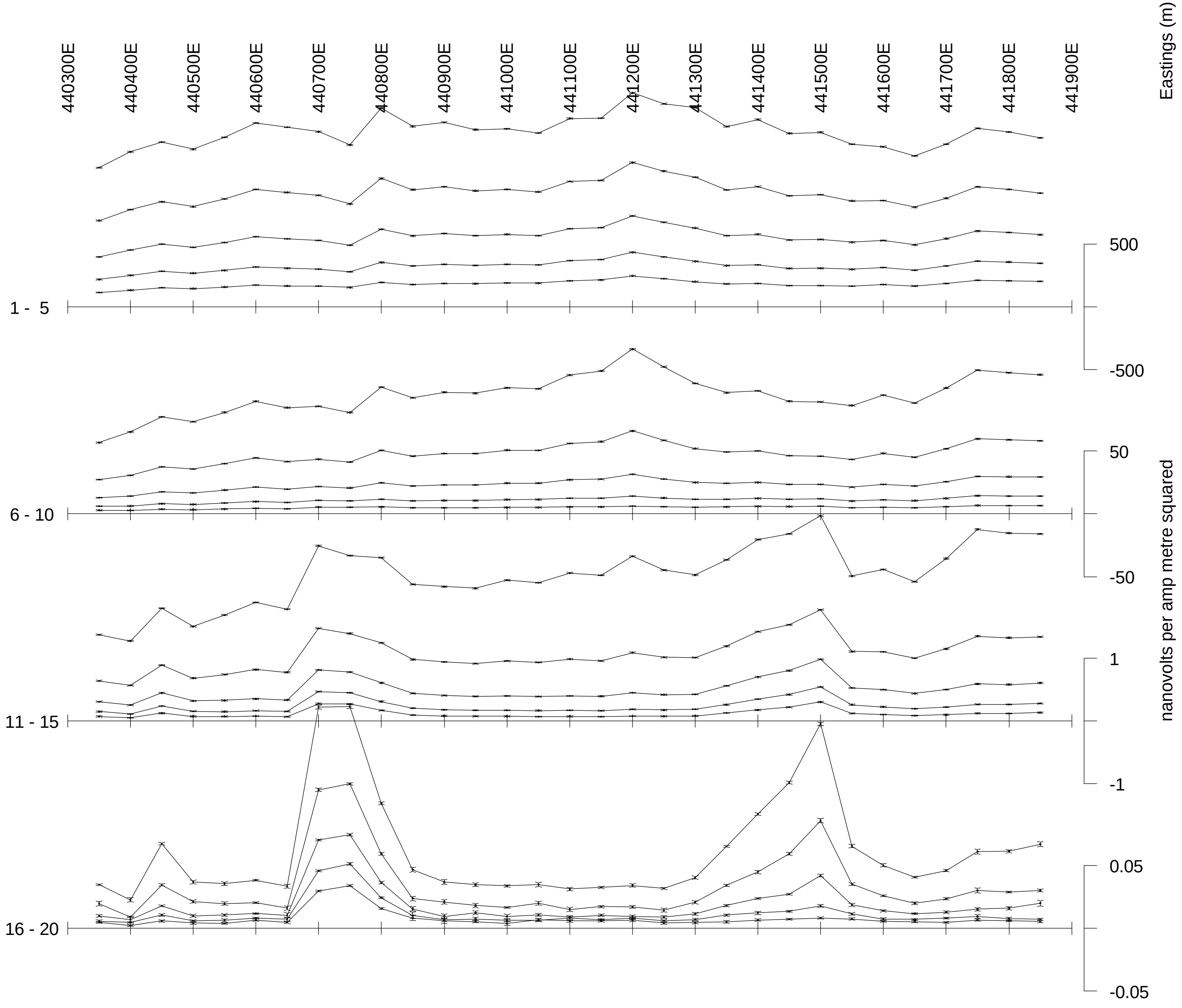
ERROR BARS REPRESENT
1 STANDARD DEVIATION / SQRT(N)

TX LOOP SIZE	:	100m x 100m
TX TURN OFF TIME	:	0.0850 milliseconds
FIRST GATE TIME	:	881.300 ms after ramp
CURRENT	:	18.50 amps
FREQUENCY	:	2.50 Hz
INTEGRATION TIME	:	60 seconds
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1 :10000
SURVEYED BY	:	RJP
DATE	:	02/09/2001

PROJECT NO.
3-704

CLIENT	:	Noranda Pacific Pty Ltd
PROJECT	:	Middle Creek
AREA	:	Cloncurry, Qld
LINE	:	7765350N Z-Component

VERTICAL COMPONENT B'(Z)



PROTEM

MOVING TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY(B')

ERROR BARS REPRESENT
1 STANDARD DEVIATION / SQRT(N)

TX LOOP SIZE	:	100m x 100m
TX TURN OFF TIME	:	0.0850 milliseconds
FIRST GATE TIME	:	881.300 ms after ramp
CURRENT	:	18.50 amps
FREQUENCY	:	2.50 Hz
INTEGRATION TIME	:	60 seconds
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1 :10000
SURVEYED BY	:	RJP
DATE	:	02/09/2001

[redacted]

PROJECT NO.
3-704

CLIENT	:	Noranda Pacific Pty Ltd
PROJECT	:	Middle Creek
AREA	:	Cloncurry, Qld
LINE	:	7765750N Z-Component

APPENDIX 4

Drill Hole Data

Geology Code Headers

Header Code	Type	Header
hole_name	General	Hole Name
from_depth	General	Start Interval (m)
To_depth	General	End Interval (m)
geol_type	General	Code for wrapping text
rec	General	Recovery
flag	General	Flag for highlighting
Age	General	Geological age
rt1	Lithology	Rock Type 1
rmm1	Lithology	1st Rock Major Mineral
rtq1	Lithology	Rock Type 1 Qulifier 1
rtq2	Lithology	Rock Type 1 Qulifier 2
rtq3	Lithology	Rock Type 1 Qulifier 3
rtq4	Lithology	Rock Type 1 Qulifier 4
rt2	Lithology	Rock Type 2
rt2q1	Lithology	Rock Type 2 Qulifier 1
rt2q2	Lithology	Rock Type 2 Qulifier 2
rt2q3	Lithology	Rock Type 2 Qulifier 3
rt2q4	Lithology	Rock Type 2 Qulifier 4
rl	Lithology	Lightness
rh1	Lithology	1st Rock Colour
rh2	Lithology	2nd Rock Colour
wth	Lithology	Weathering
gsize	Lithology	Grain Size
rtt1	Lithology	Texture
rta1	Lithology	1st Rock Type Mineral amount
rtm1	Lithology	1st Rock Type Mineral
rta2	Lithology	2nd Rock Type Mineral amount
rtm2	Lithology	2nd Rock Type Mineral
rta3	Lithology	3rd Rock Type Mineral amount
rtm3	Lithology	3rd Rock Type Mineral
rta4	Lithology	4th Rock Type Mineral amount
rtm4	Lithology	4th Rock Type Mineral
rta5	Lithology	5th Rock Type Mineral amount
rtm5	Lithology	5th Rock Type Mineral
str_depth	Structure	Depth
str_type	Structure	Type
str_rel	Structure	Spatial
str_dip	Structure	Dip
str_magaz	Structure	Azimuth (mag)
smq1	Mineralisation	1st Sulphide Mineralisation Qualifier
smq2	Mineralisation	2nd Sulphide Mineralisation Qualifier
py	Mineralisation	Sulphides and/or oxides pyrite
po	Mineralisation	Sulphides and/or oxides pyrrhotite
cp	Mineralisation	Sulphides and/or oxides chalcopyrite
gl	Mineralisation	Sulphides and/or oxides galena
sp	Mineralisation	Sulphides and/or oxides sphalerite
other_su1	Mineralisation	Sulphides and/or oxides other 1
other_am1	Mineralisation	Sulphides and/or oxides percentage 1
other_su2	Mineralisation	Sulphides and/or oxides other 2
other_am2	Mineralisation	Sulphides and/or oxides percentage 2
veinqual	Veining	Veining qulifier
veinpc	Veining	Vening percetage
va1	Veining	1st veining type mineral amount
vtm1	Veining	1st veining type mineral
va2	Veining	2nd veining type mineral amount
vtm2	Veining	2nd veining type mineral
va3	Veining	3rd veining type mineral amount
vtm3	Veining	3rd veining type mineral
at1	Alteration	1st alteration type
at1m1	Alteration	1st alteration type mineral 1
at1m2	Alteration	1st alteration type mineral 2
at2	Alteration	2nd alteration type
at2m1	Alteration	2nd alteration type mineral 1
at2m2	Alteration	2nd alteration type mineral 2
comments	General	Comments

