RESOURCE ESTIMATE OF THE Pb-Ag-Zn-Cu DEPOSIT LOCATED ON THE FARM ROZYNENBOSCH 104, KENHARDT DISTRICT, NORTHERN CAPE PROVINCE, SOUTH AFRICA.

COMPILED ON BEHALF OF MIRANDA MINERALS (PTY) LTD

COMPILED BY: R. J. Mossom

Merlin Resources

DATE: 8th August 2006

STATUS: Confidential; Circulation restricted

Scope of work

Merlin Resources, a geological consultancy, was contracted by Miranda Minerals (Pty) Ltd., an Exploration Company, to compile a Competent Persons Report on a Pb-Ag-Zn-Cu deposit located between Kakamas and Kenhardt in the Northern Cape Province over which farm Miranda Minerals purchased the mineral rights and associated prospecting agreement from Gold Fields of South Africa. In terms of the new legislation the Company has applied for a new order prospecting right, the application for which has been accepted by the DME.

A considerable amount of exploration work was carried out by Phelps Dodge and then by GFSA. The results of the Phelps Dodge exploration is owned by Miranda Minerals and the GFSA data forms part of the open file system in the custody of the Council for Geoscience, Pretoria.

The Managing Member of Merlin Resources, R. J. Mossom, was previously involved in the evaluation of a nickel deposit, exploration for a barite / base metal sulphide hosted gold deposit in the Limpopo mobile belt and an evaluation of metamorphic zone hosted iron ore deposits and certain sulphide bearing layers in western Liberia and as such has the relevant knowledge and experience to compile this CPR.

The scope of work entails the following:

- Describe the location and geology of the deposit.
- Compile a summary of the Phelps Dodge and GFSA information.
- Present the evaluations compiled by Phelps Dodge and GFSA to arrive at a Resource Category in compliance with the SAMREC code.
- Convert commodity prices and the Rand / Dollar exchange rate to present day values to arrive at an in situ value for the four commodities.
- Make recommendations.

The following is considered to be **Out of Scope:**

- Mine planning and scheduling.
- Mining tonnages and grades
- Metallurgical processing
- Mineral products after beneficiation.
- Financial analysis and cost of mining.
- Metal price forecasting.

EXECUTIVE SUMMARY

After the discovery of the Copperton deposit by Anglo Vaal during the late1960's, the north western Cape Province become a target area, particularly for base metal mineralisation which resulted in the development of mines such as Black Mountain, producing Pb-Cu-Zn.

An aerial reconnaissance survey conducted by Phelps Dodge Africa identified a structural feature on the farm Rozynenbosch 104, bisected by the road between Kenhardt and Kakamas, some 40km south of the Orange river.
Ground based follow up identified the potential for base metal mineralisation which resulted in an intensive prospecting program being initiated using geophysics, soil and whole rock geochemistry, very detailed mapping and the drilling of 68 diamond drill boreholes.

The Rozynenbosch central deposit (also termed Red Hill Mines Ltd.) is located in the Rozynen Bosch formation of the Vyfbeker Metamorphic Suite of the Hartbees river fragment forming part of the Namaqua Metamorphic Complex.

The area was subjected to transpressional convergence between the stable Namaqua and Kaapvaal cratons which produced the Namaqua Mobile belt and as such has been subjected to polyphase deformation.

All of the rocks in the area with the exception of the Karoo age sediments and intrusives have undergone varying degrees of regional metamorphism, varying from greenschist to granulite facies.

The sulphide mineralisation appears to be of synsedimentary-volcanogenic origin hosted in a metamorhosed arkosic zone forming an isoclinal fold with a thickness varying from 8m to 132m with an apparent increase in sulphide content at the point of axial thickening.

The interpretation of the prospecting results has allowed the allocation of the Indicated Ore Resource category with an estimated in situ value based on the following commodity prices (L.M.E. dated 07/08/2006):

Pb: $1130-00/ton; Zn: $3383-00/ton; Cu: $7820-00/ton; Ag: $12-43/oz

Phelps Dodge grades and tonnage :

For Cut-off	Million Tonnes	Pb%	Zn%	Pb & Zn%	Ag gm/t
1.0% / 5m	6.99	2.56	0.54	3.09	43.09
1.5% / 5m	6.15	2.77	0.57	3.34	47.74
2.0% / 5m	4.84	3.19	0.64	3.83	51.58
2.5% / 5m	3.19	3.88	0.88	4.75	44.06
3.0% / 5m	2.58	4.28	1.07	5.35	52.93

!% combined Pb/Zn grade cut off will produce:

6.99million tons grading at 2,56% Pb, 0,54% Zn, 0,08% Cu: 0,08, 43,09 g/t Ag:
(The copper grade of 0,08% was averaged from borehole intersections)

Rand / US$ exchange rate: $1-00 = R6,70

Pb: 176,640 t	= $199,603,200-00	R1,337,341,440-00
Zn: 37,260 t	= $126,050,580-00	R 844,538,886-00
Cu: 5,592 t	= $ 43,729,440-00	R 292,987,248-00
Ag: 9,739,871 oz	= $121,066,601-00	R 811,146,226-00

Total estimated value @ 1% cut off: $490,449,821-00 R3,286,013,801-00

The GFSA / Phelps Dodge J.V. data produced the following:

14 million tons grading at: Pb -1,72%, Zn - 0,46%, Cu - 0,03%
Ag - 34,1 g/t

Current in situ value:

Pb:240800 t	= $272,104,000-00	R1,823,096,800-00
Zn: 64,400 t	= $217,865,200-00	R1,459,696,840-00
Cu: 4200 t	= $ 32,844,000-00	R 220,054,800-00
Ag: 15,350,482 oz	= $190,806,495-00	R1,278,403,517-00

Total estimated in situ value : $522,815,108-00 R3,502,861,224-00

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List of attached maps. Note: In certain cases plans and sections are from a series; e.g rock chip sampling (litho chemistry) consists of 8 plans. Sections labeled LS are longitudinal sections, dip sections are labeled by section line.

AS PER ATTACHMENT ON DOCUMENT			
LITHO CHEMISTRY	SHEET 4C OF 8	1:1 000	1B/14/2/66
STRUCTURAL OVERLAY OF RB		1:5000	1B/14/2/54
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1. INTRODUCTION

Merlin Resources was contracted by Miranda Minerals, an exploration company, to carry out an independent audit and compile a Competent Person's Report on a Pb-Zn-Cu-Ag deposit, allocated the name Red Hill Mines,Ltd.on the farm Rozynenbosch 104, located between Kenhardt and Kakamas in the Northern Cape Province.

The information has been derived from detailed exploration carried out by highly reputable mining / exploration companies, namely Phelps Dodge Africa from 1972 to 1983 and then by a joint venture agreement with Goldfields of South Africa up to 1987. After the unbundling of GFSA in 1998 and the withdrawal of Phelps Dodge in 2000, Miranda Minerals became the sole owner of all of the information generated by Phelps Dodge. The joint venture information was donated by GFSA to the open file system maintained by the Council for Geoscience and as such is freely available.

It must be clearly understood that this document in no way consists of original work by the writer, a re-interpretation or a re-evaluation of tons and grades, but is a presentation of the exploration results produced by the two above mentioned companies.

A great deal of very detailed information was acquired from Phelps Dodge comprising 21 files containing geological reports and interpretations, borehole information, ore resource determinations, geophysical reports, geochemical reports, lead isotope analysis and a large number of very detailed plans and sections. In addition, some 200 pages of relevant information was copied from the open file system of the Council for Geoscience, appropriately filed and retained by Miranda.

This report has been compiled from the archived Phelps Dodge and GFSA exploration results. Due to the highly complex nature of the geology, it is apparent that a number of interpretation differences existed between, not only the Phelps Dodge personnel, but with GFSA as well. However, these related more to genesis and mode of occurrence and as such may be regarded as academic, with no detraction from the fact that a sizable base metal / silver resource has been delineated.

A great deal of reliance has been placed on the information compiled and available from the Council for Geoscience, particularly the explanation relating to the Metallogeny of the Upington-Kenhardt area (du Toit), as being to the most concise and up to date.

A large number of Geological Society of South Africa publications and other texts were perused, as acknowledged and detailed under references.

2. OBJECTIVE

The objective of the Competent Person's Report is the following:

- To reduce a voluminous amount of data to a manageable document to comply with the SAMREC Code and JSE regulations.
- To verify and present the resource estimates as compiled by both Phelps Dodge and GFSA.
- To make recommendations on additional work, investigations and the digitizing of data that could probably be undertaken to enhance the value of the geological and the potential mining-geological database.
- To update the resource estimates to current monetary terms.

3. GEOGRAPHY

The Rozynenbosch central Pb-Zn-Cu-Ag deposit is located on the farm Rozynenbosch 104 at 29^0 $04^{'}$ south lattitude and 20^0 $47^{'}$ east longitude at an altitude of ±750m a.m.s.l., in the Gordonia district of the Northern Cape Province.

The farm is situated some 35km south of the town of Kakamas, bisected by the main Kakamas / Kenhardt road and east of the seasonal Hartbees river which constitutes the main drainage channel of the area.

The area is generally flat lying with remnant low hills and local small undulations. The climate is arid to semi-arid with hot summers and cool winters with an average rainfall of 15-20cm, largely in summer us cumulo-nimbus precipitation and the occasional winter cold front generated nimbo-stratus precipitation.

The communication network consists of reasonably well maintained tar and gravel roads, a main line railway connection at Upington with a branch line extension to Kakamas. The Sishen-Saldanna iron ore railway line passes through Kenhardt, but as this is essentially a private line, although operated by Spoornet, common user status is not guaranteed.

The closest Eskom electricity grid and permanent water supply from the Orange river will be at Kakamas.

