AFRICO RESOURCES LTD.

#1108 - 1030 West Georgia Street
Vancouver, British Columbia V6E 2Y3
Telephone: (604) 646-3225 • Facsimile: (604) 646-3226

[redacted]

October 1, 2008

08005349

Securities and Exchange Commission
Division of Corporation Finance
Office of International Corporate Finance
100 F Street N.E.
Washington, D.C. 20549 USA

Ladies and Gentlemen:

Re: **Rule 12g3-2(b) Supplemental Materials**
Africo Resources Ltd.
Furnished Pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934, as amended
(SEC File No. – 82-35147)

On behalf of Africo Resources Ltd. (the "***Company***"), we hereby furnish to the Securities and Exchange Commission (the "***SEC***") the following documents pursuant to the requirements of Rule 12g3-2(b)(1)(iii) of the Securities Exchange Act of 1934, as amended (the "***Exchange Act***"). Pursuant to Rule 12g3-2(b)(5), the furnishing of this information to the SEC does not constitute an admission by the Company that it is subject to the Exchange Act.

Pursuant to Rule 12g3-2(b)(1)(iii), the Company submits the information attached hereto as Schedule A, which consists of the following documents:

1. Letter to regulators dated September 17, 2008;
2. July 2008 Revised Technical Report on the Kalukundi Project;
3. Consent of Qualified Person (Julian Verbeek) dated September 18, 2008;
4. Consent of Qualified Person (John Hearne) dated September 18, 2008;
5. Consent of Author (Julian Verbeek) dated September 19, 2008; and
6. Consent of Author (John Hearne) dated September 18, 2008.

If you have any questions regarding the enclosures, please do not hesitate to contact Michael O'Brien at (604) 646-3225.

Sincerely,

Africo Resources Ltd.

"Michael O'Brien"

Michael O'Brien
Chief Financial Officer

10/14

SCHEDULE A

1. Letter to regulators dated September 17, 2008;
2. July 2008 Revised Technical Report on the Kalukundi Project;
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6. Consent of Author (John Hearne) dated September 18, 2008.

Getz Prince Wells LLP

Suite 1810, 1111 West Georgia Street
Vancouver, British Columbia, Canada V6E 4M3
Tel: (604) 685-6367 Fax: (604) 685-9798

September 17, 2008

VIA SEDAR

British Columbia Securities Commission
P.O. Box 10142, Pacific Centre
701 West Georgia Street
Vancouver, British Columbia V7Y 1L2

Alberta Securities Commission
4th Floor, Alberta Stock Exchange Tower
300-5th Avenue S.W.
Calgary, Alberta T2P 3O4

Ontario Securities Commission
20 Queen Street West, Suite 1903
Toronto, Ontario M5H 3S8

Autorité des marchés financiers
800, Square Victoria, 22e étage
C.P. 246, tour de la Bourse
Montréal, Québec H4Z 1G3

Dear Sirs/Mesdames:

Re: Africo Resources Ltd. (the "Issuer") – Technical Report (Revised)

The Technical Report on the Issuer's Kalukundi Project, as previously filed, has been revised by the authors, as attached, in response to comments received from regulators.

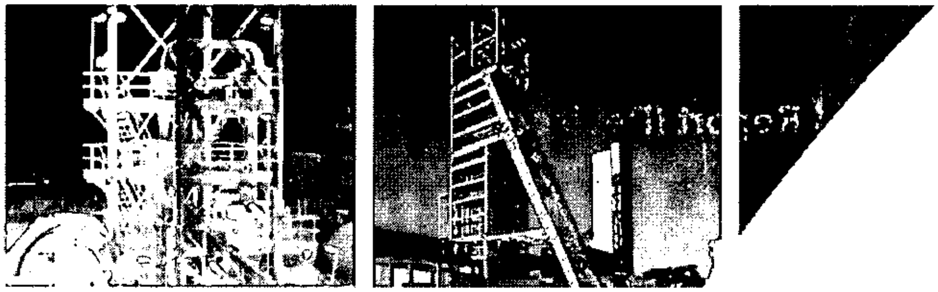
Yours truly,

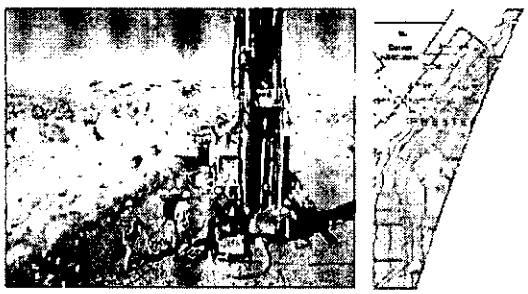
"Zahra H. Ramji"

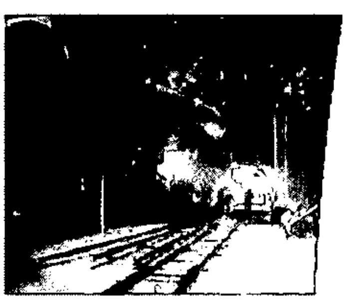
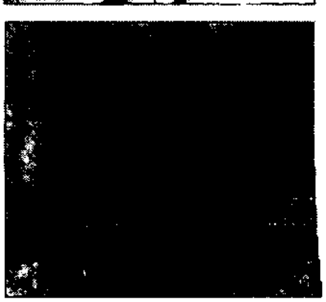
Zahra H. Ramji

Email: zahra@getzpw.com
Direct Line: (604) 605-4295

Enclosure



RSG GLOBAL

Integrated Mining Solutions

KALUKUNDI PROJECT

Technical Report (Revised)

Prepared by RSG Global on behalf of

Africo Resources Limited

GEOLOGY • EXPLORATION • RESOURCES • MINING ENGINEERING • METALLURGY

KALUKUNDI PROJECT

Democratic Republic of the Congo

Technical Report (Revised)

Prepared by RSG Global on behalf of:

Africo Resources Limited

Author(s):	John Hearne	Principal Consultant - Mining Engineering	BEng, MBA, MAusIMM
	Julian Verbeek	Principal Consultant - Resources	BSc.(Hon), PhD. (Geol.), MAusIMM

Additional Qualified Persons, not affiliated with RSG Global:

MDM Engineering Ltd	David Dodd	BSc Hons (Chem), FSAIMM
Africo Resources Ltd	Michael Evans	BSc (Geo/Chem), MSc (Geo), MGSSA, MSEG
Golder Associates Africa (Pty) Ltd	Guillaume Louw de Swardt	BSc (Eng), MSc(Eng), MECSA
Knight Piésold (Pty) Limited	Douglas Dorren	BSc (Eng), MSc(Eng), MAICE
African Mining Consultants Limited	Martin Broome	BSc Hons (Geo), MSc(Eng), FUKIMMM

Date: July 2008

Job Number: JSWA01

Copies:	Africo Resources Limited	(2)
	RSG Global – Perth	(1)

Primary Author
John Hearne

Supervising Principal
Linton Kirk

The Reader is advised to read the Disclaimer (Section 3 of this document)

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1 SUMMARY

1.1 Introduction

RSG Global Pty Ltd (RSG Global) has been commissioned by Africo Resources Limited (Africo) to compile a technical report on the Kalukundi copper cobalt Project located in the copper belt of the Democratic Republic of the Congo (DRC). This report is to comply with disclosure and reporting requirements set forth in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects, and in compliance with Form 43-101F1 (the "Technical Report").

This report pertains to the four main deposits that comprise the Project, namely the Principal, Anticline, Kalukundi and Kii Fragments.

1.2 Location

The Project is located within the Kolwezi District of Katanga Province in the south-east of the DRC. The Project area is located 60km to the east of Kolwezi and just 4km to the north of the main road between Likasi and Kolwezi. The village of Kisankala is situated close to the Principal and North Fragments of the Kalukundi deposit.

The Project is secured under an Exploitation or Mining License, PE591, which was issued on 11 October 2001 for a term of 20 years. The tenement is 19.5km^2 in extent, consisting of 23 carres or blocks.

1.3 Ownership

The exploitation permit for the Project is held by Swanmines and the ownership of Swanmines is shared between H & J Family trust (75%) and Gécamines (25%). Africo currently holds a 48% interest in H & J Family Trust and has the option to increase this holding to 100%. Rubicon Minerals Corporation (Rubicon), a publicly listed Canadian company (TSX and AMEX) holds a 39.6% interest in Africo.

Africo is a private Canadian registered company and has secured funding through Rubicon and independent shareholders to provide funding for the exploration programme and FS on the Project. Thus far, over $9M has been committed to the Project.

1.4 Project Geology

Base metal mineralisation in the world class Zambian and DRC copper belt provinces is hosted by sedimentary rocks of the Neo-Proterozoic Katangan Sequence, developed within the Lufilian Arc. This copper belt extends over 600km from Luanshya (Zambia) in the southeast and to Kolwezi in the Democratic Republic of the Congo (DRC) in the northwest. Even with sustained production over almost 100 years, there are still huge resources of Cu and Co in this extensive mineral province.

The Katangan Supergroup rocks are up to 7,000m thick and are underlain by basement granite, intermediate metavolcanic and metasedimentary rocks dated at between 1,800Ma to 2,000Ma.

The Katangan Supergroup is subdivided into Roan, Lower and Upper Kundelungu Groups. Mineralisation at Kalukundi occurs within the Mines Sequence (or *Series des Mines*) which is correlated with the Lower Roan rocks within the SE part of the Lufilian arc in Zambia. The sediments represent a facies continuum of proximal to intermediate and distal dolomitic mudstones, siltstones, sandstones and algal reef fragments.

The Katangan Supergroup sediments in Zambia are deformed by a series of open folds, whereas in the DRC the Katangan Supergroup is preserved both as tightly folded, but relatively intact sequences and as complexly deformed, locally continuous but structurally dismembered 'rafts' of lower Roan strata (*Series Des Mines*) within a 'mega breccia' or melange that contains abundant evaporite minerals. The mega breccia is probably the result of decoullement at the northern margin of the basin and northward thrusting of the Katangan Supergroup over basement lithologies (granites and gneisses) and other, higher, Katangan Supergroup stratigraphy. The mega breccia is probably of tectonic origin, focussed on incompetent chemical sediments.

Metamorphic grade increases southwards but within the Kalukundi area very low-grade chlorite facies metamorphism is evident.

Of the twelve fragments identified in the Kalukundi concession area, only four are the subject of this report. These are the Principal, Anticline, Kalukundi and Kii Fragments.

The Mines series rocks in particular have undergone deep weathering and hypogene alteration, assisted possibly by the acids formed by the breakdown of sulphides. The core units have been silicified and the remobilisation processes have resulted in redistribution of the copper-cobalt mineralisation into open spaces within the Mines Series rocks.

1.5 Resource Drilling

The dimensions of the four fragments discussed in this report, expressed as strike length and drilled width, are:-

- Principal 630m x 36.70m
- Anticline 150m x 80.25m
- Kalukundi 430m x 44.18m
- Kii 330m x 40.84m

Exploration work in the vicinity of Kalukundi between 1927 and 1987 consisted largely of detailed surface mapping and excavation, mapping and sampling of pits and trenches and the 'manual' drilling of shallow exploratory holes for mapping purposes.

Active exploration has been carried out by three main companies, Gécamines, JCI and Swanmines since about 1986.

Table 1.8_2

Kalukundi Project

Reserve Summary by Fragment

Fragment	Reserves														
	Proven					Probable					Total				
	MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal	
		Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]
Principal	2.3	2.22%	1.00%	50,238	22,611	0.4	2.29%	1.10%	8,689	4,182	2.5	2.23%	1.01%	58,927	26,793
Anticline	1.4	2.59%	0.54%	35,550	7,358	0.2	1.60%	0.55%	2,984	1,223	1.6	2.47%	0.55%	38,534	8,581
Kalukundi	1.1	2.55%	0.42%	28,471	4,730	0.4	1.40%	0.47%	5,214	1,764	1.5	2.26%	0.44%	33,685	6,493
Kii	1.8	2.55%	0.58%	46,010	10,420	0.3	2.62%	0.50%	8,886	1,699	2.1	2.56%	0.56%	54,896	12,119
Total	**6.6**	**2.44%**	**0.69%**	**160,268**	**45,119**	**1.3**	**2.02%**	**0.69%**	**25,773**	**8,867**	**7.8**	**2.37%**	**0.69%**	**186,041**	**53,986**

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Active exploration has been carried out by three main companies, Gécamines, JCI and Swanmines since about 1986.

Drilling for resource evaluation purposes has been carried out in three campaigns:-

Gécamines in 1986/87	8 holes	2,809m	10% of the resource drillholes
JCI/Geo-Consult in 2001/02	12 holes	1,440m	15% of the resource drillholes
Africo/Swanmines 2004/05	58 holes	5,401m	5% of the resource drillholes
Totals	**78 holes**	**9,650m**	

In addition to the above, 58 holes drilled by Africo, a further 30 boreholes, not used directly in the resource evaluation, were drilled for geotechnical, condemnation and exploration purposes.

1.6 Data Quality

QAQC data provided by Africc meets industry standard levels of precision and accuracy. The standards and blanks show good levels of accuracy, core duplicate and inter-laboratory pulp-duplicate data showed high levels of precision.

1.7 Mineral Resources

Classification of the mineral resource at Kalukundi was based on data quality, drill spacing, confidence in continuity and various kriging efficiency measures. RSG Global considers confidence in the grade estimates to be good, even though drillhole density is limited down dip. Confidence is supported by low grade variability and low skewness parameters.

Only resources above 200m below surface have been considered "potentially economically extractable". Resource models exist below this, but extraction of this material would most likely be by underground methods. No evaluations of underground parameters have yet been carried out and hence no resources have been quoted below this level. Furthermore these resources are predicated on very limited drilling information. Significant exploration potential is suggested by these models.

Mineral Resources are tabulated below, based on a 1.5% copper-equivalent cutoff at a 12:1 copper to cobalt equivalence ratio.

Table 1.7_1
Kalukundi Project
Resources Between Surface and 200 Metres Below Surface

	Resource Tonnes	% Copper Grade	% Cobalt Grade	Copper (Mlbs)	Cobalt (Mlbs)
Measured	9,648,484	2.45	0.61	521.5	130.1
Indicated	2,505,924	2.29	0.61	126.6	33.7
Total Measured + Indicated	**12,154,408**	**2.42**	**0.61**	**648.1**	**163.8**
Inferred	**15,020,674**	**2.63**	**0.58**	**871.5**	**192.6**

Resources with the highest confidence levels of continuity and grade occur from surface down to 150m where the density of drilling is greatest. The Resource from 150m to 200m falls almost entirely into the Inferred category. Modelling below 200m suggests exploration potential for further mineralised material.

1.8 Reserves

The Project Reserve estimate as of May 2006 is reported in Table 1.8_2. All stated Reserves are completely included within the quoted Resources. The input parameters used in the Reserve estimate are described in Section 17. For ease of reference, however, a summary of the most pertinent input parameters is provided in Table 1.8_1.

Table 1.8_1
Kalukundi Project
Summary of Input Parameters used for Reserve Estimation

Item			Value
Cu Price		$/lb	1.25
Co Price		$/lb	12.00
Diesel fuel price		$/l	1.29
Mining cost	Mill Feed	$/t	3.12
	Waste	$/t	4.01
Processing Costs	0-10m	$/t	35.35
	10-20m	$/t	36.96
	20-30m	$/t	39.02
	30-40m	$/t	41.53
	40-50m	$/t	44.50
	50-60m	$/t	47.93
	60-70m	$/t	51.80
	70-80m	$/t	56.14
	80-90m	$/t	60.92
	90-100	$/t	66.16
	100-110m	$/t	71.86
	110-120m	$/t	78.01
Processing Recoveries		%	Variable
G&A		M$/yr	7.2
Mine supervision		M$/yr	1.27
Grade control		$/t	0.06
De-watering		M$/yr	0.5
Stockpile rehandle		$/t Mill Feed	1.16
Mining dilution		%	2
Mining recovery		%	97
Inter ramp slope angle		Degrees	Variable
Royalty	Government	%	2.0
	Gecamines	%	2.5
Metal Transport	Cu	$/t	300
	Co	$/t	377

Table 1.8_2

Kalukundi Project

Reserve Summary by Fragment

Fragment	Reserves														
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1.9 Development and Operations

It is envisaged that the Project could mine and process 0.80Mt per annum ("Mtpa") over approximately ten years. The plant is designed to produce 21,100t of Cu per year and 4,200t of Co per year at an average process cost of $44.42/t of ore treated.

All ore and waste will be mined via conventional, open pit mining methods, using a mining contractor. The operation plans to utilise selective mining techniques to separate ore and waste. The mining equipment that is considered to be suitable for the Project would include 80t backhoe configured, hydraulic excavators and off-highway haul trucks with a payload capacity of 35t.

The treatment plant flowsheet is based on processing 0.8Mtpa of mill feed. The testwork indicated that the Kalukundi ore could be processed using a single stage crushing circuit followed by a conventional SAG / ball milling circuit with the ball mill in closed circuit with a cyclone. Overall recovery after losses in processing was between 89% and 93% for Cu and between 70% and 78% for Co.

The leach product is then washed in a six stage counter current decantation plant to ensure a clarified liquor is sent to the copper recovery circuit whilst keeping losses due to entrainment below 1%. The copper recovery circuit consists of copper solvent extraction step where the copper is moved to an organic phase before being stripped to produce a advance liquor that is treated in the copper tank house. The copper tank house produces cathode plate that will be sold. A bleed stream from the copper circuit is sent to the cobalt recovery circuit.

The cobalt circuit consists of several purifying steps where impurities like iron, aluminium, manganese, zinc and finally copper are removed before the purified cobalt liquor is sent to solvent extraction circuit where cobalt is loaded onto an organic phase before being stripped to produce the advance solution that is treated in the cobalt tank house. The cobalt tank house produces cobalt cathode that will be binned and sold.

Africo and its contractors will employ approximately 524 people throughout the operating phase of the Project. Initially selected posts requiring specific skills or experience will be filled by expatriates. In addition to performing their job function, expatriate personnel will be expected to transfer knowledge and expertise in order to develop the capabilities of the national staff. In the longer term, it is anticipated that nationals of the DRC will fill most operating and management positions within the company.

A water pumping station has been planned to pump the full requirement of water from Lake Nzilo, on the Lualaba River, 22km to the site in a buried steel pipeline into the plant raw water storage dam. Water will be drawn from the storage dam water for plant make-up, fire and potable water. The fire water will be pumped to a fire water ring main by a dedicated electrical and standby diesel pumping system. The raw water will be treated through a chlorination plant for the production of potable water prior to storage in two separate storage tanks. The plant and camp sewerage will be treated in two bio-filter plants with the grey water being discharged to the environment.

Power at 110kV will be supplied to the plant from the existing National Grid overhead power lines which pass 100m from the plant boundary. Plant power transformers will be situated in the plant main switchyard. Power distribution on site will be at 11kV.

1.10 Project Implementation

Production is assumed to commence after a pre-production period of 18 months, commencing 1 July 2006.

The development capital cost of the Project has been estimated at $166M and is based on an EPCM (engineering, procurement, construction and management) implementation strategy. The estimate includes owner's costs, working capital, and a contingency, totalling approximately $12.23M.

1.11 Financial Summary

The overall operating costs for the plant and mining operation per tonne of ore mined are shown in Table 1.11_1.

Table 1.11_1
Kalukundi Project
Overall Operating Costs – Average over Life of Mine
(Annualised at 801,000tpa)

Description	US$/t of ore
Mining	4.32
Process Plant and Infrastructure	44.42
General & Administration	7.28
Total Operating Costs/t of ore	**US$56.02**

The investment in working capital and pre-production capital expenditure is $166.6M plus pre-production stripping of $6.85M.

The results of sensitivity analysis show that the Project is relatively insensitive to changes in working cost and capital expenditure. Only metal price changes have a substantial effect.

1.12 Conclusions

The results of the economic analysis indicate that exploitation of the Kalukundi deposits is economically viable and should proceed. Opportunities exist in most areas of the Project that will be more rigorously investigated during the detailed engineering phase and where appropriate will be incorporated into the Project.

The current financial models are based on the scenario of 100% equity financing for the Project. This, coupled with a conservatively projected base price of Copper and Cobalt gives a before tax IRR of 14.7%. No allowance has been made in the model for the effects and levels of debt financing available or required.

- The anticipated Project payback time is less than four years.

Opportunities exist in most areas of the Project to be more rigorously investigated during the detailed engineering phase and to firm up certain assumptions, thereby mitigating and or removing some of the risks that have been identified during the FS.

1.13 Recommendations

The exploitation of the Kalukundi deposits should proceed.

It is recommended that Africo proceeds with:-

- Development of a detailed mine implementation program.
- Compilation of tender documents for mine contracting and subsequent tender process.
- Risk based geotechnical and geohydrological evaluation, which may lead to steepening of wall angles.
- Personnel recruitment, policies and procedures and training.
- More detailed or updates to mine design, scheduling and budgeting.
- Continue the exploration on the satellite deposits to increase the life of the plant.
- Source local earthworks and civil contractors and machinery.

There is considerable scope to increase the Project Reserve of 7.8Mt by proving up existing Resources, by carrying out follow up studies and also through drilling of other mineralized surface bodies on the property, all of which will be aggressively pursued by Africo in 2006.

2 INTRODUCTION AND TERMS OF REFERENCE

2.1 Terms of Reference

Africo Resources Limited (Africo) commissioned RSG Global Pty Ltd. (RSG Global) to provide an independent Technical Report on the Kalukundi Copper Cobalt Project located in the copper belt of the Democratic Republic of the Congo (DRC).

This Report is to comply with disclosure and reporting requirements set forth in the Toronto Stock Exchange Manual, National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101CP to NI 43-101, and Form 43-101F1 of NI 43-101.

All monetary amounts expressed in this report are in United States of America dollars (US$) unless otherwise stated.

2.2 Principal Sources of Information

The authors of this report were the authors of the Feasibility Study (FS) on the Kalukundi Project, which was completed in May 2006.

The resource drilling was carried by Africo staff and the FS was prepared for Africo in conjunction with various specialist consultants required to complete all aspects of the study. Those retained directly for the Project were:-

▪ RSG Global	Resource and Mining; Financial Modelling
▪ MDM Engineering Ltd (MDM)	Process Engineering
▪ African Mining Consulting (AMC)	Environmental studies
▪ Knight Piesold Pty Limited	Geotechnical Evaluation
▪ Mintek	Metallurgical testwork & pilot plant studies
▪ Golder Associates Africa Pty Ltd	Tailings Dam design

Remaining portions of the FS were prepared by Africo Resources.

2.3 Qualifications and Experience

RSG Global is an integrated Australian-based consulting firm, which has been providing services and advice to the international mineral industry and financial institutions since 1987.

The primary author of this report is Mr John Hearne, who is a professional mining engineer with 22 years experience in the exploration and evaluation of mineral properties. Mr Hearne is Principal Engineer of RSG Global, a Member of the Australasian Institute of Mining and Metallurgy (AusIMM), and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101.

Mr John Hearne, was responsible for the preparation of Sections 1 to 5, 17.8, 18, 19, 20, 21 and 23. Mr Hearne, in addition to supervising the preparation of the Technical Report, directed the work pertaining to the mineral reserve estimates. Mr Hearne has not visited the Project site. Other RSG Global mining professional have made a number of site visits to Kalukundi over the last two years.

Dr Julian Verbeek, a Principal Consultant of RSG Global and a Member of the AusIMM, served as the Qualified Person responsible for preparing this technical report. Dr Verbeek is the Qualified Person responsible for the preparation of Sections 6 to 15 and 17 (17.1 to 17.7) of this technical report. Dr. Verbeek has visited site on a number of separate visits throughout 2004, 2005 and 2006.

Preparation of the Technical Report relied on additional Qualified Person support from the following:-

- Mr David Dodd, who is a process engineer with 30 years experience as an extractive metallurgist. Mr Dodd is the Technical Director for MDM Engineering Ltd and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101.
- Mr Michael Evans, who is a geologist with 20 years experience as a senior manager. Mr Evans is the Project Manager for Africo Resources Limited and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101.
- Mr Douglas Dorren, who is a civil/mining engineer with 31 years experience. Mr Dorren is the Specialist Geotechnical Engineer for Knight Piésold Pty Limited and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101
- Mr Guillaume Louw de Swardt, who is a civil engineer with 15 years experience. Mr de Swardt is the Tailings Dam Design Engineer for Golder Associates Africa Pty Ltd and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101.
- Mr Martin Broome, who is a mining industry professional with 32 years experience. Mr Broome is the Principal and Managing Director for African Mining Consultants Limited and has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in Canadian National Instrument 43-101.

2.4 Independence

Neither RSG Global, nor the other authors of this report, apart from Mr Evans, have or have had previously any material interest in Africo or related entities or interests. The relationship with Africo is solely one of professional association between client and independent consultant. This report is prepared in return for fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

3 DISCLAIMER

RSG Global relied on data supplied by Africo for its review of the Project. These data include third party technical reports and unpublished third party information. The authors have made all reasonable enquiries to establish the completeness and authenticity of the information provided and identified, and a final draft of this report was provided to Africo along with a written request to identify any material errors or omissions prior to final submission.

Mr. Pierre Risasi of Djunga and Risasi was commissioned by Africo Resources to undertake the verification of the standing of the Kalukundi mining title held by Swanmines. Their legal opinion is that the Kalukundi Exploitation Permit has been validly created and is duly registered in the name of Swanmines.

No warranty or guarantee, be it express or implied, is made by RSG Global with respect to the completeness or accuracy of the legal and taxation aspects of this report. RSG Global does not accept any responsibility or liability in any way whatsoever to any person or entity in respect of these parts of this document, or any errors in or omissions from it, whether arising from negligence or any other basis in law whatsoever.

Some of the quoted mineral resources reported here are not in accordance with the requirements of NI43-101 and are reported for historical purposes, unless otherwise stated.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Project Location

The Kalukundi Project is located within the Kolwezi District of Katanga Province in the south-east of the DRC, 60km to the east of Kolwezi and just 4km to the north of the road between Likasi and Kolwezi (Figures 4.1_1 & 4.1_2). The distance by road to the capital of the Katanga Province, Lubumbashi, is 270km. The Project is only 15km by road from the Tenke Project and 25km from Fungurume. The mining centre of Likasi is 160km from Kalukundi.

The Project area is located just to the north of the main road between Likasi and Kolwezi. The village of Kisankala is situated close to the Principal and North Fragments of the Kalukundi deposit. Until November 2004, this village housed approximately 3,000 informal or artisan miners and their dependants. Most of these workers left once Swanmines stopped all illegal artisan mining on the property. It appears that although limited artisan mining continues in the surrounding areas, the issue of tenure with regards to these miners has been resolved.

4.2 Tenements

The Project is secured under an Exploitation or Mining License, PE591, which was issued on 11 October 2001 for a term of 20 years. The tenement is 19.5km^2 in extent, consisting of 23 carrés or blocks. The boundaries of the Project have been surveyed and are marked with six boundary beacons.

Table 4.2_1
Kalukundi Project
Plan of Concession Carrés, Area No. 591

	Deg	Min	Sec	E 25 54 0	E 25 54 30	E 25 55 0	E 25 55 30	E 25 56 0	E 25 56 30	E 25 57 0
S	10	37	30	B					C	
S	10	38	0		1	2	3	4		
S	10	38	30		5	6	7	8	D	E
S	10	39	0		9	10	11	12	13	
S	10	39	30		14	15	16	17	18	
S	10	40	0		19	20	21	22	23	
S	10	40	30	A						F
S	10	41	0		Concession 591			23 Carrés		

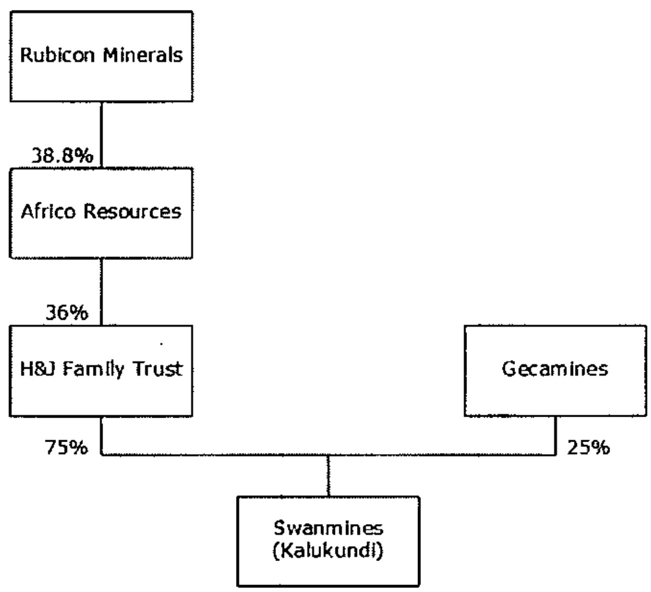
License No	Map Ref.	Corner Points	Longitude	Latitude
591	S11 / 25	A	25° 54' 30"	10° 40' 00"
		B	25° 54' 30"	10° 37' 30"
		C	25° 56' 30"	10° 37' 30"
		D	25° 56' 30"	10° 38' 30"
		E	25° 57' 00"	10° 38' 30"
		F	25° 57' 00"	10° 40' 00"
Date of issue: 11th October 2001				

The beacons were surveyed by Robert John McGaw, a qualified surveyor from Zimbabwe, using differential GPS-based survey instrument. The six mining lease corner beacons were correlated to first order government topographic survey beacons. The corner beacons were concreted in and certified as being correct by the Mining Dept (Kolwezi) and the Topographic Dept (Kinshasa).

4.3 Ownership

The exploitation permit, Permis D'Exploitation, No 591 (Mining License) for Kalukundi is held by the Swanmines Joint Venture (Swanmines) and the ownership of Swanmines is shared between H & J Family trust (75%) and Gécamines (25%). Africo currently holds a 48% interest in H & J Family Trust and has the option to increase this holding to 100%. Rubicon Minerals Corporation (Rubicon), a publicly listed Canadian company (TSX and AMEX) holds a 39.6% interest in Africo. Africo is a private British Columbia incorporated company and has secured funding from its shareholders for the exploration programme and FS on the Project. The ownership of the Kalukundi Project is shown in Figure 4.3_1.

Figure 4.3_1
Ownership of the Kalukundi Project



4.4 Tenement Status

The Kalukundi permit was originally issued in 11 October 2002 as permit C242 with an approximate area of 15.5km^2 inside a five point polygon. With the implementation of the new Mining Code, the boundaries were moved in 2003 to coincide with the co-ordinates of the national topographic cadastral grid. This resulted in the concession area being increased to 19.5km^2 within a six pointed polygon. The Certificate D'Exploitation for the revised area was signed on January 28 2004. Annual rental fees of $5.00/hectare are payable to the Government of the DRC amounting to $9.769.64/year. The rental payable in terms of the Mining Code has been fully paid to date. The payment for 2006 was due by the end of March 2006 and has been paid.

Thus far, over $9M has been committed to the Project. This permit entitles the company to commence mining activities, subject to relevant DRC mining legislation.

4.5 Royalties and Agreements

Once production begins, the owners will be required to pay royalties to the DRC Government in accordance with current mining legislation which imposes a royalty tax payable on the sale of minerals at the rate of 0.5% for ferrous metals, 2% for non-ferrous metals and 2.5% for precious metals. Thus Africo will be committed to payment of a 2% royalty on gross sales to the government.

In accordance with an agreement with Gécamines, a 2.5% royalty on gross sales is payable by the owners of Swanmines to Gécamines.

4.6 Environmental Liabilities

The proposed mine will be developed in an area covered largely by natural forest. There are extensive trenches and artisan workings covering the area, but most will likely be removed by mining.

Provisional costs for mine reclamation and post-closure environmental monitoring have been included in the Project financial modeling.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Project Access

Access to the Project is either by road through Zambia, via Lumbumbashi (270km) and Likasi, or from Kolwezi (60km).

The road between the Zambian/DRC border post at Kasumbula and Lubumbashi is tarred and has recently been rehabilitated but experiences heavy trucking traffic and unless it is appropriately maintained will deteriorate rapidly over the next few years. The road from Lubumbashi to Likasi is good by DRC standards, but potholes are numerous. The road was repaired during the second half of 2005 and this improved its condition substantially. The contract to reconstruct this road completely has been awarded and work has commenced on the section nearest to Lubumbashi. The road between Likasi and Kolwezi is in extremely poor condition. The trip from the Project to Lubumbashi takes about six hours of hard driving in small four wheel drive vehicles. Transporting heavy equipment can take a number of days.

An electrified railway line passes some 4km south of the Project, linking Lubumbashi and Kolwezi. The line is currently poorly maintained and a limited goods and passenger service operates on trains running intermittently in either direction and the Luilu plant at Kolwezi is serviced on a twice weekly basis.

There is an international airport at Lumbumbashi, and a local airport at Kolwezi.

5.2 Physiography

The north-central DRC is a large plateau at about 300m amsl (above mean sea level) and is drained by the Congo River. The country becomes more mountainous in the east in the vicinity of the East African Rift Valley.

The area surrounding the Project is relatively flat to undulating, with occasional low ridges of resistant rock. The concession area slopes gently towards the Kisankala Spring situated in the centre of the Kalukundi property. Outcrops of silicified Katangan stratigraphy form conspicuous low hills, which rise about 20m to 30m above the surrounding plains. These hills are characterised by the lack of large trees, which results from copper toxicity in the soils (copper clearings). The silicified nature of some lithologies further inhibits growth of large trees. These low ridges often represent prospective stratigraphy.

Most of the area between the mineralised fragments consists of flat-lying terrain underlain by shales and conglomerates belonging to the Lower Kundelungu Group, covered by a few meters of soil and/or saprolite. Some patchy laterite pavements occur along the banks of the Kisankala River and near the eastern property boundary.

Four ridges in the Kalukundi area are underlain by fragments of mineralised stratigraphy and are the focus of this report. From southwest to northeast these are:-

- Principal: Largely continuous stratigraphy with a steep north-easterly dip. Offset on steeply dipping north-easterly striking cross faults.
- Anticline: Isoclinally folded zone of generally steeply dipping stratigraphy with a north-westerly verging and steeply plunging closure.
- Kalukundi: Largely continuous south-easterly dipping footwall zone with discontinuous structural repetition in the hangingwall.
- Kii: Largely continuous but structurally overturned south-easterly dipping stratigraphy.

There are other mineralised fragments within the Project area. It is likely that these will be evaluated at some stage, and surface portions of some of these fragments have already been exploited by local artisan workers. Only the above mentioned four fragments are incorporated in this review.

The area is generally forested by natural forest, known as Miombo Woodland with occasional clearings for largely subsistence agriculture. This woodland extends from Angola in the west to Zambia in the south and Tanzania in the east. The ecology is characterised by broadleaf deciduous woodland (10 to 20m in height) and savannas interspersed with grassland over the mineralised fragments.

Deforestation close to the roads and towns is advanced and charcoal burning is common.

Groundwater level has been measured at approximately 40m below the surface at Kalukundi. There are, two perennial springs at Kisankala and Kii, fed by fracture-borne water from the dolomitic formations.

5.3 Climate

Congo has a mild climate throughout the year, with typically heavy summer rains. During the rainy season, water-logging contributes significantly to the rapid degradation of roads.

The climate is tropical to temperate. It is typically hot and humid in the equatorial river basin, cooler and drier in southern highlands and cooler and wetter in eastern highlands. South of Equator, the wet season is November to March and the dry season is April to October.

There are three main weather stations with reliable historical meteorological data located around the Project area. In the southern parts of the DRC the annual average rainfall varies between 1,220 and 1,320mm with double maxima in December and March. Between December and April most field work is restricted to areas served by good roads, effectively limiting exploration. The temperature for summer is between 18°C and 32°C and in winter varies between and 4°C and 25°C. The prevailing wind direction during most of the year is from the east-southeast. Average wind speeds vary from a low of 1.6m/sec in February to a high of 3.4m/sec in September. Maximum gusts range from about 22m/sec in the dry winter months up to 30m/sec in the wet summer months. Thunderstorms during the summer are generally associated with west-north-westerly winds.

In the immediate vicinity of the Project area, Miombo woodland dominates and there are no dambos (small wetlands in shallow depressions), but a few small areas along the Kisankala stream become waterlogged in the wet season. Local subsistence agriculture utilises these limited areas for cultivation. The Kalukundi license is located on gently undulating topography with a mean elevation of 1400m amsl.

Malaria is endemic to the area.

5.4 Local Infrastructure and Services

Relatively undisturbed Miombo woodland covers the permit with little agricultural activities undertaken. Main crops grown are maize and cassava.

The closest town is Kolwezi, and although there are numerous villages surrounding the Project, these have extremely poor or no infrastructure. There are numerous Police/Military roadblocks on access roads, but this presence does little to enhance security or prevent theft. Small 'donations' are expected by passing traffic.

Kisankala Village is located at the centre of the permit. Kisanfu is the nearest village to Kisankala and is located 7km to the south with more permanent housing and infrastructure. A census was carried out in January 2005 and the population of Kisankala Village was 1,064 people. The census was updated in January 2006 and there were 2,361 people living in Kisankala Village. Most of the housing in the village comprises temporary wood structures.

There is a clinic in Kisanfu (7km) and hospitals can be found in Kolwezi (50km) and Likasi (100km). There are three primary schools in Kisanfu. The disused railway station is the location of the third school. Secondary and tertiary education facilities can be accessed in Kolwezi, Likasi or Lubumbashi.

The electrified SNCC Kolwezi-Likasi railway passes 2km south of the southern boundary of PE 591. The nearest station is Kisanfu. The railway line is in use and is currently in good condition. Trains for a passenger service run intermittently and the Luilu plant at Kolwezi is serviced on a twice weekly basis.

Telephonic communication to the site was initially via satellite telephone, but the cellular telephone network was extended in March 2005 such that intermittent coverage could be obtained on elevated portions of the site. Currently, fair coverage is obtained over much of the site and along the main road as well.

Although there is no current connection, the national power grid carrying hydroelectric power from the Congo River scheme passes close to the south of the Project.

Despite having high rainfall, the country experiences water shortages in towns due to poorly maintained infrastructure. The main local water resources within the Kalukundi concession area consist of two small springs, called Kii and Kisankala. Additional water for mining purposes could be obtained from the Lualaba River dam, 24km to the west. It is anticipated that pit de-watering boreholes will contribute to mining and process water requirements.