MINERAL

actinolite	AC
albite/albitisation	AB
almandine	AM
amphibole	AX
andalusite	AA
anhydrite	AH
ankerite	AK
anorthite	AN
anorthoclase	AF
apatite	AT
arsenopyrite	AS
bands of magnetite	MB
barite	BA
beryl	BE
biotite	BI
biotite-hornblende	BH
bleaching	BL
Blue qz	QB
bornite	BO
calc-silicate	C-
calcite	CA
carbonate	CB
cassiterite	CT
cerussite	CE
chalcedony	QY
chalcocite	CC
chalcopyrite	CP
chert	CH
chiastolite	IA
chlorite	CL
chloritized mafics	MC
chloritized olivine	OC
chloritoid	CD
chrysocolla	CK
clay	CY
clinopyroxene	CX
clinozoisite	CZ
copper	CU
cordierite	CO
corundum	CM
covellite	CV
cuprite	CI
diffuse carb vnlts	DT
diopside	DI
dissem garnet	DG
dissem magnetite	DM
dissem oxides	DX
dissem sulphides	DS
dolomite	DO
earthy hematite	HE
epidote	EP
epidote-chlorite	EC
feldspar	FD
fibrous Ax	FX
fibrous Px	FY
fluorite	FL
forsterite	FO
fuchsite	FU
gahnite	GH
galena	GL
garnet	GA
ga adj to vns	VG
garnet bands	GB
glauconite	GN
glaucophane	GC
goethite	GO
gold	AU
graphite	GR
gypsum	GY
halite	HA
hornblende	HB
hydrozincite	HZ
illite	IL
ilmenite	IM
iron oxides	FE
K-feldspar/microclin	KM
K-feldspar/orthoclas	KF
kaolinite	KA
kyanite	KY
leucocratic c-	LC
leucoxene	LE
limonite	LI
lithic fragments	LF
mafic minerals	MF
maghemite	MH
magnesite	MG
magnetite	MA
malachite	ML
manganese	MN
mang carbonate	MY
marcasite	MR
mica	MI
Mn-garnet	SG
Mn oxides	MX
Mn silicates	MS
molybdenite	MO
monazite	MZ
muscovite	MU
olivine	OL
opaques	OQ
orthopyroxene	OR
oxides	OX
pentlandite	PN
plagioclase	PF
platinoids	PT
pyrite	PY
pyrobole	PR
pyromorphite	PM
pyroxene	PX
pyrrhotite	PO
qz	QZ
qz-carbonate	QC
qz-epidote	QE
qz-pyrite-calcite	QP
qz-sericite	QS
qz-tourmaline	QT
qz crystals	QX
qz vein	QV
rutile	RU
scapolite	SC
scheelite	SH
sericite	SR
serpentine	SE
siderite	SD
siliceous alt	SS
sillimanite	SI
specular hematite	HS
sphalerite	SP
sphene	SN
spinels	SL
staurolite	ST
stibnite	SB
sulphates	SA
sulphides	S=
sulphides (oxidized)	SX
talc	TA
talc-carbonate	TC
tourmaline	TO
tremolite	TR
unknown	UN
uraninite	UR
uranium minerals	UX
vermiculite	VM
white mica	WM
zincite	ZC
zircon	ZI

OCCURRENCE

alteration rims	H
blebs	B
boxwork	W
breccia, matrix	X
cavity fill, vughs	A
clasts	C
coatings	E
crystal clusters	R
crystalline	T
disseminations	D
euhedral crystals	U
eyes, augen	I
fracture coatings	F
gouge	G
interstitial, cement	J
laminations	L
macro-veins	>
massive	M
matrix	Y
micro-veins	<
nodules, pistolites	N
patches (as in quilts)	Q
pervasive	P
pseudomorphs	#
selvages	S
spots	O
stockwork	K
unsure	?
veins	V

ROCK TYPE

acid rock	ACID
acid volcanic	ACVL
adamellite	ADAM
albite-mag rock	ABMA
albitite	ALBT
alluvium	ALUV
amphibolite	AMFB
andesite	ANDS
anorthosite	ANOR
arenite	AREN
arkose	ARKS
BIFF	BIFF
basalt	BASL
basaltic tuff	BSTF
basic rock	BASC
basic volcanic	BAVL
BIF, calcic	CABF
bi-qz schist	BSXX
biotite gneiss	BIGN
biotite schist	BISC
black shale	BLSH
breccia	BREC
calc-silicate	CASI
calcareous soil	CASO
calcrete	CALC
C$ siltst	CSSI
cb-mafic alt	MFCA
cb rock	CARB
cb veins/alt	CAAA
cavity	CVTY
chert	CHER
cherty qzite	QZCH
chlorite schs	CLSC
chromitite	CHRM
clay	CLAY
clay zone	CLZN
claystone	CYST
clinopyroxenite	CLPX
conglomerate	CONG
dacite	DACT
diorite	DIOR
dolarenite	DOAS
dolerite	DOLR
dolomite	DOLM
do breccia	DOBX
do limestone	DOLS
do shale	DOSH
do sist	DOSI
evaporite	EVAP
fault gouge	FAGO
fault zone	FAZN
feldspar porp	FDPP
ferricrete	FERC
ferrug zone	FEZN
gabbro	GABR
gahnite-qzite	QZGH
garnet qzite	GAQZ
gneiss	GNES
gossan	GOSS
gossan brec	GGBX
granite	GRAN
granodiorite	GRDR
granofels	GRFL
granophyre	GRPH
granulite	GRLT
graphitic schs	GISC
gravel	GRAV
greenschist	GRSC
greisen	GRES
greywacke	GRWC
grit	GRIT
gritstone	GTST
gypsum	GYPS
hardpan	HARD
hornfels	HORN
igneous	IGNS
ignimbrite	IGNM
intrusive	INTR
ironstone	IRON
jaspilite	JASP
kimberlite	KIMB
lag	LAGS
laterite	LATR
latr cap, hard	LRCH
latr cap, soft	LRCS
latr mottled zone	LRMO
latr pallid zone	LRPL
limestone	LIST
lost core	LOST
lower saprolite	LWSP
mafic altn	MFAA
mafic arenite	MFAS
mafic rock	MFRK
mafic volcanic	MFVL
magnetite	MAGN
magnetite-mafic alt	MFMA
marble	MARB
marl	MARL
massive sulphides	MSS=
metasediment	MTSD
metavolcanic	MTVL
mica schist	MISC
mi qz aren	MAQA
migmatite	MIGM
mill rock	MILL
monzonite	MONZ
mottled zone	MTZN
mud uncons	MUDD
mudstone	MDST
mu-bi-qz-schist	SHXX
mu schist	MUSC
norite	NORT
olivine gabbro	OLGB
orthogneiss	ORGN
orthopyroxenite	ORPX
overburden	OVER
paragneiss	PAGN
pebble cong	PBCG
pebbles u-	PEBB
pebbly snst	PBSN
pegmatite	PEGM
pelite	PELT
peridotite	PERD
phyllite	PHYL
pisolite	PISL
porphyry	PORP
psam + bisc, IB	BIAS
psammite	PSAM
psammitic schist	ASSC
psammopelite	PSPE
pyroclastic rock	PCRK
pyroxenite	PYRX
qz-albite rock	QALB
qz-arenite	QZAS
qz-carbonate	QZCB
qz-epidote	QZEP
qz-feldspar porp	QFPP
qz-magnetite BIF	QMBF
qz basalt	QZBS
qz diorite	QZDR
qz gabbro	QZGB
qz monzonite	QZMZ
qz porphyry	QZPP
qz vein	QZVN
qz, massive	QZMS
quartzite	QZIT
redox front	REDX
residual latr	RSLT
rhyodacite	RYDC
rhyolite	RHYL
rock	ROCK
sand	SAND
sandstone	SNST
sandy sist	SNSI
saprock	SPRK
saprolite	SAPR
schist	SCHS
sediment	SEDM
semi-mss=	SMS=
serpentinite	SERP
shale	SHAL
silcrete	SILC
siliceous altn zone	SLAZ
silicified list	SFLI
silicified sist	SFSI
silisificied rock	SFRK
silty snst	SILI
si-mu-ga schist	SHMU
silt, uncons	SILT
siltstone	SIST
Silty snst	SISN
skarn	SKAR
slate	SLAT
soil	SOIL
stringer mx	MSST
syenite	SYEN
talc-cb rock	TACB
talc schist	TASC
tectonic brec	TEBX
tillite	TILL
tonalite	TONL
tourmalinite	TOUR
trachy-andesite	TCAN
trachyte	TRAC
transported latr	TRLT
tuff	TUFF
ultramafic	ULMF
uncon over	UCOB
unknown rock	UNRK
vein	VEIN
void	VOID
volcanic	VOLC
volcanic agglom	VLAG
volcanic conglom	VLCG
volcaniclastic	VLCT
wacke	WACK

FLAG

base of oxidation	BO
base of partial oxid	BP
BIF type unit	BF
comment	CC
Contact	C-
contact zone 1	C1
continuation	XX
depth to water	DW
dissem oxide zone	DX
dissem sulphide zone	DS
Dyke	D-
fault zone	FZ
faults 1	F1
footwall	FW
fracture zone	FR
hanging wall	HW
major alteration zone	AA
marker bed 1	B1
massive suphide zone	M=
massive vein	MV
overburden	OB
petrology	PP
Prot basement	BS
seam	E-
shear zone	S-
stringer min	ST
sulphides	S=
Unconformity	UN
vein	VN
veins 1	V1