Upington, being the nearest main center, is served by a scheduled air service.

4. SUMMARY OF GEOLOGY AND METALLOGENY

Rozynenbosch is quoted in the literature as a type location of a particular type of base metal occurrence in the Gordonia sub-province.
The namaqua metamorhic complex resulted from tectonics which included cratonic movements which generated three tectonic subdivisions, namely an eastern Kheis subprovince, a central Gordonia subprovince in which the proterozoic Rozynenbosch deposit is located, adjacent to the major Hartbeesrivier thrust zone forming the western boundary with the Bushmanland subprovince.

Two distinctly recognisable units are evident, the basement or floor rocks and the supra-crustal cover rocks.

The Rozynenbosch Pb-Zn-Cu-Ag deposit forms part of the Rozynenbosch Formation which forms part of the Vyfbeker Metamorphic Suite of the Hartbees River Fragment. The Formation comprises two main rock types, namely a felspathic (arkosic) unit consisting of Quartz / felspar / biotite gneiss and a calc-silicate unit comprising amphibole, meta-dolomite, marble and calc-silicate rocks with minor granitic gneiss and biotite gneiss.

All of the rocks in the Rozynenbosch area have under gone regional metamorphism with the exception of the Karoo age sediments and intrusive rocks. The grade of the regional metamorphism varies from greenschist to granulite facies. On Rozynenbosch the metamorphic grade increases from amphibolite facies on the western side of the farm to granulite facies on the eastern side with the mineralised zone falling into the former.

The overiding geological structure has resulted from extensive transpositional (lateral) movement along NW - SE trending zones, initiated

early in the deformational history and similarly continued by the later stages of deformation.

The transpositional movement caused the tight isoclinal folding with the Rozynenbosch central ore body concentrated between two fold closures.

Two later less intense episodes resulted in interference folding down the 30^0 plunge of the ore body.

The stratigraphic column has been derived from drilling results and is reflected as follows, from the bottom upwards:

- Basement: Pink / grey coloured coarse-grained porphyroblastic "augen" gneiss.
- Well laminated grey / white biotite magnetite gneiss.
- Well laminated dark grey / green amphibolite.
- White mottled grey to grey green medium to coarse grained dolomitic limestone.
- Calcareous, garnetiferous, epidote rich calc-silicate.
- Garnet rich, epidotised, meta-arkosic garnet gneiss, well mineralised and closely associated with the ore zone.
- Arkose derived grey to grey / pink gneiss. This is the main ore carrying zone, identified by numerous light pink garnets and felspar porphyroblasts, containing galena, sphalerite, chalcopyrite and pyrite as interstitial grains and crystals, fracture fillings and inclusions with the silver as discrete particles, attached to or enclosed by base metal sulphides.
- Pink magnetite gneiss.

Exploration carried out on Rozynenbosch 104, has defined a lenticular shaped strata bound ore body on what is termed Rozynenbosch central between the Kakamas / Kenhardt road and the Hartbees river, containing both massive and disseminated base metal sulphides and silver. The stratigraphic width of the ore zone varies from 8m to 132m, with the wider intersections resulting from axial thickening of the isoclinal folds.

Metallogeny: A metallogenic province is defined as "an area characterised by an assemblage of mineral deposits, or by one or more characteristic types of mineralisation generated during one or more episodes of mineralisation" or "regarded as areas of three dimensional crust in which, during some portion of geological time, the conditions were favourable for the concentration of mineral deposits of a particular commodity(ies)".

The ore zone host rocks appear to represent meta-sedimentary zones within acid to intermediate meta-volcanic rock units which implies that the

base metal sulphide bodies and associated silver mineralisation are synsedimentary-volcanogenic in origin.

The suggested mechanism of origin is the production of sub-marine exhalative sulphide deposits, becoming sediment hosted by precipitation caused by a change in fluid regimes, solubilities and basin de-watering. The differential mobility of minerals by contemporaneous or later metamorphism would modify distribution, as pyrrhotite, sphalerite, chalcopyrite and galena are considered to be "mobile" minerals.

5. PREVIOUS EXPLORATION

After the discovery and exploitation of the Copperton deposit in the late 1960's, the north western Cape Province (now Northern Cape Province) elicited a great deal of exploration interest in the search for other mineral deposits in this very geologically complex area.

In 1972, during an aerial reconnaissance survey conducted by Phelps Dodge Africa in the Kenhardt district, a prominent fold structure was noted close to the western boundary of Rozynenbosch 104. On a follow-up ground based examination, a number of old prospecting trenches containing galena were discovered as well as a prominent gossan containing significant lead and silver values.

A total of 11,812 ha of ground in and around Rozynenbosch 104 was acquired for prospecting purposes.

The Rozynenbosch project consisted of geophysics, grid surveying, detailed geological mapping, soil sampling, geochemical chip sampling and diamond core drilling, logging, sampling, assaying and the compilation of results. A program of 68 boreholes totaling some 15,000m of diamond drilling was completed from which the geological sections and grade profiles were compiled.

6. STATEMENT DETAILING EXPLORATION RESULTS

12.10(a)

12.10(a)(i)

6.1 Exploration Drilling

The exploration drilling carried out by Phelps Dodge Africa consisted of diamond drilling using BX sized equipment (42mm core diameter). The company contracted to carry out the drilling was not recorded.

The exploration drilling carried out by GFSA consisted of diamond core drilling using BQ sized (wireline) equipment (36,5mm core diameter) carried out by GFSA owned drilling contracting company (G.F.C.)

In none of the perused monthly reports was any dissatisfaction noted as to unacceptable core recovery or any other factor which might adversely affect the accuracy of the drilling results.

As the core has been described as a hard competent crystalline rock, the samples taken and representative nature of the samples have been accepted as being accurate.

12.10(a)(ii)

6.2 Borehole & sample logging

As this exploration was carried out between 1973 and 1987 by other companies, it is impossible to comment on the quality of the logging. However, it must be noted that this exploration was carried out by two major mining / exploration companies with supervision by well known reputable geoscientists with impeccable qualifications, it is reasonable to assume that that shoddy practices would not have been tolerated.

The logging was both qualitative and when sampling results were plotted, quantitative.

12.10(a)(iii)

6.3 Sample recovery

As indicated by the drilling sheets and monthly reports, the sample recoveries were properly recorded. As the borehole cores consisted of solid material halved by means of a diamond cutting saw, no sample bias caused by friable material exists.

12.10(a)(iv)

6.4 Other sampling

A regional soil sampling program was performed by Loxton Hunting & Associates which included the farm Rozynenbosch. A standard type of soil sampling was carried out according to a surveyed grid whereby ±200gm of material was sampled into packets, numbered according to the grid co-ordinates, labeled and submitted for assay. Assaying was done McLachlan & Lazar using the A.A. and colourimetric (lead diethyldithiocarbamate) methods. The results were plotted on plan which indicated a major anomaly on Roznenbosch central and smaller anomaly to the north.
(See dot plan attached as appendix)

Whole rock geochemical chip sampling

This sampling program was performed by Loxton Hunting & Associates and by Phelps Dodge staff. The purpose of the exercise was to ascertain the distribution of mineralization in areas of solid rock outcrop.
Each sample was given a unique number according to the grid co-ordinates and plotted according to the surveyed grid.
A total of 5692 samples (± 15mm x 15mm) were taken on Rozynenbosch central, north and south. Rock chips were taken over an area with a 2m radius, ±20 in number (200gm) at 20m intervals on a pre surveyed grid.
Assaying was done on pulverized material by A.A. reading on an aqueous solution or by solvent extraction completed by McLachlan & Lazar, Analytical Services and Aggeneys Laboratory.
In order to establish background values and anomalies, the following was determined: Arithmetic mean, standard deviation and threshold values.
Two methods of determining an anomaly were used; any values significantly above thresh-hold and secondly, twice the threshold value were accepted as representing an anomaly. Various other factors such as the influence of topography were taken into account when determining the significance of an anomaly.
Determinations for Cu, Pb, Zn,Ag, Mn, Au and fluorite were carried out. The results were plotted as (1) actual results and (2) contoured according to metal type.

Results:

	Pb(ppm)	Zn(ppm)	Cu(ppm)
Arithmetic mean	13,1	36,6	27,5
Std. Deviation	11,5	29,1	27,6
Threshold value	47,6	123,9	110
Contour value	50	125	110

(Threshold value = arithmetic mean + 3 x Standard Deviation)

It was found that the rock chip sampling exercise effectively delineated the ore body at outcrop and proved superior to soil sampling in areas of outcrop.

12.10(a)(v)

6.5 Sampling techniques

Soil sampling procedure was collection, sieving, packaging and labeling according to the grid co-ordinates,
From the monthly reports, it is reported that the diamond drill borehole cores were sawn using a diamond blade. The one half core was sent for assay and the remainder was stored.
There is no record of quality control or sample preparation technique other than acceptance of the reputation of the contracting companies and the laboratories concerned.

The technique of the chip sampling is outlined in 12.10(a)(iv) above. The size of the samples taken over the stated area is more than adequate to be representative the fine grained rock types.
The sample stations were far enough apart so as to avoid any possibility of inter sampling contamination.

12.10(a)(vi)

6.6 Verification

The verification of results of the exploration completed by Phelps dodge was carried out by GFSA personnel at the commencement of the joint venture agreement between Phelps Dodge and GFSA.
Perusal of the GFSA reports does not indicate any dissatisfaction or negative comments with the results produced up to that time.
There is no record of twinned holes and no deflections were drilled. The use of multiple laboratories would seem to indicate the use of duplicate check samples.

