

D003-1

**ANNUAL REPORT**

**EL9/2005**

**RED HILLS**

**For Period 1<sup>st</sup> July 2005 – 30<sup>th</sup> May 2006**

I. J. Tedder  
Nicholas J. Fitzpatrick  
Ken Morrison

June 2006

**Distribution:**

Mineral Resources Tasmania 1 copy  
Newcrest Mining Limited – SE Australia 2 copies

## CONTENTS

<b>FIGURES</b> .....	<b>ii</b>
<b>PLANS</b> .....	<b>ii</b>
<b>TABLES</b> .....	<b>ii</b>
<b>APPENDICES</b> .....	<b>ii</b>
<b>DIGITAL FILES</b> .....	<b>iii</b>
<b>SUMMARY</b> .....	<b>1</b>
<b>KEY WORDS</b> .....	<b>2</b>
<b>1 INTRODUCTION</b> .....	<b>2</b>
1.1 TITLE.....	<b>2</b>
<b>2 PREVIOUS EXPLORATION</b> .....	<b>3</b>
<b>3 EXPLORATION STRATEGY</b> .....	<b>4</b>
<b>4 GEOLOGICAL MAPPING AND GEOCHEMISTRY</b> .....	<b>5</b>
4.1 Red Hills mapping and rock chip sampling.....	<b>5</b>
4.2 Red Hills core relogging .....	<b>7</b>
4.3 Post drilling Red Hills field trip.....	<b>8</b>
4.4 Soil sampling.....	<b>9</b>
<b>5 DRILLING</b> .....	<b>14</b>
5.1 NCT006.....	<b>14</b>
5.2 NCT007.....	<b>17</b>
<b>6 ENVIRONMENT</b> .....	<b>19</b>
<b>7 PLANNED WORK</b> .....	<b>19</b>
<b>8 BIBLIOGRAPHY</b> .....	<b>20</b>
<b>9 EXPENDITURE</b> .....	<b>20</b>

**FIGURES**

1.	EL9/2005 Red Hills – Mt Darwin Location Map	<b>Scale</b> 1:100,000
----	---	---------------------------

**PLANS**

Plan 1:	EL9/2005 Red Hills Project Drill Hole Locations	<b>Scale</b> 25,000
Plan 2:	EL9/2005 Red Hills Project Geology	1:2,500
Plan 3:	Red Hills Section NCT006 Au, Cu, Lithology, Magsus	1:1,000
Plan 4:	Red Hills Section NCT007 Au, Cu, Lithology, Magsus	1:1,000

**TABLES**

Table 1:	Rock chip samples	Page No. Pages 10 & 11
Table 2:	Soil samples	Pages 12 & 13
Table 3:	Drill Hole Locations	Page 14
Table 4:	NCT006 Drill Hole Location	Page 15
Table 5:	NCT006 Down Hole Survey Data	Page 15
Table 6:	NCT006 Anomalous Intersections	Page 16
Table 7:	NCT007 Drill Hole Location	Page 17
Table 8:	NCT007 Down Hole Survey Data	Page 17
Table 9:	NCT007 Anomalous Intersections	Page 18

**APPENDICIES**

Appendix1	Diamond Drilling – Collar Data (NCT006 & NCT007) (See Digital File EL9_2005_200605_03_Appendix1.txt)
Appendix2	Diamond Drilling – Survey Data (NCT006 & NCT007) (See Digital File EL9_2005_200605_04_Appendix2.txt)
Appendix3	Diamond Drilling – Assay Data (NCT006 & NCT007) (See Digital File EL9_2005_200605_05_Appendix3.txt)
Appendix4a	Diamond Drilling – Lithology Logs – Digital (NCT006, NCT007) (See Digital File EL9_2005_200605_06_Appendix4a.pdf)

**APPENDICIES (cont'd)**

- Appendix4b Diamond Drilling – Lithology Log Codes – (NCT006, NCT007)  
(See Digital File EL9\_2005\_200605\_07\_Appendix4b.pdf)
- Appendix4c Diamond Drilling – Lithology Log Codes – Scanned Paper Logs (NCT006, NCT007 & RH004)  
(See Digital File EL9\_2005\_200605\_08\_Appendix4c.pdf)
- Appendix4d Diamond Drilling – Lithology Summary Logs (NCT006 & NCT007)  
(See Digital File EL9\_2005\_200605\_09\_Appendix4d.pdf)
- Appendix4e Diamond Drilling – Strip Logs (NCT006 & NCT007)  
(See Digital File EL9\_2005\_200605\_10\_Appendix4e.pdf)
- Appendix5 Diamond Drilling – Structure Orientation Data (NCT006 & NCT007)  
(See Digital File EL9\_2005\_200605\_11\_Appendix5.txt)
- Appendix6 Diamond Drilling – Magnetic Susceptibility Data (NCT006 & NCT007)  
(See Digital File EL9\_2005\_200605\_12\_Appendix6.txt)
- Appendix 7 Surface Geochemistry – Rock Chip Sample Data (NTR0001 – NTR0031)  
(See Digital File EL9\_2005\_200605\_13\_Appendix7.txt)
- Appendix 8 Surface Geochemistry – Soil Sample Data (NTS0001 – NTS0046)  
(See Digital File EL9\_2005\_200605\_14\_Appendix8.txt)

**DIGITAL FILES**

EL9\_2005\_200605\_01\_Report.pdf  
(Report Text & Figure 1)

EL9\_2005\_200605\_02\_Plans 1-4.pdf  
(Plans 1 to 4)

EL9\_2005\_200605\_03\_Appendix1.txt  
(Diamond Drill Holes NCT006 & NCT007 – Collar Data)