Because of the state of the access roads, rail and power links and although the mining lease is not far from established towns in terms of distance, it is essentially a remote site in terms of infrastructure.

6 HISTORY

6.1 General

The Zambian and Congolese copper belts host some of the worlds most continuous, largest and richest sediment hosted copper and cobalt deposits known. The oxide zones of many of the deposits currently being mined and explored were exploited by indigenous artisan workers long before the first wave of explorers and colonisation reached the south-central African interior in the 1880's. Early copper mining started in the Belgian Congo soon after the turn of the century. A rail link was constructed from Victoria Falls through Zambia to Lubumbashi in late 1910. A smelter was built at Lubumbashi under the management of Union Miniere and copper production from Kolwezi, Kakanda and Kambove started to increase. Kansanshi, Bwana Mukuba and Nkana are good examples of copper deposits with an ancient history of exploitation in Zambia.

Modern mining has been focused on exploiting these deposits for over the last 100 years. The DRC copper belt saw the steady increase in copper and cobalt production through to the copper boom of the late 1980's. However, a period of political turbulence followed the independence of the Congo from Belgium in 1967 and the destructive reign of Mobutu Sese Seko. The operations of Union Miniere continued through to independence, but then fell under the new para-statal organisation called Gécamines. At this stage, production had reached a peak of 500,000t of copper metal and 30,000t of cobalt metal. For a while, production continued at a steady pace, but soon began to decline and by the early 1990's.

The large pits and tailings facilities bear witness to the fact that this area was once an important force in global copper and cobalt production. Since independence however, a steady decline in mining activities has occurred. Following the rise of African Nationalism in the DRC and Zambia, and subsequent independence from colonial powers, mining operations in Zambia were nationalised in 1970. After nationalisation and leading up to the late 20th century, the mines in the sub-region declined in profitability, and exploration was sidelined. Around the end of this period, privatisation was initiated, and revitalisation of the industry ensued.

In the DRC, informal mining is still largely carried out by artisan workers or semi formal mining operations for cobalt and processing occurs in basic washing plants and other decaying infrastructure.

Most formal mining activities in the DRC have, until recently, been undertaken by State-owned Gécamines in the copper belt and OKIMO (gold mining operations). Recently however, mining has suffered from a lack of capital investment, particularly after the security situation deteriorated in 1990, and most operations have ceased or are operating at restricted capacity. Currently, metal production is estimated at less than 10% of previous levels. It is estimated that Gécamines produced approximately 500Ktpa of copper during the mid 1980's. Copper production in 1996 was approximately 30Kt, and this level of production has been maintained and only slightly exceeded in recent years.

Gécamines have been actively attempting to improve rapidly declining copper and cobalt production by promoting several ailing mines and associated treatment facilities to foreign investors, generally by offering joint venture terms. Political change in January 2001 has led to increasing levels of confidence in the return of political stability to the region. This in turn has led to increased interest from international mining companies that have started to acquire mining interests in the Copperbelt. These include Phelps Dodge (Tenke Fungurume), First Quantum (Lonshi, Likasi Tailings), Anvil Mining (Dikulushi), the Forrest Group (Kolwezi area), International Panorama Resources (Kambove and Kakanda Tailings) and American Mineral Fields (Kolwezi Tailings). Only the Anvil operations, at Dikulushi have flourished and constitute the first significant new mining and processing operation in the DRC in recent times. Operations at Lonshi are restricted to mining activities only, with the ore being trucked across the border to a processing facility at Bwana Makubwa. Similarly a barge is used to transport Dikulushi ore across Lake Bengwelu.

The President of the DRC, Joseph Kabila, is widely supported by the international community, and financial assistance from the World Bank and the IMF has been recently forthcoming for the first time in over a decade. The DRC is currently more stable than it has been for many years, and it is hoped that stability will bring development and general prosperity to the country. Infrastructure rehabilitation is underway, and large investments have been made in telecommunications development. Renewed interest in mining investments is also evident, especially in the south-eastern portion of Katanga where the province has been relatively unaffected by various armed conflicts that have plagued the north-eastern border region, where mining and exploration for gold is still expanding.

The existence of mineralised fragments of Roan stratigraphy in the Kalukundi area has been known since 1916. The focus during that time, however, was on the huge tonnages available in the larger deposits of the Zambian and DRC copper belts.

6.2 Exploration by Previous Owners

The southern portion of the DRC was first prospected on a systematic basis by Tanganyika Concessions Limited just prior to the end of the 19th Century. As exploration moved into active production of copper (and minor tin) a new company, Union Miniere du Haut Katanga (UMHK) was formed In July 1906 to oversee the development and operation of the mines. In addition to the early exploration for copper, cobalt and gold, exploration also focussed on iron and pyrite in the Kasonta area, and graphite and pyrite in the Mwashia units that surround the "mega-breccia" zone. As a result of their systematic evaluation work most of the major and many minor copper occurrences had been discovered by 1916.

UMHK also prospected the low lying ground between the topographically obvious, and outcropping Lower Roan rafts. This prospecting was carried out mainly through pitting and some "electrical" ground geophysics.

Exploration work in the vicinity of Kalukundi between 1927 and 1987 consisted largely of detailed surface mapping and excavation, mapping and sampling of pits and trenches and the 'manual' drilling of shallow exploratory holes for mapping purposes.

Active exploration has been carried out by three main companies, Gécamines, JCI and Swanmines since about 1986 which has resulted in the definition of stratigraphy and mineralised areas.

Gécamines completed eight diamond drillholes between 1986 and 1987, along with extensive trenching and pitting and geological mapping. These were intermediate to deep holes to 600m, focused on determining the continuity of the copper mineralisation at depth.

In late 2001 and early 2002, Geo-Consult, on behalf of JCI drilled twelve boreholes totalling 1,440m, along with further geological mapping and interpretation. Geo-Consult assayed all their drillholes for Cu and Co. In addition they analysed 1/3 of the drillholes for Au, Ag, Ca, Mg, Ni, Fe, Mn, S, Si and P, and determined bulk densities for the mineralised zones. The JCI exploration work is detailed in a report by Geo-Consult in July 2002.

In August 2002, a metallurgical assessment was carried out by Mr. M.J. Boylett to evaluate the possibility of using local plant facilities to process Kalukundi oxide ores and thereby reduce the burden of capital costs. Numerous options were considered for leaching and flotation of the ores to produce various products.

In September 2002, a preliminary financial analysis was done by JCI investigating alternative production rates and processing routes.

At this stage, Swanmines negotiated the rights to the Kalukundi property thus taking over from JCI. The *permis de research* was converted to a *permis de exploitation*, and funds were secured to commence a resource evaluation and FS in May 2004.

6.3 Historical Resources

Drillhole sampling by JCI/Geo-Consult and Gécamines correlated well. Average total Co grades of 0.66% Co (JCI) compared well with the 0.6% Co quoted by Gécamines. Gécamines also reported a mean Cu grade of approximately 4% Cu for their Upper and Lower mineralised zones. This corresponded to the JCI average of 3.03% Cu. The JCI figure, however, includes low grade material that was excluded by Gécamines.

Mineral 'reserves' reported by Gécamines in January 1998 are reproduced in the table below (Table 6.3_1). Gécamines reported the 'reserve' as 'Probables' and 'Possibles' which JCI (2001) correlated to Indicated and Inferred Resources in terms of JORC and SAMREC. The details of the above resource are however uncertain. Tonnage and grade from which the resource was derived were not reported, only total contained metal.

RSG Global believes that these estimates could have been considered inferred if JORC/SAMREC codes had been appropriately applied and grade and tonnage had been tabulated, based on the limited data available and deficiencies in the data quality, particularly the core recovery achieved during drilling. Furthermore, there is no documentation regarding the calculation of the estimate. Although not 43-101 compliant, these historical resource figures have been provided for background information purposes.

Table 6.3_1 Kalukundi Project Mineral "Reserve" (Gécamines 1998)				
	Total Copper Content (tonnes)		Total Cobalt Content (tonnes)	
	Probables	Possibles	Probables	Possibles
Kalukundi C-5 Principal (now referred to as Principal and Anticline)		562,000		94,000
Kalukundi North (now referred to as Kalukundi and Kii)	196,500	59 500		43,000
Total	**196,500**	**621,500**		**137,000**

In an attempt to obtain a better estimate, JCI (2001) estimated the mineral resource based on width and grade data, strike and a nominal 100m depth, a sectional polygonal type estimate. The estimate was constrained by a basic spreadsheet type optimisation process to produce a 'reserve' as reproduced in Table 6.3_2. A 5% geological loss and 5% dilution at zero grade is incorporated in the JCI estimate. This is a mixture of resource and reserve terminology, but JCI (2001) made no attempt to classify their estimate in terms of JORC or SAMREC.

Table 6.3_2
Kalukundi Project
Estimated Resource Amenable to Open Cut Mining
(JCI 2001)

	Block	In Situ Tonnage		Strip Ratio	Grade %		Metal	
		Mill Feed	Waste		TCu	TCo	TCu	TCo
C-5 Principal	A to D	4,289,990	15,485,921	3.61	4.39	0.62	188,331	26,598
C-5 Principal	E	2,532,885	9,301,686	3.67	4.39	0.62	111,194	15,704
Kalukundi North	F to H	7,220,320	12,642,159	1.75	3.63	0.65	262,098	46,932
Total (80m depth)		**14,043,195**	**37,429,766**	**2.67**	**4.00**	**0.64**	**561,622**	**89,234**
C-5 Principal	A to D	5,362,488	20,700,997	3.86	4.39	0.62	235,413	33,247
C-5 Principal	E	3,166,107	12,496,765	3.95	4.39	0.62	138,992	19,630
Kalukundi North	F to H	9,025,399	18,273,171	2.02	3.63	0.65	327,622	58,665
Total (100m Depth)		**17,553,994**	**51,470,933**	**2.93**	**4.00**	**0.64**	**702,027**	**111,542**

C-5 Principal is referred to in this study as Principal and Anticline and Kalukundi North is referred to as Kalukundi and Kii.

Table 6.3_3
Kalukundi Project
Resources after Geo-Consult/JCI 2002

In situ Indicated Resources at the Kalukundi Project				
Area		**Tonnage (t)**	**TCu %**	**TCo %**
C5 Principal	Southern Limb	6,399,875	2.77	0.76
	Anticline	4,527,766	3.89	0.69
Kalukundi Nord	Southern Limb	3,327,049	2.46	0.49
	Northern Limb	2,687,582	2.89	0.58
Total / Average		**16,942,272**	**3.03**	**0.66**

C-5 Principal Southern Limb corresponds to the now-termed Principal fragment, and Kalukundi Southern Limb simply as Kalukundi and Kalukundi Northern Limb as the Kii fragment. Anticline is unchanged.

In February 2004, SRK undertook a limited due diligence assessment of the JCI geological and mineral resource reports, and recommended an Inferred Resource classification. RSG Global concurs with this classification.

Table 6.3_4 provides a summary of the Geo-Consult resources in a comparable format to the current resources, reported in Section 17, 0% internal Cu and Co cutoff, but based on a nominal external cutoff of 0.5% total Cu.

Table 6.3_4
Kalukundi Project
Inferred Resources
(Geo Consult International data - 2002)

Fragment	Tonnage	Cu (t)	Co (t)	Cu %	Co %
Principal					
0 - 10m	454,585	2,637	4,046	0.58	0.89
10 – 80m	3,603,977	102,713	27,030	2.85	0.75
80 – 100m	998,020	30,639	7,086	3.07	0.71
Tonnage to 100m	**5,056,582**	**135,989**	**38,162**	**2.59**	**0.77**
100 – 150m	1,343,295	41,239	10,075	3.07	0.75
Tonnage to 150m	**6,399,877**	**177,228**	**48,236**	**2.77**	**0.75**
Anticline					
0 - 10m	116,164	1,045	790	0.90	0.68
10 – 80m	1,528,081	66,013	8,099	4.32	0.53
80 – 100m	560,152	22,854	3,361	4.08	0.60
Tonnage to 100m	**2,204,397**	**89,913**	**12,250**	**4.08**	**0.54**
100 – 150m	2,323,369	86,429	19,284	3.72	0.83
Tonnage to 150m	**4,527,766**	**176,342**	**31,534**	**3.89**	**0.69**
Kii					
0 - 10m	303,710	2,126	2,035	0.70	0.67
10 – 80m	1,869,764	60,767	10,471	3.25	0.56
80 – 100m	333,678	9,977	1,869	2.99	0.56
Tonnage to 100m	**2,507,152**	**72,870**	**14,374**	**2.89**	**0.58**
100 – 150m	180,431	4,998	1,119	2.77	0.62
Tonnage to 150m	**2,687,583**	**77,868**	**15,493**	**2.89**	**0.58**
Kalukundi					
0 - 10m	416,306	2,498	2,206	0.60	0.53
10 – 80m	2,499,522	68,737	11,748	2.75	0.47
80 – 100m	356,961	8,960	1,785	2.51	0.50
Tonnage to 100m	**3,272,789**	**80,194**	**15,739**	**2.45**	**0.48**
100 – 150m	54,260	1,449	293	2.67	0.54
Tonnage to 150m	**3,327,049**	**81,643**	**16,032**	**2.46**	**0.49**
Totals					
Total to 100m	**13,040,920**	**378,967**	**80,524**	**2.91**	**0.62**
Total to 150m	**16,942,275**	**513,082**	**111,295**	**3.03**	**0.66**

6.4 Historical Production

Historical production from the Kalukundi deposit occurred during two phases:-

- Informal mining by artisan workers.
- Limited surface mining by Swanmines on fragments not included in this review.

Production records from the former can at best be estimated, but largely constitute Heterogenite or cobalt mined manually from relatively narrow excavations to depths of up to about 20m below surface. The artisan excavations were never surveyed and are not safe to work in. Some of these workings have since been backfilled.

An attempt was made to produce heterogenite from the Kesho Fragment, formerly known as C5 East. A washing plant was established on the site, but washing of a limited amount of material was unsuccessful and the operation was abandoned. No production records for the latter were retained due to the small amount of material used in the plant as testwork. The plant has since been dismantled and removed from the site. The Kesho Fragment does not form part of this ITR.

An estimate of material extracted from these fragments is about 200,000t comprising:-

- Principal Fragment 127,500t;
- Anticline Fragment 40,000t;
- Kalukundi Fragment 9,500t;
- Kii Fragment 14,500t; and
- Kesho Fragment 9,000t.

Rough wireframes have been built of the depletion zones and these have been depleted from current models for Principal, Kalukundi and Kii. The depletion at Anticline is negligible.

7 GEOLOGICAL SETTING

7.1 Regional Setting

Base metal mineralisation in the Zambian and DRC copper belt provinces is hosted by sedimentary rocks of the Neo-Proterozoic Katangan Sequence, developed within the Lufilian Arc. This copper belt extends over 600km from Luanshya (Zambia) in the southeast and to Kolwezi in the Democratic Republic of the Congo (DRC) in the northwest.

The Katangan Supergroup rocks are up to 7,000m thick and are underlain by basement granite, intermediate metavolcanic and metasedimentary rocks dated at ~1,800Ma to 2,000Ma. The sediments represent a facies continuum of proximal to intermediate and distal dolomitic mudstones, sandstones and algal reef fragments.

The Katangan Supergroup is subdivided into Roan, Lower and Upper Kundelungu Groups, separated respectively by the *Grand* and the *Petit Conglomerat* diamictite marker units. Mineralisation at Kalukundi occurs within the Mines Sequence (or *Series des Mines*) which is correlated to Lower Roan rocks elsewhere in the Lufilian arc.

The Lufilian Arc forms part of a network of supracrustal belts in Africa (Pan-African) and South America that are host to important metallogenic provinces e.g. Katangan (DRC), Zambian copper belt, Kabwe Zn/Pb/Ag terrane (Zambia), Otavi Mountain Land Cu/Zn/Pb (Namibia), Gariep Belt Zn/Pb (Namibia) and the São Francisco craton Zn/Pb deposits (Brazil).

Generalised stratigraphy for the copper belts is shown in Figure 7.1_1. The maximum age of the Katangan sedimentation is constrained by U-Pb dates on zircons from the Nchanga granite at 877+/-11Ma. Extensive rifting occurred at around this time. It is generally accepted that the deposition of the supracrustals occurred during the rift phase of the Katangan Sequence in Zambia and DRC.

The development of isolated, structurally bounded basins comprising half grabens/graben structures controlled initial sedimentation in the lowermost portion of the Katangan Sequence, the Roan Group. The configuration of the basin margin is especially important and controlled the development of thick wedges of clastic sediments in the basal sequences. Growth faults controlled prolonged and variable sedimentation into the basins. This resulted in the development of predominantly arenaceous and argillaceous rocks, with relatively thin interbeds of rudaceous material. Facies change occurs between the Zambian and DRC Roan group rocks, with argillaceous and carbonaceous rocks predominating in the DRC.

The development of the 'mineralised shale' unit marks the first major marine transgression in the Zambian copper belt, and in the DRC this transgression also resulted in laterally extensive shallow marine sedimentation in the *Series Des Mines*. This provides an important marker that can be traced throughout the copper belts.

The extensive flat-lying plains surrounding the Roan ridges in the DRC are ubiquitously underlain by Lower Kundelungu rocks although these are not exposed on surface at Kalukundi because of deep soils and thick vegetation. Lower Kundelungu sequence rocks were also not intersected by boreholes drilled on the Project, but were intersected by condemnation boreholes drilled below potential waste dump and plant areas. These confirm the presence of Kundulungu stratigraphy as shown on maps compiled by Gécamines and other regional studies. The Lower Kundelungu stratigraphy consists of a basal conglomerate overlain by sandstones and shales.

While the Katangan Supergroup sediments in Zambia are deformed by a series of open folds, in the DRC the Katangan Supergroup is preserved both as tightly folded, but relatively intact sequences and as complexly deformed, locally continuous but structurally dismembered 'rafts' of lower Roan strata (*Series Des Mines*) within a 'mega breccia' or mélange that contains abundant evaporite minerals. The mega-breccia forms a kite-shaped wedge elongated parallel and adjacent to a major northwest trending lineament. Interpretations based on LandSat and aerial photographs suggest that this structure may represent an original Katanga basin edge fault.

The structure of the Katangan Sequence in Zambia is considered to be the result of compression during basin closure; however in the DRC it is probably the result of decoullement at the northern margin of the basin and northward thrusting of the Katangan Supergroup over basement lithologies (granites and gneisses) and other, higher, Katangan Supergroup stratigraphy. The mega breccia is probably of tectonic origin, but focussed on incompetent chemical sediments.

Metamorphic grade increases southwards but within the Kalukundi area very low-grade chlorite facies metamorphism is evident.

7.2 Local Geology

The Roan stratigraphy preserved in the Kalukundi area belongs to the *Series Des Mines* (correlated to Lower Roan in Zambia) and occurs as isolated allochthonous outliers (klippe or "ecailles", referred to henceforth simply as fragments) bounded by large shear and fault zones. These outliers are exposed over several hundreds of meters of strike length and also exhibit significant dip extents. The *Series Des Mines*, in particular the RSC, is more resistant than the adjacent stratigraphy and the mega-breccia. As a result, the RSC forms outcrops and low ridges that are prominent in the otherwise flat terrain.

Of the twelve fragments identified in the Kalukundi concession area, only four are the subject of this report. These are the Principal, Anticline, Kalukundi and Kii Fragments (Figure 7.2_1). Limited exploration and evaluation work has been undertaken on the other fragments, but only the Kalukundi East fragment (Kesho) contains known mineralisation, identified in outcrops, trenches and larger excavations. One vertical borehole by Gécamines intersected the mine series stratigraphy and returned some excellent cobalt values, but poor copper results. As copper was the main target at the time, no further work was focussed on this fragment. The Kesho fragment (and possibly other fragments) represent upside to the existing Kalukundi resources.

Stratigraphy for the Series des Mines in the Kalukundi area is summarised below.

- **CMN** – "*Calcaire a Minerais Noirs*", comprises dolomite and limestone and is the uppermost sequence of the *Series Des Mines*. The lower portion of this unit is made up of dolomitic shales and chert-rich zones. Mineralisation, when present, may constitute a third mineralised zone characterised by high gangue acid consumption ("GAC") in fresh rock but with lower GAC in the weathered/oxidised zone.

- **SDS** - "*Shales Dolomitiques Superieurs*" (Upper Dolomitic Shales) composed of bedded and laminated dolomitic siltstone and fine-grained sandstone. Sporadic, poor (sub-economic) copper mineralization occurs throughout this horizon. In some fragments, there are significant intersections of "hangingwall mineralisation" in this material. The hangingwall mineralisation is, however, difficult to correlate between drill sections and has not been modelled or estimated, but it could represent upside potential for the Project.

- **SDB** - "*Schistes De Base*" (Basal Schists) silty dolomite to siltstone containing some nodules. This well bedded unit is commonly well mineralised with high grade copper and cobalt, which has been extensively mined by artisanal workers.

- **RSC** - "*Roches Silicieuses Celluiaires*" (Siliceous Rocks with Cavities, Cellular) comprises massive to stromatolitic, silicified dolomite. It forms conspicuous ridges and is generally poorly mineralised. The hydrothermally altered stromatolites are occasionally enriched with black heterogenite (cobalt) oxides.

- **RSF** - *Roches Siliceuses Feuilletees* or "Foliated" (Laminated) and Silicified (dolomitic) Rocks. It is made up of silicified bedded dolomitic shales. This unit is mostly mineralised to well mineralised with copper and cobalt and can be differentiated from the upper RSC by its fine laminar banding. .

- **DStrat**. - *Dolomites Stratifiees* or "Stratified Dolomite" is similar to the overlying RSF. It is comprised of well-bedded argillaceous dolomites. Near the top of the unit, a nodular chert-rich horizon is characteristic. This unit is often very well mineralised with copper and cobalt and with the overlying RSF can form a contiguous zone of mineralisation.

- **RAT** *Roches Argilo-Talcqueuse* is the lowest member of the Series des Mines stratigraphy and comprises a sequence of dolomitic and talcose argillaceous units. Both RAT Griese (Grey) and RAT Lilas (purple) occur in the Kalukundi area.

- **Breche Heterogene** - This unit occurs at the base of the sequence and the fragments in the breccia are derived from all rock types of the Roan Mines Series. The fragments are generally angular but occasionally well rounded, ranging from a few millimetres to several centimetres in size. The matrix consists of finer-grained particles with the same composition as the larger fragments. The breccia is generally accepted as having a tectonic origin.

Higher, Lower Roan stratigraphy is absent at Kalukundi. The sequence reflects a facies continuum of proximal to intermediate and distal dolomitic mudstones, sandstones and algal reef fragments.

The whole sequence has been silicified and remobilisation of silica and copper-cobalt mineralisation has played a major role in the present appearance of the rocks, for example the formation of vugs in and silicification of the RSC Unit.

The dimensions of the four fragments evaluated in detail during this programme are as follows (strike length & drilled width):-

- Principal 630m x 36.70m.
- Anticline 150m x 80.25m.
- Kalukundi 430m x 44.18m.
- Kii 330m x 40.84m.

The Principal fragment has a NW-SE strike and north-easterly dips varying from 75° in the SE, flattening to about 55° towards the northern end. The north-western half is displaced by four NE-SW striking faults with displacements up to about 15m. Drilling results suggest that the down-dip extension flattens to almost 45° and deep Gécamines drilling suggests that it may terminate down-dip against a sub horizontal fault.

The Anticline Fragment has a north-westerly trending fold axis with both fold limbs dipping about 045° north-easterly. The axial trace also plunges steeply NNE. Both limbs have a strike length of 150m and a width of about 80m. The tight folding has resulted in numerous cross-cutting faults.

The Kalukundi Fragment has a strike length of 430m heading 053° and dips south-eastwards at 78°. Deep exploration holes drilled by Gécamines suggest that the dip reverses, dipping northwards with depth. This suggests a synformal relationship with the Kii Fragment. A NE-SW trending (dextral) fault with an approximate displacement of 45m intersects the mineralisation near its south-western end. The projected extension of this fault may possibly intersect the north-eastern limit of the Kii Fragment.

The Kii Fragment strikes 045° with a length of 330m and dips at 65°. Deep drilling results from Gécamines (KDI 102) suggest that the down-dip extension may be cutoff against a fault.

A fifth fragment, Kesho, is located close to the proposed plant site. No detailed drilling has been undertaken here, but this fragment is well mineralised and could add significant resources to the Project. One diamond drill (KDI 4) was drilled by Gécamines, which intersected mineralised material below 120m vertical depth. The dimensions of the Kesho fragment are inferred to be 350m (strike) x 41.40m (thickness).

In general, the zone of weathering and oxidisation reaches between 70 and 130m below surface. The depth of the weathered zone appears to be greater in the Principal, Anticline and Kii fragments than in the Kalukundi fragment. Below the weathered oxide zone, a mixed zone containing oxide and sulphide mineralisation occurs. No boreholes have intersected pure sulphide mineralisation, the deepest drillhole intersects mineralisation at 490 m below the surface. Weathering is severe and the silty and shaly parts of the succession are completely decomposed down to depths of approximately 40m and are still friable and crumbly to 100 metres below surface. Weathering and oxidation penetrate down selective lithologies such as the D Strat to an inclined depth of 350m (BH KDI2) drilled by Gécamines on the Principal fragment.

7.3 Structural Geology

The fragments are folded, forming tight, steeply dipping synclinal and anticlinal structures. The vergence of the folds is variable on a regional scale; this is consistent with the interpretation of chaotic fragments within a mega-breccia (*Breche Heterogene*). The dip of the limbs is between 45° and 85°. Similar styles of deformation have been interpreted for the Mines Series stratigraphy in the Kolwezi area.

Individual fragments are terminated by faults on their lateral extents, and crosscutting brittle faults offset stratigraphy, especially in the Principal fragment. Fault displacements vary between 15m (Principal) and 45m (Kalukundi). These shears and faults may have provided passageways for siliceous fluids and fluids responsible for the remobilisation of copper and cobalt.

All the mineralised zones have been faulted and/or folded to varying degrees of intensity, but gross continuity of the lithological units can nevertheless be demonstrated.

In the southern portion of the Kalukundi deposit, both the northern and southern limb of a faulted and folded sequence of Roan rocks is exposed. The northern limb (Anticline fragment) has an antiformal geometry and a north-westerly plunging fold axis and terminates at depth against a brecciated footwall zone, possibly a thrust fault. The southern limb (Principal fragment) dips at between 60° and 85° towards the northeast and is also truncated against the breccia at depth.

In the north-eastern portion of the Kalukundi deposit, the Kalukundi fragment is exposed as two subparallel/en echelon outcrops. These represent the limbs of an overturned isoclinal synform, dipping at 45° and 70° to the southeast for the southern (Kalukundi fragment) and northern (Kii) fragments. Two deep boreholes were drilled by Gécamines to depths of 475m and 600m to investigate the continuity of these two fragments in depth. The deeper borehole, KDI 101 intersected the Kalukundi fragment at a vertical depth of 490m, confirming considerable depth continuity. BH KDI 102 intersected the *Breche Heterogene* at the point where the Kii fragment was anticipated, thus some displacement of this zone may be anticipated here.

8 DEPOSIT TYPES

The Lufilian Arc forms part of a network of supracrustal Pan African belts (Neoproterozoic age) in Africa and South America that are host to important base metal provinces e.g. Katangan (DRC and Zambian copper belts), Kabwe Zn/Pb/Ag terrane, Otavi Mountain Land Cu/Zn/Pb (Namibia), Gariep Belt Zn/Pb (Namibia) and the São Francisco craton Zn/Pb deposits of Brazil.

There are two main deposit types developed in the DRC copper belt where Cu and Co mineralisation occurs:-

- Continuous, stratabound, sediment hosted Cu-Co deposits with significant strike extent (e.g. Tenke-Fungarume). These are similar to the Cu-Co deposits developed in the Zambian Copperbelt but may also be terminated at depth against breccia zones representing thrust faults. This is in contrast to the Zambian copper belt deposits which are generally continuous at depth.
- Discontinuous, raft-style stratabound sediment hosted Cu-Co deposits such as Kalukundi. The raft-style deposits are interpreted to be generally small allochtonous fragments of Lower Roan stratigraphy thrust northwards from the main Lufilian arc. Mineralisation and host lithology is broadly similar to the more continuous deposits.

The relationship between the DRC carbonate-shale hosted deposits and the Zambian shale-arenite deposits is controversial, but there is no reason to propose widely differing origins. The main differences are the characteristics of the Lower Roan Formation facies, and the tectonic disruption of the DRC stratigraphy.

9 MINERALISATION

9.1 General

The Kalukundi deposit represents hypogene remobilisation of primary sulphide mineralisation. The primary mineralisation was probably typical of other Lower Roan mineralisation in copper belt deposits in Zambia and the DRC. Some of the deeper drillholes at Kalukundi have intersected partially weathered sulphide mineralisation as far down as 270m below the surface.

The principal sulphide zone copper bearing minerals are chalcocite, chalcopyrite and bornite. Cobalt is present in carrollite. Within the oxidised zone copper occurs as malachite and cobaltiferous malachite with subordinate kolwezite and chrysocolla, and cobalt occurs as heterogenite. Spherocobaltite occurs within the RSC in small amounts.

Within the Kalukundi fragment significant amounts of chalcocite are developed below the depth of 40m below surface, whilst elsewhere, malachite persists well below this depth. Chalcocite is, however, often developed in a supergene zone near surface and does not necessarily reflect true unoxidised sulphide mineralisation.

Heterogenite appears to be enriched near surface, especially in the subsurface from 4m down to about 40m depth.

Mineralisation in the Mines Series in the sulphide zone on the Katanga Copperbelt is well developed and shows continuity within the upper SDB and the lower RSF and D Strat units both along strike and down dip, while the stromatolitic dolomite unit separating these mineralised units, the RSC, carries some cobalt mineralisation and only minor copper mineralisation. In the oxide zone, remobilisation of copper and cobalt into the RSC results in this central zone being quite well mineralised in places.

Mineralisation at Kalukundi is best developed within the lowermost zone (RAT Grise/D Strat/RSF) and to a slightly lesser degree in the upper (SDB/RSC) zone. The two mineralised horizons may have been distinct within the sulphide zone with lower grade mineralisation between the two. In the oxide zone mineralisation is largely continuous from the D Strat to the SDB with significant remobilisation of metal into the RSC. Nevertheless, the highest grades usually remain in the lower and upper mineralised zones.

In certain parts of the fragments, the SDB and RSC units are poorly mineralised to barren and the adjacent RSC is often poorly mineralised adjacent to this zone. This is evident in the SE Principal fragment, both near surface and in depth and in the Kalukundi fragment near surface.

The distribution of mineralisation is variable, reflecting changes in both the original distribution and the subsequent weathering regimes. Within the oxidised zone, very high grades of both copper and cobalt may be encountered due to supergene enrichment. Contrarily, certain zones may be poorly mineralised. Differential leaching in the porous RSC unit near surface results in this unit and closely adjacent lithologies being locally barren.

The relationship between the thrusting and faulting responsible for the present distribution of the Lower Roan at Kalukundi and the primary mineralisation is uncertain, but the lateral bounding faults and breccias in the sole thrusts have contributed to increased permeability for hypogene fluids and the deep weathering at the Kalukundi deposit.

9.2 Oxide and Sulphide Mineralogy

The main oxide minerals in the Kalukundi fragments are Malachite, Kolwezite and Chrysocolla in the case of copper and heterogenite in the case of cobalt. These and the less common minerals are listed as follows:-

- Malachite $Cu_2Co_3(OH)_2$
- Chalcanthite $CuSO_4.5H_2O$
- Kolwezite $(Cu,Co)_2CO_3(OH)_2$
- Libenthinite $(Cu_2(PO_4)(OH))$
- Chrysocolla $Cu_2H_2(Si_2O_5)(OH)_4$
- Cuprite Cu_2O
- Native Copper
- Heterogenite $Co^{+3}O(OH)$
- Mg-Spherocobaltite $Mg.CoCO_3$

The main sulphide minerals are chalcocite, bornite and chalcopyrite in the case of copper, and carrollite in the case of cobalt. The chemical compositions are as follows:-

- Chalcocite Cu_2S
- Digenite Cu_2S
- Bornite Cu_5FeS_4
- Covellite CuS
- Chalcopyrite $CuFeS_2$
- Carrolite $Cu(Co)_2S_4$
- Linaeite (Siegenite) $Ni(Co)_2S_4$
- Cobaltite $CoAsS$

In addition, haematite (Fe_2O_3), specular hematite (Fe_2O_3), "*sel rose cobalt*" a bright pink cobaltiferous-$CaCO_3$ (above), and siderite ($FeCO_3$) were reported by JCI and Gécamines also described the presence of tenorite (CuO). Pyrite is present in small amounts.

Uranium is present at Kalukundi in very small amounts. Weak radioactivity has been detected in the SDB and the RAT Grise units. The uranium silicate, coffinite U (SiO_4) $(OH)_4$ was detected in trace amounts within goethite in a sample from the RAT Grise.

10 EXPLORATION

10.1 Topographical Survey

The original survey and the topographic maps produced by Gécamines reflected survey points, drillhole collars, trenches and other details. Check surveys conducted during the Geo-Consult exploration program corresponded to the previous data. Geo-Consult also established 4 baselines with red painted corner beacons parallel and adjacent to the strikes of the main outcrop at Kalukundi and Principle fragments.

Subsequent surveys have been carried out over more than 90% of the property by a contract surveyor. Traditional surveying techniques were employed using a (laser) theodolite and prismatic staff and a local Gauss Conform (LO26), Clark 1866 datum co-ordinate system utilised by Gécamines. This survey data was used to produce a topographic map with 1m contour intervals. All the borehole collars were also accurately surveyed. The local LO26 co-ordinate system was used in all the 3-D resource modelling.

Some data manipulation has been necessary to convert data from the local coordinate system to the "Triangulation Du Katanga, issued by Comité Special Du Katanga (CSK), Service Geographique et Geologique" on which regional topographical survey beacons are based. Conversion from local to standard grid coordinates (Universal Transform Mercator (UTM) World Global System of 1984 (WGS84)) will ultimately be necessary. Any resultant conversion errors are likely to be small and not material.

10.2 Geological Mapping

Gécamines and its predecessors explored the deposits within the Kalukundi and surrounding areas between 1927 and 1987. The work consisted mainly of extensive pitting (up to 16m), trenching, mapping and sampling. The pitting data was extensively used for creating geological maps in areas with almost no outcrop. Virtually all of these pits are still open and can be located in the field.

Mapping and presentation of geological data by Gécamines was done to a high standard and Geo-Consult and Africo Geologists have made only minor changes to the original Gécamines and Geo Consult maps based on new data secured from the drilling and from more detailed surface mapping and trench data, e.g. at Kalukundi where the width of the RSC was overstated as a result of thick scree cover and soil creep.

Most of the maps were hand drawn 1:2000 scale geological and assay plans. Ammonia prints of these maps are still available from Gécamines.

10.3 Trenches

A number of trenches and pits were excavated by Gécamines (total length >2000m) in order to assist with mapping in areas obscured by overburden and scree, and also to provide sampling of near-surface material. Trenches on some fragments were excavated aligned to local grid north (30 to 40° to the strike direction), others were excavated perpendicular to strike.

JCI/Geo-Consult cleaned out those trenches positioned on drillhole sections and re-mapped and re-sampled them. They also extended the trenches and sampled sections (especially within the RSC) that had not been sampled by Gécamines. Samples were taken as continuous lines of rock chips. JCI/Geo-Consult considered the quality of the Gécamines logging and mapping to be good, and commented on the high incidence of black oxides as veins and nodules indicative of high heterogenite in the near-surface zone. They also noted that Cu grades in the trenches were generally lower than for shallow boreholes, concluding that there had been significant surface leaching. For the purposes of modelling, JCI assumed the leaching zone to extend to 10m below surface. Subsequent interpretations by Africo geologists confirm that there is considerable or complete leaching of the RSC outcrops in the uppermost 2m to 3m. Below this cobalt is enriched in open spaces and fractures, but copper mineralisation remains depleted down to a depth at least 10m and possibly slightly deeper.

Some of these original Gécamines trenches were again mapped and sampled by Africo geologists. The assay results from these trenches have been included in the geological models prepared jointly by Africo and RSG Global.

10.4 Exploration Data Collection

Maps have been digitised and incorporated into a GIS System (TNTmips and ArcView). Other geological information (borehole logs, assay and survey data) is maintained in a series of Microsoft Excel spreadsheets for import into GIS and geological modelling software (Gemcom and Datamine). Drafted (Microstation) drillhole cross-sections have also been produced.

Original handwritten logs are archived and maintained on site.

10.5 Interpretation and Discussion

Exploration data is consistent with the interpretation of the Kalukundi deposit as a hypogene, oxide facies, raft-type, carbonate-shale, stratabound, sediment hosted Cu-Co deposit.

RSG Global has reviewed the exploration data available and considers the data quality and interpretations to be good, and the model to be well understood. The data confirms excellent continuity of the mineralised horizons both along strike and down dip.

Trench coverage, however, is poor over some of the fragments. Almost no trenching was done across the RSC horizon due to its poor mineralisation and hard, silicified nature of the RSC unit. The focus of Gécamines geologists was the higher-grade mineralisation along the SDB-RSC contact and on the RSC-RSF-D Strat contacts. In most cases the intervening silicified and vuggy RSC dolomites were not sampled. The artisan trenches have not been mapped as they are dangerous to work in, particularly following heavy seasonal rains.

Consequently there remains considerable uncertainty regarding the surface distribution of remobilised Cu and Co oxides, both along strike and down dip. Africo has attempted to address this uncertainty by drilling shallow diamond drillholes in the near surface region and by carrying out additional trenching. This has been only partially successful due to limitations on access to the surface zones resulting from, amongst other things, artisan workings.

RSG Global has not applied adjustments to their estimates for leaching, enrichment or depletion, but has classified the surface zones as Inferred where sampling density is poor.