ROCK QUALIFYER / TEXTURE

acid	AC
aeolian	AE
albitised, albitic	AB
alkali	AL
altered	AA
amygdaloidal	AM
andesitic	AN
angular unconf	<A
arkosic	AK
banded	BN
basaltic	BS
basic	BA
bedded	BD
BIF associated	BF
bituminous	BT
bleached	BL
botryoidal	BO
boudinaged	BJ
brecciated	BX
calcareous	CA
carbonaceous	C$
cataclastic	CX
cavernous	CV
cemented	CE
Chaledonic	CW
cherty	CH
chilled margin	CM
clastic	CL
clayey / clay size	CY
close structured	CS
coarse bands (>1cm)	>B
coarse - pebble size	+C
colloform	CF
composite	CJ
conglomeratic	CG
crenulated	CR
crystalline	XL
dacitic	DC
deformed	DE
dioritic	DR
dirty	DT
disrupted	DP
dissem ma	DM
doleritic	DL
do	DO
drag folded	DF
dyke	DY
epiclastic	EP
equigranular	EQ
evaporitic	EV
fault breccia	FX
fault zone, fault	FZ
faulted	F-
FD porphyritic	PF
FD, cream-white	WF
FD, green-grey	GF
FD, pink-orange	OF
feldspathic	FD
felsic	FC
ferruginous	FE
fine - med bands (<1cn	<B
fine -med size	+F
flaggy	FY
flame textures	IF
flow banded	FB
fluvial	FU
fluvio-glacial	FV
folded	FT
folded, gentle	FG
foliated	FO
footwall	FW
fossiliferous	FS
fracture zone, fracturec	FR
friable	IA
gabbroic	GB
garnetiferous	GA
glacial	GC
glassy	GS
gneissic	GN
goethitic	GE
gossanous	GG
graded bedding	GD
granitic	GR
granoblastic	GX
granophyric	GO
granulose, granular	GL
graphic	GP
graphitic	GI
gravelly	GV
gritty	GT
hanging wall	HW
hematitic	HE
heterogeneous	HT
homogeneous	HO
hornfelsic	HF
igneous	IG
indurated	ID
inequigranular	IQ
interbedded	IB
intermediate	IT
interstitial	IS
intrusive	IN
irregular	IR
kaolinitic	KA
laminated	LM
lateritic	LR
layered	LY
leached	LH
lensoid, lenticular	LN
leuco	LE
lineation/lineated	LD
lithic	LI
macrofaulted	>F
macroveined (>2mm)	>V
mafic	MF
ma-bearing	MA
massive	MS
med to gravel size	+M
meta-	MT
micaceous	MI
microfaulted	<F
microveined (<2mn	<V
migmatitic	MM
mineralised	MX
mylonitic	MY
oolitic	OO
matrix supported	OS
ortho-	OR
oxidized	OX
pebbly	BP
pegmatitic	PG
pelitic	PE
phyllitic	PH
pillowed	PW
pisolitic	PI
plutonic	PT
porous	PU
porphyritic	PP
porphyroblastic	PB
possible	??
potassic	K+
psammitic	PS
psammo-pelitic	PZ
pseudobreccia	PX
pyritic	PY
pyroclastic	PC
pyrrhotitic	PO
qz-fd porphyritic	QF
qz porphyritic	PQ
quartzitic, quartzos	QZ
rare trace	<-
recrystallized	RX
red rock(HE + AB)	RR
relict	RL
replaced	RP
retrogressed	RE
reworked	RW
rhyolitic	RY
sandy	SA
schistose	SC
sericitic	SR
shaly	SH
sheared	S-
siliceous	SS
siliceous altn	QA
silicified	SF
sill	I-
silty/silt size	SI
spherulitic	SO
spinifex	XF
spotty, spotted	SP
stressed	SE
sub-volcanic	SV
sugary	SG
sulphidic	S=
texturally altered	TX
tholeiitic	TH
trachytic	TC
tuffaceous, shardy	TF
ultrabasic	UB
ultramafic	UM
unconsolidated	U-
uniform	UF
unmetamorphosed	UN
vein	V-
vein breccia	VB
veined	VN
vesicular	VS
volcanic	VL
volcaniclastic	VC
vuggy	VG
xenolithic	XE

STRUCTURE CODE

angular unconf	<A
axial plane	AY
banded sulphides	B=
bn, compositional	CB
bn, metamorphic	MB
bedding	BD
breccia	BX
breccia zone	BZ
cleavage	KV
contact zone	C-
crenulations	CR
dyke	DY
fault	F-
fault breccia	FX
fault zone	FZ
fold phase 1	F1
foliation	FO
footwall	FW
fracture zone	FR
hanging wall	HW
joint set	JS
laminations	LM
lineation	LD
lower contact	LO
macrovnd (>2mm	>V
massive vein	MV
microvnd (<2mm)	<V
migmatitic fo	MM
mylonitic fo	MY
qz vein	QV
schistosity	SC
shear	S-
sill	I-
slickensides	SJ
strong fo	SF
unconformity	<U
upper contact	UO
vein	VN
vein breccia	VB
weak fo	WF

GRAIN SIZE

very fine-grained	<
very cse-grained (>>1cn	>
clay/glass(<0.004mm)	0
fine silt/aphanitic	1
med-cse silt/aphanitic	2
fine sand/fine	3
med-cse sand/fine	4
gravel/medium	5
small pebbles/coarse	6
large pebbles/coarse	7
cobbles/pegmatite	8
boulders/megapeg	9
cse-grained (4mm-1cm)	C
fine-grained (<1mm)	F
heterogeneous	H
med-grained (1-4mm)	M

LIGHTNESS

darkest	1
very dark	2
dark	3
medium-dark	4
medium	5
medium-light	6
light	7
very light	8
palest	9
banded	B
mottled	M
black	N
patchy	P
spotty	S
white	W

HUE

aqua	Q
black	N
blue	B
brown	U
Cream	C
green	G
grey	E
khaki	K
lime	L
mauve	M
orange	O
pink	I
purple	P
red	R
tan	T
violet	V
white	W
yellow	Y

AMOUNT

rare trace (<<1%)	<
totally dominant (100%	>
<1% widespread trace	1
1-2%	2
2-5%	3
5-10%	4
10-20%	5
20-40%	6
40-60%	7
60-80%	8
80-99%	9
co-dominant (25-50%)	C
dominant (>50%)	D
minor (1-5%)	M
subordinate (5-25%)	S
trace (<1%)	T

MINERALISATION MODE

amorphous	AO
amygdaloidal	AM
banded	BN
bands (<1cm)	<B
bn laminae sulphides	B=
bedded	BD
BIF associated	BF
blebs	BB
boxworks	BW
cavity, vuggy infill	VI
coarse bands (>1cm)	>B
colloform	CF
intergrowths	IW
crackle bx and veinlet	KR
VX swarm	VX
crystalline	XL
dissem	DI
dissem and blebby	DB
dissem sulphides	DS
drusy cavities	DV
dyke	DY
euhedral crystals	EU
fault breccia	FX
fault zone, fault	FZ
grain coatings	
and dissems	DG
joint film	JF
laminated	LM
lm sulphides	L=
layered	LY
lensoid, lenticular	LN
lineations 1	L1
macrovein swarm	>I
macroveined (>2mn	>V
massive	MS
massive sulphide	M=
massive vein	MV
microvein swarm	<I
microveined (<2mm)	<V
macrovein (>2mm)	>S
microvein (<2mm)	<S
patchy	PD
pervasive	PV
stockwork	SW
stringer textures	ST
vein	V-
vein breccia	VB
vein selvedge	VE
vuggy	VG

VEIN QUALIFYER

axial plane	AY
boudinaged	BJ
crackle bx and sulph v	VX
disrupted	DP
faulted	F-
folded	FT
macrovein swarm (>2r	>I
macroveined (>2mm)	>V
microvein swarm (<2n	<I
microveined (<2mm)	<V
mineralised macrovns	>S
mineralised microvns	<S
stockwork	SW
vein breccia	VB

ALTERATION

albitic alteration	AB
banded	BN
banding, compositiona	CB
banding, crude	LB
banding, irregular	BI
banding, textural	TB
bleached zones	BL
disrptd isolated	
patches & rems	DR
dissem selvages	
adj to veins	DV
dissem	DI
irregular patches	PA
mafic alteration	MF
rock type is alteration	RT
massive zone	MA
moderate	MD
patchy	PD
pervasive	PV
red rock altn	RR
relict patches of roc	RL
Replacement	RP
silicification	SF
texturally altered	TX
vein selvedges	VE
veins	VN
weak	WK

GEOL LOG TYPE

Alteration	AL
Comments	CC
Com additional 1	C1
Lithology	LL
lith additional 1	L1
Mineralization	MI
Min additional 1	M1
Structure	ST

WEATHERING

not weathered	0
very low	2
low (weakly, minc	3
fairly low	4
moderately	5
fairly well	6
highly	7
very highly	8
extremely highly	9