12.10(a)(vii)

6.7 Data location

Sampling grids, mapping grids and drill hole collars were surveyed in by theodolite producing both co-ordinates and elevations by dedicated survey personnel.
Down the hole surveys were not done by Phelps Dodge but were done by GFSA on existing holes and new holes using Sperry-Sun equipment. These results showed borehole deviations of up to 15^0. These results are shown on sections produced by GFSA.
The quality and adequacy of topographic controls are stated in the monthly reports and shown by the sections produced.

12.10(a)(viii)

6.8 Data density and distribution

(1) Whole rock chip sampling details are outlined under 12.10(a)(iv)

(2) Diamond drilling

A square grid was surveyed in by means of a theodolite with a base line bearing of 111^0 True along which boreholes were sited according to target area outlined by the rock chip sampling survey combined with geophysical surveys (magnetometer and IP). The borehole results were plotted along section lines with a lateral strike continuity of 60m on either side of each section line assumed.
The data density and distribution is sufficient to establish the degree of geological and grade continuity to allocate the classification of Indicated Resource to the deposit.
The only sample compositing used was the collection of ±20 whole rock chip samples within a 2m radius to achieve a 200g sample for analysis.

12.10(a)(ix)

6.9 Audits & reviews

No audits or reviews of sampling techniques and data have been recorded.

12.10(a)(x)

6.10 Exploration work done by other parties.

This document is a detailed presentation of previous exploration carried out by Phelps Dodge Africa and by Gold Fields of South Africa.

12.10(a)(xi)

6.11 Detailed geology of Rozynenbosch 104

The geology outlined below is specific to the Rozynenbosch central ore body. However, cognizance should be taken that Rozynenbosch South and North are good drilling targets. The mineralised zone in both these bodies lies in exactly the same stratigraphic horizon as the ore on Rozynen Bosch Central. This leads to the speculation that the ore bodies are not only related (which is likely), but possibly also connect up in depth.

The Rozynenbosch Project consisted of:

1. Grid Surveying

2. Geological mapping of Rozynenbosch Central and South deposits.

3. I.P. and ground magnetic surveys of Rozynenbosch Central, South and North deposits.

4. Geochemical chip sampling of Rozynenbosch Central, South and North deposits.

5. Diamond drilling programme, logging, sampling and assaying. Sections showing ore body configuration drawn. Grade and tonnage calculations were produced.

The nature and extent of the various programmes are elaborated on under sections of Economic Geology .

The photo-geological, aeromagnetic and geochemical work was done by Loxton Hunting and Associates under contract to Phelps Dodge of Africa.

Geophysics

A geophysical office was established at Rozynenbosch during the last week in October, 1973 to more effectively oversee the expanding geophysical activities in the district. Eighteen hundred square miles of aeromagnetic coverage was obtained over two separate areas in the district. This coverage has generated several follow-up targets using ground magnetic and induced polarization surveys.

GEOLOGICAL SETTING

1. The Regional Geology of the Kakamas/Kenhardt Area

(a) Introduction

Between 1943 and 1960, the area around Kakamas and Keimoes was mapped by J.W. von Backstrom of the Geological Survey, (Memoir 53). Latitude 29^{o} 00', the southern limit of his mapping passes through the middle of the farm Koegab, which adjoins the farm Rozynen Bosch on its northern boundary.

Between January and June, 1973, 7,500 square kilometres, comprising a rectangular area 80km wide and 90km long, and encompassing the towns Kenhardt, Kakamas, Keimoes and Louisvale, was photographically mapped by R.F. Loxton, Hunting and Associates at the request of Phelps Dodge of Africa. The map, thus produced, clearly delineating the position and trend of cover sequence (also referred to as schist belts of the Kheiss System) over basement floor rocks, provides the best available regional guide for economic investigation in this area.

A detailed field examination of the geology on parts of the farm, Rozynen Bosch, was then completed by P. Joubert.

Detailed large scale mapping, information from borehole sections, and a structural interpretation around the mineralised Rozynen Bosch bodies, have helped to elucidate the regional picture outlined by regional-scale workers.

(b) Geology

Two distinctly recognizable units, the basement floor and the supracrustal cover sequence (Kheis system), are the essential elements of the regional picture. The gneissose basement, re-activated and intrusive in places, has alternatively been named the "Basement" gneiss (preferable), the "Grey" gneiss (more commonly used), and occasionally, the "Nababeep" gneiss. The cover sequence comprises schists, amphibolites (metadiabases on Rozynen Bosch), dolomitic limestones, various calc-silicates, metavolcanics (metatuffs or

metarhyolites, magnetite quartzites, magnetite amphibolites, metgabbros, pyroxenties and serpentinites), meta-arkoses (usually referred to as “Pink” gneiss) and impure quartzites.

The regional lithological picture is completed with the addition of late stage intrusive phacoliths of charnockitic adamellite porphyry (concordant intrusive bodies of hypersthene granite introduced concurrently with folding), and numerous pegmatites and quartz veins (Probably introduced during the tensional release phase of the tectonic cycle). Remobilization of the basement floor in the close vicinity of cover rocks has resulted in varying degrees of migmagtization and the introduction of “Concordia-type” granite on Witvlei.

The over-riding geological structure resulted from extensive lateral (transpositional) movement along N.W. – S.E. zones, initiated early in the deformational history and perpetually rejuvenated during the later stages of deformation. This transpositional movement, F_2 caused the omnipresent S_2 foliation, tight isoclinal F_2 folds (the Rozynen Bosch Central ore body is concentrated between two F_2 fold closures), and distinctive schists and mylonites in and near the basement cover contacts. F_2 deformation was subsequently followed by F_3 and F_4 deformation, both less intense than F_2 and characteristically refolding the penetrative S_2 foliation. F_4 deformation has resulted in the spectacular interference folding down the F_2 plunge on Rozynen Bosch Central.

F_1 deformation, a controversial issue as to its manifestation, is alternatively circumscribed or neglected in the explanation of the elongated linear form of the schist belts. Theory one has it that the linear character of these belts came about due to the F_2 deformation, the separation between the duplication of the belts being caused largely by over-riding from the northeast; the shearing and thrusting (manifest in various schists and mylonites) resulting in the formation of schist belt “slivers” inter-digitating with basement gneiss. This theory does not reject F_1 deformation but certainly does not describe its manifestation and its role in the deformational history.

The older theory, initially outlined by von Backstrom, envisages overfolding towards the south west to product isoclinal folds of F_1 generation. This deformation took place in two cycles: the Kheiss cycle compressed the rocks into large open folds, shortly after which olivine gabbro was injected as sills into the lower Kaaien beds, while the subsequent Gariep cycle was long-continued and intense, resulting in isoclinal folding and the reactivation of the “basement” gneiss. Von Backstrom does recognise a later deformation, which he refers to as “axial plane folding” and which definitely refolds his earlier isoclinal folds and the foliations plus lineations attributed thereto. (This later deformation, which fold axis strikes northeast, corresponds to P. Joubert’s F_3 deformation).

All rocks in the area, with the exception of late igneous intrusions such as

doletites, etc., and Karoo sediments, have undergone varying degrees of regional metamorphism. Locally some rocks have undergone contact metamorphism. The grade of the regional metamorphism varies from greenschist to granulite facies. Von Backstrom (memoir 53) has delineated the different zones of metamorphism by chlorite, biotite, garnet, staurolite, and sillimanite isograds, which largely coincide with the boundaries of lithological units. It was previously widely accepted that the grade of metamorphism increased from N.E. to S.W. However, P. Joubert has recently indicated that this is not the case on Rozynenbosch, where the grade increases from amphibolite facies on the western side of Rozynen Bosch to granulite facies on the eastern side. He feels that perhaps the granulite facies will coincide with and closely follow the western margin of the area of higher magnetism, indicated on the aerial geophysical survey.

The rocks around the Rozynenbosch mineralised bodies fall into the amphibolite facies of metamorphism. The common rock forming minerals are: quartz, microcline, garnet, hornblende, biotite, sillimanite, calcite, serpentine (after olivine), muscovite and magnetite. The presence of sillimanite, especially in the basement gneiss, shows that the grade is upper amphibolite and not, as has been previously stated, lower amphibolite.

Age determinations obtained from grey gneiss and pegmatites in this area vary from $\pm$1050m.y. to $\pm$900m.y. These ages indicate that one tectonic cycle, thought to be responsible for the polyphase deformation and probably of protracted duration, closed by $\pm$900m.y. ago.

The known economic mineralization in this area, and including the areas from Copperton to north of Upington, can be summarized as follows:

1. Massive copper/zinc sulphide mineralization found at Copperton and Areachab (just north of Upington).

2. Massive to disseminated copper/nickel mineralization associated with hornblende gabbro sills in Marydale series, typically developed on the farms (Grieff, Haartebees Pan and Rok Optel).

3. Disseminated and massive lead, zinc, copper & silver mineralization in acid environments (metarhyolite, magnetite quartzite, etc) of the Rozynen Bosch type.

4. Re-mobilized iron rich copper-bearing dyke swarms in the Lutzputs area.

5. Mineralization associated with the numerous pegmatites of this area, tungsten being probably the most noteworthy element, but also including beryl, monazite, corundum, tin, lithium, felspar and mica.

6. Late stage veins carrying fluorspar and traces of base-metal sulphides as found on Pypklip West.

2. Summary of Stratigraphical Column on Rozynenbosch

The stratigraphic column on Rozynenbosch is probably best reflected on line 480 where holes drilled have penetrated the complete succession. Due to at least four periods of folding, the succession appears more complex than it is. An attempt to reconstruct the sequence from the bottom to top would be the following: (rock codes in brackets)

(a) **Basement**: (BGN)

Pink-grey in colour, coarse grained porphyroblastic gneiss in which large feldspar – quartz concretions lends an "augen" or "eye" type texture. Dark mineral – mainly biotite mica. This zone is highly sheared on the unconformable contract with the overlying schist belt.