EL9\_2005\_200605\_04\_Appendix2.txt  
(Diamond Drill Holes NCT006 & NCT007 – Survey Data)

EL9\_2005\_200605\_05\_Appendix3.txt  
(Diamond Drill Holes NCT006 & NCT007 – Assay Data)

EL9\_2005\_200605\_06\_Appendix4a.txt  
(Diamond Drill Holes NCT006 & NCT007 – Lithology Logs - Digital)

**DIGITAL FILES (cont'd)**

EL9\_2005\_200605\_07\_Appendix4b.pdf

(Diamond Drill Holes NCT006 & NCT007 – Lithology Log Codes)

EL9\_2005\_200605\_08\_Appendix4c.pdf

(Diamond Drill Holes NCT006, NCT007 & RH004 – Lithology Logs - Scanned Paper Logs)

EL9\_2005\_200605\_09\_Appendix4d.pdf

(Diamond Drill Holes NCT006 & NCT007 – Summary Logs)

EL9\_2005\_200605\_10\_Appendix4e.pdf

(Diamond Drill Holes NCT006 & NCT007 – Strip Logs)

EL9\_2005\_200605\_11\_Appendix5.txt

(Diamond Drill Holes NCT006 & NCT007 – Structure Orientation Data)

EL9\_2005\_200605\_12\_Appendix6.txt

(Diamond Drill Holes NCT006 & NCT007 – Magnetic Susceptibility Data)

EL9\_2005\_200605\_13\_Appendix7.txt

(Rock Chip Data)

EL9\_2005\_200605\_14\_Appendix8.txt

(Soil Sample Data)

EL9\_2005\_200605\_15\_File Verification.txt

(File Verification Listing)

**SUMMARY**

Newcrest Mining Limited commenced exploration for gold rich deposits at Red Hills, on being granted EL9/2005 on the 1<sup>st</sup> July 2005. The tenement encompasses 8 km<sup>2</sup> of prospective Mount Read Volcanics approximately 1 km to the east of the Henty gold mine from 3 km south west of Mt Murchison down to approximately 1 km to the north of Lake Westwood.

Exploration in this first year of work focused on drilling underneath known anomalous stratigraphy, which has been tested by previous exploration companies at only relatively shallow levels. A total of two diamond drill holes, (NCT006 – NCT007) were completed for 1,511 m. Soils, rock chips, mapping were also completed.

Work planned for the second year of exploration will be to conduct further drilling of geological, geochemical and/or geophysical anomalies established from the surveys conducted in this reporting period, and those from previous explorers.

**KEY WORDS**

Exploration; Gold; Copper; Diamond Drilling; Henty; Mount Read Volcanics; Selina 3836.

## **1 INTRODUCTION**

Newcrest Mining Limited is exploring for gold rich deposits in the Mount Read Volcanics. This is the first annual report for EL5/2005 for the period 1<sup>st</sup> July 2005 to 30<sup>th</sup> May 2006.

### **1.1 TITLE**

#### TENEMENT

EL9/2005 was granted on the 1<sup>st</sup> July 2005 to Newcrest Operations Limited for five years to 30<sup>th</sup> June 2010. The area was most recently held as EL29/94 by AurionGold Exploration (and predecessors) and Homestake Exploration.

#### LOCATION

The tenement covers an area of 8 square kilometres over parts of the West Coast Range immediately south of Mt Murchison, and down to Lake Westwood. Refer to Figure 1 for location. Most of the tenement falls within Crown Land. The northern end of the tenement lies within the Mt Murchison Regional Reserve (north of approximately 5366200N AMG).

Topographic map sheets covering the area are listed below.

**1:250,000 TASMANIA TOPOGRAPHIC MAPS**  
QUEENSTOWN SK5505

**1:25,000 TASMANIA TOPOGRAPHIC MAPS**  
SALINA 3836

#### DATUM

All AMG (Australian Map Grid) references are to AGD66\_Zone 55.

## 2 PREVIOUS EXPLORATION

Significant phases of past exploration by other companies in the area covered by the tenement are summarized as follows.

### Red Hills early years:

In 1905 Mount Lyell Mining and Railroad Company acquired all Mining Leases over numerous copper occurrences in the Red Hills area dating back to 1891. Mining ceased by 1908.

### 1957 – 1959 Rio Tinto:

Ground geophysical surveys (EM, magnetics and gravity) followed by the drilling of four diamond drill holes (GN1, GN2, RHP94 and RHP95). The main target was a black shale unit containing sulphides.

### 1966 – 1976 Mt Lyell Mining and Railroad Co:

Continued geophysical surveys including IP followed up with 26 shallow percussion drill holes and four diamond drill holes targeting large shallow low grade disseminated copper deposits in the Red Hills lavas as well as VHMS type deposits in the overlying volcanoclastics and sediments.

### 1976 – 1985 Goldfields Exploration:

Detailed surface geological, geochemical and geophysical work followed up by fourteen diamond holes (RH5 to RH18) encouraged by a massive sulphide intersection in RH5 which returned 3 m with 31.8% Zn, 11.2% Pb, 154 ppm Ag and 5.8g/t Au. A poorly constrained 'resource' of about 1 million tonnes at 2 g/t Au with 4.6% Zn, 1.3% Pb and 37 g/t Ag was estimated (Purvis et. al., 1983).

### 1985 – 1993 CRAE and Aberfoyle:

More surface exploration work including down hole EM and UTEM. One diamond drill hole (RH19) was completed to follow up a DHEM anomaly in RH18.

### 1993 – 2004 Plutonic/Homestake – Goldfields/Aurion/ Placer Dome:

Surface geochemistry and geophysics followed by the drilling of four diamond drill holes (RH20 – RH23). No exploration field work has been completed since September 2002.