HOLE_ID	HOLE_NAME	PROJECTION	EASTING	NORTHING	LONGITUDE	LATITUDE	INCLINATION	AZIMUTH	HOLE_LENGTH	CONTRACTOR	RIG_TYPE	STARTED	FINISHED
569259	NJVD10	AMG-54	440750	7765750	140.4328569	-20.20476624	-60	270	258	PONTIL	UDR-650	28/09/2001 0:00	4/10/2001 0:00
569257	NJVD09	AMG-54	440250	7764700	140.4280364	-20.21423852	-60	270	204	PONTIL	UDR-650	6/07/2001 0:00	11/07/2001 0:00
569255	NJVD08	AMG-54	440820	7765000	140.4335024	-20.2115454	-60	270	285	PONTIL	UDR-650	1/07/2001 0:00	6/07/2001 0:00

HOLE	SAMPLE	FROM_DEPTH	TO_DEPTH	LAB	BATCH	AG_ICP_PPM	AL_ICP_PPM	AS_ICP_PPM	AU_ICP_PPM	AU(R)_ICP_PPM	BA_ICP_PPM	BI_ICP_PPM	CA_ICP_PPM	CD_ICP_PPM	CO_ICP_PPM	CR_ICP_PPM	CU_ICP_PPM	FE_ICP_PPM	K_ICP_PPM	MG_ICP_PPM	MN_ICP_PPM	MO_ICP_PPM	NA_ICP_PPM	NI_ICP_PPM	P_ICP_PPM	PB_ICP_PPM	RB_ICP_PPM	SR_AAS_PPM	TI_ICP_PPM	ZN_ICP_PPM
NJVD08	NJ8002	82	84	ALS-CLON	CL5401	-0.5	49200	16	-0.02		602	5	29500	0.8	58	6	247	118500	24700	41200	1690	8	16200	35	2160	8	156	22	2200	250
NJVD08	NJ8003	84	86	ALS-CLON	CL5401	-0.5	43800	12	-0.02		511	5	31800	-0.5	25	13	178	111500	24600	53100	2000	14	8200	18	1920	-2	121	16	2000	147
NJVD08	NJ8004	86	88	ALS-CLON	CL5401	-0.5	53800	11	-0.02		1010	4	17600	-0.5	65	5	419	66800	38600	34800	1140	5	14000	53	721	11	234	18	2400	104
NJVD08	NJ8005	88	90	ALS-CLON	CL5401	-0.5	46500	10	-0.02		1040	2	35700	-0.5	51	15	158	80800	37700	51100	1590	9	8200	37	1220	8	179	18	2100	279
NJVD08	NJ8006	90	92	ALS-CLON	CL5401	-0.5	8000	35	-0.02		91	6	67500	-0.5	25	9	14	180100	2500	71500	2160	7	2900	10	5970	-2	10	-1	1500	432
NJVD08	NJ8007	92	94	ALS-CLON	CL5401	-0.5	8500	31	-0.02		58	6	20700	1.8	143	20	903	470900	5500	28500	1240	7	1000	144	1550	-2	61	-1	1900	493
NJVD08	NJ8008	94	96	ALS-CLON	CL5401	-0.5	24200	67	0.03		373	7	17200	0.9	153	8	1760	327600	18000	29600	1120	13	4100	151	1250	9	131	17	1200	167
NJVD08	NJ8009	116	118	ALS-CLON	CL5401	-0.5	5500	9	-0.02		161	9	30000	0.6	106	13	130	427500	3100	39100	1440	13	1400	48	320	11	30	-1	1700	209
NJVD08	NJ8010	134	136	ALS-CLON	CL5401	-0.5	6400	8	-0.02		219	8	26900	1.2	99	21	446	425900	4700	36700	1250	26	1600	41	488	13	40	-1	1100	814
NJVD08	NJ8011	140	142	ALS-CLON	CL5401	-0.5	4700	-5	-0.02		1070	9	23600	-0.5	32	9	172	511200	2700	32000	1680	7	1300	16	117	17	29	4	1500	418
NJVD08	NJ8012	142	144	ALS-CLON	CL5401	-0.5	3400	-5	-0.02		446	7	23800	-0.5	26	25	162	371500	1400	28400	1620	5	1100	15	66	10	17	-1	1000	379
NJVD08	NJ8013	158	160	ALS-CLON	CL5401	-0.5	54700	18	-0.02		2490	-2	50700	-0.5	92	31	595	66000	58700	53500	2470	13	3800	43	1640	14	271	21	2400	305
NJVD08	NJ8014	160	162	ALS-CLON	CL5401	-0.5	49000	15	-0.02		1940	3	53900	1	95	37	1460	87800	52800	55800	2540	23	2900	104	1350	20	288	25	2200	316
NJVD08	NJ8015	162	164	ALS-CLON	CL5401	-0.5	43400	17	0.03		2120	3	53500	-0.5	196	38	1080	91700	44100	71000	2760	14	3200	76	1630	7	314	17	2000	378
NJVD08	NJ8017	172	174	ALS-CLON	CL5401	-0.5	61000	18	-0.02		2870	3	42800	-0.5	119	34	1500	94400	55000	38300	1320	135	9500	51	2510	7	406	45	2300	230
NJVD08	NJ8018	182	184	ALS-CLON	CL5401	-0.5	56900	17	-0.02		1130	3	29700	-0.5	117	37	1120	86300	36200	35500	1200	20	11100	36	2090	10	250	31	2500	204
NJVD08	NJ8020	186	188	ALS-CLON	CL5401	-0.5	57600	24	-0.02		737	-2	39500	0.6	59	37	600	52900	43300	16200	1120	9	10600	16	1820	3	262	57	2800	110
NJVD08	NJ8022	190	192	ALS-CLON	CL5401	-0.5	45100	11	-0.02		174	3	7900	-0.5	120	25	488	79100	20800	17000	699	2	12400	16	573	25	117	23	900	144
NJVD08	NJ8024	202	204	ALS-CLON	CL5401	0.9	5900	-5	-0.02		86	6	18800	2.4	100	13	1440	507500	3400	27000	1880	6	900	72	611	28	28	-1	300	740
NJVD08	NJ8025	204	206	ALS-CLON	CL5401	0.9	6000	6	0.02		119	7	21200	-0.5	204	19	1440	491500	3000	28400	1750	8	900	58	534	17	31	-1	400	762
NJVD08	NJ8027	212	214	ALS-CLON	CL5401	-0.5	48800	43	-0.02		2010	3	46400	-0.5	144	57	1150	121600	38300	56400	1850	20	4000	36	1760	7	279	29	2200	217
NJVD08	NJ8029	216	218	ALS-CLON	CL5401	-0.5	42100	30	-0.02		1230	5	51600	0.6	118	36	1130	119000	40700	60600	2430	46	1600	48	1120	21	292	19	1800	265
NJVD08	NJ8031	220	222	ALS-CLON	CL5401	-0.5	68000	32	-0.02		5660	-2	33300	-0.5	54	30	591	74200	63100	40700	1350	12	2800	26	1780	18	472	66	2800	207
NJVD08	NJ8032	222	224	ALS-CLON	CL5401	-0.5	48900	46	-0.02		4370	4	39300	1.3	321	28	1270	126900	43200	41500	1650	429	3300	49	1530	16	251	34	1800	218
NJVD08	NJ8034	226	228	ALS-CLON	CL5401	1	20700	14	-0.02		334	7	25300	1.2	114	12	820	267000	19400	53400	2000	9	1000	29	927	-2	161	-1	1200	548
NJVD08	NJ8036	230	232	ALS-CLON	CL5401	-0.5	11700	25	-0.02		202	7	42000	0.5	68	20	698	265300	9500	66400	2680	5	1300	24	980	-2	73	-1	700	505
NJVD08	NJ8038	234	236	ALS-CLON	CL5401	-0.5	22900	61	-0.02		616	6	20300	-0.5	87	19	623	220900	27100	84200	2200	4	1700	21	607	-2	227	10	700	481
NJVD08	NJ8039	236	238	ALS-CLON	CL5401	-0.5	32600	78	-0.02		965	6	16400	0.7	58	32	886	147600	41900	108900	2320	4	1100	18	685	92	397	12	1300	773
NJVD08	NJ8041	240	242	ALS-CLON	CL5401	0.9	7700	34	-0.02		189	6	22700	1.5	59	11	628	444000	10000	47800	1550	18	500	8	424	-2	83	-1	300	358
NJVD08	NJ8043	244	246	ALS-CLON	CL5401	0.5	8700	19	-0.02		325	8	12400	18.8	60	17	481	502200	10700	37400	1490	24	400	7	327	-2	98	-1	400	6550
NJVD08	NJ8045	248	250	ALS-CLON	CL5401	1	11300	46	-0.02		271	7	29100	1.8	58	14	615	352300	14100	71100	1170	7	800	7	501	-2	162	-1	400	768
NJVD08	NJ8046	250	252	ALS-CLON	CL5401	1.1	7100	44	-0.02		137	7	18400	2.3	32	15	873	502300	7600	36700	1680	16	500	12	383	-2	91	-1	300	905
NJVD08	NJ8048	254	256	ALS-CLON	CL5401	-0.5	13000	38	-0.02		441	7	30300	0.9	219	16	954	362800	14200	62200	1870	9	1100	26	437	-2	171	-1	500	575
NJVD08	NJ8050	258	260	ALS-CLON	CL5401	1.3	12100	10	-0.02		502	7	20700	1.4	64	19	912	374300	16100	65700	1450	12	800	22	281	-2	183	-1	500	346
NJVD08	NJ8052	262	264	ALS-CLON	CL5401	0.9	5400	25	-0.02		363	4	11600	1.3	80	23	895	546500	5500	25800	1340	9	200	18	458	2	62	-1	200	364
NJVD08	NJ8053	264	266	ALS-CLON	CL5401	1.3	13300	13	-0.02		1110	7	19500	0.9	82	20	683	277600	17000	69500	1700	8	700	16	362	-2	198	-1	500	691
NJVD08	NJ8055	268	270	ALS-CLON	CL5401	0.6	7800	9	-0.02		149	7	34000	1	85	12	1090	396000	5500	52900	2310	80	900	23	235	-2	49	-1	500	638
NJVD08	NJ8057	272	274	ALS-CLON	CL5401	-0.5	57100	19	-0.02		5270	2	12800	0.7	49	30	500	100400	50200	32100	1430	15	2500	4	495	11	302	62	2700	279
NJVD08	NJ8059	276	278	ALS-CLON	CL5401	-0.5	57300	18	-0.02		10900	3	40000	0.6	34	16	724	126400	48500	42400	2620	9	3100	6	563	12	290	64	3400	394
NJVD08	NJ8060	278	280	ALS-CLON	CL5401	-0.5	59500	16	-0.02		11100	3	41800	0.9	27	22	539	117500	48200	33600	2420	6	4500	3	480	10	199	53	2500	362
NJVD08	NJ8062	282	284	ALS-CLON	CL5401	-0.5	46900	21	-0.02		2410	3	33400	-0.5	51	19	551	156500	30700	39800	2280	7	3700	11	408	3	213	16	2000	363
NJVD09	NJ9001	34	36	ALS-CLON	CL5408	1	80100	8	-0.02		5070	-5	8200	-5	29	32	82	73000	34900	13700	2510	15	4100	26	1260	71	142	76	4260	139
NJVD09	NJ9002	36	38	ALS-CLON	CL5408	-1	66800	6	-0.02		7770	-5	6300	-5	27	34	81	97700	48200	10800	2310	10	3600	26	733	73	225	88	4220	135
NJVD09	NJ9004	62	64	ALS-CLON	CL5408	-1	62700	10	-0.02		8960	-5	5900	-5	21	27	-5	84600	53700	5600	557	6	1700	14	894	-5	221	53	3820	19
NJVD09	NJ9006	112	114	ALS-CLON	CL5408	-1	20500	8	-0.02		901	-5	18700	-5	21	9	-5	321000	11700	10400	564	-5	3400	90	2490	-5	33	-10	1850	17
NJVD09	NJ9008	116	118	ALS-CLON	CL5408	-1	55200	6	-0.02		2040	-5	11100	-5	7	23	-5	169800	15600	4000	502	6	3000	41	1550	6	82	14	4410	16
NJVD09	NJ9010	120	122	ALS-CLON	CL5408	-1	58700	15	-0.02		1020	-5	27400	-5	6	23	-5	120400	12500	10900	724	5	18500	26	4100	6	63	12	6180	23
NJVD09	NJ9011	122	124	ALS-CLON	CL5408	-1	61600	7	-0.02		1390	-5	14100	-5	-5	25	-5	97600	25100	4100	326	6	16400	22	2550	-5	128	13	5370	12
NJVD09	NJ9012	140	142	ALS-CLON	CL5408	-1	78300	-5	-0.02		916	-5	14300	-5	8	22	-5	62900	13700	8600	638	7	38300	22	986	-5	84	25	4100	39
NJVD09	NJ9013	142	144	ALS-CLON	CL5408	-1	74900	6	-0.02		1290	-5	18500	-5	14	24	5	35200	12600	8300	621	6	29300	13	297	7	86	19	4850	29