(b) **Unconformity**: zone of shearing

(c) **Biotite gneiss**: (BIGN)

(d) **Amphibolite**: (DIAB)

A well laminated, dark grey-green rock consisting of a high percentage of plagioclase and hornblende/epidote. A well developed foliation and reasonable cleavage is characteristic.

(e) **Dolomite** (DOLM)

A medium to coarse grained mottled white to grey and grey-green, sugary textured dolomitic limestone. Poorly sorted and orientated mica flakes are common. In conjunction with and due to its close association until the amphibolite, this zone is used as a marker band and aids tremendously in the solving of the structure.

(f) **Calc – silicates / skarn**: (CASI)

Locally developed, this highly calcareous, garnetiferous, epidote-rich zone is often very narrow but unmistakeable in character. It can, however, be confused with (g).

(g) **Garnet gneiss/tactite**: (GNES)

A garnet rich, epidotized meta-volcanic with arkose-like texture. This zone is

often well mineralised and is closely associated with the mineralised zone.

(h) **Ore-carrier/grey gneiss/grey-pink gneiss**: (SASN)

The rock is normally a pinkish colour but where mineralised, has a grey-lead grey tint. Normally medium to fine grained with high quartz – feldspar content. The mineralised zone can easily be recognised due to a large amount of light pink garnets and numerous microcline feldspar porphyroblasts and is slightly to reasonably effervescent with diluted hydrochloric acid due to a varying calcite content.

(i) **Pink gneiss**: (ARKS)

This is a correlate of the first in the schist belt, i.e. the biotite gneiss. A large part of the area is overlain by the pink gneiss which weathers to a dark brown but hard rock normally capped by magnetite to lend a black tarnish.

For details of the constituent minerals of the various rock types discussed above, reference should be made to: Mineralogical, microscopic and geochemical examination of Rozynen Bosch in this report.

3. Mineralogical, Microscopic and Geochemical Examination of the Rozynenbosch Rocks

Ten ore samples of core taken from borehole RB 5 were examined mineralogically by the Lakefield Research of Canada Limited. Eighteen specimens of rock types around Rozynenbosch Central, were microscopically and geochemically examined by S. Williams of the P.D. Western Exploration Office, USA, and one specimen has been examined microscopically by J.B.E. Jacobsen of the Witwatersrand University.

Ore

The metamorphic grade was found to be mezozonal (amphibolite grade). The sulphide assemblage and the presence of fluorite suggest that this rock is of volcanic origin as opposed to the overlying meta-arkoses (pink gneiss). The ore zone has a limited distribution or surface; has developed a typical pink-orange leaching capping appearance; is very friable and gives anomalous rock chip geochemical values. Rounded pebble-sized concretions, typically developed in the weathered capping, are thought to be areas of “superior cohesion” formed during metamorphism. In fresh core, the rock is distinctly lighter in colour, probably due to the higher quartz content, and microcline is porphyroblastic and contrasts strongly to the meta-arkoses. Aside from the feldspar and occasional garnet porphyoblasts, the ore zone minerals are equigranular and medium to fine grained. Jacobsen suggests the excessive potash-rich nature of the rock is more compatible with an acid volcanic than an arkosic sediment.

The sulphides consist mainly of galena (0.01 – 17.0% Pb averaging ±2.4%Pb), sphalerite (0.01 – 9.00% Zn, averaging ±o.6 % Zn), silver (0 – 470 gm/m ton Ag, averaging ±60 gm/ton), chalcopyrite (usually less than 0.1% Cu) and pyrite.

The average grain size of 70% of the galena was found to be 20 – 25 microns ranging from a maximum of 340 microns to less than 5 microns. Approximately 95% of the galena was associated with the non-opaque minerals as:

1. Interstitial grains and crystals
2. Fracture fillings
3. Inclusions in grains of gangue.

The remaining galena was present as inclusions in pyrite and sphalerite, usually less than 10 microns in size.

The average grain size of 70% of the sphalerite was found to be 20 – 40 microns, ranging from a maximum of 400 microns to less than 10 microns. More than 95% of the sphalerite occurred with gangue minerals in association similar to those listed for galena. Many grains of sphalerite contained fine grained exsolved chalcopyrite.

More than 90% of the chalcopyrite was present as fine grained exsolutions within sphalerite. The remaining chalcopyrite occurred with gangue minerals as fracture fillings and interstitial grains.

Silver was found both as minute particles in the galena and also as discrete grains between galena and quartz.

Lakefield Research concluded that the average grain size of the galena and sphalerite indicated that a fine grind may be required to achieve a satisfactory liberation of these minerals and that cyanidation may be required for the recovery of the silver.

Garnet Tactite (GNES)

Light orange to brown coloured garnet-rich calcareous arkose, often highly mineralised in lead and zinc, usually containing abundant epidote and with minor amounts of hornblende, quartz and calcite. The rock is typically developed on the contact of the ore zone and dolomite.

Calc-silicate (CASI)

A dark grey to black (occasionally light coloured, especially on fresh surface) weathering rock, coarse grained and usually developed in close proximity to the dolomite-market horizon. The main rock-forming minerals are hornblende,

garnet, pyroxene and carbonate, with minor biotite and quartz.

Amphibolite (DIAB)

A black rock with light grey specks, medium grained and occasionally well laminated, showing a well developed foliation, lineation (and especially well developed rodding in the F_2 hinge zones), and consisting essentially of plagioclase and hornblende with minor amounts of quartz, biotite, magnetite and sericite (retrograde after plagioclase). S. Williams (P.D. – USA) thinks the composition is compatible with material derived from basic volcanic debris.

Meta-arkose (SASN & ARKS)

Two essentially similar meta-arkoses, separated stratigraphically by dolomite and amphibolite. The ARKS meta-arkose is distinctly darker coloured (more iron staining) than the pink weathering SASN meta-arkose, which overlies the ore body and is probably the equivalent of the so-called “pink gneiss” which is very prevalent further to the east. The ARKS meta-arkose is thought to be the equivalent of the biotite gneiss immediately above the basement gneiss contact on the western side of the Rozynen Bosch schist belt. The rocks contain quartz, microcline, and mica with minor amounts of epidote, garnet and magnetite with accessory amounts of sphene, zircon, apatite and pyrite.

ECONOMIC GEOLOGY

(a) Regional

(1) Photogeological Study of an Area between Kenhardt and Kakamas

Between January and June, 1973, 7500 square kilometres comprising a rectangular area 80km wide and 90km long and encompassing the towns Kenhardt, Kakamas, Keimoes and Louisvale was photo-geologically mapped by R.F. Loxton Hunting at the request of Phelps Dodge.

To facilitate the study, Phelps Dodge commissioned Aircraft Operating Company to undertake the flying of colour air photographs at a scale of 1:20,000 and to prepare mosaics from black and white contact prints.

The purpose of the study was to prepare a photo-geological map and to relate the known geology and mineralisation on the farm Rozynenbosch to the regional geological setting. The study was undertaken by the analysis and annotation of the air photographs, compilation of the interpreted data onto the mosaics and adequate checking of the geology in the field.

The most useful exploration aspect of this survey is the delineation of the supra-

crustal rocks ("schist belts" or "Kheiss System") over the basement. The structural elements such as folding, foliation and jointing have been mapped. The lithological subdivisions of the supra-crustal rocks:-

1. Amphibolite quartzite facies:
   (a) Lower schists
   (b) Middle schists (Rozynen Bosch ore body)
   (c) Upper schists

2. Pink gneiss facies

3. Quartzite facies

Target recommendations suggest that the volcano-sedimentary marine associations of the middle schists (arkoses and marbles) of the amphibolite quartzite facies, should be mapped in detail and examined geochemically.

2. **Aeromagnetics**

Loxton-Hunting received a contract in July, 1973, to fly approximately 11000 line kilometres over an area of about 1800 square miles with Gulf fluxgate total field magnetometer. Four channel gamma ray spectrometer coverage was obtained simultaneously with the aero-magnetic data. The height of the magnetic sensor was roughly 250 feet above the ground. Favourable aero-radiometric anomalies as indicated to Phelps Dodge by Loxton-Hunting were field checked with a portable scintillometer and were interpreted as resulting from lithologic changes rather than from significant amounts of uranium. Fairdrawn aeromagnetic contour maps of the larger area, i.e. Rozynebosch were produced (scales at 1:25 000 and 1:50 000).

3. **Geochemical Stream Sediment and Soil Sampling**

Stream sediment has proved a powerful tool in this area and certainly indicates the mineralised outcrops on Rozynenbosch. It must be noted, however, that the sampling must always be extended into the barely discernable upper reaches of drainage channels, especially in hilly outcrop terrains. The Cu, Pb, Zn dilution trains are surprisingly short and easily obliterated when entering larger drainage channels. Samples taken within metres of leached capping gave values of $\pm$600ppm Pb and $\pm$250ppm Zn, where threshold values were calculated to be 40ppm for Pb and 53ppm for Zn.

Follow-up soil geochemistry on close spaced grids on Rozynenbosch has provided several substantial anomalous areas. Contoured maps for Rozynen-bosch have been produced.

The close-space follow-up soil sampling grids on the farm Rozynenbosch have

provided several interesting targets. Contoured maps for these have been completed.

4. **Rozynenbosch Central**

(1) **Detailed Geological Mapping**

Mapping in detail to a scale of 1:1000 was completed on an enlarged grid.

The grid, covering the gossanous outcrop and vicinity, now measures 1280m x 760m and has surveyed beacons at 80m intervals. Subsequent grid positions at 40m intervals were put in with an alidade and plane table. The grid has also been covered by aerial photographs at 1:3400, from which an orthophoto at a scale of 1:1000 has been prepared.