### General:

Various phases of previous exploration focused on three main target types, these being:

- 1) Stratabound gold/polymetallic VHMS in black shales.
- 2) Disseminated and vein Cu-Au-Mt in rhyolites.
- 3) Silica-carbonate alteration and Qtz-Carb-Au-basemetal veining in rhyolites.

In summary the ERA has been explored by;

- extensive phases of geological mapping;
- airborne geophysics (magnetics, radiometrics, EM);
- various phases of stream, rock, soil and old workings geochemistry;
- various phases of mostly analogue-era ground geophysics (ground magnetics, IP, old EM methods);
- large grids of blanket-coverage fixed-loop and moving loop EM, and
- drilling of twenty six percussion holes and twenty nine diamond drill holes.

### **3 EXPLORATION STRATEGY**

#### **Target**

The primary exploration target is a Henty style gold deposit. However, exploration tools used can potentially find any one of a range of gold rich polymetallic deposits of the style that occur in the Mount Read Volcanics.

An assumption is being made that the target does not outcrop and is going to be relatively deep.

Exploration targets are being defined on the basis of geological, geochemical and geophysical anomalies that may reflect the outer edges of a mineralised alteration system. Mineralised systems are often centralised within a much wider, though possibly structurally deformed alteration envelope and these can be detected by geological mapping, geochemistry or geophysics. Common features of Mount Read Volcanic style gold rich deposits that are being used to help define drill targets include:

- 1) Deposits tend to be hosted near the top of the Central Volcanic Complex (CVC) stratigraphy and/or base of the Tyndall Group.
- 2) Adjacent to major Cambrian structures that form boundaries to packages of CVC.
- 3) Alteration envelopes commonly of silica-sericite-pyrite±chlorite and/or chlorite-quartz-pyrite-sericite±carbonate, strongly deformed into schists.
- 4) Pods of polymetallic massive sulphides, cherts or silica associated with and/or adjacent to mineralisation.
- 5) Anomalous gold, copper, lead, zinc, barium, manganese elements and minerals such as magnetite.
- 6) Chargeable and resistive geophysical anomalies.

#### **Strategy**

The Red Hills area consists of CVC rhyolites and andesites, Eastern Quartz Phyric Sequence quartz porphyry lavas and volcanics, Western Sequence volcanoclastic sediments and Tyndall Group volcanoclastics, all of the Cambrian Mt Read Volcanics. These are overlain, in part unconformably, by non-prospective early Ordovician to late Cambrian Owen Conglomerate and Quaternary glacial till.

Three kilometers of strike length of anomalous stratigraphy have been tested by previous exploration down to 300 – 400 m with maximum depths of around 700 m below the ground surface. Widely spaced significant intersections in a variety of mineralisation styles continue to give encouragement to explorers. The most recent explorers relinquished the area due to a change in exploration policy rather than due to lack of exploration success and in their final report recommended further drilling.

A review of previous exploration suggests there is good potential for the stratabound gold/polymetallic VHMS mineralisation outlined to date to continue at depth to the north and/or south of drill hole RH22.

#### **4 GEOLOGICAL MAPPING AND GEOCHEMISTRY**

Reconnaissance geological mapping, rock chip sampling and soil sampling was conducted over EL9/2005. Mapping and rock chip sampling focussed on the 'Red Hills lava' as a hosted to economic Au-Cu mineralisation, analogous to the Mt Jukes Pty style. Soil sampling was used to test for anomalism across the Tyndal Group – CVC contact under cover.

##### **4.1 Red Hills mapping and rock chip sampling**

Two east-west oriented traverses along existing access tracks were mapped and 28 rock chip samples taken. The purpose of this program was to ground truth existing data sets (mapping and geochemistry) and for comparison with rocks intersected in Newcrest drill core (NCT006 & NCT007). Mapping focused on the coherent 'Red Hills' lava and its western contact with the bedded volcanoclastics and lavas. The Red Hills lavas form extensive weathered pale cream massive to blocky outcrops. It appears the most intense chl alteration occurs at the western boundary; chl then decreases slightly and k-feldspar/hematite alteration increases eastward from the contact. It appears that alteration intensity is related to the contact with adjacent volcanoclastic facies.



Photo 1: Example of typical outcrop on a track near rock chip sample NTR0009, (382644E/5365841N).

Visible pyrite, and to a lesser extent chalcopyrite, were observed in outcrop and surrounding old workings. In most instances, sulphides are associated with the strongest chl alteration. The northern most traverse intersected abundant outcropping sulphide that includes the Northern Adit exposure. Reconnaissance mapping directly to the north and south of this traverse did not intersect significant alteration or outcropping mineralisation. It appears the mineralisation is confined to an east-west orientation at approximately the same northing as the existing track.

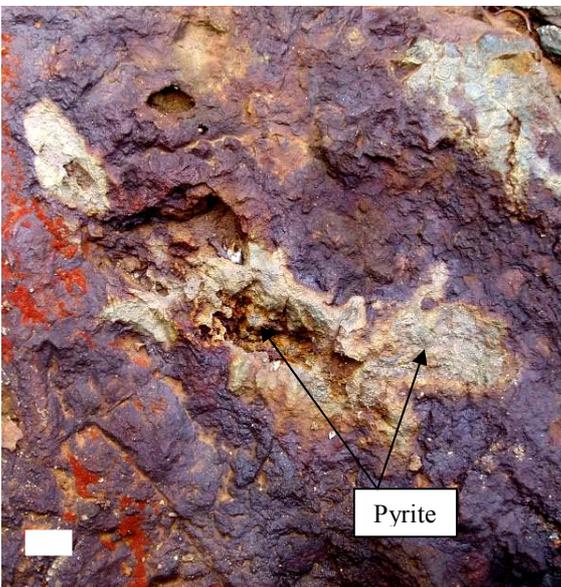


Photo 2: Pyrite in 'clots' near rock chip sample NTR0001, (382705E/5365869N). Scale bar is 1cm.