11 DRILLING

Drilling conditions were difficult, especially in weathered rock and core recoveries were low for all three phases of drilling, especially in friable zones where oxide mineralisation occurs along foliation planes and as open space fillings in veins. Core losses often occurred where rock hardness changed rapidly between soft, weathered shale/dolomite and hard silicified rock. Karstic cavities have been identified in the RSC and where the material is friable, grinding was experienced. RSG Global has experience in drilling similar material in the DRC and Zambian copper belts and accepts that obtaining high core recoveries is problematic. Discussion of the relationship between core recoveries and grades is presented in Section 17, Mineral Resource and Mineral Reserve Estimates.

11.1 Drilling by Previous Owners

Although RSG Global has not audited the Gécamines core, Geo-Consult has indicated that the boreholes drilled by Gécamines were well logged and suitable for integration into the database. They also state that sampling and recording of assays on the logs appear to have been diligently done, but that no QA/QC information is available to verify this statement. Gécamines did not sample sections of core outside the 'conventional' extent of the Mine Series units even though they were sometimes mineralised.

JCI drilled twelve boreholes (1,440m), largely as a due diligence exercise confirming the geological interpretations initially made by Gécamines. JCI achieved an average drill rate of 24m/day. Water loss in the RSC was common, resulting in the overlying mudstones running dry and clogging onto the rods until it became impossible to turn the drill string. This was overcome by casing off this section and then drilling with water loss and thick muds to hole completion.

The boreholes from both the above campaigns were relogged in detail by Africo geologists. This confirmed the excellent standard of previous work and brought the logs into line with the format used for the Africo evaluation. Limited re-sampling was also undertaken.

11.2 Drilling by Current Owners

Africo/Swanmines completed a comprehensive core drilling programme which may be summarised as follows:-

• Resource boreholes	50	4,561.67m
• Infill drilling boreholes	11	595.96m
• Geotechnical boreholes	17	2,256.55m
• Exploration boreholes	5	261.60m
• Condemnation boreholes	5	317.25m
• **Total**	**88**	**7,993.03m**

Of these 88 boreholes drilled by Africo, 58 were used directly in the geological model for resource definition purposes and the remainder for geological and geotechnical purposes.

Drilling for resource evaluation purposes was carried out in three campaigns. Seventy eight boreholes (9,650m) were used in the geological model to define the resource. Of the remainder, selected boreholes were used to define geological extensions and limits to continuity:-

▪ Gécamines in 1986/87	8 holes	2,809m	10% of the drillholes
▪ JCI/Geo-Consult in 2001/02	12 holes	1,440m	15% of the drillholes
▪ Africo/Swanmines 2004/05	58 holes	5,401m	75% of the drillholes
▪ **Total**	**78 holes**	**9,650m**	

Similar core recovery problems to those experienced in previous drilling programs were also encountered in the current drilling. However, improved core recoveries were achieved during drilling by Africo with the average overall borehole core recovery for the resource holes being 77.66% (74.24% for the mineralised zones). This is a significant improvement on the 70.45% (65% for the mineralised zones) achieved for the JCI programme in 2002.

The contractor was Geosearch International Ltd. All drillholes have been drilled using wireline diamond drilling with a triple tube recovery, typically collared and cased in PQ size (83mm). The majority of the drilling was carried out using HQ size core (61mm) once competent rock was encountered, usually around 15m, but sometimes as deep as 40m. Reduction to NQ sized core (45mm) only occurred rarely under exceptionally poor ground conditions where severe brecciation was encountered in siliceous lithologies. Drilling was conducted perpendicular to the strike at a dip of 45°. Drilling muds were used throughout the programme to improve core recovery and reduce collapse in the holes.

RSG Global observed core drilling during a site visit to the Project, and believes that appropriate techniques were employed to maximise core recovery. Some holes were re-drilled at the contractor's expense when client supervision indicated that unacceptable core losses had been the result of poor drilling practice. Nevertheless, core recovery remained poor through some sections of stratigraphy.

Drillhole collars were set up using handheld GPS, but were subsequently surveyed by a registered surveyor before incorporation into the database.

Downhole surveys were undertaken by Geosearch using a digital single shot REFLEX down-the-hole survey instrument at collar and end of hole and between 45 and 100m down the hole, generally providing at least two survey points between the collar and end of hole.

12 SAMPLING METHOD AND APPROACH

12.1 Trenches

Geo-Consult resampled the Gécamines trenches after clearing all loose rubble and soil from the trench by cutting a channel into the sidewall about 15-20cm above the trench floor. The channel was about 5cm wide and deep and the sample was collected directly into a plastic sample bag. The geology of the trench sidewall was mapped and the sample positions indicated thereon.

Care was taken during the resampling of the trenches to ensure that the samples were not contaminated by waste and other material redistributed from the small artisan workings in the vicinity of the trenches.

As Geo Consult had undertaken an evaluation of the trenches, Africo did not repeat this work. A detailed study was made of the surface exposures. Where artisan workers had created a significant disturbance at surface, systematic sampling across the exposed lithologies was concluded to be impractical and in places, dangerous. The main limitation was thick scree in places (Kalukundi and Kii fragments).

12.2 Diamond Drilling

Core from the Africo drilling was packed into 1.5m long, galvanised steel trays and the end of drill runs indicated by means of a yellow plastic tag. Accurate depths were determined from stick-up measurements that were regularly checked by the geologist.

The borehole core was sampled by cutting longitudinally along the core axis, perpendicular to the core-bedding angle. Cutting was done mainly by diamond saw but some core was also split using a cold chisel. Where the core was very soft and broken it was split longitudinally with a machete before sampling. Where mineralisation was observed in very soft muddy core, it was halved with a machete while still wet on the drill site.

The samples were taken to honour geology and also to separate high or low grade zones. Minimum size was limited to 30cm and maximum to 2.0m. In zones where recovery was especially poor, samples were taken over the whole drill run to ensure that the depths were accurate.

13 SAMPLE PREPARATION, ANALYSIS AND SECURITY

13.1 Sample Preparation and Analysis

13.1.1 Gécamines

Analyses carried out by Gécamines were carried out by atomic absorption (AA) at in-house laboratories at Kolwezi. Details of the sample preparation and analysis are not recorded.

13.1.2 JCI/GeoConsult

JCI/GeoConsult samples were sent to Set Point Laboratories in Johannesburg for analyses (copper and cobalt) by pressed pellet XRF (x-ray fluorescence). The mineralised zones of four boreholes (i.e. $^1/_3$ of the current boreholes) were analysed for a variety of other elements (Au, Ag, Ca, Mg, Ni, Fe-total, Mn, S, Si, and P) to aid with metallurgical assessments by the same method. Bulk densities were determined for the major mineralised zones.

13.1.3 Africo

The drill core samples were placed into plastic bags at the on-site core yard. Eight to ten bags were placed in a durable, woven plastic bag and firmly tied with plastic strapping to restrict movement of the sample bags and limiting breakages in transit. All the sample bags were numbered and weighed on site. These weights were recorded on the dispatch notes.

The samples were then sent to Lubumbashi by road and subsequently to Johannesburg by airfreight. All the bags were weighed again in Lubumbashi by the air freighting company. Here they were collected and delivery to SGS Lakefields Laboratory in southern Johannesburg was personally supervised.

Sample preparation and analysis of the borehole core and trench samples was carried out at SGS Lakefield Laboratories. This involved crushing, drying and milling followed by XRF analysis by pyrosulphate fusion for Cu, Co, Pb, Zn, Ni, Fe and Mn. Reject samples and pulps were retained for repeat analysis and further analysis.

Selected composite samples were also analysed for acid soluble Cu, Co, acid consumption gangue acid consumption. In addition some composite samples were also analysed by ICP-OES using a multi acid Leach for Al, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Sn, Sr, Ti, V, Zn, Zr.

13.2 Quality Control Procedures

13.2.1 Gécamines

No QA/QC data is available for the eight Gécamines boreholes or trench samples. Both JCI/Geo-Consult and Africo however have expressed confidence in the quality of the Gécamines sampling and assay work, based on discussions with Gécamines geologists and the generally high level of other geological work done by Gécamines.

RSG Global considers that the results of the Gécamines drilling are broadly consistent with the results of current drilling, consequently all Gécamines data have been incorporated into the estimation database. This data represents about 10% of the boreholes.

13.2.2 JCI/GeoConsult

Quality control plots for the GeoConsult/JCI program have been presented in their report, and are not reproduced here. Initial analyses were carried out at Set Point Laboratories in Johannesburg, with umpire assays being submitted Lakefields Laboratories, also in Johannesburg. Initial variances between the laboratories were resolved though recalibration and re-reading of the powder pellets.

A selection of duplicate samples was submitted as laboratory controls. Blank samples were also inserted into the sample stream to assess possible contamination. All the blank assays returned extremely low copper and cobalt background values.

Some 10% of the core samples were sent for check analyses to a second laboratory and standard reference samples were also included. Original and repeat samples exhibit correlation coefficients of 0.97 for copper and 0.98 for cobalt. Both the original and repeat analyses were carried out using XRF techniques. AA analyses were also carried out on some repeat samples; correlation between AA and XRF analyses was greater than 0.99 for both Cu and Co. Certified reference standards (Mintek) were also inserted into the sample stream, showing acceptable accuracy.

No discussion of standards and blanks was included in the Geoconsult/JCI report except for the statement: "*In order to ascertain the accuracy of the analyses standards, blanks and duplicates were routinely included in the sample stream. These proved that the results are reliable and not contaminated and accordingly provide confidence in the averages grades defined for the resources".* No raw QA/QC data are available to validate this statement.

This data represents about 15% of the boreholes.

13.2.3 Africo Resources

All samples analysed in the current program have been analysed at SGS Lakefields Laboratories, Johannesburg. This data represents about 75% of the boreholes.

Blanks were inserted into all sample batches. All returned grades below detection limit indicating that there is no contamination in the sample prep and laboratory procedures.

Internal standards were made up by milling and homogenising a large sample of oxide mill feed from the surface exposures on the Principal Fragment and inserted into the sample stream. This large sample was initially analysed nine times by two laboratories, and then inserted into batches after every 10th sample. RSG Global has used the average of all the 'standard' analyses to define the mean of the control sample rather than the average of the initial nine analyses. The use of an uncertified reference standard means that the variability of the expected results is not defined, and RSG Global has used a 10% variance for reference. As a large percentage of the reference samples was analysed by the same laboratory as the actual samples, this 'standard' does not serve to identify possible bias in the results or the accuracy of the results. They do however serve to confirm that no problems have been experienced with sample numbering or switching.

RSG Global recommends that certified reference samples should be obtained and used for any future drilling.

A number of repeat assays have been carried out on quartered portions of the Kalukundi core from the current drilling program. While there are some significant variations between original and repeat assays, especially for higher grade samples, these are to be expected as there is significant heterogeneity in the core, resulting largely from the presence of malachite veins and heterogenite nodules.

Notwithstanding the inadequacies of quality control, RSG Global has integrated data from all three operations in order to estimate the deposit.

Twinning: KM1 and KM1B are drilled close to K2, effectively twinning it. KM1 was collared with the intention of obtaining PQ core for metallurgical studies, but drilling difficulties resulted in this PQ being curtailed although HQ drilling continued. Poor core recoveries in the mineralised zone resulted in a redrill as KM1B at HQ size. Core recoveries were vastly improved to 85.4%. Comparison of the results of the three holes is inconclusive due to differences in the drilling methods and recoveries.

13.3 RSG Global Statistical Analysis of Africo QA/QC Data

The data used for this report was supplied in three Excel files; 'ORIGI~46.XLS', 'CA03123-SEP05 + Original values (checked + variances).XLS' and 'QC value comparison Table K13-K55 & % Variations.xls'. The supplied data falls into three QAQC regimes; standards data (internal and laboratory), core-resample (1/4 core) and Umpire Laboratory repeats (pulps).

The precision and accuracy of the copper and cobalt assay data for the Kalukundi drillhole samples has been assessed based on routine quality control samples submitted during the 2005 drilling campaigns, and by samples submitted by internal laboratory quality control procedures. The reliability of the assay data from the primary laboratories has also been assessed by comparison of the original assay results with umpire assays completed by SGS Lakefield Johannesburg and SGS Lakefield Toronto.

The quality control data has been assessed statistically to determine relative precision and accuracy levels between various sets of assay pairs and the quantum of relative error. The results of the statistical analysis are presented as summary plots in Appendixes I and II, which includes the following:-

- *Thompson and Howarth Plot* showing the mean relative percentage error of grouped assay pairs across the entire grade range, used to visualise precision levels by comparing against given control lines.
- *Rank % HARD Plot*, which ranks all assay pairs in terms of precision levels measured as half of the absolute relative difference from the mean of the assay pairs (% HARD), used to visualise relative precision levels and to determine the percentage of the assay pairs population occurring at a certain precision level.

- *Mean vs. % HARD Plot*, used as another way of illustrating relative precision levels by showing the range of % HARD over the grade range. Mean vs. %HRD Plot is similar to the above, but the sign is retained, thus allowing negative or positive differences to be computed. This plot gives an overall impression of precision and also shows whether or not there is significant bias between the assay pairs by illustrating the mean percent half relative difference between the assay pairs (mean % HRD).
- *Correlation Plot* is a simple plot of the value of assay 1 against assay 2. This plot allows an overall visualisation of precision and bias over selected grade ranges. Correlation coefficients are also used.
- *Quantile-Quantile (Q-Q) Plot* is a means where the marginal distributions of two datasets can be compared. Similar distributions should be noted if the data is unbiased.
- *Standard Control Plot* shows the assay results of a particular reference standard over time. The results can be compared to the expected value, and the ±10% precision lines are also plotted, providing a good indication of both precision and accuracy over time.

13.3.1 Assay Accuracy – Standards and Blanks

The accuracy of the copper and cobalt assay data and the potential for cross contamination of samples during sample preparation has been assessed based on the assay results for the laboratory internal blanks and from company standards submitted by Africo.

The values for the Africo standard sample assays were taken from the spreadsheet '*QC value comparison table K13-K55 & % Variations.xls*'. The Africo standard was based upon crushed mineralised material supplied from Kalukundi. The company blank was created using 'internal waste rock'. No expected value (EV) was stated for this blank.

As no expected range was stated for the blanks and standards, consequently a value of +/- 10% was used based on the EV.

13.3.2 Company Standards and Blanks

A total of 100 company standards were identified; the use of this standard commenced from the drilling of drillhole K19 onwards. The standards were analysed using XRF by pyrosulphate fusion. A summary of the standards statistics are shown in Table 13.3.2_1. Appendix I shows summary charts for the standard data.

Two different company blanks were identified:-

- Blank 'B' - 23 samples described as a 'Blank' in the excel spreadsheet; and
- Blank 'IW' - 18 samples described as 'Internal waste rock' in the excel spreadsheet.

Table 13.3.2_1 Kalukundi Project Statistical Summary of Company Standard (A) at SGS Lakefield Johannesburg		
Element	Cu	Co
Units	%	%
Expected Value	4.05	1.28
Expected Value Range	3.65 to 4.46	1.15 to 1.41
Count	100	100
Minimum	3.65	1.09
Maximum	4.15	1.33
Mean	3.99	1.26
Std Deviation	0.07	0.04
% in Tolerance	100.00%	98.00%
% Bias	-1.54%	-1.99%
% RSD	1.80%	3.06%

The result from the company blanks are summarised in Table 13.3.2_2. Appendix I shows summary charts for the blanks data.

Table 13.3.2_2 Kalukundi Project Statistical Summary of Company Blanks (B and IW)				
Standard	B	B	IW	IW
Element	Cu %	Co %	Cu %	Co %
Expected Value	0.02	0.03	0.01	0.01
Expected Value Range	0.02 to 0.02	0.02 to 0.03	0.01 to 0.01	0.01 to 0.01
Count	23	23	18	18
Minimum	0	0	0	0
Maximum	0.03	0.03	0.03	0.06
Mean	0.02	0.02	0.01	0.02
Std Deviation	0.01	0.01	0.01	0.03
% in Tolerance	0.00%	95.65%	0.00%	0.00%
% Bias	19.57%	-4.35%	11.11%	122.22%
% RSD	21.32%	21.32%	111.80%	112.81%

The results of the company standards and blanks can be summarised as follows:-

- The majority of the standards are within +/- 10% of the stated mean EV of the standard. There is a lower grade spike in both the Cu and Co readings on the 24/1/05 which could be due to analytical instrument calibration;
- Both of the blank samples display low grade variability indicating no cross contamination or mishandling during laboratory preparation; and
- The company standard and blank values exhibit industry acceptable levels of accuracy.

13.3.3 Laboratory Blanks

A total of 14 blank samples from SGS Lakefield Johannesburg were identified. A summary of the data statistics are shown in Table 13.3.3_1. The blanks were analysed using XRF by pyrosulphate fusion. Appendix I shows summary charts for the blanks data.

Table 13.3.3_1
Kalukundi Project
Statistical Summary of SGS Lakefield Johannesburg Blanks (SGSWASTE)

Item	Cu %	Co %
Standard	0.03	0.03
Element	0.03 to 0.03	0.03 to 0.03
Expected Value	14	14
Expected Value Range	0.03	0.01
Count	3.00%	0.05
Minimum	3.00%	3.00%
Maximum	0.00%	2.00%
Mean	0.00%	14.29%
Std Deviation	-16.67%	-14.29%
% in Tolerance	0.00%	60.09%
% Bias	Cu %	Co %
% RSD	0.03	0.03

The results of the SGS blanks can be summarised as follows:-

- The blank samples display low grade variability indicating no cross contamination or mishandling during laboratory preparation; and
- The SGS blank values exhibit industry acceptable levels of accuracy.

13.3.4 Assay Precision

The precision of the copper and cobalt assay data has been statistically assessed based upon the following sample and data types:-

- Duplicate diamond core (1/4 core) samples – these are termed field duplicates (FD). These results reflect the total combined sampling and analytical errors (field and laboratory);
- Primary versus umpire laboratory analyses of duplicate pulp splits – allows assessment of inter-laboratory precision inclusive of sampling and analytical errors after sample pulverisation.

The order of the comparative data types listed above reflects the successive removal of sampling error thus allowing the precision associated with each stage in the sampling process (field and laboratory), and finally the sample analyses, to be assessed. Details of the available datasets and results of the statistical analyses are summarised below, while a full compilation of statistical plots of the comparative datasets, by laboratory, accompanies the report in Appendices II.

13.3.5 Duplicate Core Data

The precision of the copper and cobalt analysis completed by SGS Lakefield Johannesburg has been assessed on 82 field duplicate repeats of ¼ core. Standard control plots are shown in Appendix II. The result of the statistical analysis of the field duplicates data are displayed in Table 13.3.5_1.

Table 13.3.5_1
Kalukundi Project
Summary of Laboratory Precision Data – Kalukundi
SGS Lakefield Johannesburg - 2001

Item	Original_Cu	Repeat_Cu	Original_Co	Repeat_Co
Samples	82	82	82	82
Minimum	0.38	0.32	0.02	0.02
Maximum	28	32.6	5.44	4.41
Mean	8.2	7.68	0.86	0.82
Median	6.05	6.46	0.47	0.43
Standard Deviation	6.33	5.98	0.95	0.9
Variance	40.1	35.81	0.9	0.81
Coefficient of Variation	0.77	0.78	1.11	1.1
Pearson C.C.	0.95		0.93	
Pearson Best Fit	y = 0.90x + 0.34		y = 0.88x + 0.06	
Spearman C.C.	0.96		0.97	
Spearman Best Fit	y = 0.96x + 1.65		y = 0.97x + 1.29	
Mean HRD	3.86		2.66	
Median HRD	3.92		2.84	
Mean HARD	10.4		10.84	
Median HARD	7.67		8.8	

The results of the statistical analysis of the duplicate data can be summarised as follows:-

- The precision of the duplicate data is moderate to high, with 62% of the Cu data within a 10% mean HARD range, 85% of the data is within a 15% mean HARD range;
- There is a good linear (Pearson C.C.) and rank (Spearman C.C) correlation between the original and duplicate results;
- The original Cu results exhibit a small positive bias (3.9% HRD) with respect to the duplicate results; and
- Industry acceptable levels of precision are met.

13.3.6 Umpire Laboratory

The inter-laboratory precision and relative accuracy between the SGS Lakefield Johannesburg and Toronto laboratories was based upon a comparison of pulp duplicate data which his summarised in Table 13.3.6_1. Standard control plots are shown in Appendix II.

Table 13.3.6_1 Kalukundi Project Summary of Laboratory Precision Data – Kalukundi SGS Lakefield Johannesburg versus SGS Lakefield Toronto – 2001				
Item	**SGS JHB Cu**	**SGS Tor Cu**	**SGS JHB Co**	**SGS Tor Co**
Samples	256	256	266	266
Minimum	0	0	0	0
Maximum	30.3	30.6	8.89	8.58
Mean	3.87	3.85	0.71	0.67
Median	2	2.08	0.4	0.38
Standard Deviation	4.96	4.91	1	0.97
Variance	24.59	24.12	1	0.93
Coefficient of Variation	1.28	1.27	1.4	1.43
Pearson C.C.	1		1	
Pearson Best Fit	y = 0.99x + 0.02		y = 0.97x -0.01	
Spearman C.C.	1		1	
Spearman Best Fit	y = 1.00x + 0.16		y = 1.00x + 0.34	
Mean HRD	-1.61		8.09	
Median HRD	0		3.12	
Mean HARD	3.67		9.54	
Median HARD	1.24		3.54	

The results of the statistical analysis of the duplicate data can be summarised as follows:-

- The inter-laboratory precision is high with 93% of the Cu data and 80% of the Co data with a 10% mean HARD range;
- There is a high linear (Pearson C.C.) and rank (Spearman C.C) correlation between the original and duplicate results;
- There is no apparent bias between the data sets; and
- Industry acceptable levels of inter-laboratory precision and accuracy are met.

13.3.7 Discussion and Conclusion

The QAQC data presented to RSG Global met industry standard levels of precision and accuracy. The internal company standards and blanks showed good levels of accuracy, as did the SGS Lakefield Johannesburg blanks samples. The core duplicate and inter-laboratory pulp-duplicate data showed high levels of precision.

- The QAQC results would benefit in the future from the addition of coarse duplicate samples (1:20 first crush of the core before pulverisation) and the submission of lab aware (1:20 pulps at the laboratory) and lab blind (1:2- pulps sent from site) pulp duplicate sampling at the primary laboratory.
- Certified reference standards should be obtained and used.

This data represents 73.7% of the resource boreholes.

14 DATA VALIDATION

14.1 Borehole Validation and Logging Procedures

While on site between 6th and 13th December 2004, RSG Global validated the logging of boreholes K14, K18, K22 and K26, roughly 10% of the boreholes drilled at that time. Particular attention was paid to validation of lithology, sample lengths and core measurements. The following comments apply to logging procedures used over the 3 periods of drilling at Kalukundi and have also been addressed by SRK in their September 2004 report.

- Lithological logging and core measurements are of a high standard for those boreholes audited. In some cases detail in the core logs is limited, but main units are correctly identified and measured.
- Sampling for laboratory analysis has been done in a number of different ways, with early (Gécamines) boreholes being sampled at variable lengths usually about 2m but occasionally as high as 3m. The early borehole samples did not honour core (at end of core run) or lithologic breaks. Later boreholes (Africo) were sampled so as to honour lithological boundaries, but commonly did not honour core breaks. Current sampling practice is to honour both core breaks and lithological breaks.
- Core recoveries can be particularly bad for all phases of drilling and core recovery measurements are absent for the Gécamines drillholes. This is due at least in part to poor drilling control and slow reactions to changes in the hardness of the rock being cored, but also to inherently friable nature of the mineralised material. RSG Global accepts that achieving adequate core recovery is a problem in most areas of the copper belt, but feels that the extent of core losses (up to 60% in places) reflects poor drilling control. It is estimated that in the worst case, variance between sampled and true grades may be up to 50%, mitigated by the fact that these cases are subordinate. Furthermore, as sampling practice has not always honoured lithological boundaries and core breaks (even, in some cases e.g. K18 37-38m, straddling core size breaks, PQ to HQ at 37.88), there is considerable uncertainty regarding the positioning of those samples and consequently the measured core recoveries over the sample length as opposed to the core run. The positioning could be out by up to 2m for areas of particularly poor core recovery. Notwithstanding these problems, and comments made in Section 17, Mineral Resource and Mineral Reserve Estimates, RSG Global has largely accepted the poor core recoveries without adjusting grades or classification, because there is limited evidence that the poor recoveries have resulted in significant biases in the sample assays. Where there is evidence of bias (upgrading of samples), this has been dealt with by cutting a limited number of samples with high grades and low recoveries.

- The importance of achieving adequate core recovery was addressed in the Geoconsult report and in the SRK review. The importance of core recovery in the evaluation of the mineralised zones was clearly understood by the Africo exploration team at the outset of the drilling programme. This was also followed up with close supervision of the drilling crews. Given the severe drilling conditions, the core recoveries achieved by Africo are, in general, reasonable. The overall average for the 50 resource boreholes is 75%. This is a considerable improvement on the GeoConsult program and presumably on the Gécamines holes. Core recoveries of up to 97.89% were achieved in competent rocks for the entire hole, but in the more leached, porous and friable zones, losses were severe and in an isolated case was as high as 78%.
- Bulk density measurements taken in the current drilling program are numerous (36 samples in K18), but do not adequately represent zones with very friable or vuggy material, e.g. within the RSC. Furthermore, density measurements have been taken as 'point' measurements, and not as intervals. Records of the From and To measurements of the density samples should also be recorded.

14.2 Assessment of Project Database

Africo provided phased delivery of the drillhole and assay data between January 2005 and November 2005.

The drillhole and trench database was provided to RSG Global in the form of comma separated variable text files (*.csv) by the Kalukundi team. These files contained assay data for Total Copper (Cu), Total Cobalt (Co) and bulk density (BD).

Extensive manual validation of the database was carried out by Africo against original assay certificates. Africo also carried out electronic validation on import into GEMCOM software. In addition, RSG Global validated data electronically to track changes between versions and to check for structural deficiencies (overlapping samples, duplicate entries etc) and checked 10% of the data at random against the assay certificates. Agreement between checked assay certificates and logs was 100%.

A number of codes were inserted into the database for below detection, insufficient sample and no assay returned. Below detection values were replaced with values for half detection limit (0.05% Cu and 0.025% Co). Insufficient sample and no sample values were generally replaced with null values, but in some cases were replaced by half detection limit on an individual basis to prevent the spreading of high grades. Voids were treated as null values throughout.

15 ADJACENT PROPERTIES

There are no mineral deposits associated with adjacent projects that are directly relevant or comparable to the Kalukundi deposits.

16 MINERAL PROCESSING AND METALLURGICAL TESTING

16.1 Metallurgical Testwork

As part of the FS, a number of metallurgical tests have been undertaken at the Mintek labs in Johannesburg, South Africa. These included bench scale acid leach tests, comminution testwork and a pilot plant campaign to confirm the recovery process selection and metal recoveries for both copper and cobalt.

During the first phase of testwork, samples produced from drill core at Kalukundi were tested to determine the comminution and leaching characteristics of the mineralised lithologies. During the second phase of testwork, the plant design was confirmed during a pilot plant campaign.

16.2 Representative Samples of Mineralisation

16.2.1 Bulk Sample Selection

The testwork samples were taken from surface exposures at the Project. The ability to secure representative material from trenches and from excavations opened up by artisan workings was evaluated in detail and material was taken from three of the five fragments. The Kalukundi fragment was not sampled due to poor exposure of representative mineralised material for all lithologies.

Excavations within the open workings or trenches were selected and each mineralised geological horizon was channel sampled on a proportional basis. On the Principal fragment, the sampling was undertaken in two areas, the more cobalt-rich zone in the NW and the more copper-rich area to the SE. On the Anticline fragment, the trenches and to a lesser degree the artisan workings provided good exposures of the mineralised lithologies. On the Kii fragment, exposures were found on the SW side to sample each of the mineralised lithologies. Ideal sampling points were chosen where the unit could be channel sampled across its entire width. The surface was then chipped clean before taking a broad channel sample.

The proportions of the bulk sample are representative of the average thickness of the five mineralised horizons within the fragments overall. Every effort was made to take high grade, medium grade and low grade samples representative of the different lithologies in the different locations.

Two composite samples were prepared from borehole core fines to derive an intermediate depth sample and a deeper sample representative of the mineralised material from the 4 fragments under evaluation. Bench scale hydrometallurgical leach testwork was carried out on both of these samples. The residence time was twelve hours at ambient temperature of 25°C. The results returned from these leaches proved that the recoveries were very similar to those achieved from the surface samples.

16.2.2 Hydrometallurgical Testwork on the Bulk Sample Material.

The assay results from the 27 composite samples were studied and 22 of the 27 samples were selected for bench scale metallurgical testwork. Five samples were omitted due to too low grade or suitability. The tests were carried out on 500g samples which were leached for four hours at 25°C.

The preliminary results of this testwork raised further concerns about the recovery of cobalt using the current leaching conditions. Half of the samples returned cobalt recoveries lower than 68%, with the lowest being only 33.76% Co recovery from a sample grading 1.49% Co. Consequently, using this leaching method, a very high proportion of the cobalt in the Kalukundi Fragment would be lost.

Based on these results and following in-depth discussions with MDM and Mintek, three sets of tests were proposed:-

- To undertake very fine grinding of a sample with very low cobalt recoveries and then undertake the leaching testwork
- To undertake additional mineralogical testwork.
- To repeat the bench scale leaching testwork on at least two samples from which the worst cobalt recoveries were experienced. For these samples, the leaching was to be extended over 24 hours and to be carried out at ambient temperature of 25°C and at 40°C.

The results returned for the fine grinding testwork were excellent, with 95% of the cobalt being leached. This confirmed that most of the cobalt is susceptible to leaching under standard conditions.

The mineralogical testwork confirmed that the cobalt mineral present in the samples is heterogenite. It also identified the existence of two types of heterogenite, a Co-rich phase, as seen before in the tails and another phase which is Co-poor and also contains varying amounts of other minerals of which the major components are Cu, Mn, Fe, and Al. The latter mineral, which may be referred to as "amorphous" in texture, has a completely different appearance to the former and is more susceptible to leaching, as this material is not detected in the tailings samples.

The repeat bench scale results were very positive with around 86% of the cobalt being leached after twelve hours. It was clearly apparent from this kinetic testwork that the original leach times had been too short, hence the more compact or crystalline heterogenite was not being taken into solution.

16.3 Comminution

Seven samples were tested at Mintek. These samples represented material from different mining areas.

The testwork covered included Bond Ball Work Indices, Bond Rod Work Indices, Bond Crushability Indices, Bond Abrasion Indices and Unconfined Compressive Strength tests. Testwork was conducted on each individual sample as well as a composite sample prepared by taking a proportionate amount of material from each individual sample.

The test programme was successful in identifying the variability of the deposit in terms of identifying the characteristics on the constituent Mines Series units and potential processing difficulties and potential processing difficulties based on standard laboratory comminution testwork.

16.4 Pilot Leach Testwork Campaign

After the preceding bench testwork programmes, the guidelines were provided to Mintek to prepare a bulk sample representative of the overall orebody, encompassing defined percentages of each lithology.

The main objective of the batch leach pilot-scale testwork was as follows:-

- Confirm data regarding the leaching efficiency of the bulk sample.
- Establish H_2SO_4 and SO_2 (g) consumptions at steady state operation, which would include the effect of the recycle of raffinate to the leach.
- Determine steady state levels of impurities (Al, Fe, Mn, Mg, Ni, Zn, Si, Cr, Ca and Pb) in the leach filtrate.
- To generate steady state leach liquor which ultimately would result in a constant raffinate bleed stream with the required cobalt tenor for the second phase of piloting.

The laboratory leach testwork employing SMBS achieved ~80% Co leaching, where as in Leach 1, an efficiency of greater than 94% was achieved using SO_2 gas. Co and Cu leaching efficiencies of greater than 94% and 97% respectively were achieved consistently for all the pilot-scale leaches.

Leach kinetics showed that once the SO_2 gas was heated, then greater than 94% Co dissolution occurred within six hours of leaching. This however doubled the SO_2 consumption.

Steady state Cu and Co tenors of 14g/l and 11g/l were achieved respectively from Leach 7 to 12. Steady state impurities were also achieved after Leach 6 except for a small increase in Fe concentration. This occurred when the SO_2 gas was heated resulting in more leaching of Fe.

Acid consumption decreased from Leach 1 to Leach 2 as a result of raffinate being recycled for slurring of the feed solids. The average raffinate contribution to the total acid requirement for Leaches 7 to 12 was 82%. The average total acid (including raffinate) and SO_2(g) consumption at steady state (Batches 4 to 9) was 48kg acid/t solid feed and 23.8kg SO_2/t solid feed. This equates to an average sulphur consumption of 28kg S/t solid feed.

As a result of the improved recoveries achieved with SO_2, it was decided to use it rather than SMBS in the process and the acid plant required for the plant would be sized to have enough capacity to produce H_2SO_4 as well as SO_2 with the SO_2 being kept in storage as a buffer.

16.4.1 Primary Copper Solvent Extraction

Copper solvent extraction (SX) is a well-established technology for the recovery of copper from a sulphate medium. This was employed for the selective removal of Cu from the Cu/Co leach liquor.

The Cu SX was operated in a closed loop with the Cu/Co leaching and Cu electrowinning (EW) steps during a twelve day continuous pilot-plant campaign. The organic phase used comprised of LIX 984N (Cognis reagent), a 50/50 aldoxime/ketoxime mixture, in an aliphatic hydrocarbon diluent, SSX210 (Sasol Schumman reagent).

16.4.2 Copper Electrowinning

EW, used in conjunction with Cu SX, is an established technology and has found application across the world for the production of high-grade copper metal. During the Kalukundi pilot plant campaign, a pilot scale copper cell, holding approximately 300l of solution inventory, was run. The cell was initially filled with a synthetic feed solution. The aim of running the Cu EW was to provide strip liquor for the copper solvent extraction circuit, to determine any build up of impurities in the electrolyte over time, and to establish the deportment of metals between the electrolyte and copper metal.

16.4.3 Iron Removal

The Fe removal circuit is the first of seven purification and refining steps in the production of high purity Co metal from a bleed stream of the primary Cu circuit. The feed for the Fe removal circuit originates from a bleed of the primary Cu SX raffinate.

The pilot plant trail demonstrated that Fe_2+ could be effectively oxidised using air/SO_2 with an average pH of 2.5. Precipitation of the resultant Fe3+ at this concentration resulted in Fe concentration of <100mg/l. The residual ferric was completely removed during the Al removal stage at a higher pH. Co-precipitated Co losses of less than 0.5% were reported.

16.4.4 Secondary Copper solvent extraction

The secondary copper solvent extraction (Cu SX2) circuit followed the iron removal stage and functioned as a polishing stage to reduce the Cu content in the Co electrolyte.

An average Cu extraction efficiency of 95% was obtained over the duration of the campaign.

16.4.5 Aluminium Removal

The aluminium removal stage follows the Cu SX2. The raffinate from Cu SX2 feeds the Al removal stage where Al and residual Fe is precipitated to produce a barren solution containing less than 2mg/l of Fe and Al.

Results showed that an average of 94% of the Al (< 15mg/l for most batches) was removed from the feed stream in two stages of Al removal (residence time of 1 hour per stage) at ambient temperature.

16.4.6 Zinc/Manganese Solvent Extraction

The Zn/Mn SX circuit followed the aluminium removal stage. This stage functioned to remove Zn, Mn, Fe, Al, Ca and a portion of Cu from the Co electrolyte by solvent extraction using di-2-ethyl hexylphosphoric acid (DEHPA).

16.4.7 Copper Ion Exchange

Ion exchange is often recommended when low concentrations of impurities have to be removed from metal electrolytes to improve its quality. For the Project, Cu was removed from the Co electrolyte to limit the contamination of the Co cathode. Mn was also removed upfront in the circuit by means of solvent extraction to limit MnO_2 sludge formation in the electrowinning circuit. The Cu ion exchange (IX) unit operation was situated after Mn SX.

16.4.8 Cobalt Solvent Extraction

The Co SX circuit followed the Cu IX stage. This stage functioned to remove Co from the Co electrolyte by solvent extraction using Cyanex 272.

16.4.9 Co Electrowinning

During the Kalukundi pilot plant campaign, undivided Co EW technology, in a deep cell, was employed in order to recover cobalt metal from the Co SX loaded strip liquor (advance electrolyte). The cell was initially filled with synthetic solution, prepared to represent a typical Co spent electrolyte using this technology.

The aim of Co EW was to produce high purity cobalt cathodes, to determine the build up of impurities in the electrolyte over time, and to establish the deportment of elements between the electrolyte and cobalt metal.

16.4.10 Acid consumption

Leach testwork carried out on selected core samples returned very positive results for acid and gangue acid consumption (GAC). In fact, the average GAC for the deposit, based on data from four boreholes, one from each fragment, was 36.6kg/t. It was on the basis of this information and the improved metal recoveries and consequently the excellent financial returns that could be obtained that the decision was made to select the leach process as being the optimum process to recover both copper and cobalt from the Kalukundi oxide deposit.

As soon as assay results were being returned from the drilling programme, SGS Lakefield was approached to re-establish the acid leach analytical method by which the analyses were undertaken to derive the above GAC value. This method measures leachable copper and cobalt as well as the acid consumption and from this, the GAC can be calculated.

Over a period of 20 months as the drilling programme was undertaken and results received, individual borehole core samples were analysed by this method. By the end of the programme, a comprehensive database of these values had been received and processed. From this database, it was possible to define the acid consumptions and GAC for a full representative cross section of each of the four fragments evaluated at Kalukundi. This is summarised as follows:-

- Principal Fragment 29kg/tonne
- Anticline Fragment 39kg/tonne
- Kii Fragment 33kg/tonne
- Kalukundi Fragment 29kg/tonne (between surface and 40 to 60m depth)
- Average 32kg/tonne

The figures above are based on a total of 1,120 samples from 33 boreholes. An additional 410 samples from nine boreholes were used to define GAC (average 354kg/tonne) within the sulphide zone of the Kalukundi fragment below 40-60 metres.

From this data, it may be concluded that the GAC for the majority of the deposit is relatively low. Consequently, the oxide ores from all four fragments are amenable to the leaching and SX/EW process which has been selected for this study.