Mapping was done graphically and with tapes, each block mapped individually measured 80m x 40m. Very little plane table mapping was done on the western side where the gradient was too steep and precipitous for tape work.

Mapped areas were re-plotted from the field sheets onto the working transparency directly and a colour code used to differentiate the various rock types. All fabric measurements were plotted according to magnetic north.

In most of the area mapped, outcrops were found of the highly metamorphosed metasediments found in the schist belts of the region. The gossanous and ore horizon being a highly feldspathic meta-arkose carrying chiefly galena and zinc in the mineralised zones, a little copper and silver is also found in the ore horizon. Another non-mineralised meta-arkose was also identified – a much harder and sometimes quartzitic rock. A very significant and easily recognisable marker horizon, namely the amphibolite/dolomite band proved most useful in distinguishing and separating (visually) the two meta-arkoses. Only in the extreme west and south-west did the characteristic pink basement gneiss appear.

2. **Core Drilling Programme**

(a) **Summary of Drilling Results**

A total of 60 holes have been drilled. The total meterage amounts to 13,309m and total amounts of samples despatched for analysis is 3167.

Results received were tabulated and weighted averages worked out for intersections with the following cut-off grades.

(a) Grade of 1% Pb and Zn over minimum of 5 metres
(b) Grade of 1.5% Pb and Zn over minimum of 5 metres

(c) Grade of 2% Pb and Zn over minimum of 5 metres
(d) Grade of 2.5% Pb and Zn over minimum of 5 metres
(e) Grade of 3% Pb and Zn over minimum of 5 metres

(b) **Tonnages and Grade Calculations**

These results were plotted on the different cross-section lines. Extrapolations were drawn and the different areas planimetered. A lateral strike continuity of 60m on either side of each section line was assumed. The total cubic meterage thus obtained was multiplied by a S.G. factor of 2.85 to obtain metric tonnes. Weighted ton/percentages was then calculated for each section line and area of influence (120 metres). The total of all the different lines thus produced a grand total of specific grade under the various cut-off categories mentioned.

For Cut-off	Million Tonnes	Pb%	Zn%	Pb & Zn%	Ag gm/t
1.0% / 5m	6.99	2.566	0.54	3.09	43.09
1.5% / 5m	6.15	2.77	0.57	3.34	47.74
2.0% / 5m	4.84	3.19	0.64	3.83	51.58
2.5% / 5m	3.19	3.88	0.88	4.75	44.06
3.0% / 5m	2.58	4.28	1.07	5.35	52.93

A copper grade of 0,08% was derived from borehole intersections.

Also cross checks, i.e. combined values may differ in the second decimal place due to approximate values taken for calculations.

(c) **Structure of the Mineralised Zone**

Due to interference folding such as the younger F_3 and mainly F_4 folds, the linear F_2 folds suffer distortion, i.e. moving to the north-east from the outcrop area along the F_2 closure it is clearly noted that:

A flattening of the orebody takes place between boreholes RB 10 and RB 5. Similarly, a “low” is found in the vicinity of line 120.

The F_4 interference appears to be significant in the concentration of ore, i.e. concentration of mineralisation is encountered in the “anticlines” and the opposite is experienced in the “synclines”.

The continuation of the No. 2 closure is hampered and distorted by F_3 folding and probably shearing in the 600 line vicinity. However, no boreholes east of line 240 have been drilled to prove or disprove this line of thought. The type

intersection made in RB 11 is very similar to that made on RB 9 which penetrated the core of the said closure.

The No. 1 closure is best indicated on section line 240 (Map No. 9). Line 120 shows shearing which is related to F_4 interference.

The area in the vicinity of the No. 2 closure outcrop is less complicated and together with the outcropping and sub-outcropping zone of ore to the position of RB 3, lends itself to easy extraction by open pit mining methods.

Conclusions and Recommendations:

As said in the previous paragraph, a large percentage of the ore is easily accessible by open pit excavation. As for the rest of the orebody – depending on grade – subsurface mining methods can easily be implemented due to the presence of a firm and stable hanging and footwall.

3. **Geophysics**

The farm was covered entirely by the Kenhardt aeromagnetic survey. Induced polarization surveys comprised the major ground geophysical effort. Ground magnetic coverage was further obtained over grids at Rozynen Bosch North and Rozynen Bosch South.

Rozynen Bosch Central:

Reconnaissance 100 metre dipole-dipole induced polarisation lines were run over the central portion of Rozynenbosch early in 1973 to attempt to trace the possible extension of the orebody to the east. The results of these I.P. lines were disappointing in comparison with drilling results. As the drilling programme progressed and the mineralisation zone became better defined, a small detailed induced polarization survey utilizing 50 metre dipoles was initiated in an attempt to trace the orebody and to correlate the I.P. data with known mineralisation. Preliminary information shows that the detailed I.P. survey has been successful in delineating the plunging orebody to the northeast within the limits of the depth penetration of the dipole spacing used. A new anomaly has been detected by the detailed survey which correlates with a small fold closure near grid co-ordinates 720W, 1640 N.
Examination of the aeromagnetic coverage at Rozynenbosch Central reveals a magnetically flat area relative to the North and South portions of the farm.

6.12 Data compositing methods.

12.10(a)(xii)

All borehole sampling results were weighted according to the assay grades and the width of the sample to produce a weighted average exclusive to each intersection.
No maximum or minimum grade truncations were used across the mineralized zones.
Phelps Dodge Africa has produced two sets of grade / tonnage results based on a percentage cut off ranging from 1.0% to 3,0% in 0,5% increments as well as a monetary cut off (at 1973 exchange rates) of $4-00, $8-00 and $12-00, all over a true width of 5m.
GFSA completed a grade / tonnage exercise at the conclusion of the Joint Venture but did not use any cut off factors, producing an in situ tonnage and grade for the deposit.

12.10(a)(xiii)

6.13 Mineralisation widths & intercept lengths

The drill hole intercepts are down the hole lengths. However, the geometry of the stratigraphy and mineralized zone is evident from the plotted sections so that a true width can be obtained either graphically or by calculation.
The later down the hole surveys completed by GFSA indicate that the deviation of the boreholes is 15^0 or less, generally southwards towards the stratification and has as a negligible effect on the intersection widths.

12.10(a)(xiv)

6.14 Balanced reporting.

Comprehensive well documented reporting of all of the exploration results has been accomplished by both Phelps Dodge and by GFSA

12.10(a)(xv)

6.15 Other substantive exploration data.

Geological observations, geophysical surveys, geochemical surveys and mineralogical work is fully detailed under section 12.10(a)(xi)

A report was completed by the Bernard Price Institute of Geophysical Research in 1977 on lead-isotope analyses major ore bodies in the NW Cape which included Rozynenbosch.
Conclusions:
The age of the ore body and the host rocks is 1200 – 1000 m.y.
The lead is derived predominantly from the upper crustal rocks.
The upper crustal rocks may have formed as early as 3,7 b.y. ago
At 2,5 to 2,0 b.y. ago the upper crustal rocks suffered a loss of uranium during a high grade metamorphic event.
At 1200 ± 100 m.y. lead from these rocks was extracted and mixed with crustal or orogenic lead to form the ore deposit.
The subsequent regional metamorphism added only small amounts of

lead to the major ore bodies.

Under the aupices of GFSA, additional independent reports compiled by C. V. Pearson and P. J. Roberts are attached for perusal.

6.16 Further work

12.10(a)(xvi)

Digitize all of the available information pertaining to the ore resource and model the deposit using a package such as DATAMINE. This will enable a number of options to be produced to arrive at an optimum tonnage / grade model, produce revised plans, sections, mine plans and production scheduling.

Determine the oxidation level below surface of the base metal sulphides as oxides and sulphides require different metallurgical recovery methods. This does not appear to have been recorded.

Expand the existing exploration base on the remaining portion, north and south project areas on Rozynenbosch 104 and include the adjacent farms of Koegab 59 and Witvlei 103.

Consider employing newer technology geophysics such as seismics (Vibroseis) and the newer electro-magnetic methods (Stratagem).

A number of other mineral occurrences in the general area, particularly in the Bushmanland sub-province to which the Rozynenbosch deposit has an affinity, have reported concentrations of Barite ($BaSO_4$) in rocks closely associated with the base metal sulphide deposits. Barite has been included in the mineral analysis of rock chip sampling carried out by GFSA. It is suggested that in any future work this commodity should be targeted as well as the selling price is some R420-00 / ton. Due to the high SG (4,2) it would be easily recoverable by gravity concentration from adjacent overburden.

7. MINERAL RESOURCES

12.10(b)

12.10(b)(i)

7.1 Geological features, type of deposit & dimensions

The ore body outcrops as an irregular horseshoe shape, being the surface expression of an inverted and sloping “S” shape (viewed in the direction of plunge) plunging at 30^0 to the north east (024^0 True), located between the confines and around the “noses” of two adjacent almost parallel plunging F2 closures.
The mineralisation consists of both massive and disseminated Zn, Pb, & Cu base metals with significant quantities of silver.

Ten ore samples were sent to Lakefield Reasearch of Canada, Ltd. for mineralogical examination and eighteen specimens were were microscopically examined by the Phelps Dodge Western Office (USA).
The base metal sulphides consisted of galena (0,01% - 17,0% averaging 2,4%), sphalerite (0,015 – 9,00% averaging 0,6%), silver (0 – 470 gm/ton averaging 60 gm/ton), chalcopyrite (<0,1% averaging 0,08%) and pyrite.
The silver occurred as attachments to or enclosed by galena or as discrete grains.

The dimensions of the deposit reflected at surface is an irregular horseshoe shape 800m across the limbs, 700m from the base to the apex with limb thickness varying from 200m to 400m at surface with a borehole determined depth to the base of the inverted “nose” of 190m.