NJVD09	NJ9014	144	146	ALS-CLON	CL5408	-1	68100	-5	-0.02		1140	-5	20100	-5	7	33	-5	90100	12800	10300	556	6	29400	27	798	14	78	21	6190	27
NJVD09	NJ9015	146	148	ALS-CLON	CL5408	-1	58900	-5	-0.02		1380	-5	22900	-5	25	38	-5	48600	15500	1700	299	5	20100	12	478	-5	115	-10	5790	8
NJVD09	NJ9016	168	170	ALS-CLON	CL5408	-1	70500	-5	-0.02		3060	-5	6200	-5	17	35	5	60000	19400	8200	341	6	9200	13	545	-5	141	19	4500	16
NJVD09	NJ9017	198	200	ALS-CLON	CL5408	-1	13300	-5	-0.02		147	-5	13700	-5	5	26	-5	14700	10400	4700	392	-5	3500	6	595	-5	49	-10	5580	16
NJVD10	NJ10001	56	58	ALS-CLON	CL5473	1	57600	183	-0.01		533	-5	3800	-5	13	25	136	88200	30000	12900	10600	34	800	14	1020	190	159	10	3110	247
NJVD10	NJ10002	58	60	ALS-CLON	CL5473	2	55300	127	-0.01		468	5	4500	-5	12	39	109	89700	25100	12300	9860	30	2100	18	1360	157	171	11	2970	609
NJVD10	NJ10003	80	82	ALS-CLON	CL5473	2	67700	455	-0.01		657	6	8800	-5	28	85	267	109200	51200	23400	1870	109	1600	27	3220	131	309	24	2000	242
NJVD10	NJ10004	82	84	ALS-CLON	CL5473	1	45200	50	-0.01		191	7	4500	-5	59	69	917	137900	31700	18800	1730	79	1100	52	2220	26	305	18	1420	122
NJVD10	NJ10005	84	86	ALS-CLON	CL5473	2	52300	123	-0.01		409	7	8500	-5	68	76	773	157400	45000	17600	2670	58	1800	63	2000	123	263	19	1190	387
NJVD10	NJ10006	86	88	ALS-CLON	CL5473	1	55400	35	-0.01		546	5	6600	-5	37	73	399	104000	56700	12400	2140	42	2600	38	2950	239	256	18	1020	553
NJVD10	NJ10007	100	102	ALS-CLON	CL5473	-1	58400	260	-0.01		651	-5	7500	-5	46	54	407	138400	61700	10300	7440	39	1700	35	2990	20	230	16	3580	196
NJVD10	NJ10009	104	106	ALS-CLON	CL5473	2	37200	188	-0.01	-0.01	182	-5	4300	-5	37	41	613	166200	28800	12400	2010	62	500	39	1890	34	163	-10	726	867
NJVD10	NJ10011	108	110	ALS-CLON	CL5473	1	50100	43	-0.01		290	-5	8200	-5	17	50	274	62900	41900	18200	1340	40	1700	21	2850	17	276	17	1680	83
NJVD10	NJ10013	112	114	ALS-CLON	CL5473	2	29400	94	-0.01		254	6	4300	-5	64	30	1030	258200	28200	8700	2490	59	1700	50	794	16	165	-10	776	115
NJVD10	NJ10014	114	116	ALS-CLON	CL5473	1	34900	103	-0.01		325	6	4500	-5	43	40	1030	193700	33200	7700	1390	78	4500	26	1150	7	160	-10	1160	57
NJVD10	NJ10016	118	120	ALS-CLON	CL5473	-1	32400	23	-0.01		201	5	94900	-5	23	28	461	103800	14800	50300	3970	220	1900	14	1390	11	135	-10	1140	119
NJVD10	NJ10018	122	124	ALS-CLON	CL5473	-1	15600	13	-0.01		76	-5	110900	-5	21	34	431	110500	8000	65500	5210	56	1200	12	1270	-5	119	-10	906	158
NJVD10	NJ10020	126	128	ALS-CLON	CL5473	1	23900	147	-0.01	-0.01	87	6	127100	-5	21	39	332	96900	5700	57300	5870	159	3000	12	776	20	70	-10	1180	210
NJVD10	NJ10021	140	142	ALS-CLON	CL5473	1	16100	16	-0.01		95	7	109700	-5	36	23	569	152100	5600	39500	7130	85	1900	13	821	-5	76	-10	958	226
NJVD10	NJ10023	188	190	ALS-CLON	CL5473	-1	48700	5	-0.01		511	-5	47500	-5	13	20	163	59200	37500	14600	1760	60	9400	-5	473	-5	344	20	2430	42
NJVD10	NJ10025	238	240	ALS-CLON	CL5473	-1	44200	63	-0.01		1770	-5	5400	-5	-5	22	41	23900	19900	4600	524	8	4700	7	187	9	265	26	1550	33
NJVD10	NJ10026	240	242	ALS-CLON	CL5473	1	48400	949	-0.01		1350	-5	7700	-5	32	30	2120	23400	18000	3800	473	107	4500	14	179	14	147	15	1350	18
NJVD08	NJ8001	64	66	ALS-CLON	CL5401	-0.5	40400	16	-0.02		896	3	47000	-0.5	27	17	271	74500	23500	57700	2410	8	5800	18	3800	-2	113	14	1800	145
NJVD08	NJ8016	170	172	ALS-CLON	CL5401	-0.5	58000	15	-0.02		2130	2	41900	-0.5	106	35	678	80000	51400	45700	1280	25	8700	32	2250	-2	303	30	2200	223
NJVD08	NJ8019	184	186	ALS-CLON	CL5401	-0.5	53200	20	-0.02		2930	3	32700	0.8	67	36	1140	64800	43200	27900	1110	15	7700	23	1960	7	228	32	2200	112
NJVD08	NJ8021	188	190	ALS-CLON	CL5401	1.7	22100	14	-0.02		1480	7	7000	6.6	367	49	2800	263400	15600	4800	343	15	3000	158	654	845	81	17	700	3290
NJVD08	NJ8023	200	202	ALS-CLON	CL5401	-0.5	41400	16	-0.02		1950	4	40400	1.1	124	54	840	119300	35100	64700	1780	15	4100	39	1110	31	263	18	1600	611
NJVD08	NJ8026	206	208	ALS-CLON	CL5401	-0.5	18500	21	-0.02		380	6	42500	1.2	178	25	1400	275800	10400	42400	2340	11	3000	61	925	9	45	4	900	426
NJVD08	NJ8028	214	216	ALS-CLON	CL5401	-0.5	55100	38	-0.02		2560	3	42100	0.7	87	40	643	79600	55000	52200	1780	68	2500	27	1770	13	387	34	2400	231
NJVD08	NJ8030	218	220	ALS-CLON	CL5401	-0.5	56400	34	-0.02		4040	3	37100	0.9	66	25	563	76500	62000	47500	1740	12	2500	25	1490	15	368	45	2500	231
NJVD08	NJ8033	224	226	ALS-CLON	CL5401	-0.5	16600	9	-0.02		603	7	46700	0.9	51	35	283	254500	11600	57500	2660	12	3000	16	725	2	64	-1	1300	1140
NJVD08	NJ8035	228	230	ALS-CLON	CL5401	-0.5	5200	15	-0.02		62	7	26800	-0.5	151	24	1070	466500	2900	34600	2380	8	800	42	1250	-2	26	-1	700	513
NJVD08	NJ8037	232	234	ALS-CLON	CL5401	-0.5	8500	23	-0.02		178	7	43500	1.7	133	23	1060	242800	8900	77300	2280	7	1300	21	779	-2	69	-1	400	380
NJVD08	NJ8040	238	240	ALS-CLON	CL5401	-0.5	14400	13	-0.02		367	8	28600	0.6	50	9	527	253500	19600	84600	1870	20	1200	13	444	-2	167	-1	600	493
NJVD08	NJ8042	242	244	ALS-CLON	CL5401	1	12100	31	-0.02		382	6	28800	-0.5	116	14	485	338400	16200	67700	1610	46	900	7	440	-2	141	-1	400	408
NJVD08	NJ8044	246	248	ALS-CLON	CL5401	0.7	12800	32	-0.02		333	8	28400	1	73	15	575	366300	14500	68400	1430	12	800	9	491	-2	163	-1	500	1280
NJVD08	NJ8047	252	254	ALS-CLON	CL5401	1	7300	38	-0.02		166	6	23100	1.8	35	12	609	455000	7800	46100	1820	38	600	14	343	-2	94	-1	200	1110
NJVD08	NJ8049	256	258	ALS-CLON	CL5401	1.3	10500	24	-0.02		526	8	24400	1.3	107	26	1140	388900	12900	58900	1680	8	700	27	514	-2	156	-1	400	368
NJVD08	NJ8051	260	262	ALS-CLON	CL5401	0.8	7900	26	-0.02		302	6	14800	1.3	56	8	414	517800	8300	32500	1300	7	300	11	407	-2	85	-1	300	340
NJVD08	NJ8054	266	268	ALS-CLON	CL5401	1.8	12700	11	-0.02		509	6	11900	0.6	169	3	1460	454700	14800	40600	1430	88	500	25	256	-2	148	-1	500	1170
NJVD08	NJ8056	270	272	ALS-CLON	CL5401	-0.5	40500	14	-0.02		1350	5	16200	0.6	73	9	341	177100	34000	47000	1930	21	2000	7	746	8	227	17	2000	482
NJVD08	NJ8058	274	276	ALS-CLON	CL5401	-0.5	42100	15	-0.02		9630	4	31100	1.6	48	13	665	175800	37500	43400	2390	7	1600	9	470	3	262	49	2000	381
NJVD08	NJ8061	280	282	ALS-CLON	CL5401	-0.5	37100	24	-0.02		5420	5	55100	0.5	46	23	548	171400	27700	33700	2660	18	3200	8	454	4	125	29	1500	488
NJVD08	NJ8063	284	285	ALS-CLON	CL5401	-0.5	49400	35	-0.02		2800	4	30900	-0.5	67	21	435	111000	35400	24100	1710	9	4200	14	546	3	209	20	2000	222
NJVD09	NJ9003	50	52	ALS-CLON	CL5408	-1	72000	6	-0.02		5280	-5	6500	-5	35	31	-5	100100	23500	7000	1340	9	3000	17	875	-5	144	48	3440	20
NJVD09	NJ9005	110	112	ALS-CLON	CL5408	-1	34700	19	-0.02		2100	7	19200	-5	9	18	-5	277500	13900	9800	443	-5	3800	54	6630	-5	63	11	2800	17
NJVD09	NJ9007	114	116	ALS-CLON	CL5408	-1	61600	6	-0.02		1940	-5	10200	-5	8	21	-5	118700	16800	7700	682	7	1500	34	976	-5	79	13	4710	21
NJVD09	NJ9009	118	120	ALS-CLON	CL5408	-1	46500	7	-0.02		1730	-5	11400	-5	8	24	-5	236800	16500	3800	457	-5	1900	47	2150	-5	94	13	3740	15
NJVD10	NJ10008	102	104	ALS-CLON	CL5473	5	23200	444	-0.01		146	-5	2600	-5	56	32	989	271800	16600	10300	1890	138	500	58	1210	4360	78	-10	334	154
NJVD10	NJ10010	106	108	ALS-CLON	CL5473	3	43800	242	-0.01		155	-5	14300	-5	25	48	444	96700	28700	17900	2250	102	800	32	2010	77	205	11	1120	86
NJVD10	NJ10012	110	112	ALS-CLON	CL5473	2	44400	105	-0.01		239	6	8800	-5	43	46	645	156200	44100	9900	2110	49	1600	34	2300	30	233	13	1440	109
NJVD10	NJ10015	116	118	ALS-CLON	CL5473	-1	46000	14	-0.01		426	-5	39700	-5	15	31	358	74800	43400	24900	1890	147	4200	12	1190	14	236	-10	1390	87
NJVD10	NJ10017	120	122	ALS-CLON	CL5473	-1	70600	7	-0.01		1070	-5	55700	-5	14	34	289	67000	67800	24800	3220	92	4700	11	1240	12	381	16	2130	75
NJVD10	NJ10019	124	126	ALS-CLON	CL5473	1	6700	-5	-0.01	-0.01	-10	-5	148400	-5	12	32	248	79700	1200	65100	7150	203	800	8	589	-5	23	-10	643	169
NJVD10	NJ10022	142	144	ALS-CLON	CL5473	-1	80200	16	-0.01		472	-5	98900	-5	8	18	132	43100	17100	17700	3500	354	13700	-5	543	21	196	35	2950	151
NJVD10	NJ10024	236	238	ALS-CLON	CL5473	-1	54100	27	-0.01		1800	-5	6200	-5	-5	23	32	26400	16100	5800	595	12	5800	6	203	6	190	23	1620	29