Two rock chip samples were taken from the Northern Adits working; one high graded, and one representative sample. The high grade sample contained 1.02g/t Au and 3.37% Cu, and the representative sample contained 0.05g/t Au and 0.19% Cu. All other samples were

not anomalous, i.e. <0.1g/t Au and 0.1% Cu. All the rock chip samples are listed in Table 1. The occurrence of outcropping mineralisation and associated anomalous grade from the Northern Adits make this area a potential target for future drilling.

#### 4.2 Red Hills Core relogging

A scan log was completed on a diamond drill hole RH004 completed by Mt Lyell Mining and Railroad Company on the Red Hills lava prospect in 1977. Copies of the scan logs are in Appendix 4a.

The entire hole (309m) intersected a dark green to black, moderate to strong chlorite-magnetite, and moderate to weak patchy potassium feldspar-hematite altered, aphyric massive coherent volcanics. The rock is similar to that observed on surface, in particular in the vicinity of the Northern Adits and mapped as 'Red Hills' rhyolite lava. The rock has undergone varying degrees of brecciation, typically auto-breccia and jig saw fit. The brecciation is likely syn-depositional rather than hydrothermal, due to the lack of hydrothermal alteration minerals (e.g. sericite) and mineralisation. Chlorite-magnetite typically occurs interstitially to potassium feldspar-hematite alteration in these breccia zones.



Photo 3: Example of brecciation and interstitial chlorite-magnetite alteration from RH004, 117m. Scale bar is 1cm

Pyrite is the dominant sulphide species throughout the hole, typically  $\leq 1\%$  and rarely  $>10\%$ , occurring in veins with quartz-carbonate-potassium feldspar and/or chlorite. Pyrite also occurs, however to a much lesser extent disseminated through the rock. Chalcopyrite occurs in trace amounts below 250m and is associated with zones of anomalous Cu grades. The best intersections for this hole are:

- 7.5m @ 227ppm Cu from 49.5m
- 3m @ 0.89% Cu, 101ppm Pb and 343ppm Zn from 249m.
- 7.5m @ 0.22% Cu from 262.5m

The 3m intersection from 249m was re-assayed by Plutonic Operations Limited in 1998 and returned results of 2m @ 0.53 g/t Au and 2.1 % 250 m.



Photo 4: *Quartz-carbonate-potassium feldspar-chalcopyrite vein in Red Hills lava from RH004, 267m.*

Although this hole did not intercept any grade over significant intervals, the intensity and pervasiveness of alteration and amount of sulphides observed is encouraging.

### 4.3 Post drilling Red Hills field trip

A one day reconnaissance field trip was taken to the southern end of the Red Hills lava, after the completion of this year's drill program. The purpose was to investigate the projected surface expression of the end of hole NCT006 and surrounds. NCT006 ended in 6m of coherent 'Red Hills lava', and returned 6 m @ 0.1 g/t Au and 0.49% Cu, including 4 m @ 0.12 g/t Au, 0.61% Cu.

The surface position corresponded to a small old working/shallow box cut (382582E/5364995N). The outcrop at the working comprised black, moderate to strong chlorite-potassium feldspar-hematite altered, aphanitic volcanics. The rocks were identical to those seen previously in outcrop and drill core. Where brecciated, chlorite is interstitial to k-feldspar-hematite altered clasts. Pyrite was common in the outcrop; two 'high graded' rock chip samples were taken from the working and a third from a sparsely mineralised, small working/shallow trench to the north (382539E/5365086N). Best results included 1.13 g/t Au and 1.75 % Cu (NTR0029) and 0.43 g/t Au and 2.52% Cu (NTR0031). Results are listed in Table 1. Within the lava adjacent to these workings, patchy blebs of ferruginous chl associated with trace disseminated py were observed.



Photo 5: *Ferruginous chl & trace disseminated py at Red Hills (382539E/5365086N).*

#### **4.4 Soil sampling**

The potentially prospective contact between the Tyndal Group and Central Volcanic Complex of the Mt Read Volcanics is evident from 1:10000 mapping by A.W. McNeill, 1987 along the western side of EL9/2005. The majority of the interpreted position of this contact within EL9/2005 lies under Quaternary and early Ordovician-late Cambrian cover. 46 soil samples along 3 traverses across this contact were obtained, the results are summarised in Table 2. The most significant Au ( $>>1$ ppb) and to a lesser extent Pb ( $>10$ ppm) anomalism occur in samples NTS0016 to NTS0024. This zone correlates to the approximate collar position of Newcrest diamond drill hole NCT006. The zone is mapped at surface as silica altered, however, there were no anomalous results in NCT006. The anomalism appears to be constrained to the surface.