7.2 Estimate of the volumes, tonnage and grade.

12.10(b)(ii)

(1) Phelps Dodge A

The estimate completed by Phelps Dodge is based on 60 diamond drill boreholes totaling 13,309m of core and using percentage cut-offs as outlined below over a width of 5m:

(Combined Pb & Zn%) Cut-off %	Million Tonnes	Pb %	Zn %	Pb + Zn %	Gms/t Ag
1	6.99	2.56	0.54	3.09	43.09
1.5	6.15	2.77	0.57	3.34	47.74
2	4.84	3.19	0.64	3.83	51.58
2.5	3.19	3.88	0.88	4.75	44.06
3	2.58	4.28	1.07	5.35	52.93

A copper grade of 0,08% was averaged from borehole data.

Percentages are weighted averages over a width of 5m.

(2) Phelps Dodge B

A second exercise was carried out by Phelps Dodge using a monetary cut off based on R4-00, R8-00 & R12-00 (the R/$ exchange rate was ±parity) (the monetary value is that prevailing during 1973)

Cut-Off	Tons	SG	Cu %	Pb%	Zn %	Ag gm/t
R4.00	9 023 400	2,85	0.08	2.40	0.59	46.47
R8.00	5 968 800	2,85	0.09	3.25	0.86	60.62
R12.00	4 129 200	2,85	0.09	3.97	0.99	71.92

(2) GFSA / Phelps Dodge Joint Venture

The existing Phelps Dodge data was examined, some areas re-mapped, some boreholes deepened, re-logged, an additional eight holes drilled totaling 2083m of drill core. Additional geophysical and geochemical surveys were carried out by GFSA personnel.
The ore body was re-assessed and re-evaluated. A grade and tonnage figure was produced without the use of cut off grades; i.e a total in situ estimate over a width of 3m:

14,0 million tons grading at:

Pb. 1,72%, Zn. 0,46%, Cu. 0,03%, Ag. 34,1 gm/ton

7.3 Evaluation methods

12.10(b)(iii)

(1) Phelps Dodge A

The initial evaluation was compiled using weighted grade / width calculations which were then plotted on different cross sections lines. Extrapolations were drawn and the areas planimetered. A lateral strike continuity of 60m was assumed on either side of each section. The total volume was multiplied by an SG (relative density) of 2,85 (average laboratory determined SG for the ore rock type) to obtain tons. Weighted ton/percentages were then calculated for each section line and area of influence. The total of all the lines produced a grand total for a specific grade under the various cut off categories.(see appendix for the calculation sheets)

(2) Phelps Dodge B

Borehole grading to derive intersections containing metal values equal to or in excess of the specified R4-00, R8-00 and R12-00 cut offs was performed on the University of the Witwatersrand main frame computer using program PDG002. Borehole intersections grading above the respective cut offs were plotted on three sets of 1:1000 sections for each of the nine borehole sections used. Grades of the borehole intersections were calculated using a program designed to yield weighted average values for Cu, Pb, Zn, Ag, magnetite, SG and US$ values over each intersection.

Intersections were projected between adjacent boreholes on section using geological trends derived from the previous evaluation of the Rozynenbosch ore body. In most cases such projections were continued halfway between adjacent boreholes; in some instances however, projections used in the initial evaluation were selected in preference since these were clearly based upon geological information.

As a check on the grade calculations of the various sectional ore-blocks, these grades were re-calculated on the Wits computer using grading program PD0081, an accuracy to within 0.02% metal values and US $0.02 being generally attained. Where major discrepancies occurred, the grade of the borehole intersection was re-calculated.

Duplicate planimeter readings over each section grade block defined above were used to derive tonnages of the individual 60m search radius derived blocks; these tonnages were in turn used in conjunction with a desk top computer program for weighting grades to prepare a sectional mineral inventory of the Rozynenbosch ore body at each of the specified cut-offs.

A problem encountered in the computation of cumulative tonnages after the drilling of 10, 20, 30, 40, 50 and 60 boreholes respectively originates from the fact that only 47 of the Rozynenbosch boreholes were drilled on the sections used during the present exercise, and that no tonnage figures are available for the other 13 boreholes: some of these are not listed on computer files XRB000-050. As an alternative approach to this problem, a graphic solution was applied using a cumulative tonnage curve drawn for the 47 “on section” boreholes using tonnages computed at the R4,00 cut-off.

(3) GFSA

The grade / tonnage estimate produced by GFSA was derived using a computerized inverse distance program with a distance limit of 60m around the same section lines as used by Phelps Dodge. Ore block plans and sections were produced.

7.4 Anticipated mining tonnages and grades.

12.10(b)(iv)

A sheet has been included in the appendices in which mining and estimated overburden tonnages have been produced, but no mention of the method used is available.
As no mining plan is available, this is considered to be out of scope of this report.

7.5 Planned processing tonnages and grades. 12.10(b)(v)

As no mining plan is available, this is considered to be out of scope of this report.

7.6 Estimation and reporting of mineral resources. 12.10(b)(vi)

(1) Database integrity.

No specific mention has been made in any of the reports pertaining to the above. However, the reputations of the companies involved and the supervisory personnel should be taken into account.

(2) Geological interpretation.

Geological model.

A thermal plume model has been proposed for the Namaqualand Metamorphic Complex:
A thermal plume accompanied by the intrusion of a large ultramafic / mafic complex in the vicinity of the Strondkop gravity high has been suggested to account for the uplift and arcuate trending folds , followed by increased thermal gradients, metamorphism and granite intrusion.
A similar later plume at the centre of the arcuate trend of the Namaqualand Metamorphic Complex is proposed to account for the structure, metamorphism, uplift, intrusives and high gravity field.
The host rocks appear to represent meta-sedimentary zones within the acid to intermediate meta-volcanic rock units which suggest that these base metal sulphide bodies and the associated silver mineralisation are synsedimentary-volcanogenic in origin.
The age of the ore body and the host rocks has been determined at 1200 m.y. ± 100 m.y. with the argentiferous lead derived predominantly from the upper crustal rocks which were formed at an estimated 3,7 b.y. ago.

The exploration carried out consisted of geophysical, geochemical and photographic surveys to provide target areas which were mapped in great detail using survey controlled grids. Once the mineralized outcrop had been determined and the structure determined, the area was diamond drilled on a close spaced grid producing 11392m of drill core.
A total of sixty holes (P.D. & GFSA) were drilled to prove the extent of the mineralized zone which results in an average drill hole spacing of 120m x 160m.
The outcrop area has been very well defined by detailed rock type mapping and by rock chip sampling.
The sub-surface continuity has been outlined both by geological interpretation and confirmed by close spaced core drilling. The mineral

content has been estimated with a high degree of confidence by the number of intersections obtained to assure continuity of mineralisation and to provide an adequate database for the tonnage and grade estimation procedures used.

(3) Estimation and modeling techniques.

The estimation techniques applied were as follows:

Phelps Dodge produced two estimates of tons and grade based on: percentage cut offs varying from 1% to 3% combined Pb / Zn grade at 0,5% increments and a monetary cut off of R4-00, R8-00 & R12-00 [see tables under 12.10(b)(ii)]
Both of the above were produced using a main frame computer at the University of the Witwatersrand using grading program PD0081 under files referenced XRB000-050.
No isolated extremely high or low grades have been mentioned so it is assumed that the presence of outliers were either not present or not of sufficient importance to warrant removal.
The maximum interpolation distance used was limited to 60m.

The GFSA in situ estimate did not use any cut-offs and produced an estimate of the total resource using the inverse distance method, again with the maximum distance between sample points limited to 60m. There is no mention of where this was done, but it is assumed it was an in house exercise. No modifying parameters were noted. Validation and checking processes are unknown but are assumed on the basis of company and supervisory personnel reputations.
The comparison of handling data is between the results of the two different companies outlined above.
No by-products, other than the possibility of barite, have been identified.
The geological interpretation and in particular the identification of the structure of the ore body was the controlling parameter in producing the resource estimate.

(4) Cut-off grades

The percentage cut–off grades used by Phelps Dodge were arbitrarily chosen to produce a tonnage grade comparison. The monetary cut-off grades were produced to indicate the potential revenue vs projected mining costs prevailing at that time.

(5) No mining factor assumptions have been made.

(6) No metallurgical factors or recoveries have been made

(7) Densities for each rock type were determined on borehole core samples.

(8) Taking into account the amount and variety of exploration methods that were used, the close spacing of the diamond drill holes and the quality of the geological interpretation, the quality and quantity and distribution of the data, this resource can be confidently classified as an Indicated Mineral Resource, using the definitions as outlined under Resource Estimation.

(9) The only total review carried out was that by GFSA on the Phelps Dodge data.
However, check calculations were carried out on the plotted borehole grades and widths. The intersection widths were averaged arithmetically and corrected where possible to true widths. The grades were weighted to produce an average for each borehole intersection. The intersections were then averaged using a geometric mean. These results were within 12% (higher) than the in situ value of tons and grade provided by the GFSA results. It is therefore considered that both sets of results are acceptable. However, it would appear that the copper content has been undervalued and the 3m width used by GFSA is overly conservative.

12.10(c)

7.7 Environmental management.

The environmental management program has been accepted by the DME under prospecting right No. NCS 30/5/1/3/21(533) EM.
A rehabilitation guarantee of R70,000-00 is in place.
As this is a prospecting EMP, any future costs will be outlined under a mining right application and as such is not applicable to this report.

12.10(d)

7.8 Plans and diagrams.

No existing workings exist on the farm Rozynenbosch 104.