HOLE_NAME	FROM_DEPTH	TO_DEPTH	GEOL_TYPE	COMMENTS	AT1	AT1M1	AT1M2	AT2	AT2M1	AT2M2	CP	FLAG	GSIZE	OTHER_AM1	OTHER_SU1	PO	PY	RH1	RH2	RMM1	RT1	RT2	RTA1	RTA2	RTA3	RTA4	RTA5	RTM1	RTM2	RTM3	RTM4	RTM5	RTQ1	RTQ2	RTQ3	RTQ4	SMQ1	SMQ2	SP	STR_DEPTH	STR_DIP	STR_MAGAZ	STR_REL	STR_TYPE	VA1	VA2	VA3	VTM1	VTM2	VTM3	WTH
NJVD08	0	42.6	LL	CRETACEOUS COVER									0					E			BLSH		D					CY					LM																		2
NJVD08	42.6	58.4	LL		PD	AB						BS	4								MISC		C	C	S	S		QZ	FD	BI	CL		SC												M			CL			2
NJVD08	58.4	60.8	LL		PD	AX	AB						3					G	I		ROCK		C	C				AB	AX				AA	FR																	2
NJVD08	60.8	62.5	LL	CL PUGGY INTERVALS	PD	CL							3								FAZN		D					CL					FR																		2
NJVD08	62.5	64.1	LL		PV	AB	AX						4					G	I		SCHS		C	C	C	1		AB	BI	AX	MA														M			MF			0
NJVD08	64.1	67.3	LL		PV	AX		PD	AB				4				2				MFRK		D	M	1			AX	AB	MA			SC	AA			DB														0
NJVD08	67.3	77	LL		PD	AX	AB	PD	BI				4				1				ROCK		C	C	C	1		QZ	FD	BI	MA		MA	SC			DI								M			QZ			0
NJVD08	77	78.8	LL		PV	AX		PD	AB				5								MFRK		D	M	S			AX	AB	MA			AA												M	M		QZ	CB		0
NJVD08	78.8	86.2	LL		PD	AX	MA	PD	AB	HE			4				2				SCHS		C	C	C	4		QZ	FD	BI	MA		MS				DI								M	M		QZ	CB		0
NJVD08	86.2	88.7	LL		PD	AB							4				1				ROCK		C	C	2			QZ	FD	MA			MS				<V														0
NJVD08	88.7	91.9	LL		PD	AB							5								ROCK		C	S				AX	MA				AA												M	M		QZ	CB		0
NJVD08	91.9	95.3	LL		PV	MA	AX	PD	PY				4				5				BIFF		D	C				MA	AX				FO	BN	AA		BB														0
NJVD08	95.3	98.3	LL										5					I			GRAN												MS	EQ																	0
NJVD08	98.3	103.5	LL	POSSIBLE METASEDIMENT	PD	MF	AB						4				1				SCHS		C	C	S	2		QZ	FD	BI	MA		FO				<V														0
NJVD08	103.5	107.1	LL		PV	AX	CL	PD	BI	MA			5				1				SCHS		C	C	3			AX	MA	MA			AA				DI								M	M		QZ	CB		0
NJVD08	107.1	112.3	LL		PD	AX	CL						4				2				SCHS		C	C	S	2		QZ	FD	BI	MA		AA				BB	<V							M	M	M	QZ	CB	AB	0
NJVD08	112.3	115.3	LL		PV	AX	MA						4				3				ROCK		C	C	S			AX	MA	CL			AA	SC			<V	BB		113				F-							0
NJVD08	115.3	121.5	LL		PV	AX	MA						4								BIFF		C	C				MA	AX				BN	AA						119	65	90		BN							0
NJVD08	115.3	121.5	L1																																					126	80	90		BN							
NJVD08	121.5	128.6	LL		PV	MA	AX						4				2				BIFF		D	C				MA	AX				BN	AA			BB														0
NJVD08	128.6	132.7	LL		PV	AX	MA						4				3				ROCK		D	S				AX	MA				AA	BN			BB	<V		131	60	75		FO							0
NJVD08	132.7	142.8	LL		PV	MA	AX						5				2				BIFF		D	C				MA	AX				BN	AA			<V			134	50	40		BN							0
NJVD08	142.8	143.4	LL										2					W			QZVN		D	M	M			QZ	AX	MA																					0
NJVD08	143.4	150.7	LL		PV	AX		PD	BI	MA			3				1				ROCK		D	S	4			AX	BI	MA			MS	AA	MF		DI								M	M		AB	QZ		0
NJVD08	150.7	157.4	LL		PV	AB	QZ	PD	AX	BI			3				2				ROCK		C	C	M			QZ	AB	MA			MS	AA			DB														0
NJVD08	157.4	159.2	LL		PD	AX	AB						4				3				SCHS		C	C				AX	BI				FO				BB	ST													0
NJVD08	159.2	163.4	L1																																					163	55	100		FO							
NJVD08	159.2	163.4	LL		PD	AX	BI	PV	AB				4				5				QZIT		D	C				QZ	FD				MS				BB	ST		162	45	0		BN							0
NJVD08	163.4	172.8	LL		PD	AX	MA						4				3				QZIT		D	S	S	2		QZ	FD	BI	MA		MS	MI			DI	ST							M	M	M	AB	QZ	AX	0
NJVD08	172.8	182.9	LL		PD	AX	BI	PV	AB				4				1				QZIT		D	C	M			QZ	FD	BI			MS	FO	BN		DI														0
NJVD08	182.9	188.6	LL		PD	MF	EP	PV	AB				5				3				QZIT		D	S	S	S	M	QZ	AX	BI	AB	PY	BN				BB	<V							M			QZ			0
NJVD08	188.6	190	LL	POSSIBLE CONDUCTOR	PV	S=					1		4			6	7				MSS=		C	C	S			PY	PO	QZ			AA				MS	>S	1						S			QZ			0
NJVD08	190	197.4	LL		PV	QZ							3			1	1				QZIT		D	S	S			QZ	BI	FD			FO	BN			DI	<V													0
NJVD08	197.4	201.9	LL		PV	AB		PD	AX	BI			4			1	3	I	G		ROCK		D	C	S			AB	AX	BI			MS	BX	FO	AA	BB	<V							M			QZ			0
NJVD08	201.9	207.6	LL								1		4			3	3				BIFF		D	C	M			MA	AX	PY			BN	FO			DB	<V													0
NJVD08	207.6	210.6	LL		PD	AX	BI	PV	AB				4				1				ALBT		D					AB					FO	AA			DI														0
NJVD08	210.6	218.1	LL		PV	AX	BI						6				5				ROCK		C	C	S			AX	BI	PY			AA	MS			DB	ST													0
NJVD08	218.1	221.2	LL		PD	AX	BI						4				3	C	I		QZIT		D	C	M			QZ	FD	BI			FO				BB	ST													0
NJVD08	221.2	223	LL		PV	AX	BI						5				5				ROCK		C	C	S	M	M	AX	BI	PY	QZ	BI	AA	MS			BB	ST													0
NJVD08	223	223.4	LL		PV	S=							4	1	MO		7				MSS=		C	C	S			PY	QZ	AX			AA				MS	>S													0
NJVD08	223.4	225	LL		PV	AX		PD	BI				4				2				AMFB		D	M				AX	BI				AA				DI														0
NJVD08	225	230.3	LL		PV	MA	AX	PV	PY	BI			4				4				BIFF		D	C	S	S	7	MA	AX	BI	PY		AA				BB														0
NJVD08	230.3	233.6	LL		PV	AX	MA						4			1	3				ROCK		C	C				AX	MA				AA	BN	FO		ST														0
NJVD08	233.6	234.9	LL		PV	MA	AX	PV	S=	BI			4			4	4				BIFF		D	C	S	S	S	MA	AX	BI	PY	PO	AA	BN			ST	BB													0
NJVD08	234.9	239.3	LL		PV	BI	AX						4				2				SCHS		C	C	S			BI	AX	MA			AA				ST	BB													0
NJVD08	239.3	243.2	LL		PV	MA	BI	PV	AX				3				3				BIFF		D	C	C			MA	BI	AX			BN	AA			ST								M			CB			0
NJVD08	243.2	243.9	LL		PV	AX							3					G			MFRK		D	M	2			AX	BI	MA			AA	FO																	0
NJVD08	243.9	248	LL		PV	MA	AX				1		4				2				BIFF		D	C				MA	AX				BN	FO	AA		ST	DI	1												0
NJVD08	248	268.6	LL		PV	MA	AX	PD	HE		1		4			3	4				BIFF		D	C	S			MA	AX	S=			BN	FO	AA		BB	ST													0
NJVD08	268.6	285	LL		PV	AX		PD	MA				4			2	2				ROCK		C	C	C			FD	QZ	BI			MS				DB	ST													0
NJVD09	0	27.6	LL	CRETACEOUS COVER									0					E			BLSH		D					CY					LM																		2