16.5 Performance and Recovery Predictions

The pilot plant testwork returned average leach recovery figures of Cu 98.04% and Co 95.43%.

Leach recoveries from bench scale testwork returned the comparative values as outlined in Table 16.5_1.

Table 16.5_1
Kalukundi Project
Leach Recoveries from Bench Scale Testwork

Sulphur Consumption	Depth	Cu	Co
Bulk	0m – 10m	96.29%	85.96%
Intermediate	35m – 65m	93.44%	87.46%
Deep	55m – 95m	83.33%	87.05%

These results confirmed that similar leach recoveries could be expected in depth as was found at surface. Interrogation of the data led to the following observations:-

- The intermediate sample has an amount of about 5% of refractory copper mineralization which has reduced the copper recoveries by about 3% relative to the surface bulk sample. Cobalt recoveries are closely comparable.
- The deep sample is a composite of material from six boreholes. Borehole K22 drilled into the Kalukundi Fragment intersected mainly sulphide mineralisation. This hole returned leach recoveries of about 15% Cu and it makes up about 13% of the composite sample. Thus if this material were excluded, copper recoveries of up to 93% could be expected in the Deep oxide zone of the other three fragments.

It is interesting to note that the cobalt recoveries in the deep sample are not similarly depressed. This is possibly because in BH K22, a significant proportion of the carrollite has been converted to sphaerocobaltite (Co-carbonate) which leaches readily.

17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

17.1 Geological Interpretation and Modelling

There are several mineralised fragments exposed at the surface at Kalukundi. Four of the fragments will be mined, these being the:-

- Principal;
- Anticline, located 300m northeast of the Principal fragment;
- Kalukundi, located 2.7km north north-east of the Anticline fragment; and
- Kii, located 400m north of the Kalukundi Fragment.

Geological interpretations were carried out by Africo staff and provided to RSG Global as string files and wireframe files (* dxf) from original work in GEMCOM software. RSG Global imported this data and built Datamine wireframes based on the files provided.

Interpretations are based on surface mapping and projections to drillhole intercepts at depth. Projections of the units below the deepest drillhole intercepts were made based on reasonable geological extrapolation. While the paucity of sampling at shallow depths remains, recent infill drilling has improved confidence in the grade of this zone. Confidence in the continuity of the units however, is considered excellent.

Wireframes reflect geology and continuity of lithology rather than mineralisation above a particular cutoff. Care was taken, however to incorporate natural cutoffs within the sequence, for instance the footwall in the RATG is generally a grade footwall rather than a stratigraphic one, as is the hangingwall in the SDB.

RSG Global believes that the interpretations adequately reflect the continuity of the units. Wireframes have been clipped to borehole intersections. Establishing continuity is complicated in some cases by structural discontinuities. This is particularly true in the Kalukundi fragment where units are repeated in the south-western portion of the fragment. In cases where the extent of the repetition is uncertain, the affected portion of the model has been classified as inferred. Although in other portions of the Project area cross cutting faults cause offsets in the lithologies, these are not considered to be material to the confidence in the broader continuity of the units.

Significant opportunity exists to increase measured and indicated tonnages in the repeated portions of the stratigraphy. Furthermore there is hangingwall and footwall mineralisation that cannot be estimated due to uncertainty in its continuity. This and other 'out of sequence' intersections represent potential upside for the resource. Preliminary pit optimisation work suggests that these zones will fall within the pit limits and RSG Global considers it likely that they will be defined at a grade control stage and mined.

RSG Global is aware of a Cu-leached, Co-enriched surface profile, but this is still not quantified by sampling. JCI/GeoConsult applied an arbitrary depletion/enrichment to the upper 10m of the mineralised zone. Africo has obtained some samples within the depletion/enrichment zone, and these suggest that the depletions and enrichments are not uniform over the fragments. RSG Global has consequently not applied a depletion zone to their grade model.

17.2 Mining Depletion

There has been extensive artisan mining in the upper 20m of the Principal fragment in particular. This has been focussed on the highest cobalt grades. The extent of this depletion has been estimated and represented by wireframe solids which have been used to deplete the resource for Principal, Kalukundi and Kii fragments. Depletion in the Anticline fragment is considered to be minor and not material.

17.3 Statistical Analysis

17.3.1 Compositing

Downhole composites were calculated for all boreholes, within the modelled lithologies, resulting in a nominal composite length of 2m. Composite residuals were retained 'as is' rather than incorporated into previous composites or discarding them. The residuals were not utilised for variogram calculation, but were used for interpolation.

17.3.2 Recovery vs Grade

Recoveries have been measured on core runs and not for individual assay samples although there may be six or more meter samples per core run. Consequently, it is sometimes difficult to discern which assay sample has suffered from bad recovery. In a few cases, however, it is clear that there has been upgrading of samples with poor recovery. These samples usually have recoveries of < 50% and show Cu and Co values that are amongst the highest for that unit. Other intervals with low recovery and relatively low grade may also have been enriched due to core loss, some intervals may be depleted by core loss. However, unless enrichment or depletion can be clearly demonstrated, no remedial action has been taken. The database for Kalukundi does not include recoveries for the older holes (Gécamines) consequently; no adjustment can be made for recovery and grade for these holes.

Statistical analysis of the main RATG unit for the Kalukundi Fragment indicates that there is generally no correlation between grade and recovery (Figure 17.3.2_1). The poorest recovery for this unit was 22%, corresponding to the highest grade of 23.9% Cu. It is likely that this sample was upgraded by the loss of lower grade material, but also possible that the poor recovery was the result of high grade mineralisation causing the core to be especially friable, or a combination of both. In this case, the grade was downgraded to the preceding down-the hole grade of 7.27% Cu prior to compositing. There is also evidence of upgrading of the Co grade for this interval and this has also been cut to the previous interval of 0.08% Co.

Samples considered to be enriched through core loss are listed in Table 17.3.2_1 below. Remedial action is also listed in this table.

Table 17.3.2_1
Kalukundi Project
Database Adjustments for Core Loss

	BHID	Frum	To	Lithology	Recovery%	Original Value Cu %	Original Value Co %	Adjusted Value Cu %	Adjusted Value Co%
Kalukundi	K24	44.2	44.5	RATG	22.0	23.9	0.16	7.3	0.08
Kalukundi	K24	44.5	45.57	DSTRAT	22.6	17.2	0.30	5.5	0.30
Kalukundi	K27	54.5	54.87	Fault/SDB	31.5	20.1	1.44	8.3	0.20

17.3.3 Distributions

RSG Global studied distributions for each unit, within each fragment, for Cu, Co and bulk density. Due to the numerous permutations descriptive statistics and histograms for each are not presented here, but the following general comments are considered relevant.

- The distributions of both Cu and Co are generally negatively skewed. Cu grades are in the range between 0 and 30%. Cobalt is between 0 and 12.4% before compositing. After compositing to 2m and adjustment for recovery copper grades range between 0 and 16% and cobalt grades range between 0 and 6.8%. The distributions are not considered to be strongly skewed, and no cutting of samples has been applied.
- The distribution for bulk density approximates a symmetrical distribution, with a very slight negative skew. The low side of the density tail extends to 1.63t/m^3 as a result of the reduction in density during weathering and the presence of vugs in silicified material.
- The separation of lithologies within fragments and the use of hard boundaries for hanging and footwalls simplify the estimation process as it reduces the range of Cu and Co values used to estimate each unit, but reduces the number of samples available to estimate each particular unit.

17.4 Block Modelling

RSG Global constructed two block models for each fragment, first an orthogonal model with blocks aligned to the Cartesian co-ordinates and second a rotated block model with co-ordinates aligned to the dip of the deposit. Although RSG Global considered the rotated model to be superior in terms of volumetric interpretation and interpolation, the orthogonal model was very similar in terms of interpolated grade and modelled tonnage, and was more practical to use because the models had a common block prototype and could be added to form a deposit wide model. Furthermore, the orthogonal model was useful for conversion to other software formats (e.g. GEMCOM). Consequently, reporting and mine planning was carried out using the orthogonal block models.

RSG Global used the following parent block sizes:-

- Rotated, 25m x 10m x 5m in the rotated X, Y, Z directions, i.e. along strike, down dip, across dip respectively.
- Orthogonal, 20m x 20m x 10m in the X, Y, Z Cartesian directions.

Sub-celling was allowed to provide for good volumetric representation.

Only orthogonal models are tabulated in the resource statement.

17.5 Grade Estimation

17.5.1 Variograms

RSG Global calculated and modelled variograms for Cu, Co and BD at the end of July 2005. Since then, some additional drillholes have been added to the data set, specifically drillholes in the shallow portions of the mineralisation. The current estimation is based on variography defined before the infill drilling results were available. While the variography may have changed slightly with the new data, RSG Global does not believe that this will materially change the interpolated grades.

RSG Global calculated variograms for each unit, within each fragment, and separately for structural repetitions within the fragments. Due to the numerous permutations, plots of experimental and modelled variograms are not reproduced here.

Due to limited availability of drillholes, directional variograms are generally poorly defined. Consequently, most variograms were modelled based on omnidirectional experimental variograms. Some of the variograms in the Anticline fragment showed sufficient structure to support the use of anisotropy. Notwithstanding the use of omnidirectional variograms, there are still insufficient samples to clearly define structured variography in many cases. RSG Global believes that this is due to paucity of sample pairs rather than the result of inherently unstructured variography, and has interpreted model variograms in spite of variogram noise. In cases where confidence in the structure of the variography is extremely low, a 100% nugget variogram was applied.

Variograms used are listed in Table 17.5.1_1.

17.5.2 Search Parameters

Stepped search parameters were used with a base search of 90m (rotated X axis, along strike) x 50m (rotated Y axis, down dip) x 30m (rotated Z axis, thickness). For most blocks the use of hard stratigraphic boundaries negates the Z search restriction. This initial search was aligned to the strata dip and designed largely on the sample pattern rather than variography. An octant search was applied with a minimum of two octants and two samples per octant and a maximum of 20 samples per block. This basic search was used for Cu, Co and BD.

Table 17.5.1_1

Kalukundi Project

Variogram Parameters

	Nugget	Range Ax	Range Ay	Range Az	Sill1	Range 2 Ax	Range 2 Ay	Range 2 Az	Sill2	Total Sill
Kii										
RATG Cu	2.38	33.00	33.00	33.00	4.94					7.32
RATG Co	0.01	42.97	42.97	42.97	0.10					0.11
Dstrat Cu	0.61	44.00	44.00	44.00	5.46					6.07
Dstrat Co	0.01	27.00	27.00	27.00	0.12					0.13
Dstrat BD	0.01	42.90	42.90	42.90	0.01	164.54	164.54	164.54	0.02	0.04
RSF Cu	0.58	198.00	198.00	198.00	5.22					5.80
RSF Co	0.03	130.00	130.00	130.00	0.27					0.30
RSF BD	0.00	44.67	44.67	44.67	0.03					0.03
RSC Cu	0.83	56.75	56.75	56.75	2.93					3.76
RSC Co	0.01	45.00	45.00	45.00	0.03	97.00	97.00	97.00	0.07	0.11
RSC BD	0.01	54.25	54.25	54.25	0.03					0.04
SDB Cu	0.72	139.00	139.00	139.00	3.25	250.00	250.00	250.00	3.25	7.22
SDB Co	0.10	144.00	144.00	144.00	0.23					0.33
Nugget	0.99	0.10	0.10	0.10	0.01					1.00
Kalukundi										
RATG Cu	2.38	33.00	33.00	33.00	4.94					7.32
RATG Co	0.01	42.97	42.97	42.97	0.10					0.11
RATG BD	0.01	75.00	75.00	75.00	0.05					0.06
Dstrat Cu	0.61	44.00	44.00	44.00	5.46					6.07
Dstrat Co	0.01	27.00	27.00	27.00	0.12					0.13
Dstrat BD	0.01	22.79	22.79	22.79	0.12					0.13
RSF Cu	0.58	198.00	198.00	198.00	5.22					5.80
RSF Co	0.03	130.00	130.00	130.00	0.27					0.30
RSF BD	0.01	1.97	1.97	1.97	0.04	37.30	37.30	37.30	0.02	0.07
RSC Cu	0.83	56.75	56.75	56.75	2.93					3.76
RSC Co	0.01	45.00	45.00	45.00	0.03	97.00	97.00	97.00	0.07	0.11
RSC BD	0.01	75.00	75.00	75.00	0.05					0.06
SDB Cu	0.72	139.00	139.00	139.00	3.25	250.00	250.00	250.00	3.25	7.22
SDB BD	0.01	6.08	6.08	6.08	0.02	65.24	65.24	65.24	0.05	0.07
SDB Co	0.10	144.00	144.00	144.00	0.23					0.33
SDS BD	0.01	43.06	43.06	43.06	0.13					0.14
Principal										
RATG Cu	0.49	168.28	168.28	168.28	4.44					4.93
RATG Co	0.06	222.52	222.52	222.52	0.17					0.22
RATG Density	0.00	262.85	262.85	262.85	0.05					0.05
Dstrat Cu	1.61	133.48	133.48	133.48	18.54					20.16
Dstrat Co	0.05	231.28	231.28	231.28	0.48					0.53
Dstrat BD	0.04	122.10	122.10	122.10	0.04					0.07
RSF Cu	1.31	39.50	39.50	39.50	4.14	73.73	73.73	73.73	5.28	10.73
RSF Co	0.31	10.74	10.74	10.74	1.06	55.66	55.66	55.66	0.57	1.95
RSC Cu	0.52	131.58	131.58	131.58	4.67					5.19
RSC Co	0.07	11.54	11.54	11.54	0.63					0.70
RSC BD	0.03	9.37	9.37	9.37	0.01	135.91	135.91	135.91	0.01	0.05
SDB Cu	0.86	76.25	76.25	76.25	7.72					8.58
SDB Co	0.10	91.54	91.54	91.54	0.58					0.68
Anticline (anisotropic variograms rotated 220/Z and 130/Y)										
RATG Cu	1.00	66.12	66.12	7.08	8.98					9.98
RATG Co	0.01	9.69	9.69	9.69	0.06	62.38	62.38	62.38	0.05	0.13
RATG BD	0.01	7.95	7.95	7.95	0.04	107.87	107.87	107.87	0.07	0.13
Dstrat Cu	5.63	38.11	38.11	38.11	26.25					31.88
Dstrat Co	0.06	15.31	15.31	15.31	0.55					0.61
RSF Cu	1.69	5.96	5.96	5.96	5.54	67.74	67.74	67.74	9.63	16.86
RSF Co	0.07	88.98	88.98	88.98	0.66					0.73
RSF BD	0.01	7.83	7.83	7.83	0.05					0.06
RSC Cu	0.42	4.64	4.64	3.04	0.92	73.18	73.18	27.17	2.88	4.22
RSC Co	0.03	109.96	109.96	11.13	0.13	108.77	108.77	76.36	0.13	0.29
RSC BD	0.01	96.64	96.64	11.43	0.03					0.04
SDB Cu	0.18	44.73	44.73	44.73	1.65					1.83
SDB Co	0.02	90.00	90.00	90.00	0.18					0.20
SDB BD	0.02	129.45	129.45	129.45	0.19					0.22
100% Nugget	1.00	1.00	1.00	1.00	0.00					1.00

A second pass search was designed using a search distance of approximately 90% of the total variance (sill), isotropic searches were doubled for a second search and tripled for a third. Blocks estimated in the second or third pass were generally classified as inferred. Bulk density values that remained unestimated were assigned average density values.

GAC searches were set at 50m x 50m x 50m, increasing to 450m to ensure that all blocks are informed. A minimum of one sample per block was set.

Search and sample selection parameters are listed in Table 17.5.2_1.

17.5.3 Estimation Strategy

Grade and bulk density interpolation was carried out using ordinary kriging with variogram parameters as defined in Table 17.5.1_1 and search parameters as defined in Table 17.5.2_1. GAC was estimated using inverse distance squared.

17.6 Classification

Classification of the mineral resource at Kalukundi was carried out in a subjective/objective manner, based on RSG Global's experience in estimating and exploiting stratigraphic Cu-Co deposits in the Lufilian Arc. Due consideration was applied to continuity of the units, number of drillholes intersecting units and especially tectonic fragments of units, and continuity of grades. Where the continuity of tectonic fragments was uncertain, the zones were classified as Inferred Resource.

RSG Global considered confidence in the grade estimates to be good, even though drillhole density was limited down dip. Confidence was supported by low grade variability and low skewness parameters.

Consequently all material falling between adjacent boreholes at a nominal spacing of 50m was initially classified as Measured Resource. A thin rim of Measured Resource was projected beyond the last boreholes on each section, and a further rim of Indicated Resource was interpreted beyond that. Cognisance was taken of the rapid increase in kriging variance beyond the last borehole on each section in defining the limits of Measured and Indicated Resources.

There remains a deficiency of sampling in the near-surface zone, which has consequently been classified as inferred. The extent of the inferred has, however been significantly reduced since infill drilling results became available in November 2005.

Some of the mineralised intercepts exhibit poor core recovery. This factor inherently reduces confidence in the grade estimate. Where appropriate, RSG Global adjusted grades from zones of very poor core recovery, but in most cases did not believe that the poor core recoveries materially affected confidence in the resource estimate. RSG Global further recognises that obtaining good core recovery in oxidised and friable material is not practical in many cases and that most of the samples obtained are probably the best possible. Nevertheless, RSG Global recommends that for future resource delineation drilling, emphasis should remain focussed on employing suitable methods and experienced contractors in order to provide the best practical core recoveries.

Table 17.5.2_1

Kalukundi Project

Search and Sample Selection Parameters

Search Variable	Range in x	Range in y	Range in z	rot z	rot x	Search Type	min octants	minperoct	maxperoct	min	max	search fact 2	min 2	max 2	search fact 3	min3	max3	Max per BH
Pass 1 Principal																		
Cu, Co & BD	90	50	30	43	77	octant	2	2	4	4	20							
Pass 2 Principal																		
RSC Cu	90	50	30			no octant				4	50	2	4	50	3	1	20	0
Dstrat Cu	100	100	100			no octant				4	50	2	4	50	3	1	20	0
RSF Cu	90	50	30			no octant				4	50	2	4	50	3	1	20	0
RATG Cu	120	120	120			no octant				4	50	2	4	50	3	1	20	0
SDB Cu	90	50	30			no octant				4	50	2	4	50	3	1	20	0
RSC Co	95	50	30			no octant				4	50	2	4	50	3	1	20	0
Dstrat Co	150	150	150			no octant				4	50	2	4	50	3	1	20	0
RSF Co	90	50	30			no octant				4	50	2	4	50	3	1	20	0
RATG Co	150	150	150			no octant				4	50	2	4	50	3	1	20	0
SDB Co	90	50	30			no octant				4	50	2	4	50	3	1	20	0
Pass 1 Kalukundi																		
Cu, Co & BD	90	50	30	143	75	octant	2	2	4	4	20							
Pass 2 Kalukundi																		
RSC Cu	60	60	60			no octant				4	50	2	4	50	3	1	20	0
Dstrat Cu	40	40	40			no octant				4	50	2	4	50	3	1	20	0
RSF Cu	150	150	150			no octant				4	50	2	4	50	3	1	20	0
RATG Cu	50	50	50			no octant				4	50	2	4	50	3	1	20	0
SDB Cu	150	150	150			no octant				4	50	2	4	50	3	1	20	0
RSC Co	45	45	45			no octant				4	50	2	4	50	3	1	20	0
Dstrat Co	80	80	80			no octant				4	50	2	4	50	3	1	20	0
RSF Co	75	75	75			no octant				4	50	2	4	50	3	1	20	0
RATG Co	50	50	50			no octant				4	50	2	4	50	3	1	20	0
SDB Co	100	100	100			no octant				4	50	2	4	50	3	1	20	0
Nugget	50	50	50			no octant				4	50	2	4	50	3	1	20	0
Pass 1 KII																		
Cu, Co & BD	90	50	30	135	62	octant	2	2	4	4	20							
Pass 2 KII																		
RSC Cu	50	50	50			no octant				4	50	2	4	50	3	1	20	0
Dstrat Cu	100	100	100			no octant				4	50	2	4	50	3	1	20	0
RSF Cu	40	40	40			no octant				4	50	2	4	50	3	1	20	0
RATG Cu	50	50	50			no octant				4	50	2	4	50	3	1	20	0
SDB Cu	90	90	90			no octant				4	50	2	4	50	3	1	20	0
RSC Co	50	50	50			no octant				4	50	2	4	50	3	1	20	0
Dstrat Co	50	50	50			no octant				4	50	2	4	50	3	1	20	0
RSF Co	40	40	40			no octant				4	50	2	4	50	3	1	20	0
RATG Co	50	50	50			no octant				4	50	2	4	50	3	1	20	0
SDB Co	55	55	55			no octant				4	50	2	4	50	3	1	20	0
Nugget	50	50	50			no octant				4	50	2	4	50	3	1	20	0

Search Variable	Range in x	Range in y	Range in z	rot z	rot y	Search Type	min octants	minperoct	maxperoct	min	max	search fact 2	min 2	max 2	search fact 3	min3	max3	Max per BH
Pass 1 Anticline																		
Cu Co BD	50	90	20	310	-50	octant	2	2	4	4	20							
Pass 2 Anticline																		
CMN	100	100	20	310	-50	no octant				1	20	2	1	20	3	1	20	6
RSC BD	70	70	20	310	-50	no octant				1	20	2	1	20	3	1	20	6
Dstrat BD	100	100	20	310	-50	no octant				1	20	2	1	20	3	1	20	6
RSF BD	10	10	10	310	-50	no octant				1	20	5	1	20	10	1	20	6
RATG BD	80	80	20	310	-50	no octant				1	20	2	1	20	3	1	20	6
SDB BD	100	100	20	310	-50	no octant				1	20	2	1	20	3	1	20	6
RSC Co	80	80	20	310	-50	no octant				4	20	2	4	20	3	2	20	6
Dstrat Co	15	15	15	310	-50	no octant				4	20	4	4	20	8	2	20	6
RSF Co	60	60	20	310	-50	no octant				4	20	2	4	20	3	2	20	6
RATG Co	50	50		310	-50	no octant				4	20	2	4	20	3	2	20	6
SDB Co	70	50	20	310	-50	no octant				4	20	2	4	20	3	2	20	6
RSC Cu	50	70	20	310	-50	no octant				4	20	2	4	20	3	2	20	6
Dstrat Cu	30	50	20	310	-50	no octant				4	20	3	4	20	4	2	20	6
RSF Cu	50	30	20	310	-50	no octant				4	20	2	4	20	3	2	20	6
RATG Cu	50	50	50	310	-50	no octant				4	20	4	4	20	8	2	20	6
SDB Cu	40	40	20	310	-50	no octant				4	20	2	4	20	3	2	20	6

17.7 Resource Reporting

Resources for the Kalukundi Deposit are tabulated in Tables 17.7_1 to 17.7_4. Figures are shown at a 1.5% Cu equivalent cutoff. The Cu equivalent cutoff has been calculated on the basis of a 12:1 Co:Cu revenue basis which in turn is based largely on price ratios. As metallurgical and other economic factors are still under evaluation in the FS, factors such as net smelter return have not been incorporated.

Table 17.7_1

Kalukundi Project

Resource Statement for Kalukundi at 1.5% Cu Equivalent Cutoff, based on a 12:1 Cu:Co value equivalence ratio

Measured Resources
(RSG Global Evaluation - January 2006)

Fragment	Tonnage	Cu (t)	Co (t)	Cu %	Co %
Principal					
1400-1450m	1,479,330	25,860	12,226	1.75	0.83
1350-1400m	1,743,834	48,426	14,282	2.78	0.82
Tonnage to 100m	**3,223,164**	**74,286**	**26,508**	**2.30**	**0.82**
1300-1350m	285,264	9,734	2,690	3.41	0.94
Tonnage to 150m	**3,508,428**	**84,020**	**29,198**	**2.39**	**0.83**
1250-1300m	2	0	0	3.43	0.51
Tonnage to 200m	**3,508,430**	**84,020**	**29,198**	**2.39**	**0.83**
Anticline					
1400-1450m	1,159,896	25,593	6,330	2.21	0.55
1350-1400m	306,635	12,188	1,440	3.97	0.47
Tonnage to 100m	**1,466,531**	**37,781**	**7,770**	**2.58**	**0.53**
1300-1350m	0	0	0	0.00	0.00
Tonnage to 150m	**1,466,531**	**37,781**	**7,770**	**2.58**	**0.53**
1250-1300m	0	0	0	0.00	0.00
Tonnage to 200m	**1,466,531**	**37,781**	**7,770**	**2.58**	**0.53**
Kii					
1400-1450m	526,643	13,429	2,408	2.55	0.46
1350-1400m	1,217,678	31,464	7,353	2.58	0.60
Tonnage to 100m	**1,744,321**	**44,893**	**9,761**	**2.57**	**0.56**
1300-1350m	237,769	5,548	1,460	2.33	0.61
Tonnage to 150m	**1,982,090**	**50,440**	**11,221**	**2.54**	**0.57**
1250-1300m	133	3	0	2.03	0.33
Tonnage to 200m	**1,982,222**	**50,443**	**11,222**	**2.54**	**0.57**
Kalukundi					
1400-1450m	784,184	19,751	3,382	2.52	0.43
1350-1400m	1,625,277	41,039	6,424	2.53	0.40
Tonnage to 100m	**2,409,461**	**60,789**	**9,807**	**2.52**	**0.41**
1300-1350m	281,700	3,595	1,036	1.28	0.37
Tonnage to 150m	**2,691,161**	**64,384**	**10,843**	**2.39**	**0.40**
1250-1300m	140	2	1	1.39	0.72
Tonnage to 200m	**2,691,301**	**64,386**	**10,844**	**2.39**	**0.40**
TOTALS					
Total to 100m	**8,843,476**	**217,749**	**53,846**	**2.46**	**0.61**
Total to 150m	**9,648,209**	**236,625**	**59,031**	**2.45**	**0.61**
Total To 200m	**9,648,484**	**236,630**	**59,033**	**2.45**	**0.61**

Table 17.7_2

Kalukundi Project

Resource Statement for Kalukundi at 1.5% Cu Equivalent Cutoff, based on a 12:1 Cu:Co value equivalence ratio

Indicated Resources

(RSG Global Evaluation - January 2006)

Fragment	Tonnage	Cu (t)	Co (t)	Cu %	Co %
Principal					
1400-1450m	313,857	5,986	2,975	1.91	0.95
1350-1400m	234,485	5,547	1,909	2.37	0.81
Tonnage to 100m	**548,341**	**11,533**	**4,884**	**2.10**	**0.89**
1300-1350m	179,376	6,152	1,528	3.43	0.85
Tonnage to 150m	**727,718**	**17,685**	**6,412**	**2.43**	**0.88**
1250-1300m	1,496	79	14	5.29	0.97
Tonnage to 200m	**729,214**	**17,764**	**6,427**	**2.44**	**0.88**
Anticline					
1400-1450m	155,224	1,329	1,033	0.86	0.67
1350-1400m	93,764	2,852	493	3.04	0.53
Tonnage to 100m	**248,988**	**4,181**	**1,526**	**1.68**	**0.61**
1300-1350m	29,496	753	196	2.55	0.67
Tonnage to 150m	**278,484**	**4,934**	**1,722**	**1.77**	**0.62**
1250-1300m	4,126	121	40	2.94	0.96
Tonnage to 200m	**282,610**	**5,056**	**1,762**	**1.79**	**0.62**
Kii					
1400-1450m	220,708	5,986	953	2.71	0.43
1350-1400m	50,700	1,351	260	2.66	0.51
Tonnage to 100m	**271,408**	**7,337**	**1,212**	**2.70**	**0.45**
1300-1350m	312,444	7,117	1,942	2.28	0.62
Tonnage to 150m	**583,852**	**14,454**	**3,154**	**2.48**	**0.54**
1250-1300m	1,686	43	7	2.55	0.40
Tonnage to 200m	**585,538**	**14,497**	**3,161**	**2.48**	**0.54**
Kalukundi					
1400-1450m	304,080	4,868	1,770	1.60	0.58
1350-1400m	215,298	7,417	702	3.44	0.33
Tonnage to 100m	**519,378**	**12,285**	**2,472**	**2.37**	**0.48**
1300-1350m	351,802	7,497	1,328	2.13	0.38
Tonnage to 150m	**871,180**	**19,782**	**3,799**	**2.27**	**0.44**
1250-1300m	37,383	352	142	0.94	0.38
Tonnage to 200m	**908,562**	**20,135**	**3,941**	**2.22**	**0.43**
TOTALS					
Total to 100m	**1,588,115**	**35,336**	**10,094**	**2.23**	**0.64**
Total to 150m	**2,461,234**	**56,856**	**15,088**	**2.31**	**0.61**
Total To 200m	**2,505,924**	**57,452**	**15,291**	**2.29**	**0.61**

Table 17.7_3

Kalukundi Project

Resource Statement for Kalukundi at 1.5% Cu Equivalent Cutoff, based on a 12:1 Cu:Co value equivalence ratio

Inferred Resources
(RSG Global Evaluation - January 2006)

Fragment	Tonnage	Cu (t)	Co (t)	Cu %	Co %
		Principal			
1400-1450m	149,499	3,454	1,399	2.31	0.94
1350-1400m	396,806	8,741	2,939	2.20	0.74
Tonnage to 100m	**546,305**	**12,195**	**4,337**	**2.23**	**0.79**
1300-1350m	2,082,967	61,016	15,141	2.93	0.73
Tonnage to 150m	**2,629,272**	**73,211**	**19,479**	**2.78**	**0.74**
1250-1300m	2,852,396	90,865	21,318	3.19	0.75
Tonnage to 200m	**5,481,668**	**164,077**	**40,797**	**2.99**	**0.74**
		Anticline			
1400-1450m	279,009	3,719	1,587	1.33	0.57
1350-1400m	1,245,804	31,456	7,398	2.52	0.59
Tonnage to 100m	**1,524,813**	**35,175**	**8,985**	**2.31**	**0.59**
1300-1350m	1,264,097	32,675	7,644	2.58	0.60
Tonnage to 150m	**2,788,910**	**67,849**	**16,630**	**2.43**	**0.60**
1250-1300m	147,762	2,496	841	1.69	0.57
Tonnage to 200m	**2,936,672**	**70,346**	**17,471**	**2.40**	**0.59**
		KII			
1400-1450m	425,879	12,198	1,741	2.86	0.41
1350-1400m	42,596	908	167	2.13	0.39
Tonnage to 100m	**468,475**	**13,105**	**1,908**	**2.80**	**0.41**
1300-1350m	553,694	13,227	3,600	2.39	0.65
Tonnage to 150m	**1,022,169**	**26,332**	**5,508**	**2.58**	**0.54**
1250-1300m	902,366	20,812	5,999	2.31	0.66
Tonnage to 200m	**1,924,535**	**47,145**	**11,507**	**2.45**	**0.60**
		Kalukundi			
1400-1450m	950,395	7,080	4,877	0.74	0.51
1350-1400m	409,346	11,264	1,152	2.75	0.28
Tonnage to 100m	**1,359,741**	**18,344**	**6,028**	**1.35**	**0.44**
1300-1350m	1,498,821	43,530	4,804	2.90	0.32
Tonnage to 150m	**2,858,562**	**61,874**	**10,833**	**2.16**	**0.38**
1250-1300m	1,819,236	51,968	6,787	2.86	0.37
Tonnage to 200m	**4,677,798**	**113,842**	**17,620**	**2.43**	**0.38**
		TOTALS			
Total to 100m	**3,899,335**	**78,819**	**21,259**	**2.02**	**0.55**
Total to 150m	**9,298,914**	**229,267**	**52,450**	**2.47**	**0.56**
Total To 200m	**15,020,674**	**395,409**	**87,395**	**2.63**	**0.58**

Table 17.7_4 Kalukundi Project Resource Statement for Kalukundi at 1.5% Cu Equivalent Cutoff, based on a 12:1 Cu:Co value equivalence ratio Measured and Indicated Resources (RSG Global Evaluation - January 2006)					
Fragment	**Tonnage**	**Cu (t)**	**Co (t)**	**Cu %**	**Co %**
		Principal			
1400-1450m	1,793,187	31,845	15,202	1.78	0.85
1350-1400m	1,978,319	53,974	16,191	2.73	0.82
Tonnage to 100m	**3,771,505**	**85,819**	**31,392**	**2.28**	**0.83**
1300-1350m	464,640	15,886	4,218	3.42	0.91
Tonnage to 150m	**4,236,146**	**101,705**	**35,610**	**2.40**	**0.84**
1250-1300m	1,498	79	14	5.29	0.97
Tonnage to 200m	**4,237,644**	**101,784**	**35,625**	**2.40**	**0.84**
		Anticline			
1400-1450m	1,315,120	26,921	7,363	2.05	0.56
1350-1400m	400,399	15,040	1,933	3.76	0.48
Tonnage to 100m	**1,715,519**	**41,961**	**9,296**	**2.45**	**0.54**
1300-1350m	29,496	753	196	2.55	0.67
Tonnage to 150m	**1,745,015**	**42,715**	**9,492**	**2.45**	**0.54**
1250-1300m	4,126	121	40	2.94	0.96
Tonnage to 200m	**1,749,140**	**42,836**	**9,532**	**2.45**	**0.54**
		KII			
1400-1450m	747,351	19,415	3,361	2.60	0.45
1350-1400m	1,268,378	32,815	7,613	2.59	0.60
Tonnage to 100m	**2,015,729**	**52,230**	**10,974**	**2.59**	**0.54**
1300-1350m	550,213	12,665	3,402	2.30	0.62
Tonnage to 150m	**2,565,942**	**64,895**	**14,375**	**2.53**	**0.56**
1250-1300m	1,818	46	7	2.51	0.39
Tonnage to 200m	**2,567,760**	**64,940**	**14,383**	**2.53**	**0.56**
		Kalukundi			
1400-1450m	1,088,264	24,619	5,152	2.26	0.47
1350-1400m	1,840,575	48,455	7,126	2.63	0.39
Tonnage to 100m	**2,928,839**	**73,074**	**12,278**	**2.49**	**0.42**
1300-1350m	633,502	11,092	2,364	1.75	0.37
Tonnage to 150m	**3,562,341**	**84,166**	**14,642**	**2.36**	**0.41**
1250-1300m	37,523	95,259	17,006	253.87	45.32
Tonnage to 200m	**3,599,864**	**179,425**	**31,648**	**4.98**	**0.88**
		TOTALS			
Total to 100m	**10,431,592**	**253,085**	**63,940**	**2.43**	**0.61**
Total to 150m	**12,109,443**	**293,481**	**74,120**	**2.42**	**0.61**
Total To 200m	**12,154,408**	**388,986**	**91,187**	**3.20**	**0.75**

For the purpose of this exercise, only resources above 200m below surface have been considered "potentially economically extractable". Inferred Resource models exist below this, but they would most likely have to be extracted using underground methods. No evaluations of underground parameters have yet been carried out and hence no resources have been quoted below this level. Furthermore these resources are predicated on very limited drilling information. Significant exploration potential is suggested by these models.

17.8 Reserve Estimates

The Project Reserve estimate as of May 2006 is reported in Table 17.8_2. All stated Reserves are completely included within the quoted Resources. The input parameters used in Reserve estimate are described in Section 23. For ease of reference, however, a summary of the most pertinent input parameters is provided in Table 17.8_1.

Table 17.8_1
Kalukundi Project
Summary of Input Parameters used for Reserve Estimation

Item			Value
Cu Price		$/lb	1.25
Co Price		$/lb	12.00
Diesel fuel price		$/l	1.29
Mining cost	Mill Feedd	$/t	3.12
	Waste	$/t	4.01
Processing Costs	0-10m	$/t	35.35
	10-20m	$/t	36.96
	20-30m	$/t	39.02
	30-40m	$/t	41.53
	40-50m	$/t	44.50
	50-60m	$/t	47.93
	60-70m	$/t	51.80
	70-80m	$/t	56.14
	80-90m	$/t	60.92
	90-100	$/t	66.16
	100-110m	$/t	71.86
	110-120m	$/t	78.01
Processing Recoveries		%	Variable
G&A		M$/yr	7.2
Mine supervision		M$/yr	1.27
Grade control		$/t	0.06
De-watering		M$/yr	0.5
Stockpile rehandle		$/t mill feed	1.16
Mining dilution		%	2
Mining recovery		%	97
Inter ramp slope angle		Degrees	Variable
Royalty	Government	%	2.0
	Gécamines	%	2.5
Metal Transport	Cu	$/t	300
	Co	$/t	377

The reported reserves have been compiled by Mr John Hearne. John Hearne is a Member of the Australian Institute of Mining and Metallurgy (AusIMM) and an employee of RSG Global. He has sufficient experience, relevant to the style of mineralization and type of deposit under consideration and to the activity he is undertaking, to qualify as a Competent Person as defined by the JORC code.

Table 17.8_2

Kalukundi Project

Reserve Summary by Fragment

Fragment	Reserves														
	Proven					Probable					Total				
	MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal	
		Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]
Principal	2.3	2.22%	1.00%	50,238	22,611	0.4	2.29%	1.10%	8,689	4,182	2.6	2.23%	1.01%	58,927	26,793
Anticline	1.4	2.59%	0.54%	35,550	7,358	0.2	1.60%	0.65%	2,984	1,223	1:6	2.47%	0.55%	38,534	8,581
Kalukundi	1.1	2.55%	0.42%	28,471	4,730	0.4	1.40%	0.47%	5,214	1,764	1.5	2.26%	0.44%	33,685	6,493
Kii	1.8	2.55%	0.58%	46,010	10,420	0.3	2.62%	0.50%	8,886	1,699	2.1	2.56%	0.56%	54,896	12,119
Total	**6.6**	**2.44%**	**0.69%**	**160,268**	**45,119**	**1.3**	**2.02%**	**0.69%**	**25,773**	**8,867**	**7.8**	**2.37%**	**0.69%**	**186,041**	**53,986**

18 OTHER RELEVANT DATA AND INFORMATION

All monetary amounts expressed in this report are in United States of America dollars (US$) unless otherwise stated.

The term "ore" is used for convenience throughout this report to denote that portion of the Measured and Indicated mineral resources that have been converted to Proven and Probable mineral reserves.