12.10(e)

7.9 List of surface and mineral rights.

(i) Old order mineral rights held by Miranda Minerals (copy attached)
Prospecting right under application No. NCS30/5/1/3/21(533) PR

(ii) Surface rights held by:
Ptn 1. Verneukpan Trust; T39608/2003
2. Giel van Niekerk Familie Trust; T5086/1998
4. Rozynebos Trust; T109646/1997
5. Rozynebos Trust, T110477/1997

Ptn 0 (Rem ext) & Ptn 3 no longer exist.

7.10 Assaying. 12.10(f)

(i) Laboratories used: McLachlan & Lazar; Analytical Services, Aggeneys Laboratory; Lakefield Research, Canada; Phelps Dodge Western Office, USA.
Accreditation is unknown, but is unlikely to have been in place at the time the analyses were done.

(ii) The nature, quality and appropriateness of assaying is assumed as the laboratories concerned were competent with good reputations of many years standing. Standard procedures consisted of checks, duplicates and quality control.

7.11 Legal proceedings. 12.10(g)

There are no known legal proceedings.

7.12 Exploration funding. 12.10(h)

(ii) The exploration expenditure incurred to date has been estimated at R15 million converted to present day costs.

7.13 History. 12.10(i)

All exploration has been completed. No further exploration is envisaged.

7.14 Historical statistics. 12.10(j)

No historical statistics prior to those presented exist.

7. SAMREC code of practice

Definitions

Mineral: Any substance whether in solid, liquid or gaseous form, occurring naturally in or on the earth, in or under water or in tailings or dumps, and having been formed by or subjected to a geological process, excluding water but including sand, stone, rock, gravel and clay, as well as soil other than topsoil.

Competent Person: A ‘competent person’ is defined as a person who is a member of the South African Council for Natural Scientific Professions

(SACNASP) or any other statutory South African or international body that is recognised by SAMREC. A competent person should have a minimum of five years experience relevant to the type of deposit under consideration and to the activity which that person is undertaking.

Mineral Resource: A 'Mineral Resource' is an occurrence of material of economic interest in such form, quality and quantity that there is reasonable and realistic prospect for economic extraction. The location, quantity, quality, continuity and other geological characteristics of a Mineral Resource are known, estimated from specific geological evidence and knowledge, or interpreted from a well constrained and portrayed geological model. Mineral Resources are subdivided, in order of increasing confidence in respect of geo-scientific evidence, into Inferred, Indicated and Measured categories.

- An 'Inferred Mineral Resource' is that part of a Resource for which tonnage, grade and average value can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited or of uncertain quality or reliability.

- An 'Indicated Mineral Resource' is that part of a Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content be can estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill-holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

In spite of the time lapse since completion of the project, a large amount of high quality exploration information has been archived and is available in the form of mapping, geophysics, diamond drill logging and assay results, the interpretation and presentation of which is sufficient to allocate the Indicated Ore Resource category, as defined above, to the Rozynenbosch central ore body.

9 RESOURCE ESTIMATE

A total of 14,0 million tons of ore has been identified by the GFSA / Phelps Dodge joint venture over a width of 3m grading at:

Pb: 1,72%, Zn: 0,46%, Cu: 0,03%, Ag 34,1 g/ton

A valuation exercise was carried out by Phelps Dodge using a combined Pb & Zn cut-off grade of 1% over a width of 5m.

The result was 6.99 million tons of ore grading at:

Pb: 2,56%, Zn: 0,54%, (Pb & Zn): 3,09%, Cu: 0,08%, Ag: 43,09 g/ton

10. VALUATION

The following commodity prices were sourced from the London Metal Exchange on 04/08/2006:

Pb $1130-00 / ton, Zn $3383-00 / ton, Cu $7820-00 / ton, Ag $12-43 / oz.

6.99million tons grading at 2,56% Pb, Zn 0,54% Cu: 0,08%, 43,09 g/t Ag:

Rand / US$ exchange rate: R6-70 = $1-00

Pb: 176,640 t	= $199,603,200-00	R1,337,341,440-00
Zn: 37,260 t	= $126,050,580-00	R 844,538,886-00
Cu: 5,592 t	= $ 43,729,440-00	R 292,987,248-00
Ag: 9,739,871 oz	= $121,066,601-00	R 811,146,226-00

Total estimated value @ 1% cut off: $490,449,821-00/R3,286,013,801-00

The GFSA / Phelps Dodge J.V. data produced the following:

14 million tons grading at: Pb -1,72%, Zn - 0,46%, Cu - 0,03% (estimated)
Ag - 34,1 g/t

Current in situ value:

Pb:240800 t	= $272,104,000-00	R1,823,096,800-00
Zn: 64,400 t	= $217,865,200-00	R1,459,696,840-00
Cu: 4200 t	= $ 32,844,000-00	R 220,054,800-00
Ag: 15,350,482 oz	= $190,806,495-00	R1,278,403,517-00

Total estimated in situ value : $522,815,108-00 R3,502,861,224-00

MIRANDA MINERAL HOLDINGS LIMITED

JSE RULES COMPLIANCE CHECK LIST

JSE RULE	CPR REFERENCE	COMMENTS
12.9 (a)	Introduction	Complied
(b)	N/A	N/A
(c)	N/A	N/A
(d)	Introduction	Compliant
(e)	Introduction	Compliant
(f)	Introduction	Compliant
12.10 (a)	Page 10 paragraph 6	Compliant
(i)	Page 10 paragraph 6.1	Compliant
(ii)	Page 11 paragraph 6.2	Compliant
(iii)	Page 11 paragraph 6.3	Compliant
(iv)	Page 11 paragraph 6.4	Compliant
(v)	Page 12 paragraph 6.5	Compliant
(vi)	Page 13 paragraph 6.6	Compliant
(vii)	Page 13 paragraph 6.7	Compliant
(viii)	Page 13 paragraph 6.8	Compliant
(ix)	Page 14 paragraph 6.9	Compliant
(x)	Page 14 paragraph 6.10	Compliant
(xi)	Page 14- 25 paragraph 6.11	Compliant
(xii)	Page 25 paragraph 6.12	Compliant
(xiii)	Page 26 paragraph 6.13	Compliant
(xiv)	Page 26 paragraph 6.14	Compliant
(xv)	Page 26 paragraph 6.15	Compliant
(xvi)	Page 27 paragraph 6.16	Compliant

MIRANDA MINERAL HOLDINGS LIMITED

JSE RULES COMPLIANCE CHECK LIST

JSE RULE	CPR REFERENCE	COMMENTS
12.10 b		
(i)	Page 27 paragraph 7.1	Compliant
(ii)	Page 28 paragraph 7.2	Compliant
(iii)	Page 29 paragraph 7.3	Compliant
(iv)	Page 30 paragraph 7.4	Out of scope
(v)	Page 30 paragraph 7.5	Out of scope
(vi)	Page 31 paragraph 7.6	Compliant
12.10 c	Page 31 paragraph 7.7	
12.10 d	Page 33 paragraph 7.8	
12.10 e	Page 33 paragraph 7.9	
12.10 f	Page 34 paragraph 7.10	
12.10 g	Page 34 paragraph 7.11	
12.10 h	Page 34 paragraph 7.12	
12.10 i	Page 34 paragraph 7.13	
12.10 j	Page 34 paragraph 7.14	

R. J. Mossom BSc., Pr.Sci.Nat.,(400058/91), MGSSA

12. REFERENCES

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- The Geology of an Area Around Keimoes, Cape Province (Memoir 53) J.W. von Backstrom
- A Photographic Study of an Area Between Kenhardt and Kakamas Loxton Hunting, July 1973

- Rozynen Bosch, Kenhardt Area Monthly Reports May to November 1973
- Various property investigations, reports and occasional reports and memos P. Joubert, J.B.E. Jacobsen
- Mineralogical Investigation – Rozynen Bosch Ore: Lakefield Research of Canada

Comprehensive list of plans & sections in the possession of Miranda Minerals.

ROZYNENBOSCH 104			
OUTCROP OF ORE HOST ROCK MAPS		1:250 000	X 3
RED HILL MINES	LOCALITY MAP	1:250 000	
RED HILL MINES PROPOSED WORK PROG		1:250 000	
FLIGHT INDEX OF ORANGE RIVER AREA		1:250 000	1B/14/1/14
OUTLINE OF FARMS		1:250 000	1B/14/1/15
LOCATION MAP OF SAMPLE POSITIONS		1:10 000	1B/14/1/16
LOCATION MAP OF SAMPLE POSITIONS		1:5 000	1B/14/1/17
LOCATION MAP OF SAMPLE POSITIONS		1:5 000	1B/14/1/18
LOCATION MAP OF SAMPLE POSITIONS		1:5 000	1B/14/1/19
ORE-HOST-TYPE ROCK		1:15 000	1B/14/1/21
GEO-SECTION		1:250 000	1B/14/1/1
PROPOSED WORK PROGRAMME 1985 ONWARDS		1:50 000	1B/14/1/2
PLAN NO 22 RECOMMENDATIONS		1:50 000	1B/14/1/3
PTN OF FARM ROZYNEN BOSCH		1:1 000	1B/14/1/4
SHEET 1/2/3/4/5/6/7/8/9/10			
GEO-SECTION	660	1:4 000	1B/14/2/6
	580	1:4 000	1B/14/2/8
	500	1:4 000	1B/14/2/10
	720	1:2 000	1B/14/2/12
	600	1:2 000	1B/14/2/13
	480	1:2 000	1B/14/2/14
	360	1:2 000	1B/14/2/15
	240	1:2 000	1B/14/2/16