NJVD09	27.6	29.8	LL		PD	AB						BS	4								SCHS		C	C	C	S		QZ	FD	BI	SR																				2
NJVD09	29.8	37.7	LL		PD	AB							4				1				SCHS		C	C	C	S	1	QZ	FD	BI	SR	MA					BB								M			CL			0
NJVD09	37.7	58.3	LL		PV	AB	HE						4				2				ALBT		D	S	S	S	2	AB	QZ	FD	BI	MA	RR	FO			BB								M	M	M	QZ	CB	CL	0
NJVD09	58.3	59.8	LL		PV	AB	HE						4				1				ALBT		D	S				AB	MA				RR	AA	FO		BB														0
NJVD09	59.8	62.7	LL		PV	AB	HE						4				1				ALBT		D	M				AB	MA				RR	FO	AA		DI								M	M	M	QZ	CB	CL	0
NJVD09	62.7	65.9	LL		PV	AB	HE						4					I	R		SCHS		C	C	C	3		QZ	FD	SR	MA		FO												M	M	M	QZ	CB	GA	0
NJVD09	65.9	67.3	LL		PV	AB	HE						4								ALBT		D	S	S	3		AB	FD	QZ	MA		AA												M	M		QZ	CL		0
NJVD09	67.3	68.8	LL		PV	AB	HE						4								SCHS		D	S	S	S	4	AB	FD	QZ	SR	MA	AA	FO						69	80	60		FO							0
NJVD09	68.8	110.7	L1		PV	AB	HE						4				1				ALBT		D	S	S	3		AB	FD	QZ	MA		AA	MS			BB			87.6	70	70		VN	M	M	S	QZ	CB	CL	0
NJVD09	68.8	110.7	L2																																					87.7	80	100		FO							
NJVD09	68.8	110.7	L3																																					99.9	80	100		FO							
NJVD09	68.8	110.7	L4																																					107.8	80	95		BN							
NJVD09	110.7	113.5	LL		PV	MA	AX	PD	AB				5					G	E		ROCK		D	C	S			MA	AX	AB			AA	MS																	0
NJVD09	113.5	118.5	LL		PV	AB	MA						3					R			ROCK		D	S				AB	MA				AA	MS	RR	FO									M	M		QZ	CL		0
NJVD09	118.5	121	LL		PV	MA	AX	PD	AB				5								ROCK		C	C	C	M		MA	AB	AX	GA		AA												M			QZ			0
NJVD09	121	135.2	LL		PV	AB							3				1	R			ROCK		D	M				AB	MA				AA	MS	RR		DI														0
NJVD09	135.2	149.5	LL		PV	AX	AB						4				1	R	G		ROCK		D	C	3			AB	AX	MA			RR	AA			DB								M	M		AB	CL		0
NJVD09	149.5	150.4	LL		PV	AB	MA						4					R			ROCK		D	S				AB	MA				RR	AA											M			CL			0
NJVD09	150.4	160.4	LL		PV	AB	HE						4					R			ALBT		D	3				AB	MA				MA	AA	RR										M	M	M	AB	CB	CL	0
NJVD09	160.4	163.1	LL		PV	AB	HE	PV	AX				5					I	G		ROCK		C	C	1			AB	AX	MA			AA												M	M		AB	CL		0
NJVD09	163.1	180.3	LL		PV	AB		PD	AX				3				1	R			ALBT		D	M	1			AB	AX	MA			RR	AA			BB								M	M		QZ	AB		0
NJVD09	180.3	186	LL		PV	AB		PD	AX				3					C	I		ALBT		D	M				AB	AX				MS	AA																	0
NJVD09	186	188.9	LL		PV	AB		PD	AX				3					I	R		ALBT		D	M	1			AB	AX	MA			MS	AA																	0
NJVD09	188.9	192.8	LL		PV	QZ	AB						5					R	C		ROCK		C	C	1			QZ	AB	MA			MS	AA	EQ																0
NJVD09	192.8	204	LL		PV	AB		PD	CL	AX			3				1	R			ALBT		D	M	1			AB	EP	MA			MS	AA	RR		DI														0
NJVD10	0	39.3	LL	CRETACEOUS COVER									0					E		CY	BLSH		D					CY					LM																		2
NJVD10	39.3	60.8	L1																																					57.5	25		U	BN	M			CB			
NJVD10	39.3	60.8	L2																																					58	55		U	BN							
NJVD10	39.3	60.8	LL	39.3-48 IS FRACTURED	PD	GA	CL				1	BS	3				2	E			MTSD		C	C	S	S		QZ	FD	BI	GA		BN	FR			DI	<V						FR	M	M	M	QZ	FD	GA	0
NJVD10	60.8	80.2	LL		PD	EP	CL						4				1	I			GRAN		C	C	C			QZ	FD	BI			IT	PG			DI								M			QZ			0
NJVD10	80.2	82	LL		PD	PY							2				3	E			PELT		C	C	C			QZ	FD	BI			BN				DB	LM		80.4	70	135		BN							0
NJVD10	82	84.9	LL	MASSIVE PY IN PELITE	PV	PY							5				6	E	Y		MSS=	PELT	C					PY					MS				MS								M			CL			0
NJVD10	84.9	88.7	LL		PD	PY					1		2				3	E			PELT		C	C	C	M		QZ	FD	BI	GA		BN				LM	BB		85.5	75	120		BN							0
NJVD10	88.7	92.5	LL		PD	GA	CL	PD	AX				4				1				ROCK		C	C	C	M	M	QZ	FD	BI	CL	AX	MT				DI								M	M	M	QZ	FD	CL	0
NJVD10	92.5	97.1	LL		PD	EP	CL						4				1	I			GRAN		C	C	C			QZ	FD	BI			IT				JF														0
NJVD10	97.1	100.5	LL		PD	AX	CL						4				1				SCHS		C	C	C	M		QZ	FD	BI	GA						DS			99	60		U	FO	M	M		AX	FD		0
NJVD10	100.5	102.7	LL		PD	PY	PO						4			4	3				MTSD		C	C	C	M		QZ	FD	BI	GA		BN				>S	BB							M			PY			0
NJVD10	102.7	104.4	LL	SULFIDE BRECCIA	PV	S=								1	MO	6	6				MSS=		C	C	S	S	S	PO	PY	QZ	FD	AX	BX				MS	PV													0
NJVD10	104.4	107.1	LL		PD	PY							2				4	E			PELT		C	C	C			QZ	FD	BI			LM				LM	BB													0
NJVD10	107.1	108.8	LL		PD	PY							2				2				FAZN	PELT	C	C	C			QZ	FD	BI			FR				BB	<V													0
NJVD10	108.8	111.1	LL		PD	PY							2				4				PELT		C	C	C			QZ	FD	BI			LM				LM	BB		110	68	130		LM							0
NJVD10	111.1	113.1	LL		PV	PO	PY						4	1	AS	6	5				MSS=	PELT	C	S	S	S	S	PO	PY	QZ	FD	BI	LM				MS														0
NJVD10	113.1	117.3	LL		PV	PO	PY						2			5	4				PELT		C	C	C			QZ	FD	BI			LM				LM	BB		115.3	85	115		LM							0
NJVD10	117.3	131.1	LL		PV	PO	PY	PV	CL				5	1	MO	4	2	G			PYRX		D	M				PX	QZ				MS				DB														0
NJVD10	131.1	133.4	LL		PD	AB							4				1	E	I		MTSD		C	C	S	S		AB	AX	CL	QZ						DI														0
NJVD10	133.4	134.1	LL		PD	AX							2				4	W			QZVN		D	M	M	M		QZ	PY	GA	AX		MS				<V	DI													0
NJVD10	134.1	140.1	LL		PD	AX	CL	PD	AB				3				1	E			MTSD		C	C	C			QZ	FD	BI			FO				DI														0
NJVD10	140.1	142	LL		PV	PO							5	1	MO	4	2	G			PYRX		D					PX					MS				DB														0
NJVD10	142	144.6	LL		PD	QZ	AX						4			3	1				MFRK		C	C				QZ	AX				MS				DB														0
NJVD10	144.6	152.6	LL		PD	AX							4				2	E			MTSD	PEGM	C	C	C			QZ	FD	BI			FO				DI			150.5	90			FO							0
NJVD10	152.6	157.8	LL										4					I			GRAN		C	C	C			QZ	FD	BI			MS												M			QZ			0
NJVD10	157.8	185	LL		PD	EP	CL	PD	SI				4	1	MR	1	1	E			MTSD		C	C	C			QZ	FD	BI			BN	SC			DI	<V		167.6	85	95		FO	M			CB			0
NJVD10	185	200.9	LL		PD	AX	CL	PD	GA				4			1	1				MTSD		C	C	C	M		QZ	FD	BI	GA		SC				DI								M			CB			0
NJVD10	200.9	258	LL		PD	AX	CL	PD	GA		1		4			1	1	E			MTSD		C	C	C	M		QZ	FD	BI	GA		BN				<V	DB		232.5	55	110		FO	M			CB			0