The reserve estimate has been determined and reported in accordance to the CIM definitions referred to in NI 43-101. Furthermore, the reserve classifications are also consistent with the 'Australasian Code for Reporting of Mineral Resources and Reserves' of December 2004 ("JORC Code"). The reserve classifications for both reporting systems are essentially the same, with only minor semantic differences in the naming conventions. Reserves are called "Reserves" under the JORC Code and "Mineral Reserves" under the CIM standards. "Proved Reserves" under the JORC code are called "Proven Reserves" under the CIM Standards. The reserve naming convention for both systems is summarised in Table 18_1 below for the sake of completeness.

Table 18_1
Kalukundi Project
Reserve Classification Comparison

Resource Classification	Reserve Classification	
	JORC Code	CIM Standard
Measured	Proved	Proven
Indicated	Probable	Probable

A full listing of abbreviations used in this report is provided in Table 18_2 below.

Table 18_2

Kalukundi Project

List of Abbreviations

	Description		Description
$	United States of America dollars	kWhr/t	kilowatt hours per tonne
"	Inches	Ktpa	Thousand tonnes per annum
µ	Microns	l	Litres
3D	three dimensional	l/hr/m²	Litres per hour per square metre
AAS	atomic absorption spectrometry	LM2	Labtechnics 2kg (nominal) pulverising mill
Ag	Silver	M	Million
AMC	African Mining Consultants	m	Metres
amsl	Above mean sea level	Ma	thousand years
Au	Gold	Mg	Magnesium
AUSIMM	Australasian Institute of Mining and Metallurgy	MIK	Multiple Indicator Kriging
bcm	bank cubic metres	Ml	Millilitre
Ca	Calcium	mm	Millimetres
CC	correlation coefficient	MMI	mobile metal ion
cfm	cubic feet per minute	Mn	Manganese
CIC	carbon in column	Moz	million ounces
CIL	carbon-in-leach	m/sec	Metres/second
cm	Centimetre	Mtpa	million tonnes per annum
Co	Cobalt	N (Y)	Northing
Cu	Copper	NaCN	sodium cyanide
cusum	cumulative sum of the deviations	NATA	National Association of Testing Authorities
CV	coefficient of variation	Ni	Nickel
DEHPA	di-2-ethyl hexylphosphoric acid	NPV	net present value
DTM	digital terrain model	NQ_2	size of diamond drill rod/bit/core
DRC	Democratic Republic of Congo	°C	degrees centigrade
E (X)	Easting	OK	Ordinary Kriging
EDM	electronic distance measuring	oz	troy ounce
EV	expected value	P80 -75µ	80% passing 75 microns
EW	Electro Winning	PAL	pulverise and leach
Fe	Iron	Pb	Lead
FS	Feasibility Study	ppb	parts per billion
g	Gram	ppm	parts per million
g/m³	grams per cubic metre	psi	pounds per square inch
GAC	Gangue acid consumption	PVC	poly vinyl chloride
g/t	grams per tonne	QAQC	Quality Assurance, Quality control
HARD	Half the absolute relative difference	Q-Q	quantile-quantile
HDPE	high density poly ethylene	RAB	Rotary air blast
HQ_2	Size of diamond drill rod/bit/core	RC	reverse circulation
hr	Hours	RL (Z)	reduced level
HRD	Half relative difference	ROM	run of mine
ICP-MS	inductivity coupled plasma mass spectroscopy	RQD	rock quality designation
ID	Inverse Distance weighting	S	Sulphur
ID^2	Inverse Distance Squared	SD	standard deviation
IPS	integrated pressure stripping	SG	Specific gravity
IRR	internal rate of return	SGS	Société Générale de Surveillance
ISO	International Standards Organisation	Si	Silicon
ITS	Inchcape Testing Services	SMU	simulated mining unit
kg	Kilogram	SX	Solvent extraction
IX	Ion Exchange	t	Tonnes
kg/t	kilogram per tonne	t/m³	tonnes per cubic metre
km	Kilometres	tpa	tonnes per annum
km²	square kilometres	U	Uranium
KP	Knight Piésold Pty Ltd	w:o	waste to mill feed ratio
kW	Kilowatts	XRF	X ray florescence

19 INTERPRETATIONS AND CONCLUSIONS

The Kalukundi Project in the DRC represents a high grade Cu-Co deposit developed in the Mines Series of the Lower Roan Sequence preserved in a number of tectonic fragments within a melange or breccia zone. Resource models have been developed which meet international industry standards. Co is dominant in the value of the mineralisation, while copper still makes a very significant contribution to the overall metal value.

The previous inferred resource has been improved through close spaced drilling and converted to 12.2Mt of Measured and Indicated Resources plus 9.3Mt of Inferred Resources to a comparable vertical depth of 150m. Additional Inferred Resources of 5.8Mt have been delineated to a depth of 200m below surface.

The study demonstrates that an economically viable mining operation can be developed at Kalukundi with production possible in late 2008.

The current financial models are based on the scenario of 100% equity financing for the Project. This, coupled with a conservatively projected base price of copper and cobalt, gives a Project IRR of 14.7%. The anticipated Project payback time is less than four years.

20 RECOMMENDATIONS

The exploitation of the Kalukundi deposits should proceed.

20.1 Geology

Shallow infill drilling using RC methods for grade control purposes should be commenced prior to start up mining operations. Preliminary surface evaluation work will be commenced well in advance to guide this work.

An evaluation of the hangingwall oxide copper mineralisation must be undertaken to establish the continuity of this material along strike.

Surface exploration of the Kesho fragment must be undertaken and drilling planned to define the oxide resources on this fragment. This work should be undertaken prior to commencement of mining operations. The same should be done for the Kinshasa fragment, but will be dependent on the results of preliminary surface evaluation work.

A programme of deeper drilling should be planned for the Principal, Anticline and Kii fragments to establish the depth of the exploitable oxides and the nature of the oxide sulphide transition zone at depth. Timing for this drilling is not urgent, but information gained would allow for mining operations to take account of transition mining from open pit to underground operations. Thus commencement of this programme should not commence later than two years after production commences.

Future analytical programmes should include the use of certified reference standards.

20.2 Mining

Opportunities exist in most areas of the Project to be more rigorously investigated during the detailed engineering phase and to firm up certain assumptions, thereby mitigating and or removing some of the risks that have been identified during the FS.

21 REFERENCES

Geo-Consult International (Pty) Ltd, 2002. Report on the exploration and evaluation of the Kalukundi Project in the Democratic Republic of the Congo, prepared by on behalf of JCI.

JCI, 2001. A review of the Copper-Cobalt Potential of the Kalukundi Property, Katanga Province, Democratic Republic of the Congo.

MDM Engineering (Johannesburg) 2006. Kalukundi Project, Democratic Republic of Congo, Feasibility Study.

RSG Global (J A Verbeek, July 2005). Memo titled "Kalukundi Resource Estimation".

Steffan Robertson and Kirsten (Johannesburg), 2004. Kalukundi Project, Democratic Republic of Congo, Independent Technical Review of Feasibility Study; Stage 1: Review of Proposed Study Work Scopes.

22 CERTIFICATES

RSG Global Pty. Ltd.

Certificate of Qualified Person

As an author of the report entitled "Technical Report" dated June 2008, on the Kalukundi Property of Africo Resources (the "Study"), and dated June 2006, I hereby state:-

1. My name is Julian Verbeek and I am a Principal Consultant, Resources, with the firm of RSG Global of 1162 Hay Street, West Perth, 6005. My residential address is 5/7 Delhi Street, West Perth, 6005, Western Australia.
2. I am a practising Geologist and Geostatistician registered with the AUSIMM and SACNASP.
3. I am a graduate of Natal University and hold a PhD degree (1991).
4. I have practiced my profession continuously since 1988.
5. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
6. I have personally visited the Kalukundi Property in 2004. I have performed consulting services during and reviewed files and data supplied by Africo Resources between December 2004 and May 2006.
7. I prepared Sections 6 to 15 and 17 (17.1 to 17.7) of this technical report.
8. To the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
9. I have not had prior involvement with the property that is the subject of the Technical Report.
10. I am independent of Africo Resources pursuant to Section 1.4 of the Instrument.
11. I have read the National Instrument and Form 43-101F1 (the "Form") and the Study has been prepared in compliance with the National Instrument and the Form.
12. I do not have nor do I expect to receive a direct or indirect interest in the Kalukundi property of Africo Resources, and I do not beneficially own, directly or indirectly, any securities of Africo Resources or any associate or affiliate of such company.

Dated at Perth, Western Australia, 8th day of May, 2008.

J Verbeek

Julian Verbeek B.Sc.(Honours), Geology, PhD

Principal Consultant Resources

RSG Global Pty. Ltd.

Certificate of Qualified Person

As an author of the report entitled "Technical Report" dated June, 2008, on the Kalukundi Property of Africo Resources (the "Study"), and dated June 2008 I hereby state:-

1. My name is John Hearne. I am a Principal Consultant, Mining Engineering, with the firm of RSG Global of 1162 Hay Street, West Perth, 6005.

2. I graduated with a degree from the University of Sydney, Sydney, NSW, Australia and hold a Bachelor of Engineering degree in mining engineering (1984).

3. I am a member of the Australasian Institute of Mining and Metallurgy (AusIMM).

4. I have worked as a mining engineer for a total of 22 years since my graduation from university.

3. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").

4. I have not personally visited the Kalukundi Property. Other RSG Global mining professional have made a number of site visits to Kalukundi in 2006.

5. I have prepared Sections 1 to 5, 17.8, 18, 19, 20, 21 and 23. In addition to supervising the preparation of the Technical Report, I directed the work pertaining to the mineral reserve estimates and the financial analysis.

6. To the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. I am independent of Africo Resources pursuant to Section 1.4 of the Instrument.

9. I have read the National Instrument and Form 43-101F1 (the "Form") and the Study has been prepared in compliance with the National Instrument and the Form.

10. I do not have nor do I expect to receive a direct or indirect interest in the Kalukundi property of Africo Resources, and I do not beneficially own, directly or indirectly, any securities of Africo Resources or any associate or affiliate of such company.

Dated at Perth, Western Australia, 8th day of May 2008.

John Hearne B.Eng.(Mining), MBA, GradDip AF&I
Principal Consultant - Mining Engineering

DAVID SIDNEY DODD

I, David Sidney Dodd, FSAIMM., as an author of this report entitled 'KALUKUNDI PROJECT Technical Report' prepared for Africo Resources Limited and dated June 2006, do hereby *certify that:*

1. I am Manager Technical Services with MDM Technical Africa Pty Limited of MDM House, Cnr Bram Fischer Drive & Will Scarlet Road, Randburg, South Africa.

2. I am a graduate of Manchester University, UK in 1974 with a B.Sc (Hons) Chemical Engineering Degree.

3. I am registered as a Fellow of the South African Institute of Mining & Metallurgy in the Republic of South Africa. I have worked as a metallurgist for a total of 34 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Research Metallurgist, NCCM, Zambia 1974 to 1976
   - Metallurgist, Envirotech 1976 to 1980
   - Process Engineer, Van Eck & Lurie/Bateman, South Africa 1980 to 1987
   - Technical Director, Metallurgical Design & Management, South Africa 1987 to 2006
   - Manager Technical Services, MDM Technical Africa, South Africa 2006 to present

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I visited the Kalukundi Project Site during 2006.

6. I am responsible for preparation of the metallurgical, process plant and infrastructure components of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated 8th day of May, 2008

DDodd

David Sidney Dodd FSAIMM

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CERTIFICATE OF QUALIFIED PERSON

I, Michael James Evans, do hereby certify that:

1. I am Project Manager of:

   Africo Resources Limited
   Block D (Ground floor),
   La Rocca Office Park,
   321 Main Road, crn. Petunia Avenue
   Bryanston
   Johannesburg,
   South Africa

2. I graduated with a B.Sc in Geology and Chemistry from the Rhodes University in Grahamstown in 1966 and with an M.Sc in Geology from the University of Natal in Durban in 1984.

3. I am a member of the Geological Society of South Africa (GSSA) and of the Society of Economic Geologists (SEG).

4. I am a registered Professional Natural Scientist, Reg. No. 400034/02 (Geological Science).

5. I have worked as a mining industry professional for a total of 36 years since my graduation from university and in a senior management capacity from 1998 to 2000 (12 years). Thereafter I have worked as a senior consultant and Project Manger for the past 6 years to the present.

6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

7. I am responsible for the contributions to Sections 1, 2, 3, 5. 7 and 21 of the technical report entitled "Definitive Feasibility Study. Kalukundi Project, Katanga Province, Democratic Republic of Congo", dated June 2006. I commenced the study in May 2004 and I have visited the Kalukundi property on 9 occasions over the two year period of the study for a combined total of 76 days.

8. I have not had prior involvement with the property that is the subject of the Technical Report.

9. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

10. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 8th day of May 2008

(Signed)
Michael James Evans

Golder Associates Africa (Pty) Ltd
Thandanani Park, Matuka Close,
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Fax: (+2711) 315-0317
Email: gdeswardt@golder.co.za

CERTIFICATE OF QUALIFIED PERSON – KALUKUNDI PROJECT, DRC

I, Guillaume Louw de Swardt, do hereby certify that:

1. I am a Tailings Dam Design Engineer for:
Golder Associates Africa (Pty) Ltd
Thandanani Park, Matuka Close,
Midrand, SA

2. I graduated with a B.Sc (Eng) in Civil Engineering from the University of Johannesburg in 1989 and with an M.Sc (Eng) in Civil Engineering from the University of the Witwatersrand in 1991.

3. I am a Professional Engineer registered with the Engineering Council of South Africa.

4. I have worked as a civil engineering and mining industry professional for a total of 15 years since my graduation from university.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Section 23.5 (Tailings Management) of the Technical Report entitled "Definitive Feasibility Study. Kalukundi Project, DRC.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report (Section 23.5 - Tailings Management) that is not reflected in the Technical Report (Section 23.5 - Tailings Management), the omission to disclose which makes the Technical Report misleading.

9. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report (Section 23.5 - Tailings Management) has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report (Section 23.5 - Tailings Management) with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 8th day of May 2008.

[Signed]
Guillaume Louw de Swardt

CERTIFICATE OF QUALIFIED PERSON

I, Douglas Ian Dorren Pr Eng # 860448, as an author and co-author of two reports entitled Open Pit Slope Stability Analyses and Plant Site Foundation Analyses prepared for Africo Resources and dated September 2005, do hereby certify that :

1. I am a Specialist Geotechnical Engineer with Knight Piesold (Pty) Limited, P O Box 221, Rivonia, 2128, South Africa. My residential address is 89 Via Orvietto, 14 Outspan Road, River Club Ext 29, Sandton, 2194, South Africa.

2. I am a graduate of Heriot-Watt University, Edinburgh, Scotland, 1975 with a BSc Civil Engineering degree. I am a graduate of the University of the Witwatersrand, South Africa 1986 with a MSc Civil Engineering degree.

3. I am registered as a Professional Engineer in South Africa (Registration No. 860448). I have worked as a Geotechnical Engineer for a total of 21 years of the 33 years since my graduation. My relevant experience for the purpose of the Technical Report is -
   - The assessment of founding conditions and use of materials for embankment dam construction using tropical residual soils in Madagascar, Congo, Cuba and Southern Africa.
   - The extensive experience on lateral support in deep basements, pit slope stability analysis pile and design, geotechnics of waste landfill sites (including liner system analysis), foundation analysis for major river bridges and dynamic analysis of foundations.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (N143-101) and certify that by reason of my education, affiliation with a professional association (as defined in N143-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of N143-101.

5. My co-author, G Keyter visited the Kalakundi Copper and Cobalt Project in the Democratic Republic of the Congo in 2005.

6. I am responsible for the overall preparation of Section 5 Geology and Resources – Plant Site Foundation Analyses and co responsible for Section 5 Geology and Resources – Open Pit Slope Stability Analyses of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of the National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read national Instrument 43-101F1, and the Technical Report has been prepared in compliance with the National Instrument 43-101 and form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading

Dated at Rivonia, South Africa on 19 May 2008

DDorren

DOUGLAS IAN DORREN
Pr Eng #860448
SPECIALIST GEOTECHNICAL ENGINEER

Martin Thomas Broome
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Kitwe, ZAMBIA
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CERTIFICATE OF QUALIFIED PERSON

I, Martin Thomas Broome, do hereby certify that:

1. I am a Principal and Managing Director of:

   African Mining Consultants Limited
   1564/5 Miseshi Road,
   Kitwe, ZAMBIAK

2. I graduated with a B.Sc (Hons) in Geology from the University of Wales in 1973 and with an M.Sc in Engineering Rock Mechanics from the University of London in 1978.

3. I am a Fellow of the U.K Institute of Materials, Minerals and Mining.

4. I am a Chartered Professional (Mining).

5. I have worked as a mining industry professional for a total of 32 years since my graduation from university and as an environmental auditor for the past 10 years.

6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

7. I am responsible for the preparation of the environmental Impact Assessment and Environmental Management Plan (EIA) for the Bankable Feasibility Study on the Kalukundi Copper-Cobalt Project in The Democratic Republic of the Congo (DRC). AMC engineers and scientists have made numerous site visits to Kalukundi over the period November 2004 to May 2006.

8. I have not had prior involvement with the property that is the subject of the EIA.

9. I am not aware of any material fact or material change with respect to the subject matter of the EIA that is not reflected in the EIA, the omission to disclose which makes the Report misleading.

10. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the EIA Report has been prepared in compliance with that instrument and form.

12. I consent to the filing of the EIA Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the EIA Report.

Dated this 8th day of May 2008

(Signed)
Martin Thomas Broome

23 DATE

The effective date of this report is June 2008.

Signed the 01st of June 2008.

John Hearne
Principal Mining Engineer
RSG Global

24 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

The term "ore" is used for convenience throughout this section report to denote that portion of the Measured and Indicated mineral resources that have been converted to Proven and Probable mineral reserves.

24.1 Mining

24.1.1 Mining Approach

It has been assumed that the Project will involve a conventional open pit, selective mining exploitation method, employing a mining contractor.

Drilling and blasting will be performed on 5m high benches, with blasted material excavated in two discrete flitches, each nominally of 2.5m height.

The mining equipment that is considered to be suitable for Kalukundi would depend on the final mining contractor fleet but include up to 100t back hoe excavators for mining and haul trucks with a payload capacity of between 20t and 35t.

24.1.2 Recommended Slope Design Parameters

Ground conditions influencing open pit wall stability and excavation requirements for the various pits were assessed by Knight Piésold.

It is estimated that the zone of oxidation related to weathering extends down approximately 40 to 60m below surface for the Kalukundi fragment and to between 100 to 130m below surface for the other fragments. The deeper pits will have a significant effect on the stability of pit slopes as well as drill and blast requirements for the Project.

Recommendations for batter height, batter angle and berm width have been provided for each domain. The shape of the wall has been blended in the different weathering horizons requiring different batter heights.

The recommended slope design parameters are based on an assessment of deeper seated failure. However, the potential occurrence of smaller-scale, near surface instability due to blasting and/or mining induced stress damage behind pit limit faces cannot be discounted. Areas of potential rockfall hazard in terms of recommended slope design parameters have therefore been assessed in terms of potential trajectories of blocks of rock rolling/falling down the recommended pit slope geometries. The importance of mining clean bench faces and removing potentially unstable blocks of rock is emphasised.

Knight Piésold has concluded that the level of naturally induced seismic hazard at the Kalukundi site is sufficiently low, to the extent that the use of slope design methods with seismic loading included is not considered necessary.

The slope stability assessment and design was developed assuming that the pit dewatering system will comprise a pit sump dewatering system with appropriate stormwater control only. Should further study show that slope depressurisation by means of a network of vertical drainage wells is feasible, slope designs presented in this report can be re-assessed with a view of steepening some of the pit slope geometry proposed accordingly

24.1.3 Contract Mining

It was assumed that contract mining would be employed to carry out all mining related work. An owner mining cost model was developed based on first principles to provide a comparison against this and future contract mining tender submissions.

Requests for Quotations (RFQ) on the Project were sent to a number of mining contractors that had been identified as having current work or the ability to work in the DRC.

The RFQ documentation was based on a preliminary mine production schedule that was developed in July 2005 for the Project. The schedule was predicated on a preliminary pit optimizations and pit designs.

Two contracting groups informed RSG Global that they intended to form a joint venture company for operations in the DRC and one contractor provided a quotation on behalf of the joint venture.

This contractor quote and the first principals mining cost estimate are within 5% of each other and indicate that the single contractor quote received forms a reasonable cost basis for the mining section of the FS.

The contractor equipment requirements and mining costs that were submitted are budget estimates only, based on a preliminary mining schedule. It will be necessary to obtain final contract estimates in an open mining tender, based on the final mining schedule.

24.1.4 Pit Optimisation

Pit optimization studies have been undertaken for all four deposits. Pit optimizations were carried out using the Whittle Four-X pit optimization software package.

The small size of the proposed primary load and haul equipment lends itself to highly selective mining practices. Mining dilution was set to 3% at zero grade and a mining loss of 2% has been assumed.

The input parameters adopted for the pit optimization cover a wide range of disciplines and as a result, a number of specialists have been involved in determining these parameters. The principal input parameters used in the pit optimization and the specialists responsible for determining these parameters are listed in Table 23.1.4_1.

The revenue parameters supplied are as outlined in Table 23.1.4_2.

Table 23.1.4_1 Kalukundi Project Summary Source of Main Input Parameters	
Input Parameter	**Source**
Commodity price	MDM/Africo
Mining Costs	RSG Global
Metallurgical and processing	MDM
General and Administration cost	MDM/Africo
Geotechnical and Hydrology	Knight Piésold
Governmental	MDM

Table 23.1.4_2 Kalukundi Project Revenue Calculations – September 2005		
Metal	**Unit**	**$/unit**
Copper	$/lb	$1.25
Cobalt	$/lb	$12.00

A summary of the principal costs associated with mining are shown in Table 23.1.4_3.

Table 23.1.4_3 Kalukundi Project Summary Mining Operating Costs		
Item	**Unit**	**Value**
Average waste mining cost	$/t	3.12
Average ore mining cost	$/t	4.01
Mine supervision and overheads	$/t ore	1.76
De-watering	M$/yr	0.5
Average grade control	$/t ore	0.06
Rehabilitation	$/t waste	0.10
Crusher Feed	$/t ore	1.16
Metal Transport	$/t Cu metal	300
	$/t Co Metal	377
Marketing Cost	$/t metal	2%

The processing costs for the Leach & SX/EW plant have been estimated by MDM. These take into consideration the low GAC figures for the near surface mineralised lithologies and the increasing GAC values with depth.

The processing costs vary by depth as shown in Table 23.1.4_4.

The recoveries for each fragment were supplied by MDM and are variable, dependent on grade, depth and material type.

The Project general and administration cost was supplied by MDM at $7.2M/year.

Table 23.1.4_4 Kalukundi Project Process Operating Costs	
Depth	**Total Opex US$/tonne**
0-10m	$35.35
10-20m	$36.96
20-30m	$39.02
30-40m	$41.53
40-50m	$44.50
50-60m	$47.93
60-70m	$51.80
70-80m	$56.14
80-90m	$60.92
90-100m	$66.16
100-110m	$71.86
110-120m	$78.01
120-130m	$84.61
130-140m	$91.67
140-150m	$99.18

Once production begins, the owners will be required to pay royalties to the DRC government in accordance with current mining legislation which imposes a royalty tax payable on the sale of minerals at the rate of 0.5% for ferrous metals, 2% for non-ferrous metals and 2.5% for precious metals. Thus Africo will be committed to payment of a 2% royalty on net sales to the government.

In accordance with an agreement with Gécamines, a 2.5% royalty on gross sales is payable to the JV partners.

The Whittle Four-X financial analysis was carried out using the following base assumptions and parameters:-

- Mill throughput: 0.72Mtpa.
- Mill limiting – i.e. sufficient waste is removed each period to enable the required milling rate to be maintained.
- Discount rate – 10%.

Three cashflows were produced for each analysis:-

- Undiscounted Operating Cashflow.
- <u>Best Case Discounted Operating Cashflow</u> – Each incremental pit is removed prior to advancing to the next adjacent incremental pit. The cashflow schedule is the equivalent of multiple pushbacks.
- <u>Worst Case Discounted Operating Cashflow</u> – Each bench is mined out prior to moving to the next bench, using the optimization block height as the default bench height. The cashflow schedule is the equivalent of top down 'flat' mining.

An actual mining schedule will most likely lie between the two extremes of Worst Case and Best Case as described above.

The cashflows, as described above, are exclusive of any capital expenditure or Project start-up costs and should be used for pit optimization comparison purposes only. No Net Present Value (NPV) can be derived from these cashflows.

24.1.5 Pit Optimisation Results

Based on the highest average discounted cash flow, Whittle pit shell 16 gives the optimum result, i.e., the optimal four pits for the four fragments. Pit shell 16 contains some 8.6Mt of mill feed at 2.49% Cu and 0.69% Co. Some 32Mt of waste are contained within the pit with a stripping ratio of 3.7:1. The undiscounted operating cash flow, exclusive of capital and start up costs, is $821M.

The optimum pit shell based on the maximum undiscounted cash flow is pit shell 21. Pit shell 21 contains some 8.8Mt of mill feed at 2.49% Cu and 0.69% Co. Some 34.2Mt of waste are contained within the pit with a stripping ratio of 3.9:1. The undiscounted operating cash flow, exclusive of capital and start up costs, is $823M.

The pit optimisation results are shown in Figure 23.1.5_1.

24.1.6 Mine Design

Detailed pit design work for both deposits was carried out based on the optimum pit shells as described above.

The pit slope parameters as provided by Knight Piésold were used for the detailed pit design work. A 15m wide dual access ramp was selected for the detailed mine design work, which allows for a safe operating width of three truck widths plus a windrow in the case of a 35t dump truck. The ramp gradient is set at 1 in 10. The pit haul road designs have been orientated to exit the pit to minimise the ore haulage profile to the process plant.

Due to the small scale of the individual pits, staged development has not been undertaken.

The main electrical power line into the Democratic Republic of the Congo runs over the southern end of the Principal fragment. MDM have directed that this power line will not be realigned to allow the mining of the entire Principal fragment. The Principal pit has been designed to have a standoff distance of 50m from the pit crest to the power line. This allows for a 30m wide service corridor to be maintained along the power line and an additional 20m accommodating surface drainage, bunding and access along the pit crest.

Table 23.1.6_1 provides a summary of the material breakdown as contained within the final pit designs

Figure 23.1.6_1 shows the final design for the Kii and Kalukundi pits, located to the north of the process plant, and Figure 23.1.6_2 shows the final design for the Principal and Anticline pits, located to the west of the process plant.

Table 23.1.6_1

Kalukundi Project

Summary Material Breakdown by Pit Design

Fragment	Total Material [Mt]	Waste [Mt]	Strip Ratio [w:o]	Reserves														
				Proven					Probable					Total				
				MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal		MTonnes [Mt]	Grade		Insitu Metal	
					Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]		Cu [%]	Co [%]	Cu [t]	Co [t]
Principal	17.3	14.7	5.57	2.3	2.22	1.00	50,238	22,611	0.4	2.29	1.10	8,689	4,182	2.6	2.23	1.01	58,927	26,793
Anticline	4.7	3.1	2.00	1.4	2.59	0.54	35,550	7,358	0.2	1.60	0.65	2,984	1,223	1.6	2.47	0.55	38,534	8,581
Kalukundi	4.6	3.1	2.08	1.1	2.55	0.42	28,471	4,730	0.4	1.40	0.47	5,214	1,764	1.5	2.26	0.44	33,685	6,493
Kii	12.8	10.6	4.94	1.8	2.55	0.58	46,010	10,420	0.3	2.62	0.50	8,886	1,699	2.1	2.56	0.56	54,896	12,119
Total	**39.3**	**31.5**	**4.02**	**6.6**	**2.44**	**0.69**	**160,268**	**45,119**	**1.3**	**2.02**	**0.69**	**25,773**	**8,867**	**7.8**	**2.37**	**0.69**	**186,041**	**53,986**

24.1.7 Waste Dumps

The waste dumps have been designed to Western Australian standards and the parameters used are:-

- Face slope 20°
- Bench height 20m
- Berm width 10m
- Overall slope 18°

Furthermore, the waste dump capacities have been based on a swell factor of 20%. No allowance for any in-pit or exhausted pit backfilling has been made.

The waste dump positions have been determined by taking into account geologically prospective ground, the existing drainage patterns, waste haulage profiles and the space and infrastructure issues required for the planned operations. A condemnation evaluation programme was undertaken to establish, with as high a degree of confidence as possible, that areas delineated for development of mine infrastructure and waste dumps would be positioned such as to avoid sterilisation of currently hidden or unexplored mineralisation that could in the future become exploitable.

As the pit is developed, temporary haulage ramps will be used to minimise waste haul distances for ROM pad and waste dump development.

24.1.8 Mine Production Schedule

Following a number of plant reviews during the study, the process plant throughput was increased from the 720,000t/year used in the optimisation to the 800,000t/year used as the basis for the final mine schedule.

The mine production schedule was developed using Microsoft Excel.

Scheduling was carried out on a bench by bench basis for all the pit designs.

The schedule was required to achieve the following criteria:-

- Maximum Cu grade of 3.03% to achieve 800,000tpa throughput
- Maximum Co grade of 0.66% to achieve 800,000tpa throughput
- Maximise the value of the Project
- Copper and Cobalt metal production to remain as constant as possible over the life of mine
- Maximum annual vertical mining advance of 40m

In order to reduce pre-production capital ccst, it was assumed that only part of the ROM pad will be built, ready for plant commissioning and that the ROM pad will be extended with suitable waste during ongoing mining after plant commissioning.

After the prestrip period of six months, mining is scheduled at a rate of 7.3Mtpa for the first year then 6.3Mtpa for the second year. After Year 2 and until the end of mining in Year 11, the mining rate steadily decreases in line with the decreasing strip ratio of the pits.

The timing of the pit development is as follows:-

- Pre-production commences in Quarter 2, Year 0 from the Principal and Kii pits.
- Kalukundi Pit commences in Quarter 4, Year 2.
- Anticline Pit commences in Quarter 4, Year 2.

The summary schedule is shown in Table 23.1.8_1.

Total material movement and the individual pit contribution is shown in Figure 23.1.8_1.

24.2 Recoverability

There are four fragments which contribute to the currently defined mineral resources at Kalukundi. The shape of each of the fragments is different and as may be expected the chemical characteristics of each of the fragments are slightly different. There are more similarities than differences. The features common to each of the fragments are as follows:-

- Same or similar lithologies
- Similar bulk densities.
- Each has been subjected to deep oxidation processes which have resulted in the conversion of sulphide Cu & Co ores to a suite of oxide minerals.
- Similar ore mineralogy
- The leachable characteristics of the oxide mineral suite is the same or very similar for each fragment.

Pervasive oxidation of the original sulphides has taken place to different depths in each of the fragments. This is a very important issue to understand and to define. Definition of the changeover to sulphides comes from studying the borehole core and leachable copper assays. The best drill coverage occurs in the zone from near surface down to 100m.

Processing costs have been evaluated in detail by MDM on the basis of the Pilot plant testwork results and associated bench scale leach test data. The main variable factor in these costs is the sulphuric acid and the SO_2. consumption.

The amount of acid and SO_2 used and hence the processing costs will be influenced by the gangue acid consumption of the ore and the cobalt content. These figures have been closely scrutinized by Mintek and MDM to arrive at acid and SO_2 consumptions for the deposit based on the current testwork as shown in Table 23.2_1.

Table 23.1.8_1

Kalukundi Project

Summary Mining Schedule

Tonnes	Pre-Prod	Yr01	Yr02	Yr03	Yr04	Yr05	Yr06	Yr07	Yr08	Yr09	Yr10	Yr11	TOTAL
Total Material	2,608,013	7,273,621	6,269,317	4,561,245	4,068,829	3,188,546	3,007,685	2,761,627	2,212,726	1,966,346	1,431,697	0	**39,349,655**
Waste	2,550,642	6,476,098	5,471,640	3,767,254	3,269,689	2,387,755	2,207,231	1,969,398	1,410,503	1,165,239	840,208	0	**31,515,658**
Ore	57,372	797,523	797,677	793,991	799,140	800,792	800,455	792,229	802,223	801,107	591,489	0	**7,833,998**
Cu insitu	**236**	**14,401**	**16,728**	**15,587**	**12,196**	**14,932**	**20,496**	**17,407**	**17,444**	**21,020**	**18,671**	**0**	**169,119**
Co insitu	**77**	**4,500**	**4,914**	**4,895**	**5,199**	**4,934**	**4,794**	**4,785**	**4,476**	**4,680**	**5,020**	**0**	**48,274**
							Principal Pit						
Total Material	2,467,184	1,916,067	2,496,255	1,505,456	1,892,130	1,348,123	1,359,769	1,241,805	974,584	836,878	1,304,085	0	**17,342,335**
Waste	2,417,686	1,584,014	2,228,901	1,315,965	1,642,702	1,149,093	1,136,765	1,016,623	775,754	626,632	807,953	0	**14,702,087**
Ore	49,498	332,053	267,354	189,491	249,428	199,030	223,004	225,182	198,830	210,246	496,133	0	**2,640,248**
							Anticline Pit						
Total Material	0	0	23,380	68,098	1,688,425	1,840,424	726,866	326,743	0	0	0	0	**4,673,935**
Waste	0	0	23,367	51,909	1,292,888	1,238,662	376,725	132,700	0	0	0	0	**3,116,251**
Ore	0	0	13	16,189	395,537	601,762	350,141	194,043	0	0	0	0	**1,557,684**
							Kalukundi Pit						
Total Material	0	0	160,156	822,142	0	0	921,050	1,193,079	1,238,142	246,481	0	0	**4,581,052**
Waste	0	0	159,111	720,189	0	0	693,740	820,075	634,749	64,099	0	0	**3,091,964**
Ore	0	0	1,045	101,954	0	0	227,310	373,004	603,393	182,382	0	0	**1,489,088**
							Kii Pit						
Total Material	140,830	5,357,554	3,589,527	2,165,549	488,275	0	0	0	0	882,988	127,612	0	**12,752,334**
Waste	132,956	4,892,084	3,060,261	1,679,192	334,100	0	0	0	0	474,508	32,255	0	**10,605,356**
Ore	7,874	465,470	529,265	486,357	154,175	0	0	0	0	408,479	95,357	0	**2,146,978**

Table 23.2_1 Kalukundi Project Acid and SO_2 Consumption					
Sulphur Consumption	**H_2SO_4 kg/t**	**SO_2 Kg/t**	**S kg/t**	**S tpd**	**H_2SO_4 tpd**
Bulk	11.08	24.00	15.64	35.66	25.26
Intermediate	87.80	9.76	33.60	76.61	200.19
Deep	157.83	0.98	52.11	118.81	359.86

From interrogation of the results achieved by Mintek and from discussions with MDM, a table of copper and cobalt recoveries (Table 23.2_2) was compiled using the above recovery figures and by applying the following assumptions:

To convert the leach recoveries to metal recoveries, the following process losses derived from the pilot plant testwork have been applied:-

- -1.93% for copper.
- -14.29% for cobalt.
- -3% to allow for losses incurred from up-scaling from pilot plant stage to full operating plant status. This would apply to all depths.
- -2% - This is to allow for lower plant recovery efficiency in the first year of start up operations.

For the zone between 10m to 30m, an average of the Bulk and Intermediate recoveries is applied.

For the Deep zone, the same copper and cobalt recoveries are applied as for the intermediate zone.

All of the figures in italics in Table 23.2_2 are assumed to lie within an oxide sulphide transition zone. Here the leach recoveries to metal are estimated from the SGS leach assay figures.

No estimations of recoveries are warranted for the potential mineralisation below 150m vertical depth at this stage due to the paucity of data at those depths. Also this mineralised material would fall essentially into the category of sulphides, which can only be recovered via a concentrator. Deeper drilling will be needed to define the depth extent of the oxide/sulphide interface.

Sulphides have not been quantified by testwork.

The processing costs have therefore been calculated from a component of fixed costs of US$29.54/tonne to which the costs of sulphur have been added in proportion to the progressively increasing consumption of sulphur projected in depth from the testwork.

Table 23.2_2

Kalukundi Project

Leach Recoveries and Operating Costs with Depth.

Depth	Composited Fragments				Predicted Recoveries				Individual Fragments			
	Recovery to Metal	Estimate Average	Recovery to Metal	Estimate Average	Principle Rec. to Metal		Anticline Rec. to Metal		Kalukundi Rec. to Metal		Kii Rec. to Metal	
	Cu		Co		Cu	Co	Cu	Co	Cu	Co	Cu	Co
0-10m	93		78		93	78	93	78	93	78	93	78
10-20m		91		74	91	74	91	74	91	74	91	74
20-30m		91		74	91	74	91	74	91	74	91	74
30-40m	89		70		89	70	89	70	89	70	89	70
40-50m	89		70		89	70	89	70	*20*	*50*	89	70
50-60m	89		70		89	70	89	70	*10*	*30*	89	70
60-70m		83		70	89	70	89	70	*5*	*20*	89	70
70-80m	78		70		89	70	89	70	*5*	*0*	89	70
80-90m	78		70		89	70	89	70	*5*	*0*	89	70
90-100m	78		70		89	70	89	70	*5*	*0*	89	70
100-110m					89	70	*60*	*55*	*5*	*0*	*60*	*55*
110-120m					89	70	*40*	*20*	*5*	*0*	*40*	*20*
120-130m					*60*	*55*	*20*	*0*	*5*	*0*	*20*	*0*
130-140m					*40*	*20*	*10*	*0*	*5*	*0*	*10*	*0*
140-150m					*20*	*0*	*5*	*0*	*5*	*0*	*5*	*0*

Bench and pilot plant scale testwork carried out on the three main composite samples returned differing acid consumption figures for each of these samples. The leach recoveries were found to be similar, but the GAC values increased significantly in depth. This data is set out in the table below.