**TABLE 1**  
**ROCK CHIP SAMPLES – EL9/2005**  
(\* AGD 1966/ 55 AMG)

Sample ID	Easting	Northing	Description	Assays										
				Au	Au(R)	Cu	Pb	Zn	As	Ag	Ba			
			Method	FA1	FA1	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	
			Lower Detection Limit	0.01	0.01	2	5	5	10	5	5	5	5	
			Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
NTR0001	382705	5365869	Chl-He altered volcanics	0.01	--	430	16	86	58	8	360			
NTR0002	382515	5365890	Chl-He altered volcanics	1.02	1.04	33700	40	240	200	<1	96			
NTR0003	382190	5365742	Alb-Si altered volcanics	0.04	--	380	76	120	8	<1	1300			
NTR0004	382300	5365800	Chl altered volcanoclastic sandstone	<0.01	--	165	38	82	6	<1	1050			
NTR0005	382352	5365957	Chl-Ser-Alb altered volcanoclastic sandstone	<0.01	--	66	32	96	4	<1	1000			
NTR0006	382440	5365891	Chl-Kspar alter volcanics	<0.01	--	19	8	27	<3	<1	1800			
NTR0007	382511	5365878	Chl-Mt altered volcanics	0.05	--	1900	14	130	10	2	800			
NTR0008	382576	5365848	Kspar-Chl alt volcanics	0.02	0.02	170	14	125	4	4	2100			
NTR0009	382644	5365841	Kspar-Chl altered volcanics	0.02	--	88	180	185	10	4	1550			
NTR0010	382713	5365874	Kspar-Chl altered volcanics	<0.01	--	125	26	88	22	6	500			
NTR0011	382763	5365861	Kspar-Chl altered volcanics	<0.01	--	47	16	110	10	6	330			
NTR0012	382790	5365803	Chl altered volcanics	<0.01	<0.01	42	10	140	22	8	310			
NTR0013	382832	5365763	Chl-Kspar altered volcanics	<0.01	--	60	22	125	16	2	750			
NTR0014	382907	5365726	Chl-Kspar altered volcanics	<0.01	--	19	20	130	4	2	360			
NTR0015	382944	5365700	Chl-Kspar altered volcanics	<0.01	--	66	18	110	12	6	260			
NTR0016	382315	5365286	Chl-Ser±Si altered volcanoclastic sandstone	<0.01	--	22	900	72	22	<1	1300			

**TABLE 1**  
**ROCK CHIP SAMPLES – EL9/2005**  
 (\* AGD 1966/ 55 AMG)

Sample ID	Easting	Northing	Description	Assays									
				Au	Au(R)	Cu	Pb	Zn	As	Ag	Ba		
AMG*	AMG*	AMG*	Units	FA1	FA1	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E
			Method										
			Lower Detection Limit										
NTR0017	382386	5365283	Si altered volcanoclastic sandstone	0.03	--	165	1150	185	550	5	5	900	
NTR0018	382445	5365300	Chl-Kspar-Si altered volcanics	<0.01	--	92	40	145	22		2	800	
NTR0019	382832	5365763	Chl-Kspar altered volcanics	<0.01	--	88	28	80	14		1	2050	
NTR0020	382517	5365333	Chl-Kspar altered volcanics	<0.01	--	240	10	72	12		1	2750	
NTR0021	382550	5365226	Chl-Kspar altered volcanics	<0.01	--	310	10	86	6		2	1650	
NTR0022	382572	5365160	Chl-Kspar altered volcanics	0.03	--	175	12	98	8		1	2750	
NTR0023	382621	5365164	Kspar-Chl altered volcanics	0.06	--	80	14	47	6		1	3700	
NTR0024	382674	5365272	Chl altered volcanics	0.03	--	68	20	82	12		3	1650	
NTR0025	382721	5365298	Kspar-Chl altered volcanics	<0.01	--	150	8	76	8		2	1850	
NTR0026	382778	5365271	Chl altered volcanics	<0.01	--	220	14	72	4		1	2600	
NTR0027	382845	5365252	Chl altered volcanics	0.01	--	56	18	56	10		4	1800	
NTR0028	382902	5365280	Chl-Kspar altered volcanics	<0.01	0.03	28	14	86	6		2	1100	
NTR0029	382539	5365086	fg grn-blk, strg chl-mt alt volcanics	1.13	1.06	17500	26	100	135		9	135	
NTR0030	382582	5364995	Chl-Mt altered volcanics	0.05	0.05	4350	16	68	38		4	460	
NTR0031	382582	5364995	Chl-Mt altered volcanics	0.43	0.62	25200	40	98	360		12	250	

**TABLE 2**  
**SOIL SAMPLES – EL9/2005**  
(\* AGD 1966/55 AMG)

Sample ID	Easting	Northing	Description	Assays												
				Au	As	Fe	S	Zn	Ag	Bi	Cu	Mo	Pb	Tl		
			Method	FA2	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E	IC2E
			Lower Detection Limit	1	1	100	200	1	0.05	0.1	0.5	0.1	0.5	0.1	0.5	0.1
			Units	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
NTS0001	381436	5365913	CVC	0.5	0.5	3350	100	3	0.15	0.1	5.5	0.3	23	0.05	0.05	
NTS0002	381467	5365915	CVC	0.5	0.5	3850	100	1	0.1	0.05	4.5	0.2	10	0.05	0.05	
NTS0003	381488	5365920	CVC	0.5	0.5	6100	250	11	0.15	0.1	5	0.2	8	0.05	0.05	
NTS0004	381519	5365921	CVC	0.5	0.5	6250	250	6	0.1	0.1	3	0.3	9	0.05	0.05	
NTS0005	381545	5365922	CVC	0.5	0.5	4550	100	2	0.1	0.05	2.5	0.3	6	0.05	0.05	
NTS0006	381572	5365919	CVC	0.5	2	5200	300	3	0.1	0.05	2	0.2	12	0.05	0.05	
NTS0007	381599	5365917	CVC	0.5	1	4450	100	4	0.1	0.05	4	0.6	9.5	0.05	0.05	
NTS0008	381628	5365921	CVC	0.5	1	1.98%	350	4	0.1	0.1	3	0.3	12	0.05	0.05	
NTS0009	381414	5365912	CVC	0.5	2	5700	100	6	0.15	0.05	2.5	0.2	11.5	0.05	0.05	
NTS0010	381381	5365907	CVC	0.5	2	7850	100	5	0.1	0.05	2.5	0.4	5.5	0.05	0.05	
NTS0011	381357	5365898	CVC?	1	3	6500	100	7	0.1	0.1	3.5	0.4	7.5	0.05	0.05	
NTS0012	381332	5365890	TG	0.5	1	5750	100	5	0.1	0.1	2.5	0.3	6.5	0.05	0.05	
NTS0013	381317	5365901	TG	0.5	2	4650	100	5	0.1	0.1	2.5	0.3	9.5	0.05	0.05	
NTS0014	381292	5365914	TG	0.5	2	5950	250	5	0.15	0.2	6.5	0.4	12	0.05	0.05	
NTS0015	381265	5365926	TG	0.5	2	6850	250	8	0.1	0.2	4.5	0.3	17	0.05	0.05	
NTS0016	381888	5364985	CVC	4	2	4550	100	8	0.1	0.1	2	0.3	20	0.05	0.05	
NTS0017	381906	5364991	CVC	33	2	4750	200	18	0.2	0.2	5	0.5	47	0.05	0.05	
NTS0018	381926	5364993	CVC	205	2	5950	100	22	0.4	0.3	4	0.5	52	0.05	0.05	
NTS0019	381950	5365002	CVC	76	2	3950	100	14	0.75	0.1	3.5	0.4	45.5	0.05	0.05	
NTS0020	381852	5364994	CVC	212	2	5050	100	7	0.15	0.1	2	0.3	22	0.05	0.05	
NTS0021	381833	5364990	CVC	31	2	3650	100	7	0.15	0.05	1.5	0.3	21	0.05	0.05	
NTS0022	381811	5364982	CVC	24	2	4500	100	9	0.15	0.05	1.5	0.2	12	0.05	0.05	
NTS0023	381785	5364989	CVC?	3	1	4650	100	8	0.1	0.1	1.5	0.3	12.5	0.05	0.05	



