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TECHNICAL MEMORANDUM FOR SANDFIRE RESOURCES.

DATE 15TH March 2007

TO: Greg Steemson (Sandfire Resources)

CC:

FROM : Steve Massey (Western Geoscience)

SUBJECT: PROCESSING AND INTERPRETATION OF BORROLOOLA INDUCED POLARISATION SURVEYS

1. INTRODUCTION AND BACKGROUND

The Borroloola Project is located in the Northern Territory approximately 85 km north-west of the McArthur River lead-zinc mine. Exploration is targeting base metal mineralization associated with a fault bounded sequence of McArthur Group rocks. The Coppermine Creek Fault(CMCF) and the Four Archers Fault (FAF)form the northern and western boundaries of the fault bounded block of the McArthur group.. Copper mineralisation occurs in several places along the CMCF within Sandfire's tenements.

Geophysical surveys have been completed in two campaigns using the Induced Polarisation (IP) method. In 2004 , seven lines of pole-dipole array IP were completed with the MIMDAS IP system and in 2006 acquisition occurred on a further seven lines using the Zonge GDP32 system. Both of the survey used a 100m dipole spacing and the survey lines are oriented N-S to traverse perpendicular to the strike of the CMCF.

The MIMDAS system is very deep looking IP system and data were acquired out to a maximum dipole spacing of n=29. Data were acquired with the current electrode coordinates in a configuration that both greater than and less than the potential electrode coordinates (C>P and C < P). The GDP32 survey data were read out to a maximum of n=8 in the C>P configuration.

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2. PROCESSING AND MODELLING

The decay curves of raw field data from both survey campaigns have been checked and most data are of good quality although some corrections were needed. Apparent resistivity and chargeability values were calculated from the corrected final data.

Apparent resistivity and chargeability pseudosections for the pole-dipole array surveys are presented on plans 1 to 7.

The 2D inversion codes of the University of British Columbia (UBC) were used to model the resistivity and chargeability data. In order to be consistent, the 2D inversions were completed on the MIMDAS data with C>P and the GDP32 data which used the same geometric configuration. The modeling results as true resistivity and chargeability depth sections from the GDP32 and MIMDAS surveys are shown plans 8 and 9 respectively. Model ddepth solutions from the GDP32 data are valid to a maximum depth of approximately 200-300m below surface. Model ddepth solutions from the MIMDAS data are valid to approximately 600-800m below the surface.

3. INTERPRETATION

The resistivity inversions show there is a sub-horizontal very resistive layer throughout the southern half of most of the sections. The modelled resistivities are in the order of 1000's of ohm-m, interpreted as being due to a very resistive a carbonate layer or sequence within the McArthur Group rocks. The interpreted resistive carbonates are approximately 200-300m thick, based on the resistivity models. The northernmost extent of these resistive units terminates approximately where the CMC fault is located, indicating this margin is fault bounded. The

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clastic sediments of the Roper Group that are located north of the CMCF are of low to moderate resistivity (10's- 100's of ohm-m). Low to moderate resistivity layers above and at depth below the very resistive layer in the McArthur group indicate the presence of clastic sediments.

Zones of moderate to strong chargeability are spatially associated with the CMCF and occur along strike for approximately 1.5km. The main zones of chargeability derived from the 2D inversions are shown in Table 1. The chargeable zones are usually either sub-vertical or dip steeply to the north, indicating the fault control on their distribution. There are also several sub-horizontal weakly chargeable zones away from the CMCF, suggesting there may be areas of underlying statabound or strataform mineralisation.

TABLE 1... BORROLOOLA SULPHIDE TARGETS

Targets derived from 2D IP inverse modelling results.

TargetID	Location/Survey	East	North	Depth (Max IP)	IP(mSec)	Comment
BLIP-T1	Line 555800E/GDP32	555800	8235925	-250	14.0	Broad sub-vertical body
BLIP-T2	Line 556050E/GDP32	556050	8235535	-320	10.0	Broad sub-vertical body
BLIP-T3	Line 556300E/MDAS	556300	8235770	-430	19.0	Deep Sub-vertical body
BLIP-T4	Line 556550E/GDP32	556550	8235710	-360	9.0	Nth dipping body
BLIP-T5	Line 556800E/GDP32	556800	8235685	-160	9.0	Sub-vertical body
	Line 556800E/MDAS	556800	8235745	-500	15.0	Deep steep Nth dipping body
BLIP-T6	Line 557000E/GDP32	557000	8225765	-315	19.0	Steep Nth dipping body
	Line 557000E/GDP32	557000	8236220	-240	9.0	Steep Nth dipping body
BLIP-T7	Line 557300E/MDAS	557300	8235780	-314	14.0	Steep Nth dipping body

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Drill testing of the 2D IP inversion targets, was completed in late 2006. The assay results show anomalous copper mineralisation in most of the holes. The strongest mineralisation occurred in drill BDRCD001, with assay values up to approximately 7% Cu.
The drillhole assay data have been incorporated into a 3D model that also includes the 2D IP model depth sections. When the data are viewed in this way then it is clear that the zones of higher modelled chargeability are associated with anomalous copper values and sulphides in the hole.

4. CONCLUSIONS

Two dimensional inverse modelling of MIMDAS and GDP32 IP data has successfully defined the location of moderately chargeable zones that are associated with the CMCF.

Drill testing of some of the IP targets indicated the presence of sulphides and copper mineralisation where the chargeable zones are located on the depth section, thus validating the modelling.

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APPENDIX I. LIST OF PLANS TO ACCOMPANY THIS REPORT

List of Plans **Scale**