Table 23.2_3
Kalukundi Project
Evaluation of Gangue Acid Consumption

Sample Reference Number	Mintek Cu Value %	Mintek Co value %	SGS Total Acid Consumed Kg/tonne	SGS Gangue Acid Cons Kg/tonne	MINTEK total Acid Cons Kg/tonne	MINTEK Gangue Acid Cons Kg/tonne
HC04 (D Strat)	0.26	1.06	6.8	6.2	15.68	13.8
Bulk Sample	2.18	0.96	43.9	13.5	50.96	18.7
Intermediate	2.59	0.63	89	51.6	113.18	75.9
Deep	2.44	0.60	161	133	188.12	159.1

The fact that the GAC increases in depth has been taken into account by MDM in the estimation of processing costs for the three zones, bulk, intermediate and deep. From the pilot plant testwork it was established that the SO_2 consumption is higher near surface and decreases in depth.

Table 23.2_4
Kalukundi Project
Sulphur Consumption and Total Process Costs

Depth	H_2SO_4 tpd	SO_2 tpd	S tpd	Sulphur OPEX US$/tonne	Total Opex US$/tonne
0-10m	25.26	54.72	35.66	9.42	35.35
10-20m	54.88	47.52	41.74	11.02	36.96
20-30m	89.80	40.30	49.55	13.08	39.02
30-40m	130.02	33.05	59.07	15.60	41.53
40-50m	175.54	25.77	70.32	18.57	44.50
50-60m	226.36	18.47	83.28	21.99	47.93
60-70m	282.48	11.14	97.97	25.87	51.80
70-80m	343.90	3.78	114.37	30.20	56.14
80-90m	410.62	0.00	132.50	34.99	60.92
90-100m	482.64	0.00	152.34	40.23	66.16
100-110m	531.70		173.91	45.92	71.86
110-120m	602.89		197.19	52.07	78.01
120-130m	679.34		222.20	58.67	84.61
130-140m	761.05		248.92	65.73	91.67
140-150m	848.02		277.37	73.24	99.18

From the above figures, it can be seen that the costs of both acid and SO_2 make up a very significant component of the process operating costs.

24.3 Process Flowsheet

The testwork indicated that the Kalukundi Cu-Co oxide material could be processed using a single stage crushing circuit followed by a conventional SAG / ball milling circuit with the ball mill in closed circuit with a cyclone.

The ore requires leaching for twelve hours at 25°C and 30% solids, using 150g/l sulphuric acid and sulphur dioxide as leaching agents. Co and Cu leaching efficiencies of greater than 94% and 97% respectively were consistently achieved. Overall recovery after losses in processing was between 93% and 89% for Cu and between 78 and 70% for Co.

The leach product is then washed in a 6 stage counter current decantation plant to ensure a clarified liquor is sent to the copper recovery circuit whilst keeping losses due to entrainment below 1%. The copper recovery circuit consists of copper solvent extraction step where the copper is moved to an organic phase before being stripped to produce an advance liquor that is treated in the copper tank house. The copper tank house produces cathode plate that will be sold. A bleed stream from the copper circuit is sent to the cobalt recovery circuit.

The cobalt circuit consists of several purifying steps where impurities like iron, aluminium, manganese, zinc and finally copper are removed before the purified cobalt liquor is sent to solvent extraction circuit where cobalt is loaded onto an organic phase before being stripped to produce the advance solution that is treated in the cobalt tank house. The cobalt tank house produces cobalt cathode that will be binned and sold.

24.4 Plant Design

The Kalukundi plant is designed to recover Cu and Co from a copper/cobalt ore body consisting of four fragments, namely Principle, Anticline, Kalukundi and Kii, at a total treatment rate of 800,000tpa, at an average feed grade of 2.37% Cu and 0.69% Co over the life of mine. The proposed Kalukundi plant design is based on conventional, well understood, tested and proven technology.

Ore from the pits is delivered to the ROM pad where blending will take place to ensure equalised feed to the plant. Ore from the ROM pad is sent to a single stage crushing circuit to generate a crushed product that passes 160mm. The crushed product is stockpiled before being fed to milling plant. The crushing plant is designed to have 85% operating utilisation out of an eight hour shift basis. The remaining time each day will be available for maintenance, offering up to 16 hours/day for scheduled maintenance purposes.

The stockpiled ore is reclaimed using apron feeders and fed to the milling plant at a steady rate of 95tph. MDM examined a number of alternative milling and leach size scenarios to determine an optimum power consumption solution for the plant. The optimum power consumption was achieved utilising an open circuit SAG mill followed by a closed circuit ball mill to grind ore down to 75% passing 75µm. Testwork conducted by MINTEK has confirmed the ore to be amenable to SAG milling and the circuit has been designed accordingly. The milling plant is designed to operate at 95tph and have 91% operating utilisation, which includes eight hours per week for scheduled maintenance purposes.

The milled ore feeds the thickener where excess water is removed before thickener underflow is fed to a belt filter. The dewatering steps are used to reduce the water consumption in the plant and also to prepare the leach feed with raffinate used in the leach circuit. The leach circuit consists of four leach tanks per stage for a total residence time of twelve hours. Most of the copper is leached during the time in the first two tanks where Sulphuric Acid (H_2SO_4) is added, while the cobalt is leached in the latter tanks. Sulphur Dioxide (SO_2) is added to the last two tanks to help the cobalt leach process. The leach product flows to the first of six counter current decantation (CCD) thickeners.

Raffinate from the Cobalt Solvent Extraction area is added to the last CCD thickener as a washing liquor. The overall wash ratio in the CCD area is approximately 1.3. This ratio minimises the entrained losses during washing while still achieving the required pregnant liquor solution (PLS) grades for Copper and Cobalt. In the CCD thickener circuit the slurry is pumped downstream from CCD1 whilst the liquor is pumped upstream from CCD6. The PLS from CCD1 is pumped to the Pinned Bed Clarifier whilst the Underflow is pumped from CCD6 to the tailings treatment tank. The pinned bed clarifier is utilised to ensure no solids enter the solvent extraction (SX) phase of the process.

The pinned bed clarifier overflow is pumped to the primary copper SX where copper is extracted from the PLS and loaded onto an organic LIX984N before being stripped of the organic by a 200g/l H_2SO_4 strip solution. The stripped organic is re-used whilst the loaded aqueous stream or advance electrolyte is pumped to the copper electrowinning plant. The cobalt rich, copper stripped, raffinate is pumped to the raffinate storage tank from where it is pumped to the filtration and leach areas as make-up solution whilst a bleed stream is sent to the cobalt recovery section of the plant.

In the cobalt recovery section, it is imperative that the electrolyte sent to cobalt electrowinning is cleaned of all metals that could co-deposit and reduce the grade of cobalt metal. The first metal removed is iron, which is oxidised to the ferric form and precipitated out using lime.

The clarified Iron removal thickener overflow PLS flows to the secondary copper SX where the PLS is scavenged to remove any remaining copper using the stripped organic from the primary copper SX area. The clarified PLS is sent to the aluminium removal section whilst the copper loaded organic is returned to the primary copper SX area.

The secondary copper SX PLS is further purified by precipitating out aluminium using lime. The first stage thickener underflow is pumped to the tailings treatment tank whilst the overflow flows to second stage where some more lime is added to purify the PLS further. The second stage product is sent to the second stage thickener from where the purified PLS overflow flows to the manganese and zinc (Mn/Zn) SX plant. The underflow from the second stage thickener is returned to the iron precipitation section.

In the Mn/Zn SX plant, the manganese and zinc is extracted from the PLS using di-2-ethyl hexylphosphoric acid (DEHPA). The manganese and zinc is then stripped from the DEPHA using a 150g/l H2SO4 strip solution. The manganese and zinc rich aqueous phase is then pumped to tailings and effluent treatment. The clarified PLS is pumped to the copper ion exchange (IX) plant.

The PLS is pumped to the IX columns where the remaining copper is loaded onto the resin. The copper barren solution is pumped to the cobalt SX plant. A two molar H_2SO_4 eluant is used to strip the copper from the resin before returning the eluate solution to the copper leach circuit to recover the eluted copper. The resin is regenerated using sodium hydroxide.

In the cobalt SX plant, cobalt is extracted in five extraction stages using Cyanex 272 as the organic phase. The raffinate from the cobalt SX extraction phase is returned to the CCD area. The loaded organic is pumped to the cobalt SX scrubbing and stripping where the cobalt is stripped from the organic. The stripped organic is returned to the extraction phase whilst the cobalt rich advance solution is pumped to the cobalt electrowinning section.

In both the copper and cobalt electrowinning areas, the advance liquor is heated through heat exchangers. Guar is added to the pregnant electrolyte as a smoothing agent for the cathodes. Copper electrolyte is pumped to the copper tank house which consists of 100 cells each with 43 anodes and 42 cathodes of 1.1m by 1.0m in size. Copper is plated on the cathode and the cathodes are periodically removed for stripping before the cathodes are baled for transport. Cobalt electrolyte is pumped to 36 cells consisting of 43 anodes and 42 cathodes of 0.75m by 1.0m in size. Cobalt is plated on the cathodes and the cathodes are periodically removed for stripping. The cobalt metal plate is brittle and will be shipped in drums.

All the discard streams in the plant are pumped to the tailings and effluent treatment tank where lime is added to neutralise the slurry before it is pumped to the tailings dam some 3.5 km from the metallurgical site. Return water from the tailings dam is pumped back to the plant and is used as part of the plant water requirements. In order to best utilise the limited water available in the area, water is re-circulated and retained in process where possible. The only water leaving the process will be in the tailings stream.

To ensure the quality of the copper cathode and cobalt final product, the final product bin and storage area will be housed in a roofed area. In addition the design provides for all the required offices, warehouses, service buildings etc.

24.5 Tailings Management

Golder Associates Africa Pty Ltd (Golders) established that the Project requires a tailings disposal facility that can accommodate 12Mt of tailings at a deposition rate of 60,000tpm over the life of the Project. The life of the current Project is currently 10 years. Allowance (in concept only) has been made for future expansion of the facility to 17 years capacity at present rates.

A spigot deposition method has been adopted for optimised water return and creating a safe and stable tailings dam. Storm water diversion trenches, upstream of the facility, will prevent clean storm water from the external catchment flowing onto the tailings disposal facility. Catchment paddocks will contain eroded solids and surface runoff from the side slopes during the operational stage of the facility.

A gravity penstock system will return supernatant to the return water dam. The return water dam pump station will return water to the plant for re-use in the process. The water balance indicates that approximately 40% (average) of the operations water will be returned to the plant.

24.6 Infrastructure

Knight Piésold provided the geotechnical services for the plant site foundations. Investigations included test pitting, laboratory testing of selected samples and borehole drilling and logging to depths of 30 metres at the plant site.

All buildings are either concrete with brick infill or structural steel framed with brick infill, all with galvanised steel roofing. All buildings are suitably furnished and electrically fitted for purpose. The construction will be done using the main contractors' supervisory personnel and local labour. Raw materials i.e. sand, stone and blocks will be sourced locally with cement and all hardware being imported.

Raw water usage requirements for the Project are estimated at 1,387,400m^3/year. A water pumping station has been planned to pump the full requirement of water from Lake Nzilo, on the Lualaba River, 22km to the site in a buried steel pipeline into the plant raw water storage dam. Water will be drawn from the storage dam water for plant make-up, fire and potable water. The fire water is pumped to a fire water ring main by a dedicated electrical and standby diesel pumping system. The raw water will be treated through a chlorination plant for the production of potable water prior to storage in two separate storage tanks. The plant and camp sewerage will be treated in two bio-filter plants with the grey water being discharged to the environment.

The plant access road will be rehabilitated prior to the rainy season to allow delivery of the materials and equipment required for the early start program. The roads will receive ongoing maintenance during the life of mine. All in-plant and camp roads will be HD interlocking blocks laid on a suitably prepared sub base and will be kerbed.

A provisional sum has been allowed for in the capital cost build up for a rail spur from Kisanfu rail siding to site of approximately 4.8km long. This rail spur allows for all incoming raw materials and consumables to be delivered from source directly to site as well as the export of copper and cobalt to a port for export.

Power at 110kV will be supplied to the plant from the existing National Grid overhead power lines which pass 100m from the plant boundary. Two plant power transformers at 15MVA each, will be situated in the plant main switchyard. Power distribution on site will be at 11kV. Plant power will be distributed from the main plant switchgear room. Based on the total installed kW and the relevant power correction factors applied to the absorbed kW ratings the plant will have a 100% redundancy factor based on the above transformers.

The entire concession area will be fenced with a 1.2m high four strand barbed wire fence. The process plant lay down and camp areas will be fenced with a 2.4m high fence with razor wire top resulting in a total height of 2.6m. Double gate access will be provided at all security access points.

All combustible solid waste will be removed off site to a waste disposal site for incineration. All used spares, scrap, used oil and redundant neutralized products will be removed from site by the various contractors for disposal in one of the closest towns where these products would be sold as scrap.

24.7 Markets

24.7.1 Copper

Copper is a mature commodity from the point of applications. No single new application is likely much to alter the rate of growth in copper consumption. The major use is in wire rod for electric conductor applications. Semi-fabricated mill products - tubes, rods, bars, sections, sheet, strip and plate - are collectively significant although no one product group has a dominant influence on total consumption.

Electrical engineering and construction are directly or indirectly responsible for much of the growth in copper demand. Wire rod is used in electricity transmission cables of all types and overlaps the two sectors. The two main applications for copper tubes are plumbing and air conditioning, both of which are correlated with construction. Sheet, strip and plate are used for ammunition, coinage, building products and coinage.

In the short term, high prices for copper have induced substitution in applications where such substitution is possible. To some extent, aluminium can be used in place of copper in some electrical and electronic applications, such as magnet wire and power cables, both of which use wire rod. Plastic plumbing tubes are an increasingly strong threat to the use of copper in residential construction. In the short term, too, physical shortages of material may sometimes constrain consumption, especially when fabricators find it difficult to obtain their full cathode requirements. In the first half of 2006, cathode availability has become a factor restraining consumption in some markets.

Forecasts for copper demand are largely based on top-down analysis using macroeconomic indicators including industrial production and GDP.

The medium-term outlook for GDP is fairly robust. Global GDP is expected to remain in the 3-4% annual range for the entire 2006-2010 period. China, which is by far the leading consumer of refined copper, is expected to lead the world in GDP growth. Chinese GDP growth is forecast to accelerate from 9.3% in 2006 to 9.9% in 2008, but should slow after the 2008 Olympics and should manage just 6.4% by 2010.

The outlook for industrial production is stronger still. Global industrial production is expected to fall to 3.6% in 2010, but it should exceed 4% per year in 2006-2009 and even 5% in two of the four years. Chinese industrial production is forecast to decline from 14.0% in 2006 to just 9.1% in 2010.

24.7.2 Cobalt

Cobalt has a wide variety of uses, of which chemicals are the most important. In 2005, the chemical industry consumed 52% of total demand. The other large sector of cobalt demand is superalloys, which are non-ferrous alloys used in specific heat- or corrosion-sensitive applications. The remaining cobalt is used in a variety of material-cutting applications and in magnets. The most important of these applications is the category of cemented carbide and diamond tools.

By far the most important single use for Co is in rechargeable batteries. In 2005, Li-ion batteries consumed 11,000t of cobalt in cobalt oxide while Ni-Cd and NiMH batteries consumed a further 2,000t of cobalt in cobalt hydroxide. Batteries are not only the most important application, but have also been the fastest growing. Li-ion cells dominate the market for batteries in mobile phones and portable personal computers.

Both of these applications have enjoyed explosive growth in recent years. The market is expected to mature, and, moreover, battery manufacturers have been working on new formulations of battery cathode materials that use less cobalt per cell.

From 2010 onwards, there may be additional demand for cobalt in Li-ion batteries to come from hybrid electric vehicles (HEVs). These vehicles, which are powered by both batteries and conventional engines, are produced in small volumes at present, around 200,000 units per year. Encouraged by high oil prices, motor vehicle manufacturers are accelerating the development of HEVs. At present, HEV batteries are powered exclusively by NiMH batteries, but carmakers and battery manufacturers are working on solutions that would permit the use of Li-ion batteries.

The other sectors of expected rapid growth from a significant base are cobalt acetate catalysts and superalloys.

The growth of demand for cobalt acetate is linked to substitution in beverage packaging. Various packaging materials - glass, steel, aluminium, laminated cardboard and PET - are used as beverage containers. Of these, PET has been growing the fastest, taking advantage of rising demand for non-alcoholic and non-carbonated beverages. World PET resin consumption for beverage containers increased by around 12% per year between 1999 and 2005, while total consumption of cobalt acetate increased by 8.2% per year.

Aircraft rotating parts and heat-and corrosion-resistant industrial applications are the major uses of cobalt in superalloys. Around 4,000t of cobalt were consumed in each of these sub-sectors in 2005, out of total cobalt demand in superalloys of 11,000t. The production of aircraft rotating parts (for jet engines) is expected to increase in line with the demand for aircraft. Aircraft deliveries started to recover in 2004 following a long period of erratic growth, and aircraft and jet engine manufacturers alike predict that the recovery will be sustainable. The continued expansion in demand for commercial air travel, especially in Asia, is expected to help underpin the growth in aircraft deliveries. Industrial applications for superalloys have shown strong growth historically and this is expected to continue.

The overall outlook for supply and demand is close to balance out to 2010. This balance is extremely dependent upon the continuing trade in crude cobalt units from the DRC and the refining in China. After 2010, the future supply demand balance is going to be very dependent upon the timing of new probable and possible projects. The demand for cobalt in batteries will also be extremely important.

24.8 Contracts

Negotiations are ongoing with SNEL (Societe Nationale d'Electricite) to supply power to Kalukundi. Requirements to get power to the mine site have been established as well as equipment necessary to supply 30MW of power. Transformer equipment to supply power to the site would be funded by Africo Resources/Swamnines. A draft power agreement has been drawn up and a final agreement will only be put in place once definitive dates for the start of the Project are known.

Total cost of transporting the metal, insurance, wharfage and other harbour charges up to FOB status as estimated by MDM.

The marketing cost and commissions have been estimated as 2% of the gross revenue. This also covers the administration charges of 1% levied by agencies in the DRC on facilitating exports.

24.9 Environmental

24.9.1 Objectives

Swanmines is committed to pollution prevention and responsible environmental stewardship in their sphere of operations at all stages of the Kalukundi Mining Project. This commitment will be strictly followed during initial development and design through construction, operation, commissioning, decommissioning and post-closure environmental and safety monitoring.

To achieve these commitments, Swanmines will:-

- Ensure compliance with Congolese mining and environmental regulations;
- Integrate environmental protection into all exploration activities;
- Identify, assess and manage environmental performance;
- Work with Government and relevant authorities to develop effective, efficient and equitable measures to minimise the environmental effect of Company activities;
- Require contractors and suppliers to embrace and comply with the Company's Environmental Policy;
- Ensure all employees understand and are given the opportunity to meet their environmental responsibilities; and
- Communicate openly with stakeholders on matters of environmental concern in all areas within which the company is active.

24.9.2 Environmental Assessment

An assessment of baseline environmental conditions was carried out between October 2004 and April 2006. The Kii River and the Kisankala Stream control the topography of the permit. The source of the Kisankala Stream is located in the permit and flows north-westerly into the Kii River. The undulating topography is punctuated by rocky outcrops vegetated with Miombo woodland.

The Kisankala Stream provides the water source for Kisankala Village and sampling of this stream and the Kii River indicated that the water quality was generally good, however small concentrations of bacterial coliform and lead do not comply with World Health Organisation (WHO) Drinking Water Guidelines. Aluminium levels do not comply with DRC final effluent standards of 0.05-0.2mg/l.

Groundwater quality was sampled from the springs feeding the Kii and Kisankala watercourses and the quality is generally good, however aluminium and lead concentrations exceed WHO Drinking Water Quality Standards.

Public consultation has been initiated and carried out throughout the development of the Project. Opinions gained through discussions with the local population and villagers of Kisankala Village are positive towards the Project and a Public Consultation Meeting will be carried out by Swanmines/Africo prior to proceeding with the Project. A report will be developed and submitted to the Department for the Protection of the Mining Environment (DPME).

24.9.3 Environmental Impacts and Mitigates

The major potential environmental impacts and mitigates that are anticipated are as follows:-

- The mining of four open pits and the consequent waste rock dumps will have a large visual impact on the landscape. The topography and Miombo woodland will mitigate this impact. The open pits will provide new sources of water for irrigation, consumption and sustainable economic developments;
- The locations of the open pits may potentially induce a wide sphere of influence on the groundwater through dewatering. The relatively shallow pits will minimise the depth of drawdown of the water table but pit locations in the northeast and southwest of the permit will mean that water will be lowered over a wider area. The groundwater levels will return to baseline conditions after the stoppage of dewatering activities;
- Impacts on the surface & groundwater from spillages of process water, tailings supernatant, oils, greases and untreated mine effluent. These may occur in the process plant, the TSF, the light and heavy vehicle workshops and from water storage dams. Swanmines will construct perimeter drains and install oil traps to minimise impacts. Surfacing with concrete and impervious layers in the plant and workshop areas will prevent groundwater contamination;

- Contamination of surface water and safety impacts from the TSF. Swanmines has consulted Golder to design a TSF which will be done according to best industrial practices. Regular inspections will be carried out by a specialist to ensure stability and the tailings slurry pumped to the TSF will be neutralized before pumping from the process plant;
- Dust blow may be generated from the TSF during the dry season. The prevalent wind direction is from the east and dust will be deposited on the vegetation downwind. The scale of this impact will be monitored visually and the exposure of the tailings surface will be limited by maintaining a wetted surface on the facility;
- Relocation of Kisankala Village will require clearance of Miombo vegetation in the south of PE 591. Swanmines will carry out a Resettlement Action Plan that will follow World Bank Guidelines on Involuntary Relocation and will document all proceedings with respect to relocation. Villagers will be compensated at 150% of their present assets. Swanmines will provide a school and small clinic to the relocated village;
- The mine will provide a source of development for Kisanfu, Kolwezi, Likasi and the Mutshatsha Territory as a whole, through economic investment from Swanmines into the Project. Swanmines will aim to aid small scale social projects focusing on sustainable development of education, health and agriculture in the area;
- The provision of jobs and the demand for services will create economic expansion. The use of local contractors will develop the skills in the area; and
- General improvement in the health of the local population will be achieved through the provision of health facilities on the mine for mine workers and their families and the clinic in the relocated Kisankala Village. HIV/AIDS awareness programs and malaria rollback campaigns will be developed.

24.9.4 Environmental Plans

A Mitigation and Rehabilitation Plan (MRP) was carried out in 2004, by African Mining Consultants (AMC) and submitted to the DPEM in May 2006. AMC Consultants completed an Environmental Impact Statement (EIS) and an Environmental Management Plan (EMP), which was carried out between October 2004 and April 2006.

The EMP is structured as follows:-

- Environmental Management and Monitoring;
- Occupational Health and Safety;
- Social Management;
- Mine Site Decommissioning and Rehabilitation; and
- Mine Reclamation Costs.

Implementation of the EMP will be the responsibility of the Environmental Manager. A Social Liaison Officer will communicate Swanmines' environmental policies to the local community through an ongoing public consultation process.

EMPs for all the identified positive and negative impacts of the Project have been developed. These plans are based on the social/environmental policies of Swanmines/Africo, DRC Environmental Regulations (Mine Code 2003), and other relevant international guidelines.

An Environmental Monitoring Plan will be implemented by Swanmines and will focus on the monitoring of air, surface water, groundwater and soil. The monitoring plan will be initiated during the construction phase and will be used to assess the mine compliance with DRC Environmental Regulations (Mine Code 2003) and other relevant guidelines.

Internationally accepted standards for occupational health and safety will be implemented by Swanmines to ensure a safe working environment and the prevention of illness and accidents.

Swanmines will implement a Sustainable Development Plan (SDP) that will focus on the local employment of employees and contractors and social development of the region through education and health improvement. Swanmines will aim to provide aid for commercial enterprises and increase the skills levels of the surrounding population through provision of training and literacy classes. The SDP will also focus on public safety, through regular consultation of mine activities with the local population, and responsible environmental management. The SDP will be carried out once the Project is generating revenue from metal sales.

The Mine Reclamation Plan will be implemented by Swanmines and aims to return the land affected by mine activities to its former land use or other sustainable use and prevent adverse impacts on the surrounding watercourses (Kisankala Stream). The management actions proposed to mitigate the Project impacts are based on industrial best practice and adapted, where appropriate, to the DRC conditions.

The activities that will be carried out during the closure phase will be completion of processing of the ROM stockpiles, decommissioning of the ROM pad, removal of buildings and all foundations (unless otherwise specified to Swanmines by the local population), cleanup of any contaminated soils and leveling and re-vegetation of the site. Provisional costs for mine reclamation and post-closure environmental monitoring have been included. The total mine reclamation cost is $1.0M. The total cost of post-closure environmental monitoring and reporting is $43,700.

24.10 Taxes

24.10.1 Government

The DRC has a host of different taxes, but mining companies are exempt of many and most are negligible in terms of amount imposed. Only the following taxes have been included in the analysis:-

- Additional tax on expatriate salaries — 10% of remuneration
- Import Duties — 2% pre-production and 5% during production
- Income Tax — 30% of taxable income
- Withholding Taxes - repatriation of dividends — 10% of dividend paid

The additional tax on expatriate salaries, which may not be deducted from remuneration, has been included in the working cost, whereas the import duties have been included in the capital equipment estimates and consumables portion of working cost.

Taxes that have been ignored as having a negligible effect on working cost are:-

- Tax on Land owned outside the concession area - not applicable
- Tax on rental income - not applicable
- Turnover Tax - on imports - mining is exonerated on exports - mining is exonerated on internal transactions - 5% with rate of 3% applicable to local goods, assumed to be included in cost of sales.
- Road Circulation Tax - on road usage, levied per vehicle - deemed negligible.
- Tax on vehicles - not payable for vehicles used exclusively for mining, deemed negligible for other Project vehicles.

24.10.2 Royalties and Agreements

Once production begins, the owners will be required to pay royalties to the DRC Government in accordance with current mining legislation which imposes a royalty tax payable on the sale of minerals at the rate of 0.5% for ferrous metals, 2% for non-ferrous metals and 2.5% for precious metals. Thus Africo will be committed to payment of a 2% royalty on gross sales to the DRC Government.

In accordance with an agreement with Gécamines, a 2.5% royalty on gross sales is payable by the owners of Swanmines to Gécamines.

24.11 Overall Operating Cost Estimate

The overall operating costs for the plant and mining operation per tonne of ore mined are shown in Table 23.11_1.

Table 23.11_1
Kalukundi Project
Overall Operating Costs – Average Over Life of Mine (Annualised at 801,000tpa)

Description	US$/t of ore
Mining	4.32
Process Plant and Infrastructure	44.42
General & Administration	7.28
Total Operating Costs	**56.02**

24.12 Mine Operating Costs

Based on an 800,00t/year ore production schedule and a contractor mining scenario, the total mine operating cost, including pre-production, is $159.5M.

Table 23.12_1 details the annual unit costs for the main activities undertaken in the mining operation and Table 23.12_2 shows the annual unit cost per tonne of material mined for both the contractor and the owner.

The unit mining costs for contract mining increase over time, which is a function of the increasing depth of mining. Year 4 exhibits a reduction in unit mining costs, which is a function of full scale mining operations commencing in the Anticline pit.

The owners unit mining costs exhibit a marked increase from Year 6, which is a function of the decreased strip ratio resulting in proportionately higher unit fixed costs (such as mine supervision).

24.13 Process Plant Operating Costs Estimate

The basis for the operating costs is for a milling rate of 801,000tpa or 2,225 tonnes per day. The average operating costs for the process plant (Life of Mine), as detailed in this section are summarised in Table 23.13_1.

The process plant operating costs were estimated by MDM on the following basis:-

- Power costs are based on grid power at US$0.03 /kWh.
- Labour rates provided by Africo were applied to a staffing plan based on prevailing industry norms for a plant with an appropriate degree of automation. The labour compliment is based on provision for shift operating 8-hours. The labour costing also includes all employee overheads in the total cost. This includes holidays based on the applicable shift regime, and where applicable; allowances, social security payments, overtime, and travel costs.
- A production-based bonus is also included for all employees to ensure that all are motivated to ensure maximum production.
- Reagent consumptions have been determined on the basis of laboratory testwork and industry experience. Requests for quotations were made to local and international vendors for current reagent pricing.
- Media consumption rates were provided by major equipment vendors based on testwork data, and on industry experience, where required. Costing was based on current vendor pricing. No reagent contingencies have been included in the operating cost estimates, on the basis that consumptions of these have been determined from testwork and costs are quoted costs.
- Import duties of 2% on capital cost items and first fill and 5% for on-going consumables has been allowed for.

Accuracy of the estimates is ±10%.

Table 23.12_1
Kalukundi Project
Annual Mining Cost Summary

$M	Pre-Prod	Yr01	Yr02	Yr03	Yr04	Yr05	Yr06	Yr07	Yr08	Yr09	Yr10	Yr11	Total
Waste Cost	6.85	17.44	16.75	12.99	9.45	6.67	6.65	6.53	5.42	5.09	3.79	0.00	97.64
Ore Cost	0.21	2.96	3.38	3.70	3.07	2.85	3.11	3.41	3.57	4.32	3.28	0.00	33.87
Mining Cost	**7.06**	**20.40**	**20.13**	**16.70**	**12.53**	**9.52**	**9.76**	**9.94**	**8.99**	**9.41**	**7.07**	**0.00**	**131.51**
Grade Control	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.04	0.00	**0.54**
Rehabilitation	0.26	0.65	0.55	0.38	0.33	0.24	0.22	0.20	0.14	0.12	0.08	0.00	**3.15**
Crusher Feed	0.00	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.72	0.00	**9.09**
Mining Supervision	0.25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	**10.23**
Dewatering	0.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.00	**5.00**
Total	**7.57**	**23.53**	**23.16**	**19.56**	**15.34**	**12.24**	**12.46**	**12.62**	**11.62**	**12.01**	**9.42**	**0.00**	**159.52**

Table 23.12_2
Kalukundi Project
Unit Mining Cost Summary

$/t	Pre-Prod	Yr01	Yr02	Yr03	Yr04	Yr05	Yr06	Yr07	Yr08	Yr09	Yr10	Yr11	Total
Contractor	2.71	2.93	3.36	3.86	3.31	3.28	3.55	3.94	4.48	5.26	5.45	0.00	**3.57**
Owner	0.20	0.30	0.34	0.42	0.46	0.56	0.59	0.63	0.77	0.85	1.13	0.00	**0.48**

Table 23.13_1

Kalukundi Project

Overall Operating Costs – Average Over Life of Mine

Category	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t Ore Milled
Power	3,469,874	4.33	3,469,874	4.33	3,469,874	4.33	3,469,874	4.33	3,469,874	4.33	3,469,874	4.33
Labour	3,440,400	4.30	3,440,400	4.30	3,440,400	4.30	3,440,400	4.30	3,440,400	4.30	3,440,400	4.30
Reagents	21,213,652	26.48	23,186,078	28.95	24,139,656	30.14	22,278,051	27.81	22,296,480	27.84	23,245,899	29.02
Grinding Media & Liners	1,254,954	1.57	1,254,954	1.57	1,254,954	1.57	1,254,954	1.57	1,254,954	1.57	1,254,954	1.57
Consumables	344,633	0.43	344,633	0.43	344,633	0.43	344,633	0.43	344,633	0.43	344,633	0.43
Maintenance	556,250	0.69	1,112,500	1.39	1,112,500	1.39	2,503,125	3.13	2,503,125	3.13	3,059,375	3.82
Assay	16,020	0.02	16,020	0.02	16,020	0.02	16,020	0.02	16,020	0.02	16,020	0.02
Duties	1,140,662	1.42	1,239,283	1.55	1,286,962	1.61	1,193,882	1.49	1,194,803	1.49	1,242,274	1.55
Total	**31,436,444**	**39.25**	**34,063,742**	**42.53**	**35,064,999**	**43.78**	**34,500,939**	**43.07**	**34,520,289**	**43.10**	**36,073,429**	**45.04**
Tonnes Processed	801,000		801,000		801,000		801,000		801,000		801,000	

Category	Year 7		Year 8		Year 9		Year 10		Life of Mine		Percentage of Total
	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	$/Year	$/t ore milled	
Power	3,469,874	4.33	3,469,874	4.33	3,469,874	4.33	2,707,446	4.33	33,936,310	4.33	9.8%
Labour	3,440,400	4.30	3,440,400	4.30	3,440,400	4.30	2,684,448	4.30	33,648,048	4.30	9.7%
Reagents	23,734,081	29.63	24,079,426	30.06	26,535,920	33.13	21,728,359	34.77	232,437,602	29.67	66.8%
Grinding Media & Liners	1,254,954	1.57	1,254,954	1.57	1,254,954	1.57	979,206	1.57	12,273,794	1.57	3.5%
Consumables	344,633	0.43	344,633	0.43	344,633	0.43	268,907	0.43	3,370,601	0.43	1.0%
Maintenance	3,059,375	3.82	2,503,125	3.13	2,503,125	3.13	868,053	1.39	19,780,553	2.52	5.7%
Assay	16,020	0.02	16,020	0.02	16,020	0.02	12,500	0.02	156,680	0.02	0.0%
Duties	1,266,683	1.58	1,283,951	1.60	1,406,775	1.76	1,148,824	1.84	12,404,100	1.58	3.6%
Total	**36,586,020**	**45.68**	**36,392,382**	**45.43**	**38,971,701**	**48.65**	**30,397,743**	**48.64**	**348,007,689**	**44.42**	**100.0%**
Tonnes Processed	801,000		801,000		801,000		624,998		7,833,998		7,833,998

24.14 Capital Cost

24.14.1 Summary

The total capital expenditure of $166.6 in June 2006 terms is forecast to be spent as set out in Table 23.14.1_1 below, with outlays on plant and infrastructure as per a schedule provided by MDM:

Table 23.14.1_1
Kalukundi Project
Summary Capital Expenditure Schedule
US$'000

Capital Item	Period						
	Q-6	Q-5	Q-4	Q-3	Q-2	Q-1	Q1
Computers	60	60			60	60	
Studies	250	250					
Mining	1 405	85					
Plant & Infrastructure	31 816	62 353	19 042	21 007	22 685	6 639	324
Total	**33 531**	**62 748**	**19 042**	**21 007**	**22 745**	**6 699**	**324**

In addition, an amount of $6.85M is provided for pre-stripping during the 6 months preceding start of metal production.

24.14.2 Process Plant Capital Cost Estimate

The capital cost of the process plant is summarised in Table 23.14.2_1. This assumes that a lump sum turnkey contract is signed, and as a result of this includes an allowance for 'contractor's margin' (mark-up).

Table 23.14.2_1
Kalukundi Project
Concentrator Plant and Infrastructure Capital Cost Summary

Description	Cost (US$)	Contingency	Amount (US$)	Duty (US$)	Total Cost (US$)
Civils Cost	12,487,457	10%	1,248,746	58,419	13,794,621
Steelwork Cost	12,501,474	5%	625,074	250,029	13,376,578
Plant Infrastructure Cost	4,902,765	10%	490,277	8,660	5,400,210
Camp Infrastructure Cost	6,417,373	10%	641,737	42,361	7,101,471
Mechanical Cost	13,931,915	5%	696,596	278,638	14,907,149
Electrical Cost	6,912,257	5%	345,613	138,245	7,396,115
Instrumentation Cost	605,314	10%	60,531	12,106	677,952
Piping and Valves Cost	3,991,381	15%	598,707	79,828	4,669,916
G & A Equipment Costs	1,774,618	5%	88,731	35,492	1,898,841
Transport Costs	8,661,816	5%	433,091	0	9,094,906
Construction Cost	14,439,784	10%	1,443,978	0	15,883,762
Rail Spur	7,112,892	7.5%	533,467	42,677	7,689,036
Tailings Facility	4,529,476	10.0%	452,948	0	4,982,424
Village Relocation	$786,350	15.0%	117,953		904,303
EPCM Cost	8,248,667	5.0%	412,433	0	8,661,101
Sub Total	107,303,539	7.6%	8,189,881	944,964	116,438,384
Contractors Margin	8,047,765			0	8,047,765
Road Rehabilitation Provision	1,600,000			0	1,600,000
Outokumpo Package (SX,EW)	22,540,000	0.0%	0	450,800	22,990,800
Acid Plant Package	14,500,000	0.0%	0	290,000	14,790,000
Total Plant and Infrastructure	**153,991,304**		**8,189,881**	**1,685,764**	**163,866,950**

24.15 Economic Analysis

24.15.1 Introduction

The economic evaluation of the Project presented in this study and prepared by RSG Global, assumes the Project will be 100% equity financed.

For the purposes of the study, the evaluation is based on 100% of the Project cashflows before distribution of profits to the equity owners.

All monetary amounts are in United States of America dollars (US$).

24.15.2 Assumptions

The financial base case has the following capital assumptions as of June 2006:-

▪ Capital costs	$166.6M
▪ Pre-stripping costs	$6.85M
▪ Capitalised working capital	$25.4M
▪ Annual Sustaining capital costs	$0.05M
▪ Life of Mine	10 years

The basis of the revenue assumptions was the long term forecast prices for copper (US$1.25/lb) and cobalt (US$12.50/lb), in lieu of the current high market spot prices. Using the current high metal prices as basis for the valuation would be not representative of the future market conditions at the time of presumed metal sales.

24.15.3 Financial Outcomes

The Base Case 100%-equity financed scenario, using a constant Cu price of $1.25/lb and a constant Co price of $12/lb, indicates a before-tax internal rate of return (IRR) of 14.7%.

No allowance has been made in the model for the effects and levels of debt financing available or required.

Cumulative before-tax cashflows are $580.6M over a ten year mine life. RSG Global has prepared the model based on the current best information in terms of the taxation provisions in the DRC. The figures are in constant money terms. At a discount rate of 10%, the Net Present Value (NPV_{10}) of the Project is $149.8M.

Direct operating costs, without credits for by-products, average $1.52/lb Cu and $6.51/lb Co produced over the mine life. The DRC Government benefits by $247M (15.1% of gross revenue) in terms of royalties, income taxes and withholding taxes. Not specifically calculated are additional benefits such as taxes on remuneration and import duties which are part of the cost of sales.

A summary of the Base Case cashflow model is provided in Table 23.15.3_1.

The present mine life of the Project is ten years. The initial capital investment of $167M is paid back in under four years.