## 5 DRILLING

A two-hole, diamond drilling program was completed during this reporting period. The holes are listed in Table 3.

**TABLE 3**  
**Drill Hole Locations**  
(\* AGD 1966/ 55 AMG)

Hole	East-AMG*	North-AMG*	RL	Depth
NCT006	381870	5364991	770	792.1
NCT007	381950	5365200	810	718.9

The holes were completed by Boart Longyear, using a CS1000 P4 drill rig; drill sites were accessed via the Henty gold mine, and existing tracks were utilised. For NCT006, a 50m walking track was prepared to access the water supply pump, which was flown in by helicopter. Double shifts were worked by the drill crew for most of the program.

Both holes commenced with HQ bit size, drilling with chrome barrel down to about 150 m, in order to keep the hole as straight as possible for the initial stages; and then changed down to NQ for the remainder of the hole.

The BallMark orientation system is used during drilling of the NQ core. Unfortunately, drilling conditions and technical problems were such that less than 50% of the NQ core had usable orientation. The “bottom of the core” reference line was used for all oriented structure data.

The drill core was marked up, photographed, logged, and cut in Queenstown. Core was sawn in half, with half sampled at two metre intervals (occasionally 1m intervals) and the other half retained as reference material. Assays were by Amdel in Adelaide. Standards were submitted at 1:20 with every batch of samples. Analytical techniques used were FA1 for Au and IC3E for Cu, Pb, Zn, Ag, As, Ba and S.

Detailed logging was completed using graphic logs. Logging symbols are based on those of McPhie et al 1993. The lithology section of the graphic log was also summarised into computer code, after scan logging the core and the codes entered into Micromine to allow plotting of cross sections.

### 5.1 NCT006

NCT006 was drilled to the east from a collar position 381870E/5364991 (AMG) on a major vehicular access track, immediately to the west of the Red Hills summit. The aim of the hole was to test for gold – zinc horizons within volcanoclastics of the CVC of the Mt Read Volcanics at Red Hills. The target was initially intersected in RH005 (Mt Lyell Mining and Railroad Company 1977) with follow up hole intersections in adjacent holes RH008 and RH016. The target zone was approximately 400 - 500 m below the surface, or 400 to 600 m down hole, close to or at the interpreted coherent Red Hills lava contact.

**TABLE 4**  
**Drill Hole Location**  
 (\* AGD 1966/ 55 AMG)

Hole	East-AMG*	North-AMG*	RL	Depth
NCT006	381870	5364991	770	792.1

**TABLE 5**

NCT006 Down Hole Survey Data*			
Depth	Dip	Azimuth-mag	Azimuth-AMG
0	-65.0	77.0	90.0
25	-65.0	79.5	92.5
50	-65.0	80.0	93.0
75	-65.0	80.0	93.0
100	-64.0	78.0	91.0
150	-63.5	79.0	92.0
175	-63.5	79.0	92.0
200	-62.0	77.0	90.0
250	-60.5	76.5	89.5
300	-59.0	76.0	89.0
350	-56.5	74.5	87.5
400	-56.5	76.0	89.0
450	-53.0	73.5	86.5
500	-51.0	72.5	85.5
550	-49.0	73.0	86.0
600	-47.5	70.0	83.0
650	-46.0	69.5	82.5
700	-43.5	71.0	84.0
750	-42.0	72.5	85.5

\*Survey data collected with a single shot Eastman Camera.

## Results

The hole intersected a thick sequence of red-cream, k-feldspar-hematite-chlorite altered, feldspar – phyric, massive rhyolitic lavas, and lesser juvenile clast supported volcanoclastic conglomerates and breccias. Moderately pervasive alteration occurs, locally intensified at veining and/or faulting. Trace amounts of disseminated and cb-qtz vein hosted galena-sphalerite and pyrite occur throughout the hole. All units contained feldspar, conforming to existing geological mapping, which suggests they are part of the CVC. Minor flattened dark porphyritic pumice fragments were logged in several units. Refer to logs in Appendices 4a to 4c and summary log in Appendix 4d.