	120	1:2 000	1B/14/2/17
	ZERO X 2	1:2 000	1B/14/2/18
	-120	1:2 000	1B/14/2/19
	720 X 5	1:2 000	1B/14/2/20
	600 X 4	1:2 000	1B/14/2/21
	240 X 4	1:2 000	1B/14/2/22
	360 X 4	1:2 000	1B/14/2/23
	480 X 4	1:2 000	1B/14/2/24
	ZERO X 4	1:2 000	1B/14/2/25
	120 X 3	1:2 000	1B/14/2/26
	-120 X 5	1:2 000	1B/14/2/27
	L#1 X 5	1:2 000	1B/14/2/28
	720	1:4 000	1B/14/2/36
	480	1:4 000	1B/14/2/38
	360	1:4 000	1B/14/2/39
	240	1:4 000	1B/14/2/40
	ZERO	1:4 000	1B/14/2/40
GEO-SECTION	120	1:4 000	1B/14/2/41
	-120	1.4 000	1B/14/2/43
	ZERO	1:2 000	1B/14/2/52
	120	1:2 000	1B/14/2/120
GEOLOGICAL MAP	2 X Pb-Zn-Ag-Au	1:10 000	1B/14/2/46
	5 X	1:10 000	1B/14/2/48
	2 X	1:5 000	1B/14/2/49
	3 X	1:5 000	1B/14/2/50
	3 X	1:5 000	1B/14/2/51
	1 X	1:5 000	1B/14/2/52
		1:5 000	1B/14/2/53
	MASTER X 2	1:4 000	1B/14/2/1
ORE BLOCK SECTION	X 1	1:500	1B/14/2/34
	X 3	1:500	1B/14/2/35
	+600	1.1 000	1B/14/2/56
	+480	1.1 000	1B/14/2/57
	+360	1.1 000	1B/14/2/58
	+240	1.1 000	1B/14/2/59
	+120	1.1 000	1B/14/2/60
	ZERO	1:1 000	1B/14/2/61
	-120	1.1 000	1B/14/2/62
	-240	1.1 000	1B/14/2/63
ORE BLOCK OUTLINE	720 X 2	1:2 000	1B/14/2/12

	600 X 2	1.2 000	1B/14/2/13
	480 X 2	1:2 000	1B/14/2/14
	360 X 2	1:2 000	1B/14/2/15
	240 X 2	1:2 000	1B/14/2/16
	120 X 2	1:2 000	1B/14/2/17
	ZERO	1:2 000	1B/14/2/18
	-120 X 2	1:2 000	1B/14/2/19
	-240	1:2 000	1B/14/5/12
BASEMENT SILLIMANITE GNEISS		1:4 000	1B/14/1/23
GFSA GEO RE MAPPING	4 x SHEET 2 OF 8	1.1 000	1B/14/2/64
GFSA GEO RE MAPPING	4 x SHEET 3 OF 8	1.1000	1B/14/2/65
GFSA GEO RE MAPPING	5 x SHEET 4 OF 8	1.1 000	1B/14/2/66
LITHOCHEMISTRY	SHEET 4b OF 8	1:1 000	1B/14/2/66
GFSA GEO RE MAPPING	5 x SHEET 5 OF 8	1.1 000	1B/14/2/67
LITHOCHEMISTRY	SHEET 5b OF 8	1:1 000	1B/14/2/67
LITHOCHEMISTRY	SHEET 5c OF 8	1:1 000	1B/14/2/67
GFSA GEO RE MAPPING	4 x SHEET 6 OF 8	1.1 000	1B/14/2/68
GFSA GEO RE MAPPING	6 x SHEET 7 OF 8	1.1 000	1B/14/2/69
LITHOCHEMISTRY	SHEET 7b OF 8	1:1 000	1B/14/2/69
LITHOCHEMISTRY	SHEET 7c OF 8	1:1 000	1B/14/2/69
GFSA GEO RE MAPPING	3 X SHEET 8 OF 8	1:1000	1B/14/2/70
	LEGEND		1B/14/2/71
LITHOCHEMISTRY	1 X SHEET 8C OF 8	1:1 000	1B/14/2/70
	1 X SHEET 8B OF 8	1:1 000	1B/14/2/70
GFSA GEO RE MAPPING	3 X SHEET 7 OF 8	1:1 000	1B/14/2/69
SYMBOLIC LEGEND FOR LITHOLOGIES			1B/14/3-4/6
PROPOSED EM SURVEY LOOP LOCATION		X 2 COPIES	1B/14/4/1
MAIN EXPLORATION TARGET		1:10 000	1B/14/4/2
GEO PHYSICAL	FIGURE 3	1:250 000	1B/14/4/4
GEO-CHEM STREAM SEDIMENT ANOMALIES		1:50000	1B/14/3-1/1

LITHO-CHEMISTRY	PLAN 18	1:50000	1B/14/3-1/1
		1:5 000	1B/14/3-4/3
LITHO-CHEMISTRY		1:5 000	1B/14/3-4/4
		1:5 000	1B/14/3-4/5
SECTIONS	L#1	1:2 000	1B/14/2/29
	LS – 2X 2	1:2 000	1B/14/2/30
		1:2 000	1B/14/2/31
SOIL GEOCHEM RBC	Pb	1:4 000	1B/14/3-3/1
	Zn	1:4 000	1B/14/3-3/2
LITHO-GEOCHEM RBC	Pb	1:4 000	1B/14/3-4/1
	Zn	1:4 000	1B/14/3-4/2
LOCATION OF GEO PHYSICS TEM GRIDS		1:10000	1B/14/4/3
PLAN OF PROPOSED BOREHOLES		1:4 000	1B/14/5/1
LOCATION OF BOREHOLES & CROSS SECT		1:5 000	1B/14/5/35
LOCATION OF BOREHOLES		1:2 000	1B/14/5/36
LEVEL PLAN	660	1:4 000	1B/14/2/5
	660 + BLOCKS	1:4 000	1B/14/2/6
	580	1:4 000	1B/14/2/7
	580 + BLOCKS	1:4 000	1B/14/2/8
	500	1:4 000	1B/14/2/9
	500 + BLOCKS	1:4 000	1B/14/2/10
	MASTER	1:4 000	
STRUCTURE	(GFM & D)	1:4 000	1B/14/2/3
STRUCTURE	(PHELPS DODGE)	1:4000	1B/14/2/2
BASEMENT CONTOUR LINE MAP			
LAND SAT INTERPRET.		1:250 000	1B/14/2/33
GEO-SECTION	720	1:4 000	1B/14/5/2
	600	1:4 000	1B/14/5/3
	480 + BLOCKS	1:4 000	1B/14/5/4
	360 + BLOCKS	1:4 000	1B/14/5/5

	240 + BLOCKS	1:4 000	1B/14/5/6
	+ 120	1:4 000	1B/14/5/7
	'ZERO' + BLOCKS	1:4 000	1B/14/5/8
	- 120 + BLOCKS	1:4 000	1B/14/5/9
	LS#1 + BLOCKS	1;4 000	1B/14/5/10
	L#2	1:4 000	1B/14/5/11
	240	1:2 000	1B/14/5/12
	RB64 – RB61	1:1 000	1B/14/5/13
	RB64 – RB61	1:1 000	1B/14/5/13A
	RB64 – RB61	1:1 000	1B/14/5/13B
	RB64 – RB61	1:1 000	1B/14/5/13C
	RB64 – RB61	1:1 000	1B/14/5/13D
	RB43-RB44	1:1 000	1B/14/5/14
	720	1:1 000	1B/15/5/14
	+600 X 2	1:1 000	1B/14/5/15
	480	1:1 000	1B/14/5/16
	360	1:1 000	1B/14/5/17
	360	1:1 000	1B/14/5/17
	240 X 2	1:1 000	1B/14/5/18
	120 X 2	1:1 000	1B/14/5/19
	ZERO X 3	1:1 000	1B/14/5/20
	-480	1:1 000	1B/14/5/20
	-120	1:1 000	1B/14/5/21
	-240	1:1 000	1B/14/5/22
	-480	1:1 000	1B/14/5/23
	720	1:2 000	1B/14/5/24
GEO-SECTION	600	1:2 000	1B/14/5/25
	480	1:2 000	1B/14/5/26
	360	1:2 000	1B/14/5/27
	+240	1:2 000	1B/14/5/28
	+120	1:2 000	1B/14/5/29
	ZERO	1:2 000	1B/14/5/30
	-120	1:2 000	1B/14/5/31
	-240	1:2 000	1B/14/5/32
	-480	1:2 000	1B/14/5/33
		1:2 000	
		1:2 000	
		1:2 000	
AS PER ATTACHMENT ON DOCUMENT			
LITHO CHEMISTRY	SHEET 4C OF 8	1:1 000	1B/14/2/66
STRUCTURAL OVERLAY OF RB		1:5000	1B/14/2/54
TABLE 3			1B/14/2/43
ORE BLOCK OUTLINE	PLAN 21	1:4 000	1B/14/2/21
GEOLOGICAL SECTION	LS#1	1:4 000	1B/14/2/44

	600	1:4 000	1B/14/2/37
	240	1:2 000	1B/14/2/22
	360	1:2 000	1B/14/2/23
	LS-2	1:2 000	1B/14/2/30
	600	1:2 000	1B/14/2/21
	480	1:2 000	1B/14/2/24
BOREHOLE LOCATION	Section Lines		IB/14/5/35
GEOLOGICAL PLAN	BOREHOLE LOCATION	1:2 000	
GEO CHEM STREAM SEDIMENT ANOMALIES		1:50 000	1B/14/3-1/1
REGIONAL GEOLOGICAL MAP		1:5 000	1B/14/2/49
PYPKLIP		1:50 000	2920BB
IDEALISED GEOLOGICAL SECTION 480		1:4 000	
LOCALITY MAP		1:1 000 000	1B/14/1/20
ORE BLOCK SECTION	+720	1:1 000	1B/14/2/55
POTENTIAL & EXISTING EXPLORATION TARGETS		1:30 000	1B/14/2/47