Table 23.15.3_1

Kalukundi Project

Summary of Base Case Cashflow Model

Cashflow		Yr-02	Yr-01	Yr01	Yr02	Yr03	Yr04	Yr05	Yr06	Yr07	Yr08	Yr09	Yr10	Total
Gross Revenue	US$'000	0	0	102,523	145,933	147,344	146,802	144,758	144,642	144,124	137,949	146,097	192,146	**1,452,319**
Royalty & Off-mine Charges	US$'000	0	0	-8,738	-12,916	-12,913	-12,340	-12,359	-12,952	-13,315	-12,954	-13,251	-16,595	**-128,332**
At-mine Revenue	US$'000	0	0	93,786	133,017	134,431	134,462	132,400	131,690	130,809	124,995	132,846	175,552	**1,323,988**
Working Cost	US$'000	0	0	-44,611	-62,055	-58,811	-54,097	-51,068	-52,811	-53,476	-52,280	-55,171	-45,171	**-529,550**
Changes in Stock Level	US$'000	0	0	-416	297	-903	-1,073	-656	314	157	-245	526	-1,879	**-3,878**
Cost of Sales	US$'000	0	0	-45,027	-61,758	-59,714	-55,170	-51,724	-52,498	-53,319	-52,525	-54,645	-47,050	**-533,428**
Operating profit	US$'000	0	0	48,758	71,259	74,718	79,292	80,676	79,193	77,491	72,470	78,201	128,502	**790,559**
Tax		0	0	0	0	-106	-12,606	-19,168	-21,578	-21,942	-21,758	-20,437	-59,569	**-177,163**
Cash Flow before Tax	US$'000	**-97,297**	**-78,369**	**25,154**	**68,447**	**73,979**	**78,189**	**79,309**	**77,035**	**75,612**	**71,318**	**75,243**	**132,003**	**580,622**
after Tax	US$'000	**-97,297**	**-78,369**	**25,154**	**68,447**	**73,873**	**65,583**	**60,141**	**55,457**	**53,670**	**49,560**	**54,806**	**72,433**	**403,459**

Other key outcomes of the financial analysis include:-

- Copper (Cu) revenue at $1.25 per pound Gross - $452.8M At-Mine - $383.2M
- Cobalt (Co) revenue at $12 per pound Gross - $1,018.3M At-Mine - $958.0M
- Cash cost per pound Cu based on percentage of total revenue $0.62/lb
- Cash cost per pound of Co based on percentage of total revenue, net of by-product revenue $0.62/lb
- Cash cost per pound of Co based on percentage of total revenue, net of by-product revenue $6.64/lb
- Cash cost per pound Cu net of Co by product credit $1.12/lb
- Cash cost per pound Co net of Cu by product credit $1.99/lb
- Total copper production 164,296 tonnes (362.1 Mlbs)
- Total cobalt production 38,485 tonnes (84.8 Mlbs)

24.15.4 Sensitivity Analysis

Several cashflow projections were calculated whereby certain of the Base Case parameters were varied. In particular, each of the metal prices, capital costs, operating costs, grade and recovery were varied by +10% and -10%.

The results of the sensitivity analyses are summarized in Figures 23.15.4_1, 23.15.4_2 and 23.15.4_3, in which the sensitivity of the Project to each of the varied parameters is quantified in terms of change in the Project cashflow calculated at a 10% discount rate and change in the Project Internal Rate of Return (IRR).

The Project is very sensitive to metal prices and is generally insensitive to working cost and capital expenditure.

24.16 Mine Life

The present life of the Project, based on the current Reserves, is ten years.

There is considerable scope to increase the current Reserve of 7.8Mt by proving up existing Resources, by carrying out follow up studies and through drilling of other mineralized bodies on the property, as follows;

- Approximately 1.4Mt of Resource are currently not included in the mining plan as Reserves due to the proximity of a powerline. Africo will carry out a small scale study to examine the feasibility of including these resources in the mine plan.
- Within the Kalukundi concession area, twelve fragments have been identified, of which four are the subject of this report. An additional eight mineralized fragments within the concession area have received only preliminary investigation. Limited drilling has been undertaken on selected fragments and the results returned to date indicate that at least two of these fragments, the Kesho fragment, to the east of the Anticline and the Kinshasa fragment in the North West corner area, have significant mineralisation and warrant detailed evaluation.

- Significant resources exist beneath each proposed pit. Additional Resources amounting to 19.3Mt down to a depth of 200m have not been included in the current life of mine plan. Potential further resources are indicated by three boreholes and depths deeper than 200m, providing blue-sky potential for Africo.

24.17 Project Implementation Plan

The Project implementation schedule is sensitive to the timing of key activities relative to the rainy season from early November to late March each year. In order to bring the Project on line in the first quarter of 2008, a fast track approach to the Project programming was evaluated. The main consideration in the planning process was to try to minimise the effects of the wet season. It is apparent that the programme is most adversely affected by the wet season at the end of 2007.

To minimise this seasonal impact, all major civil, structural and mechanical activities must be completed by the end of October 2007. This approach means that the only activities to be completed during November would be the finishing of plant piping and electrical activities. The months of December and January would then be used for plant commissioning and the completion of punch list items.

It is imperative that an early start is made on the road rehabilitation, therefore making the section of the road from Likasi to site accessible for mobilisation of construction equipment and materials. It is envisaged that the mobilisation of equipment to site will take approximately thirty days if contractors have to be mobilised from South Africa, which is the most reliable source. Investigations will however be undertaken in the DRC to source the Road Rehabilitation and Bush Clearing Contractors, thus reducing the mobilisation periods.

If this approach is adopted and properly managed throughout the duration of the Project the time delaying wet season effect can be minimised and Africo can expect the production of the first Cu and Co metal in February of 2008.

The following key dates are extracted from the Project schedule:-

▪ 01 to 30 June 2006	Tender and adjudicate key site contractors
▪ 01 to 31 July 2006	Negotiate key design/supply contracts
▪ 01 to 31 July 2006	Tender long lead items
▪ 01 July 2006 to 28 February 2007	Detailed design
▪ 15 July 2006 to 31 October 2006	Bulk earthworks, construction camp, road rehabilitation, commence civils
▪ 18 November 2007	Commence dry commissioning
▪ 20 December 2007	Commence wet commissioning
▪ 05 January 2008	Commence ore commissioning
▪ 31 January 2008	First Cu cathode production
▪ 28 February 2008	First Co cathode production

24.18 Background Information on the Democratic Republic of Congo

24.18.1 Demographics and Geographic Setting

DRC is an independent state with a surface area of 2,345,410km^2, situated in central Africa astride of the equator. It has a coastline of 37km at the Congo River mouth. It borders on Angola in the southwest and west, on Cabinda and the Republic of the Congo in the west, on the Central African Republic and Sudan in the north, on Uganda, Rwanda, Burundi, and Tanzania in the east, and on Zambia in the southeast. Kinshasa is its capital and largest city. Lubumbashi is the second largest city and capital of the southernmost Katanga Province (one of 10 provinces).

The population of the Congo (58.3 million, The CIA World Fact Book, 2005) comprises approximately 200 ethnic groups, the great majority of whom speak one of the vernacular languages. In addition, there are Nilotic speakers in the north near Sudan and scattered groups of Pygmies (especially in the Ituri Forest in the northeast). The principal vernacular-speaking ethnic groups are the Kongo, Mongo, Luba, Bwaka, Kwango, Lulua, Lunda, and Kasai. The Alur are the main Nilotic speakers. In the 1990s, Congo had an influx of immigrants, particularly refugees from neighbouring countries. In 1985, over half the population was rural, but the country is becoming increasingly urbanized.

French is the Congo's official language. Swahili is widely spoken in the east, and Lingala is spoken in the west; Tshilaba is also common. It is estimated that 65.5% of the population are literate in French, Lingala, Kingwana, or Tshiluba. About 50% of the inhabitants are Roman Catholics and 20% are Protestants. A substantial number are adherents of Kimbanguism, an indigenous Christian church. Many also follow traditional religious beliefs and about 10% are Islamic.

The adult HIV/AIDS prevalence rate is 4.2% and AIDS is considered to have a significant impact on the life expectancy and mortality rates of the population. Some 2.4 million people are estimated (2003) to be living with HIV/AIDS.

24.18.2 Political and Financial Status

The area now known as the Democratic Republic of the Congo was populated as early as 10,000 years ago, and settled in the 7th and 8th centuries by people from present-day Nigeria. European exploration and administration took place between the 1870s and the 1920s. The area was first mapped by Henry Morton Stanley. Congo was claimed by King Leopold II of Belgium at the Conference of Berlin in 1885, then known as the 'Congo Free State'. The local population was brutalized in exchange for rubber. During the period between 1885 and 1908, about 10 million Congolese were killed by mercenaries. In 1908, the Belgian parliament bowed to international pressure, and adopted the Free State as a colony, the Belgian Congo.

The DRC, originally known as Zaire, gained its independence on June 30, 1960, after almost a decade of political struggle. The first Prime Minister, Patrice-Emery Lumumba was a member of the politically minor Batatele tribe.

Patrice Lumumba was ousted during independence talks held during in Brussels in 1960. Joseph Mobutu seized power in a coup in November 1965. Many small businesses, owned by foreigners, were nationalized following this coup. In 1991, a multiparty democracy was established in a largely bankrupt country.

Laurent Kabila, backed by Uganda and Rwanda, forced Mobutu into exile in 1997. Kabila was sworn in as president and Zaire was renamed Democratic Republic of Congo (DRC). In 1998, Uganda and Rwanda began to sponsor rebels groups that challenged DRC's central government in the East, and north-east of the country.

Laurent Kabila was assassinated in 2001, and was succeeded by his son Joseph. Occupation by foreign troops remained a major drawback but in the peace process initiated in 2002, a peace agreement was signed with Rwanda, Uganda and Angola and Zimbabwe and foreign troops were withdrawn.

Several International Monetary Fund (IMF) and World Bank missions have met with the Kabila government to help it develop a coherent economic plan and various reforms have been implemented.

In 2004, the GDP was estimated at $42.74 billion, and the per capita income was $700 with a real growth rate of 7.5%. DRC earned $1.42 billion (2003 est.) from exports of diamonds, copper, crude oil, coffee and cobalt. A large portion of the economic activity falls within the informal sector and is consequently not reflected in the GDP data.

Economic stability, aided by international donors has improved over the last few years. New mining contracts have been approved, which could improve DRC's fiscal position and GDP growth.

The current exchange rate of the DRC currency, Congolese franc is 433.5 CDF/US$ (March 2005). The corporate tax rate is 30%.

24.18.3 Mining Industry

The DRC has significant base, precious metal, and diamond resources. The southern province of Katanga hosts an estimated 10% of the world's copper and 50% of its cobalt resources, and in the 1970s the DRC was one of the world's leading copper and cobalt producers. Since the mid-1980s, however, mineral production has fallen dramatically and remains low despite the reforms by the Kabila government.

Early in 2003, a new mining code was promulgated with the assistance of the World Bank. Investors are no longer permitted to negotiate ad hoc mining conventions with the State, and a defined list of tax and customs exemptions is provided, consequently the role of the State is transparent and objective. Under the revised code, foreign investors are allowed to hold mining concessions in the copper-rich Katanga Province in southern DRC where previously state-owned Gécamines still hold exclusive rights.

Base Metals

La Générale des Carrières et des Mines ("Gécamines") is the state-owned mining and exploration company controlling much of the DRC's mining sector. Most of its mines and concentrators at Kolwezi are closed, as is the Luilu refinery. In 2003, Gécamines' production slumped to just 8,200t of copper and 1,200t of cobalt from 25,000t and 8,200t, respectively, in 2002. In the mid 80's, 460,000t of copper and 15,000t of cobalt were produced. Gécamines plans to ramp production to100,000tpa of copper and 10,000tpa of cobalt by 2010, requiring investment of $250 M.

Gécamines has interests in a number of other mining ventures including the Tenke Fungurume copper-cobalt project and the Kipushi zinc mine development.

Gold

A number of mining companies are active in gold exploration including Mvelaphanda Holdings Ltd (Kilomoto), AngloGold Ashanti, Gold Fields, Banro Corp and Moto Mines in the eastern and northern DRC.

Diamonds

The DRC is a significant diamond producer. Most of the diamonds are mined in Eastern Kasai Province near Mbuji Mayi, in Western Kasai at Tshikapa and near Kisangani in Upper Congo. The commercial exploitation of diamonds is dominated by Societe Miniere de Bakwanga ("MIBA"), which has an 80% state ownership. There is also a flourishing small-scale sector of artisan diggers, traffickers and traders. In 2003, the DRC's total diamond production was estimated to have been around 16 Mct worth US$400 M. De Beers, Southern Era Resources and others have recently applied for exploration permits.

24.18.4 Mining Tenure

All the mineral rights in the DRC are vested in the State. Prospecting, exploration and exploitation must be carried out under a permit issued under the New Mining Code.

On 11th July 2002, the New Mining Code (NMC) was approved by parliament and ratified by the President. During March 2003 the new Mining Regulations were ratified, and in April 2003 the new Constitution for the DRC was approved by all parties and signed into affect by the President. The Minister of Mines appointed a commission to validate the mining titles under the New Mining Code of 2002 and to convert previously held titles in terms of the NMC. The final list is now available and a regulatory process is in place to approve title. The Labour Code, the Investment Code and the Forestry code have also been implemented. All aspects of investment in the mining sector are stipulated in the NMC.

The main features of the NMC are:-

- Mineral resources belong to the state,
- No discrimination between public and private enterprises, between national and foreign investors,
- Protection against arbitrary expropriation by the state,
- Protection of the environment,
- The licenses may be Prospecting, Exploration, Exploitation, Small Scale Mining or Tailings Exploitation or Artisan permits,
- Provision of a 5% free carry state shareholding,
- Up to 60% of the net profit after taxes may be held abroad, and
- Accounts are allowed to be held in US$ values.

Should a Project be brought into production, a royalty tax is payable on the sale value of minerals at the rate of 0.5% for ferrous metals, 2% for non-ferrous metals and 2.5% for precious metals.

25 ILLUSTRATIONS

Figure 4.1_1
Locality Map showing the DRC and its Neighbours

Note the location of the Katanga Province and the centres of Kolwezi, Likasi and Lubumbashi in the southern portion of DRC.

Figure 4.1_2
Locality map of part of Katanga Province showing the Copperbelt region and the position of the Kalukundi concession

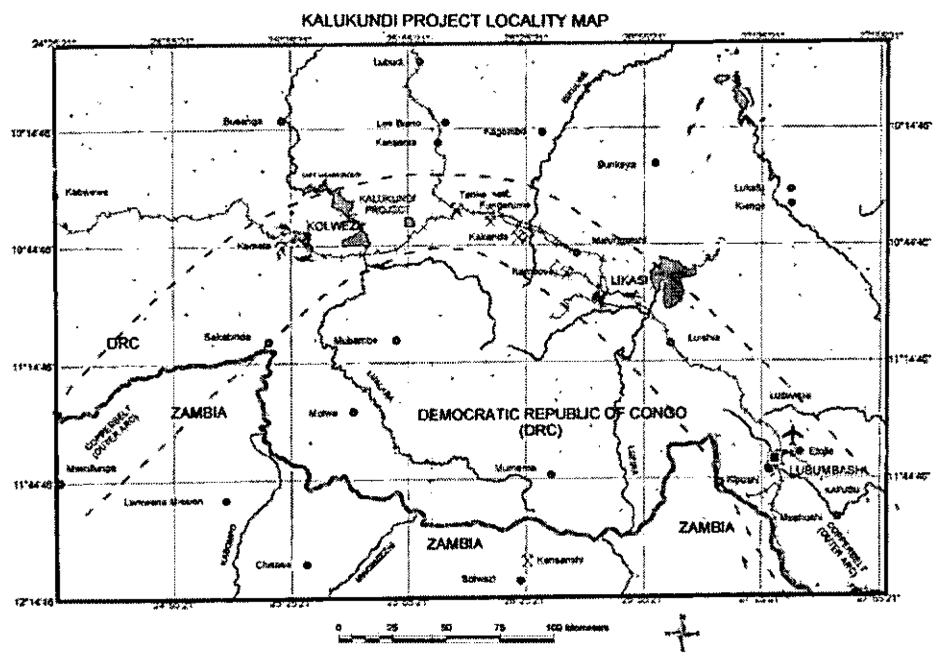


Figure 7.1_1

Stratigraphic column for the Katanga supergroup, emphasising the main units of interest in the Lower Roan formation

Katanga System Stratigraphy					
System	**Series**	**Formation**	**Local Name**	**Description**	**Thickness (m)**
KATANGA	KUNDELUNGU SUPERIEUR - UPPER KUNDELUNGU			Sediments, at base limestones, calcschists grading into shales, sandstones at base Petit Conglomerat	30 - 50
	KUNDELUNGU INFERIEUR - LOWER KUNDELUNGU			Sediments, sandstones and shales, at base Grand Conglomerat	200 - 500
	ROAN	R4-1and 2	MWASHYA	Shales, siltstone, sandstone to dolomites, limestones, oolithic, jasper and frequently siliceous beds and cherts	50 -100
		R3-2	DIPETA	Shales and sandy schists with intercalated dolomites and limestones	1000?
		R3-1	RGS	Roches Greseuse Superieur, dolomitic shales and sandy schists, towards top beds of silicified dolomites	100 -200
		R2-3	CMN	**Calcaire a Minerais Noirs**, light coloured dolomites with thin beds of white sandstone argilitic dolomites alternating with schists, sometimes graphitic and two collenia (stromatolite) horizons locally, at base dolomitic sandstones	130
		R2-2	SDS	**Schistes Dolomitic Superieur**, upper dolomitic shales, subdivided as follows:- SD 3b finely laminated black, graphitic shales, highly micaceous, sandy dolomites SD 3a micaceous, sandy shales, dolomitic, grey-green, well bedded SD 2d shale, dolomitic and graphitic SD 2c shale, dolomitic and sandy, grey-green SD 2b dolomite, massive, light coloured, collenia (stromatolitic) dolomite SD 2a dolomitic, graphitic black shale, micaceous SD 1b BOMZ (Black Mineralised Main Zone) blue-grey, crystalline dolomite	50 -80
		R2-1	SDB	SD 1a **Schistes De Base**, shale dolomitic, well bedded, micaceous, light grey nodule horizons at base	10 -15
			RSC	**Roches Silicieuses Cellulaire**, massive, crystalline light coloured dolomite, black crystals present (heterogenite ?), locally developped collenia horizons, occasionally shales at bottom and top, extreme cellular weathering	12 -25
			RSF	**Roches Silicieuses Feuilletees**, siliceous, dolomitic shales, micaceous, light-grey weathering whitish, extremely finely laminated	5
			D STRAT	**Dolomie Stratifiee**, argilitic dolomite. well bedded to laminated, light-grey in colour light-brown, yellow weathering, chert horizons, nodule layer towards top	3
			RAT grises	**Roches Argilleuses Talceuse**, argillitic sandstones, massive and dolomitic, light-grey talc present in varying quantities	2 -5
		R1	RAT 2	**Roches Argilleuses Talceuse**, argillitic siltstones, dolomitic, banded to well bedded containing beds of dolomitic sandstone and occasionally beds of collenia (stromatilitic) dolomite	190
			RAT 1	**Roches Argilleuses Talceuse**, upper portion silty argillite, red and bedded. Lower portion unknown	40
			POUDINGUE	Unknown formation, transgression conglomerate and arkoses in other localities	?
Unconformity or thrust plane?, sheared contact ?					
?	?	?	Br	**Breche Heterogene**, possibly Roan or maybe Kundelungu?	?

Figure 7.2_1
Plan of the Kalukundi Concession, 591 showing the Distribution of the Mineralised Fragments and Local Infrastructure

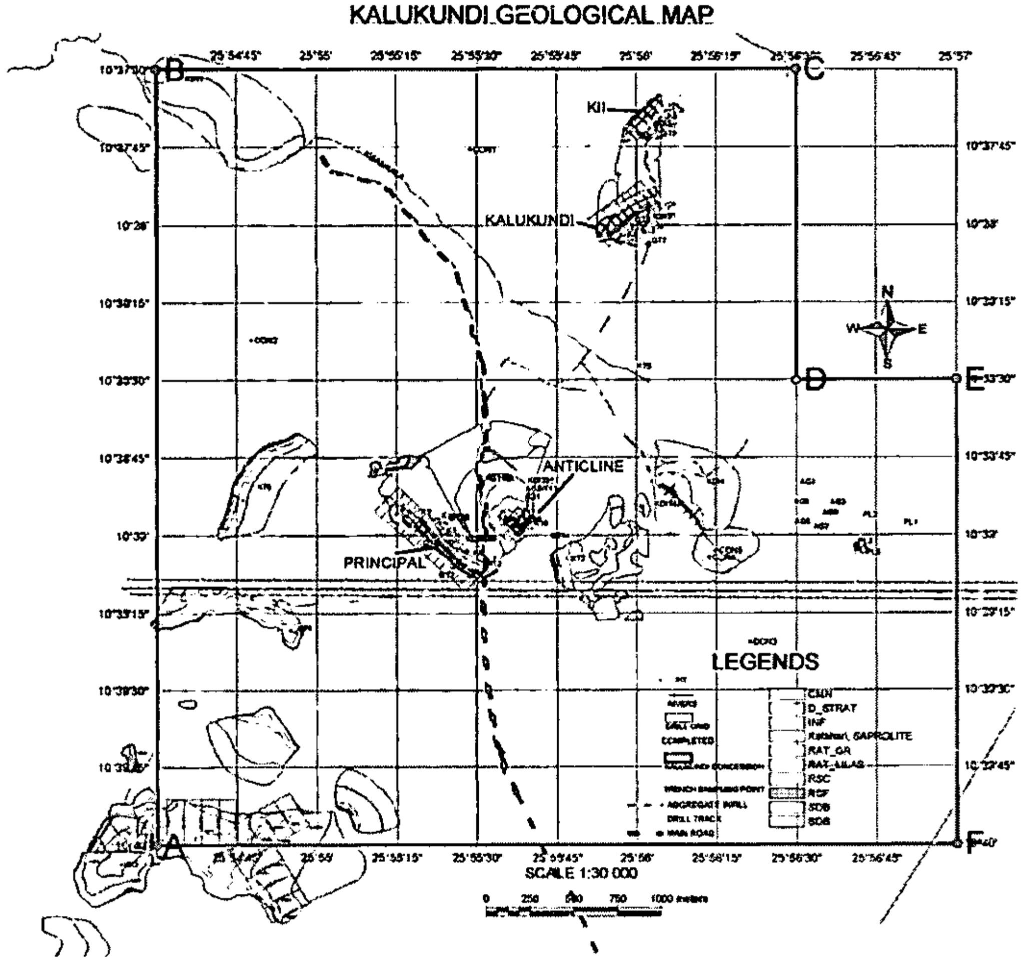


Figure 17.3.2_1
Recovery vs Cu grade for RATG in the Kalukundi Fragment

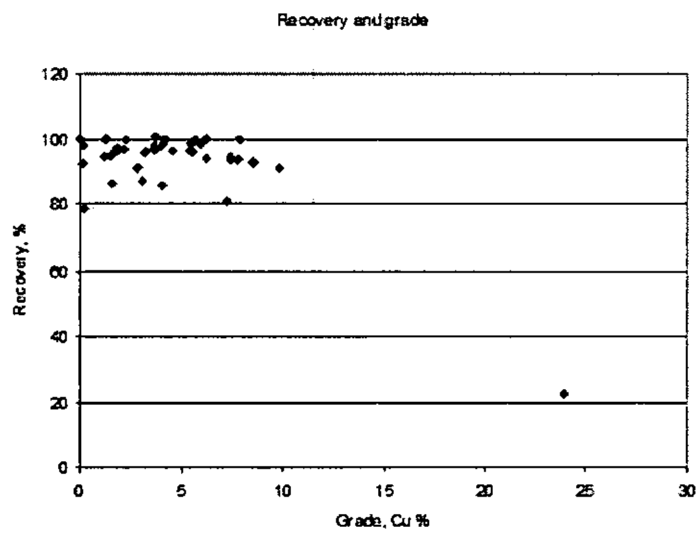


Figure 23.1.5_1
Kalukundi Pit Optimisation Results
March 06
Cu = $1.25/lb, Co = $12.00/lb; Measured + Indicated Resources

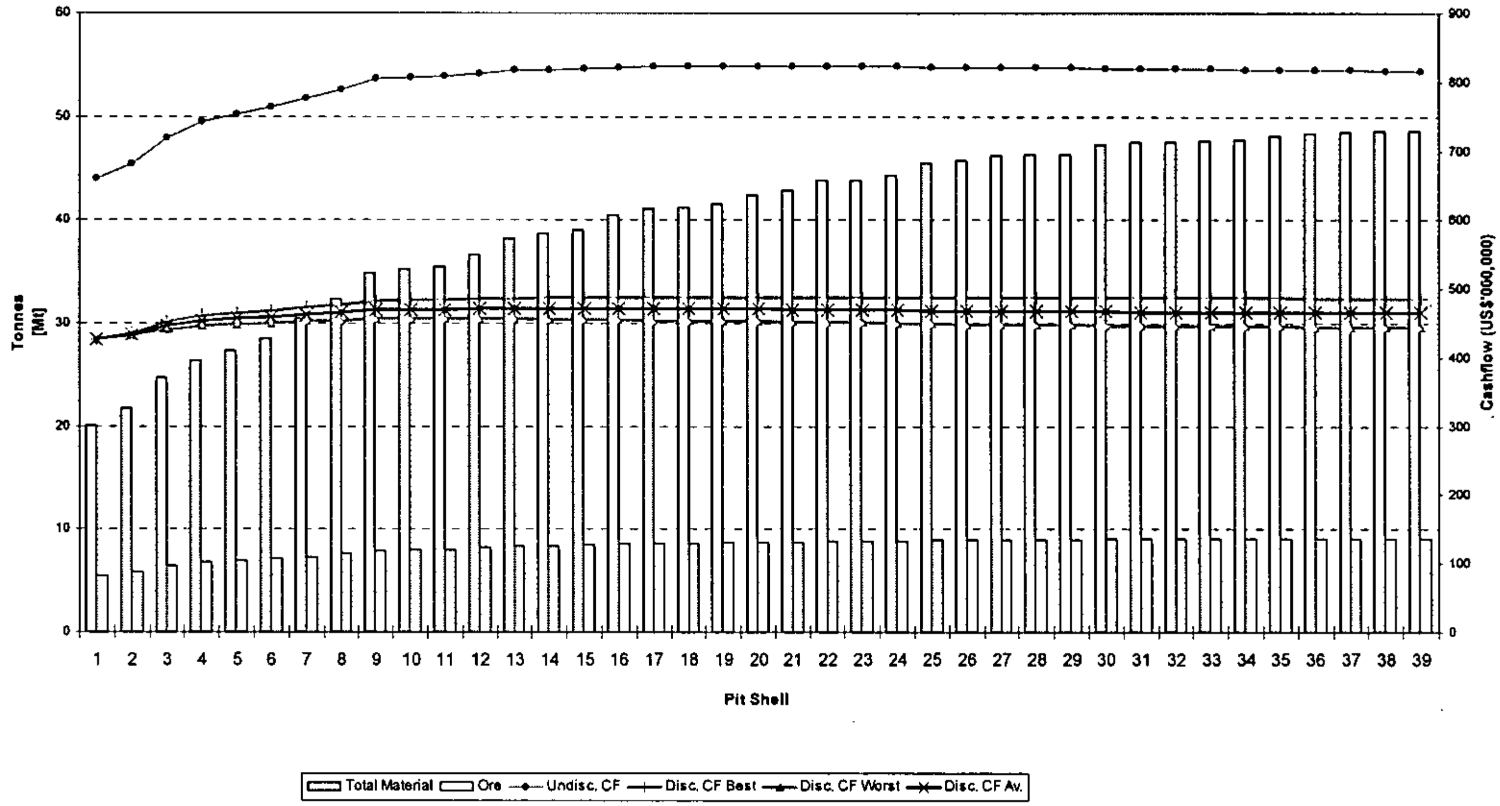


Figure 23.1.6_1
Kalukundi and Kii Pits with Waste Dumps

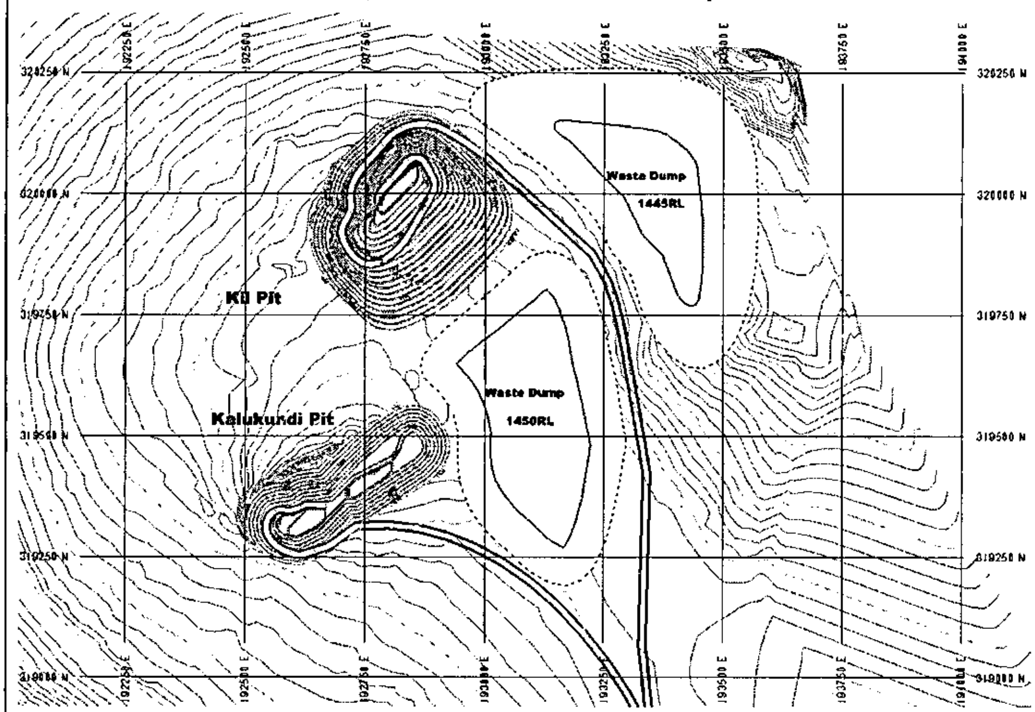
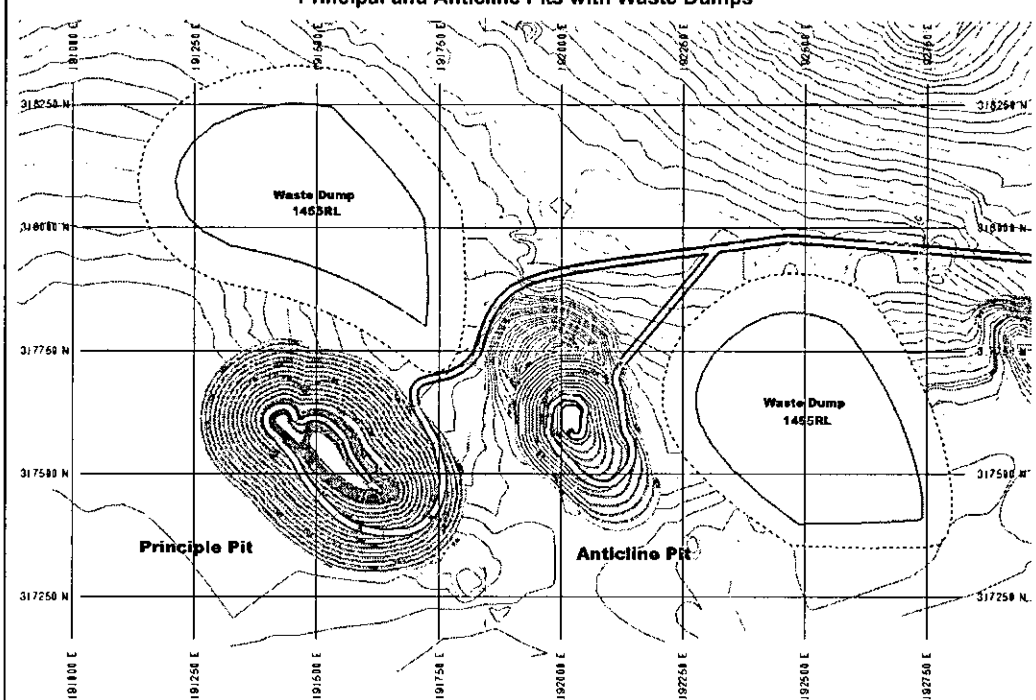


Figure 23.1.6_2
Principal and Anticline Pits with Waste Dumps



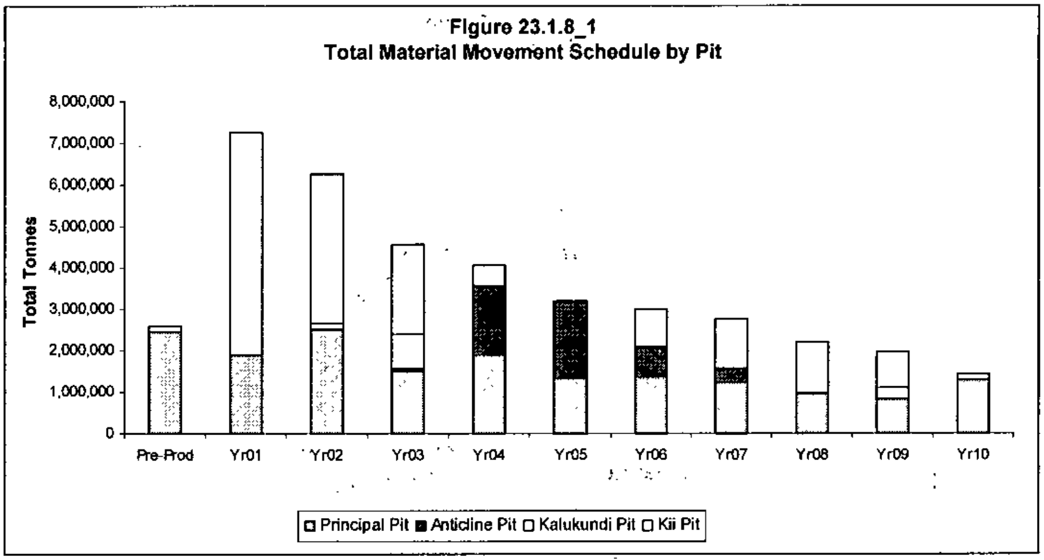


Figure 23.1.8_1
Total Material Movement Schedule by Pit
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Tonnes
Pre-Prod
Yr01
Yr02
Yr03
Yr04
Yr05
Yr06
Yr07
Yr08
Yr09
Yr10
Principal Pit
Anticline Pit
Kalukundi Pit
Kii Pit

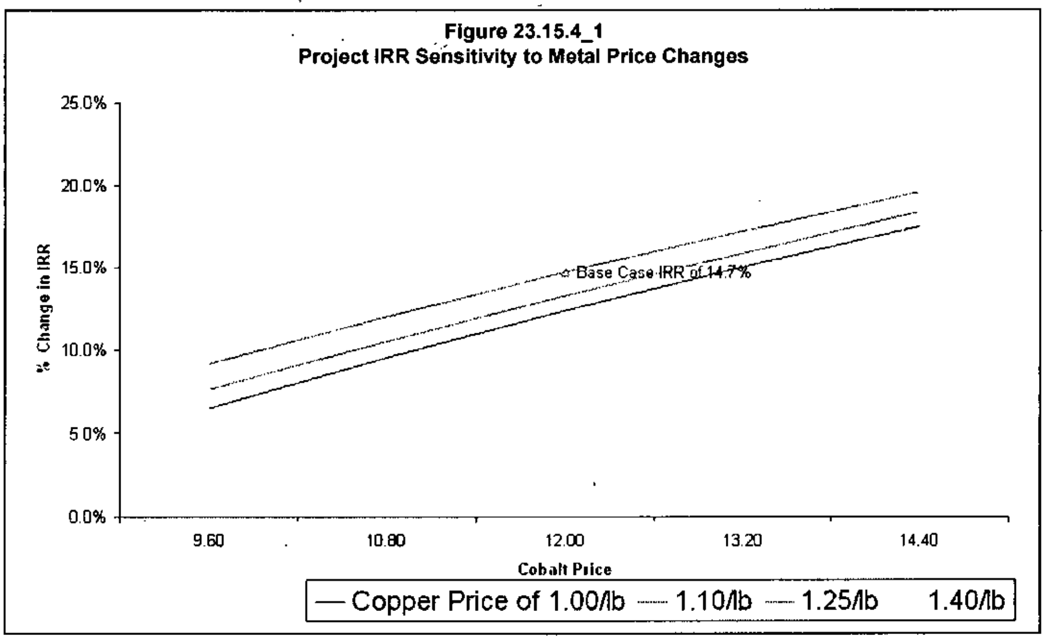


Figure 23.15.4_1
Project IRR Sensitivity to Metal Price Changes
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
% Change in IRR
Base Case IRR of 14.7%
9.60
10.80
12.00
13.20
14.40
Cobalt Price
Copper Price of 1.00/lb
1.10/lb
1.25/lb
1.40/lb