HOLE_NAME	FROM_DEPTH	TO_DEPTH	MAGSUS
NJVD08	42.5	44	0
NJVD08	44	46	0
NJVD08	46	48	0
NJVD08	48	50	0
NJVD08	50	52	12
NJVD08	52	54	97
NJVD08	54	56	6
NJVD08	56	58	6
NJVD08	58	60	0
NJVD08	60	62	0
NJVD08	62	64	906
NJVD08	64	66	403
NJVD08	66	68	119
NJVD08	68	70	613
NJVD08	70	72	150
NJVD08	72	74	3289
NJVD08	74	76	1474
NJVD08	76	78	3976
NJVD08	78	80	5543
NJVD08	80	82	11567
NJVD08	82	84	19780
NJVD08	84	86	2438
NJVD08	86	88	641
NJVD08	88	90	621
NJVD08	90	92	76725
NJVD08	92	94	111600
NJVD08	94	96	81304
NJVD08	96	98	368
NJVD08	98	100	3959
NJVD08	100	102	5328
NJVD08	102	104	2542
NJVD08	104	106	20163
NJVD08	106	108	2216
NJVD08	108	110	7579
NJVD08	110	112	1892
NJVD08	112	114	33268
NJVD08	114	116	72785
NJVD08	116	118	97913
NJVD08	118	120	85473
NJVD08	120	122	71517
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NJVD08	124	126	120300
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NJVD08	128	130	104857
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NJVD08	136	138	130833
NJVD08	138	140	126267
NJVD08	140	142	150200
NJVD08	142	144	74064
NJVD08	144	146	26543
NJVD08	146	148	22028
NJVD08	148	150	622
NJVD08	150	152	84

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NJVD08	154	156	4126
NJVD08	156	158	1437
NJVD08	158	160	0
NJVD08	160	162	171
NJVD08	162	164	7
NJVD08	164	166	5
NJVD08	166	168	38
NJVD08	168	170	225
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NJVD08	176	178	134
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NJVD08	182	184	9
NJVD08	184	186	10
NJVD08	186	188	118
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NJVD08	204	206	121997
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NJVD08	224	226	37835
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NJVD08	260	262	116377
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NJVD10	126	128	5
NJVD10	128	130	862
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NJVD10	132	134	216
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