A summary of significant assay results are listed below and in Appendix 4e (Strip Log). Refer to Appendix 3 for complete assay results.

TABLE 6

NCT006 Red Hills Anomalous Intersections							
From	To	Metres	Au (g/t)	Cu ppm	Pb ppm	Zn ppm	As ppm
666	668	2	0.70	1650	800	185	90
676	678	2	0.12	950	6100	750	20
786	792.1	6	0.1	4858	8	97	8
Inc. 788	792.1	4	0.12	6137	7	102	8

The hole failed to intersect the targeted gold rich massive sulphide horizons, nor any black shale as present in previous holes. However, the anomalous intersections from 666 m and 676 m may correlate to the massive sulphide horizons in previous drilling.

One explanation for this may be that the area is structurally complex and that the horizons maybe folded and/or displaced by faulting. However, the absence of major faulting in drill core and the limited structural data does not support this argument. It is more probable that the massive sulphide horizons which vary in thickness across existing holes have simply 'pinched' out via volcanic facies variation and so are not present at depth.

The best gold anomalous zone contains 2 m @ 0.70 g/t Au, 0.17% Cu, 800 ppm Pb, 185 ppm Zn and 90 ppm As (666 – 668 m). The anomalism is probably related to a series of small carbonate veins and fractures containing  $\geq 1$  % pyrite, chalcopyrite and galena within a larger breccia zone.

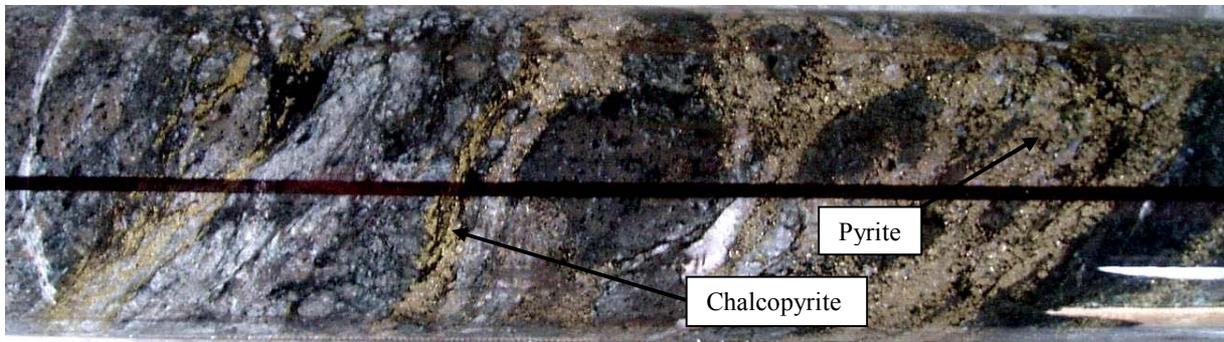


Photo 6: 667.1m showing brecciated carbonate veins containing pyrite and chalcopyrite. Scale bar is 1cm.

The best copper anomalous zone contains 6m @ 0.1 g/t Au, 0.49% Cu, (786 – 792.1 m) including 4m @ 0.12 g/t Au, 0.61 % Cu, (788 – 792.1 m). The mineralisation occurs at the contact to, and within the coherent Red Hills lava facies. It is related to  $\geq 1$ % disseminated, vein and quartz-carbonate-chlorite vein hosted chalcopyrite and lesser pyrite.



Photo 7: 791.5m showing typical chalcopyrite associated with a quartz-carbonate-chlorite vein.

The drill rig reached its depth capacity at 792.1 m, and therefore the total extent of this mineralisation remains unknown.

Refer to Appendix 4a for the graphic log of NCT006. Oriented structural data is in Appendix 5. Assay results for NCT006 are listed in Appendix 3.

## 5.2 NCT007

This hole was drilled to the east, from a collar position of 381950E/5335200N (AMG), 200 north of NCT006. Refer to Plans 1 & 2 for location. The aim of the hole was again to test for gold – zinc anomalous horizons within volcanoclastics of the CVC of the Mt Read Volcanics at Red Hills. The target zone was defined approximately 400 - 500 m below the surface or 500 to 600m down hole, close to or at the interpreted Red Hills lava contact.

**TABLE 7**  
**Drill Hole Location**  
(\* AGD 1966/ 55 AMG)

Hole	East-AMG*	North-AMG*	RL	Depth
NCT007	381950	5365200	810	718.9

**TABLE 8**

NCT007 Down Hole Survey Data*			
Depth	Dip	Azimuth-mag	Azimuth-AMG
50	-71.0	72.0	85.0
76	-70.0	72.0	85.0
101	-70.0	72.0	85.0
143	-69.5	71.5	84.5
200	-67.0	68.0	81.0
254	-65.0	67.5	80.5
304	-63.5	65.0	78.0
354	-62.0	64.5	77.5
404	-60.0	65.0	78.0
455	-59.0	67.5	80.5
506	-57.0	68.5	81.5
554	-54.0	69.0	82.0

600	-51.0	70.0	83.0
650	-48.0	65.0	78.0
700	-45.0	65.5	78.5

\*Survey data collected with a Eastman Camera shots.

## Results

NCT007 drilled through rocks identical to those interested in NCT006. The hole intersected a thick sequence of red-cream, k-feldspar-hematite-chlorite altered, feldspar – phyrlic, massive rhyolitic lavas, and lesser juvenile clast supported volcanoclastic conglomerates and sandstones. Moderate pervasive alteration occurs, locally intensified at veining and/or faulting. Trace amounts of disseminated and carbonate-quartz vein hosted galena-sphalerite & pyrite occur throughout the hole. All units contained feldspar, conforming to existing geological mapping which suggests they are part of the CVC. Minor flattened dark porphyritic pumice fragments were logged in several units. Refer to logs in Appendix 4a and summary log in Appendix 4b.

NCT007 intersected three gold anomalous intervals between 422 and 542m. These are interpreted to be the down dip extension of gold – zinc anomalous horizons intersected in shallower up dip holes. For example, at least 3 gold – zinc anomalous horizons were intersected in RH006R (382136E/5365182N), collared 200m to the east of NCT007 on the same northing. A summary of significant assay results for hole NCT007 are listed below and illustrated in Appendix 4c (Strip Log). Refer to Appendix 3 for complete assay results.

**TABLE 9**

<b>NCT007 Red Hills Anomalous Intersections</b>							
<b>From</b>	<b>To</b>	<b>Metres</b>	<b>Au (g/t)</b>	<b>Cu ppm</b>	<b>Pb ppm</b>	<b>Zn ppm</b>	<b>As ppm</b>
422	424	2	0.10	14	80	320	84
516	524	8	0.30	128	693	408	78
Inc. 520	522	2	0.71	340	1250	280	140
538	542	4	0.25	18	235	118	49
624	640	16	0.07	3000	37	78	6
Inc. 626	630	4	0.14	7500	28	84	9
654	664	10	0.05	1830	26	73	10

The best gold zone is of 8 m @ 0.30 g/t Au including 2 m with 0.71 g/t Au from 516 m to 524 m. This zone was logged as a breccia zone with 0.5 % - 1 % carbonate-chlorite vein-hosted pyrite, chalcopyrite and galena, as well as disseminated pyrite. The best copper zone is of 16 m with 0.07 g/t Au, 0.3 % Cu, from 624 to 640 m including 4 m @ 0.14 g/t Au, 0.75 % Cu, from 626 to 630 m. This zone relates to the approximate contact with the Red Hills lava, and associated with 0.5% to 1% disseminated and vein hosted chalcopyrite.

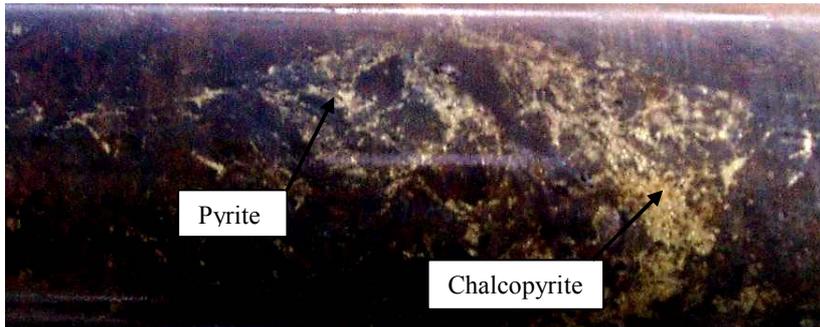


Photo8: Example of anomalous Cu zone from 624 to 640 m. Scale bar is 1cm.

Refer to Appendix 4a for the graphic log of NCT007. Oriented structural data is in Appendix 5. Assay results for NCT007 are listed in Appendix 3.

## 6 ENVIRONMENT

Existing vehicular tracks were used during the drill program. The two drill pads required some excavation work to produce a flat area and in-ground sumps. The process involved an excavator lifting the top soil to one side, creating the drill pad and in ground sumps, and cutting drainage channels along adjacent existing tracks to minimise erosion. A 50m walk track was prepared by Rogers Exploration Services to access the supply pump which was flown in by helicopter.

The drill pads were rehabilitated using an excavator to return them as near as possible to their natural appearance, including leaving a 'lumpy' surface to minimise erosion and runoff. 25kg of fertiliser (N:P:K; 8:4:10) was spread over each drill site as recommended by Alan Jackson of LMRS Pty Ltd (Formerly Land Management and Rehabilitation Services). This was recommended in order to reduce long-term erosion and sedimentation effects and increase the rate of vegetation establishment.

Inspections of the drill sites after drilling and rehabilitation works were conducted to ensure the holes were properly sealed and capped and the sites cleaned up.

All the areas worked in were treated as if contaminated by '*Phytophthora*' so all boots and gaiters were washed before going to a new area/ and at the end of each day. All new timbers were used as base plates, and the rig and associated equipment washed down prior to moving to the next site.

## 7 PLANNED WORK

The planned program for the next 12 months was still being finalised at the time of writing this report. At this stage at least 1 moderate depth diamond drill hole or a number of shallower diamond drill holes are tentatively planned for the coming year.

## 8 BIBLIOGRAPHY

*McPhie J., Doyle M., Allen R. 1993 'Volcanic Textures. A guide to the interpretation of textures in volcanic rocks'. Centre of Ore Deposit and Exploration Studies. University of Tasmania.*

*Purvis, J.G., Jones, M.T., FitzGerald, F.G and Poltock, R.A. 1983 Gold Fields Exploration Pty Ltd, Annual Report EL9/66 for 1982-1983. MRT Open File Report 83-1996.*

## 9 EXPENDITURE

### EXPENDITURE EL9/2005 RED HILLS

For Period 1<sup>st</sup> July 2005 – 30<sup>th</sup> May 2006

ITEM	EXPENDITURE
SALARIES	\$166,643.00
DRILLING	\$261,510.00
FIELD COSTS	\$32,527.00
MISCELLANEOUS OFFICE COSTS	\$83,989.30
TRAVEL/ACCOMM	\$21,530.00
VEHICLES	\$4,107.00
LAND/LEGAL	-\$1,785.00
ANALYSIS	\$14,060.00
OTHER	\$114.00
<b>TOTAL EXPENDITURE</b>	<b>\$582,695.30</b>