Figure 23.15.4_2
Project NPV Sensitivity to Working Cost and Capital Variations

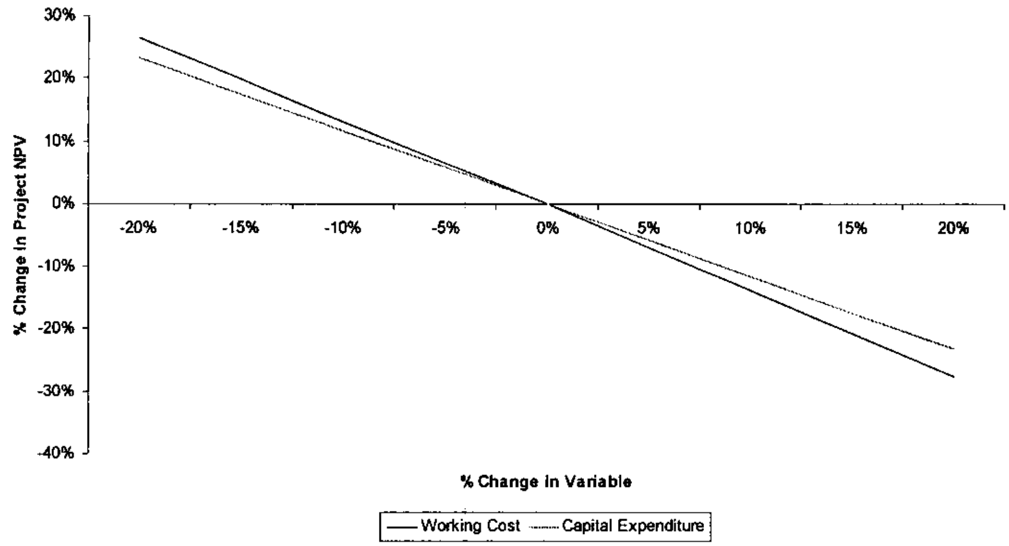
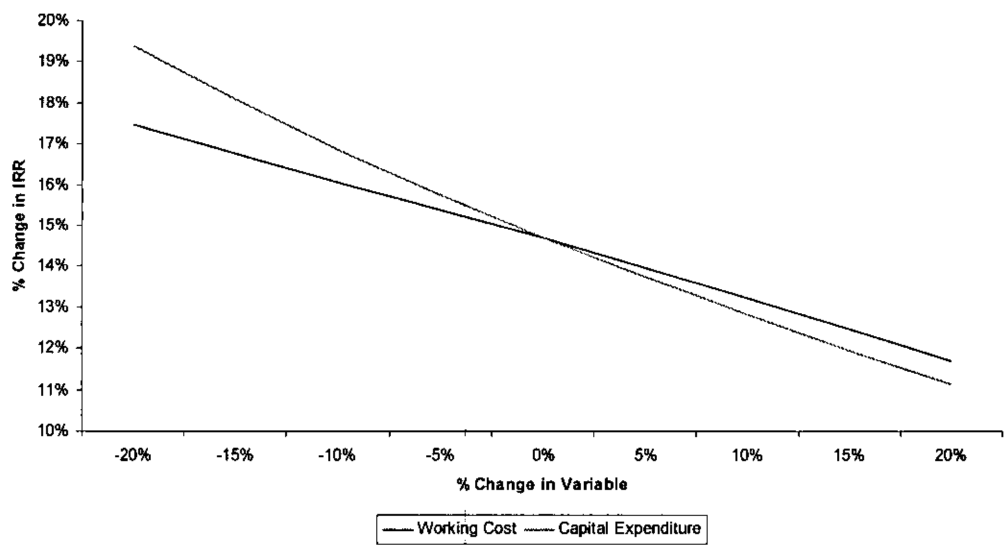


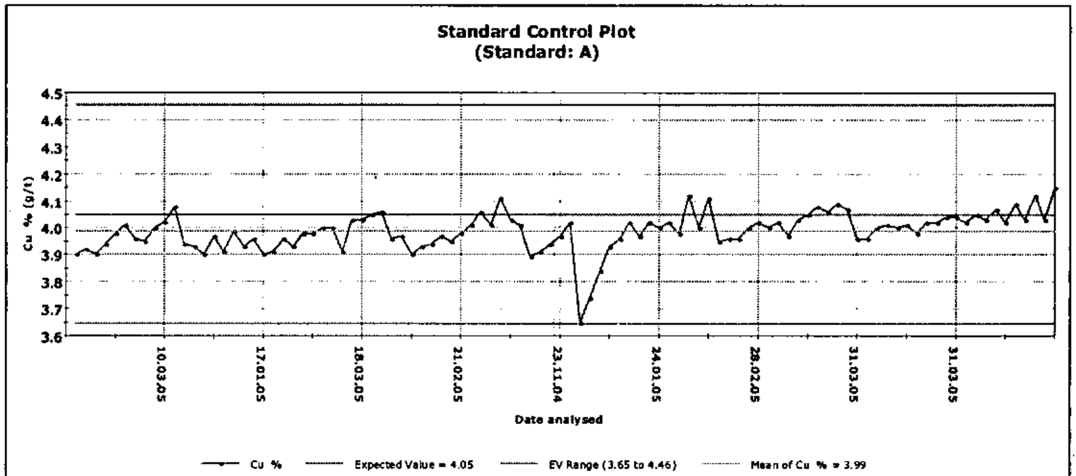
Figure 23.15.4_3
Project IRR Sensitivity to Working Cost and Capital Variations

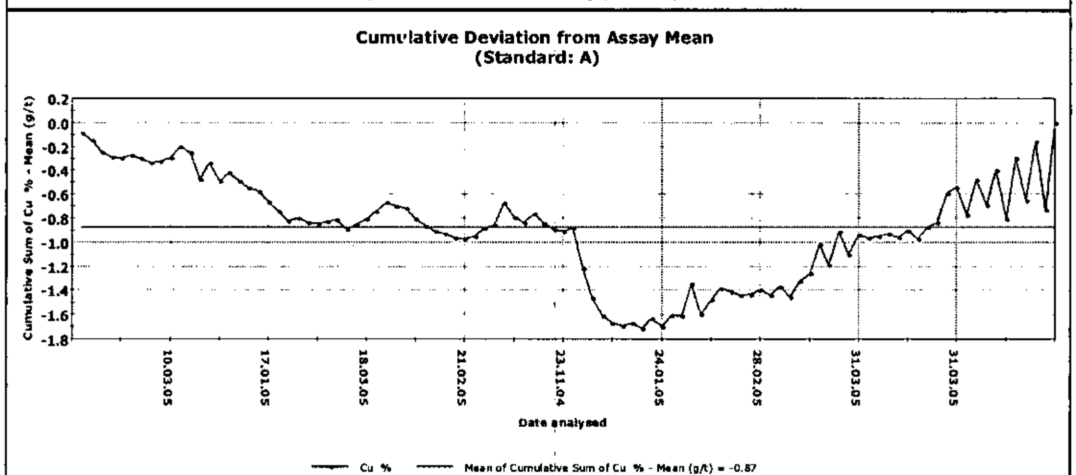


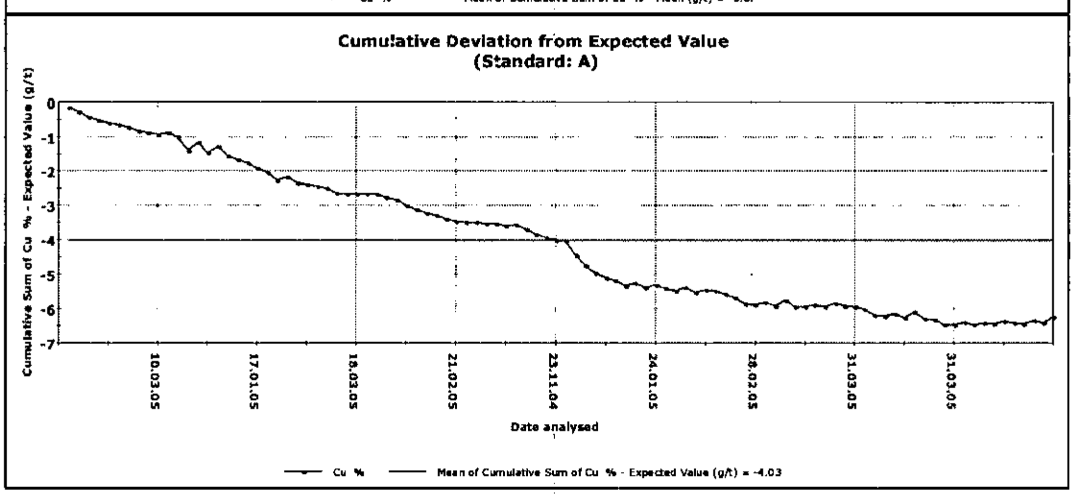
APPENDIX 1:

Company Standards and Blanks Plots

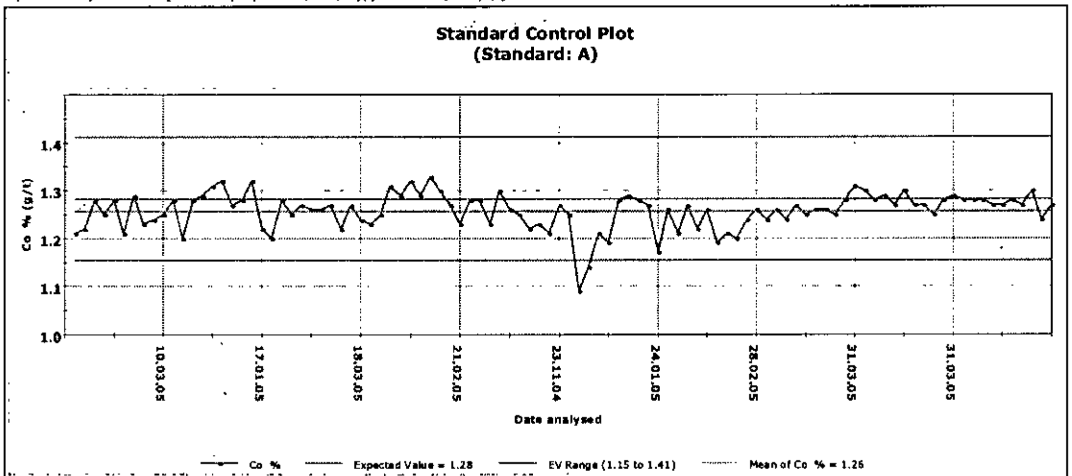
Standard:	A	No of Analyses:	100
Element:	Cu %	Minimum:	3.65
Units:		Maximum:	4.15
Detection Limit:		Mean:	3.99
Expected Value (EV):	4.05	Std Deviation:	0.07
E.V. Range:	3.65 to 4.46	% in Tolerance	100.00 %
		% Bias	-1.54 %
		% RSD	1.80 %

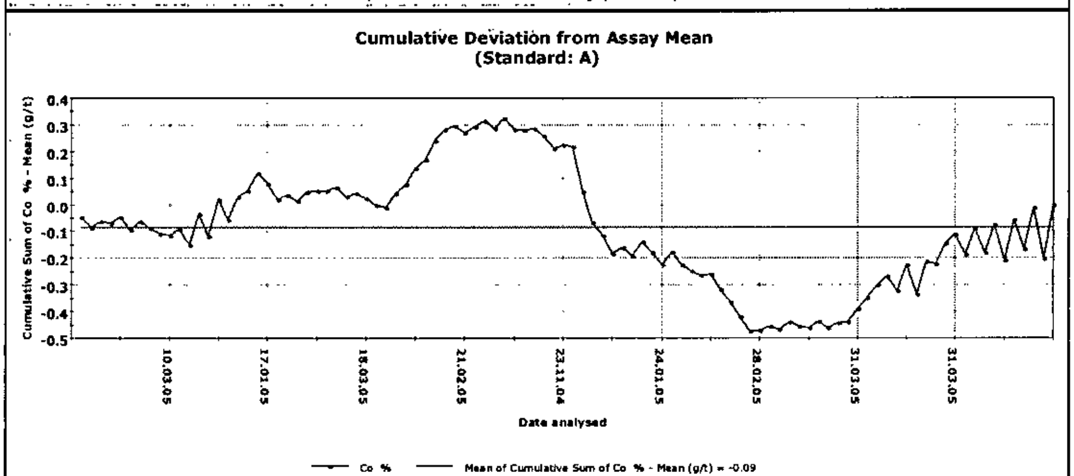


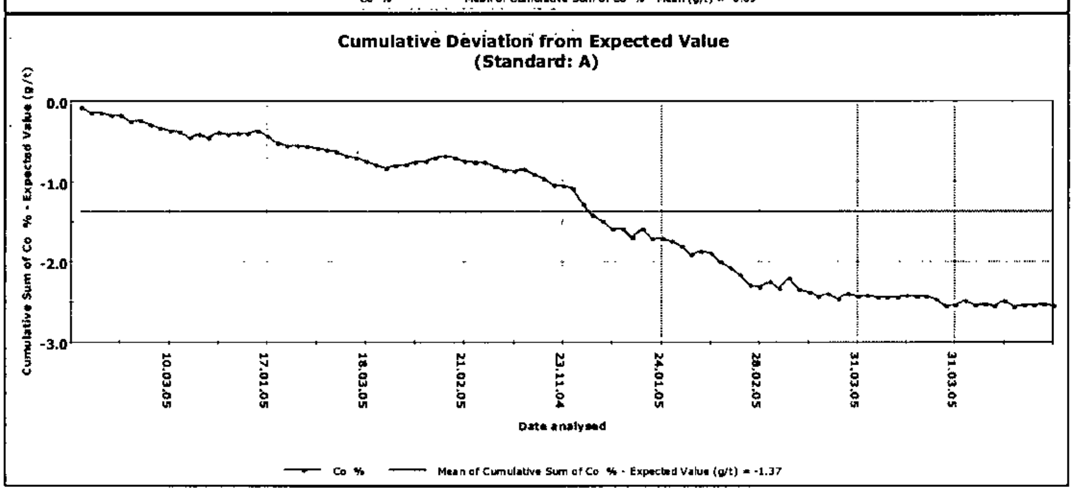




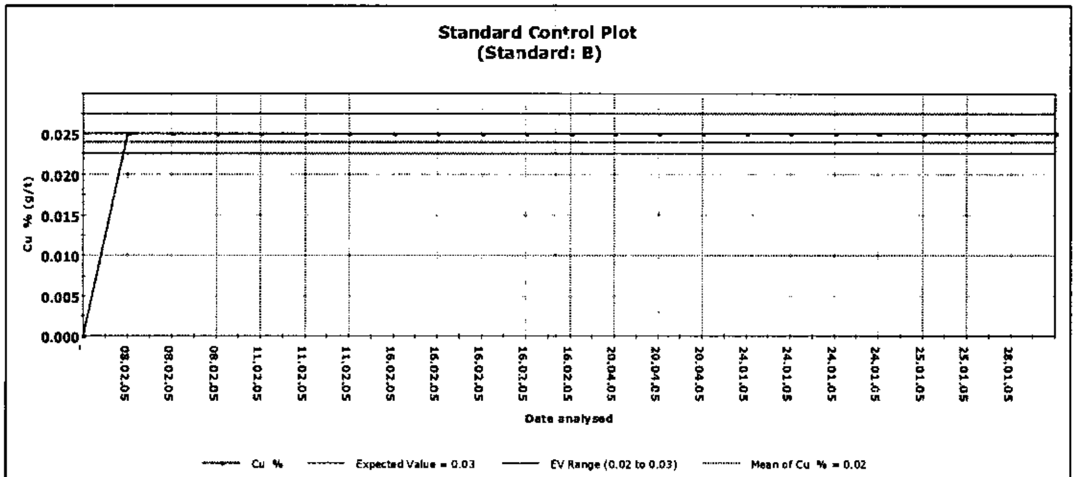
Standard:	A	No of Analyses:	100
Element:	Co %	Minimum:	1.09
Units:		Maximum:	1.33
Detection Limit:		Mean:	1.26
Expected Value (EV):	1.28	Std Deviation:	0.04
E.V. Range:	1.15 to 1.41	% in Tolerance	98.00 %
		% Bias	-1.99 %
		% RSD	3.06 %

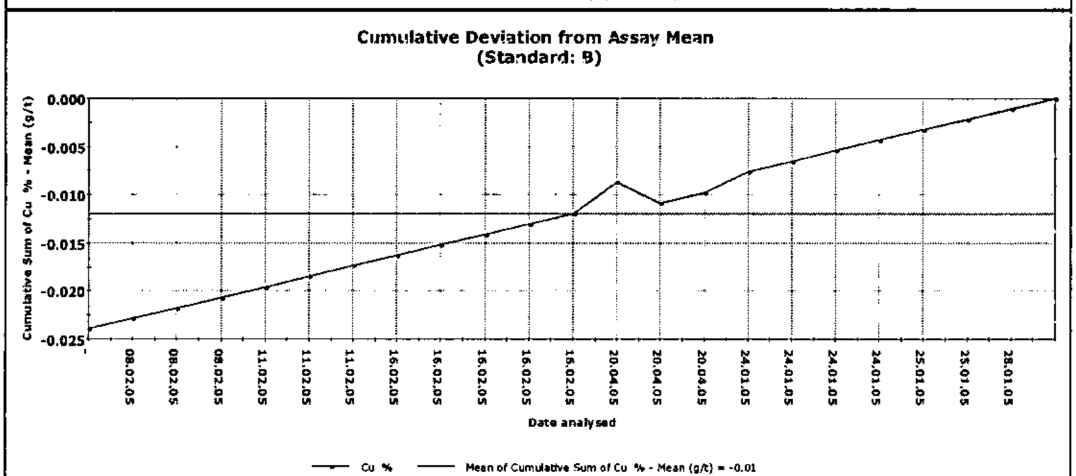


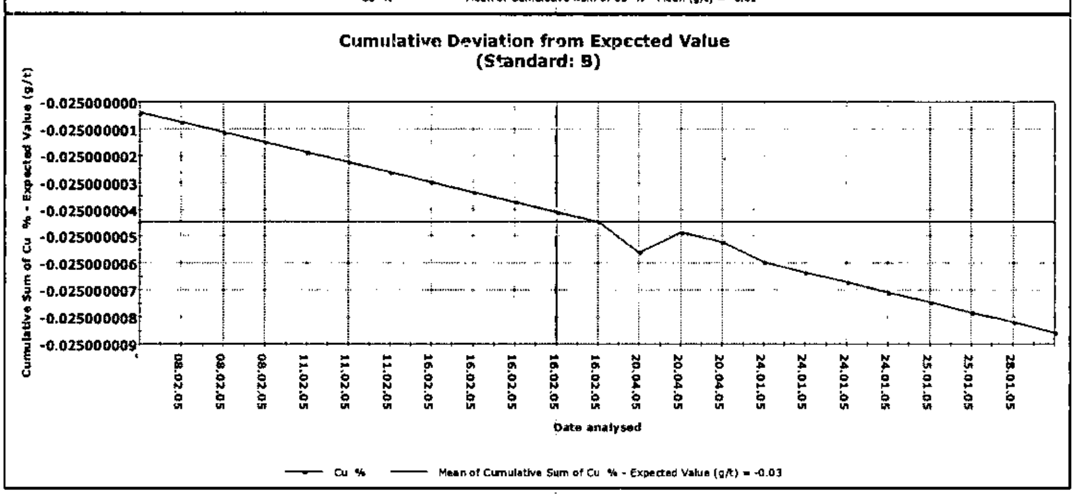




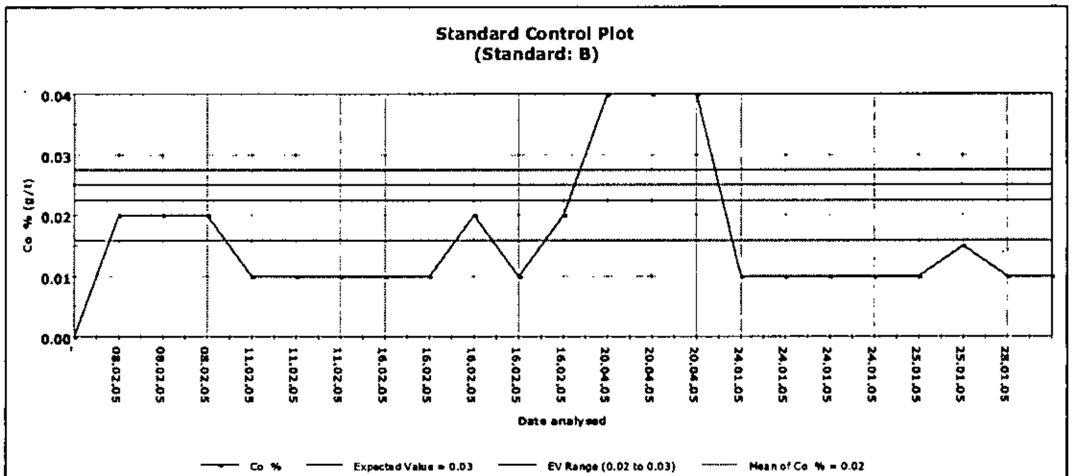
Standard:	B		No of Analyses:	23
Element:	Cu %		Minimum:	0.00
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.03		Std Deviation:	0.01
E.V. Range:	0.02 to 0.03		% in Tolerance	95.65 %
			% Bias	-4.35 %
			% RSD	21.32 %

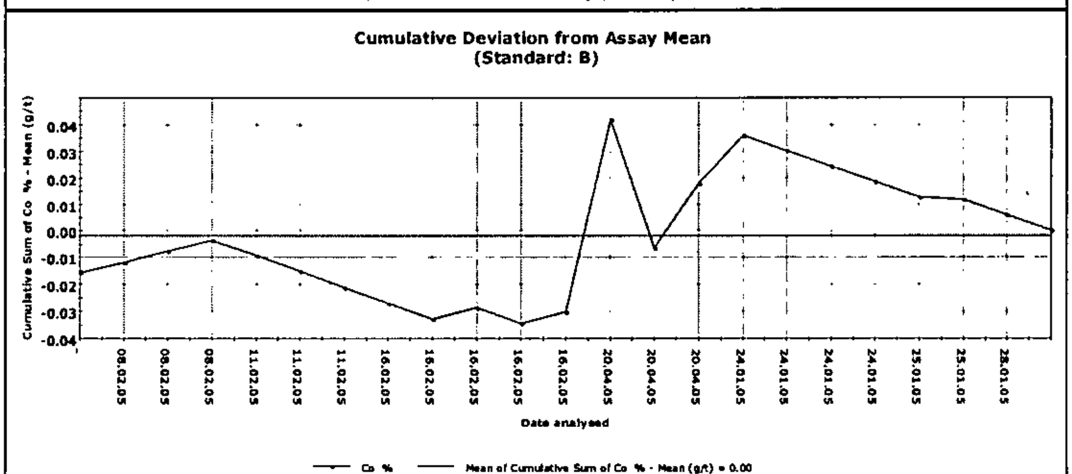


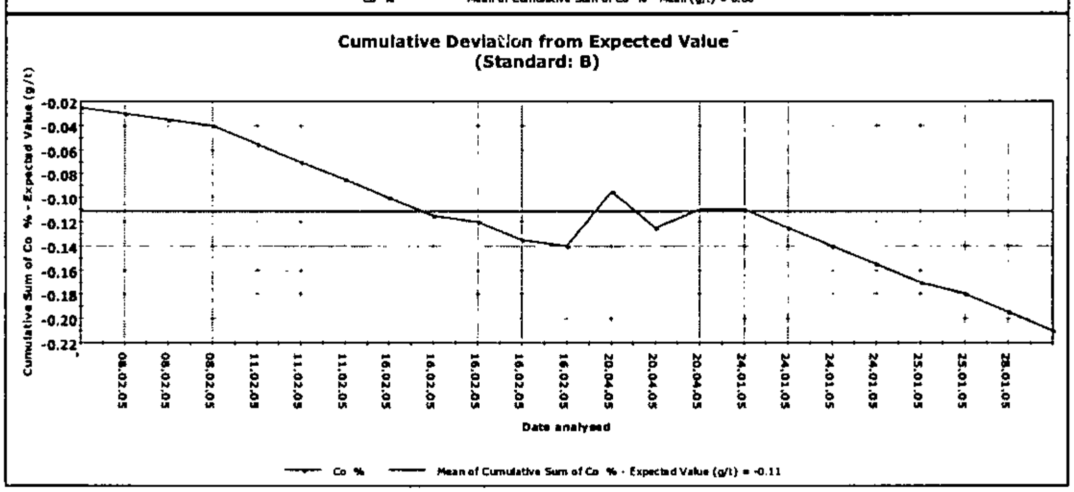




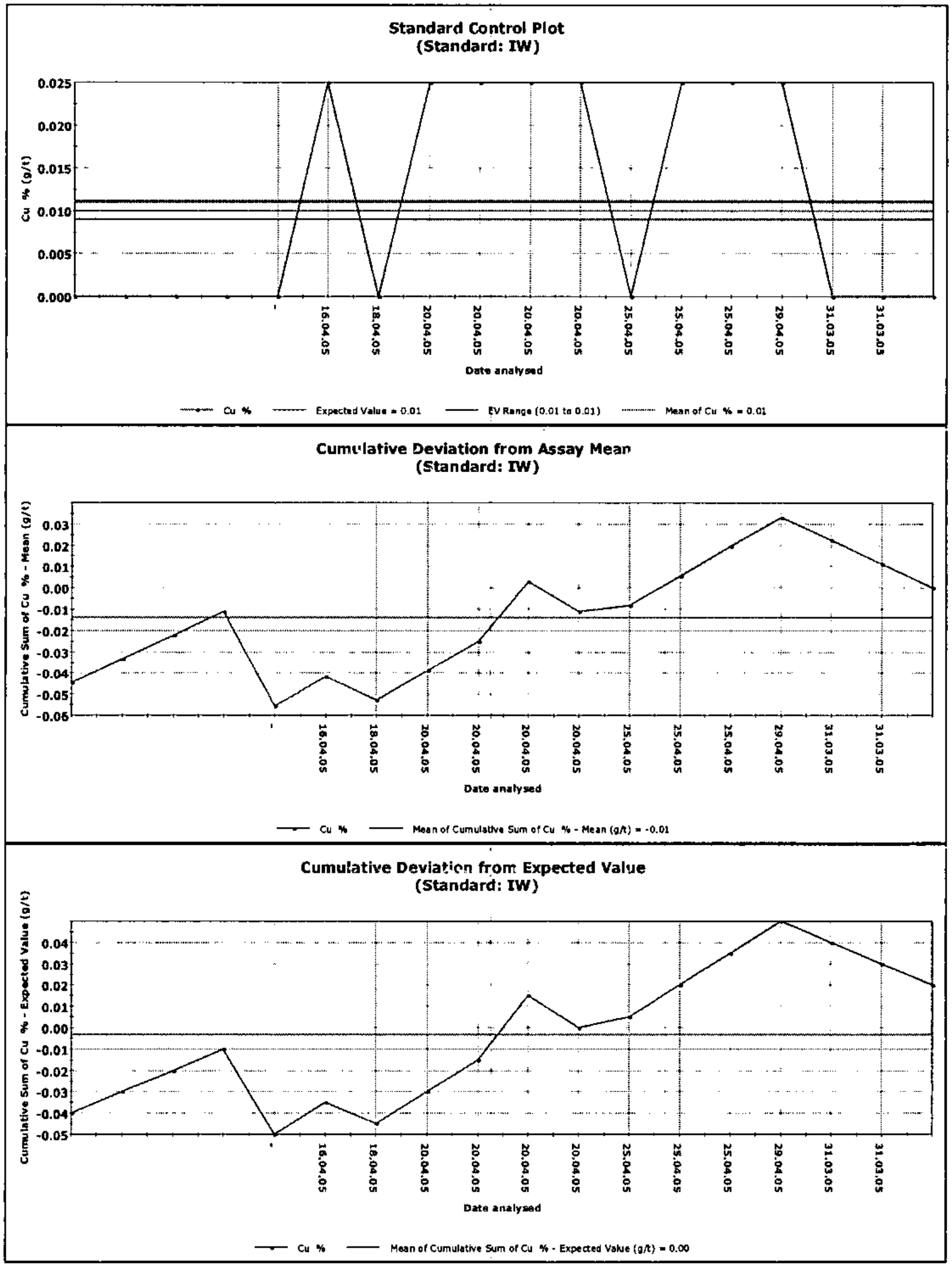
Standard:	B		No of Analyses:	23
Element:	CO %		Minimum:	0.00
Units:			Maximum:	0.04
Detection Limit:			Mean.	0.02
Expected Value (EV):	0.03		Std Deviation:	0.01
E.V. Range:	0.02 to 0.03		% in Tolerance	0.00 %
			% Bias	-36.52 %
			% RSD	66.12 %



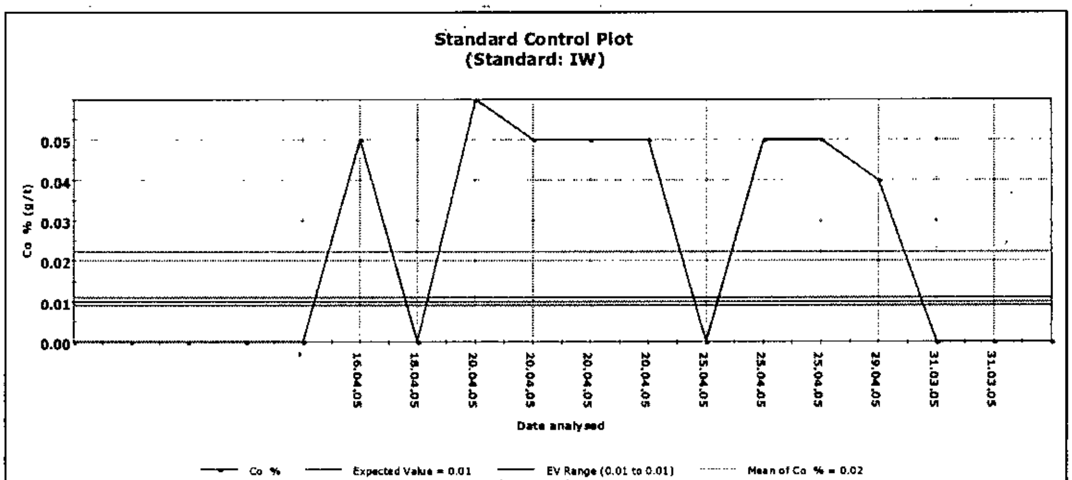


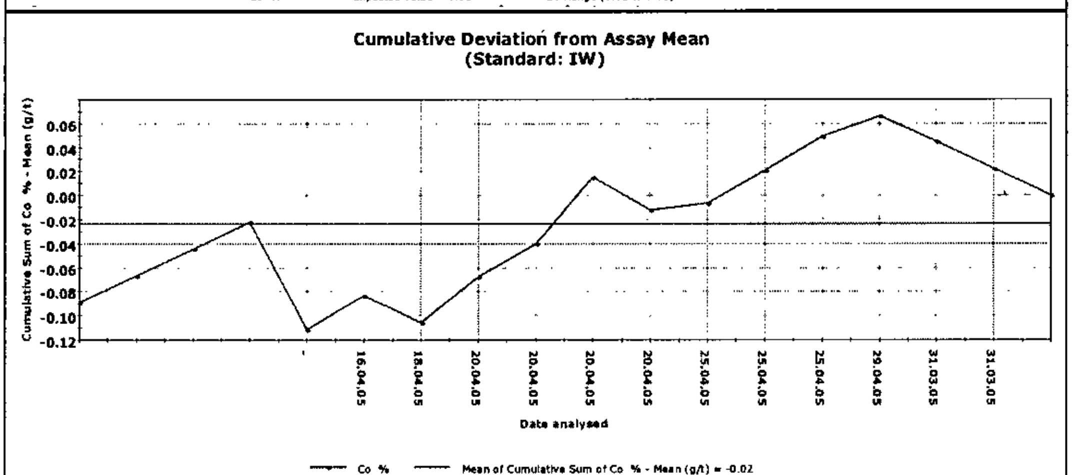


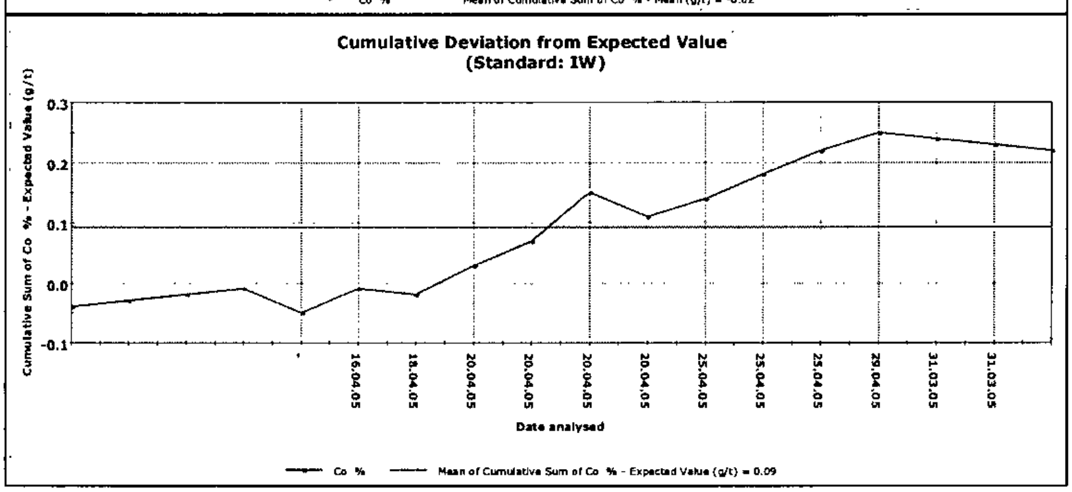
Standard:	IW		No of Analyses:	16
Element:	Cu %		Minimum:	0.00
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.01
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.01 to 0.01		% in Tolerance	0.00 %
			% Bias	11.11 %
			% RSD	111.80 %



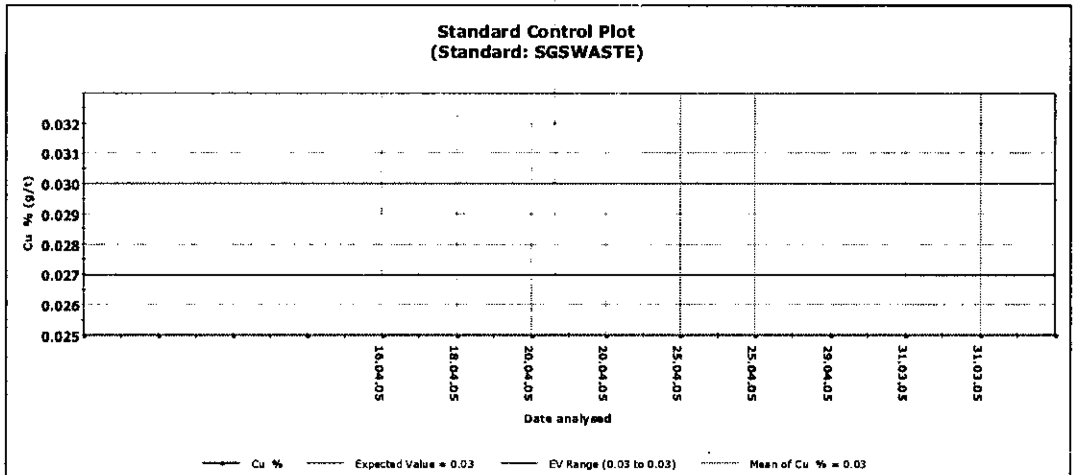
Standard:	IW		No of Analyses:	18
Element:	Co %		Minimum:	0.00
Units:			Maximum:	0.06
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.01		Std Deviation:	0.03
E.V. Range:	0.01 to 0.01		% in Tolerance	0.00 %
			% Bias	122.22 %
			% RSD	112.81 %

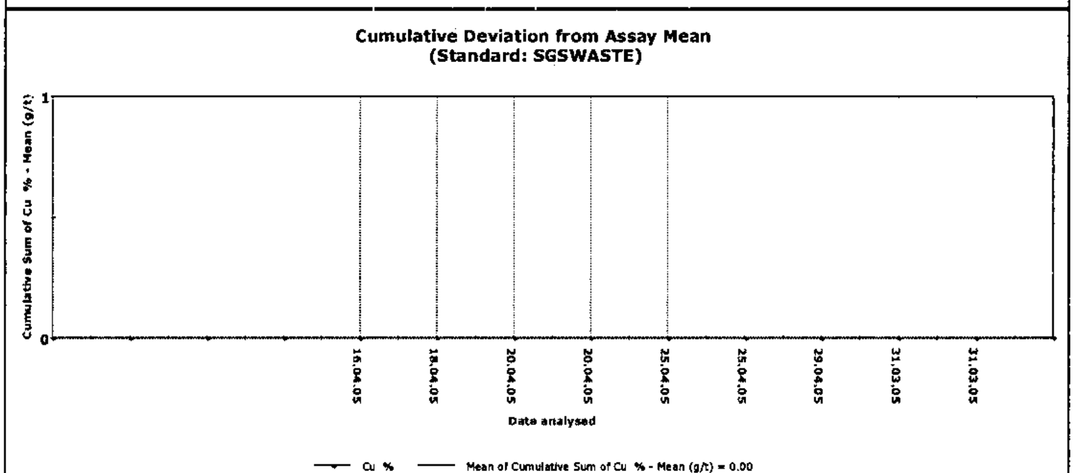


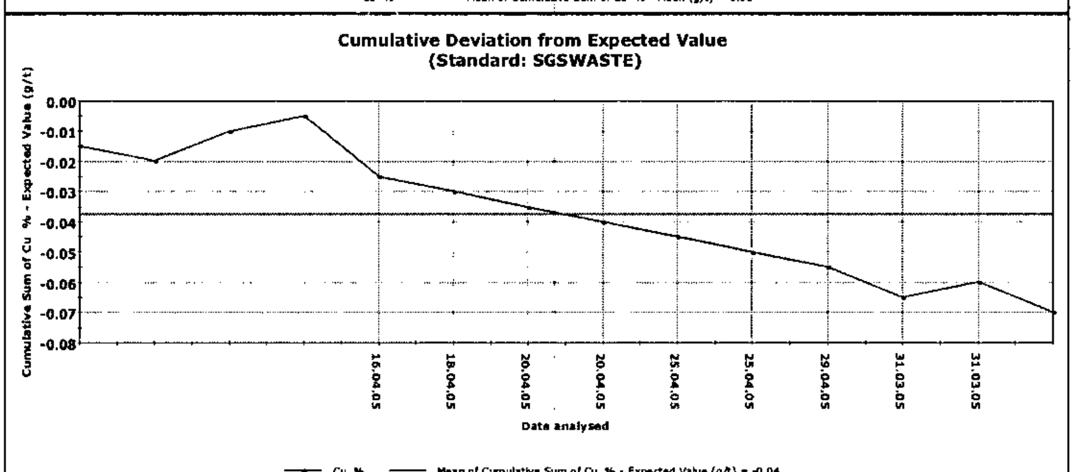




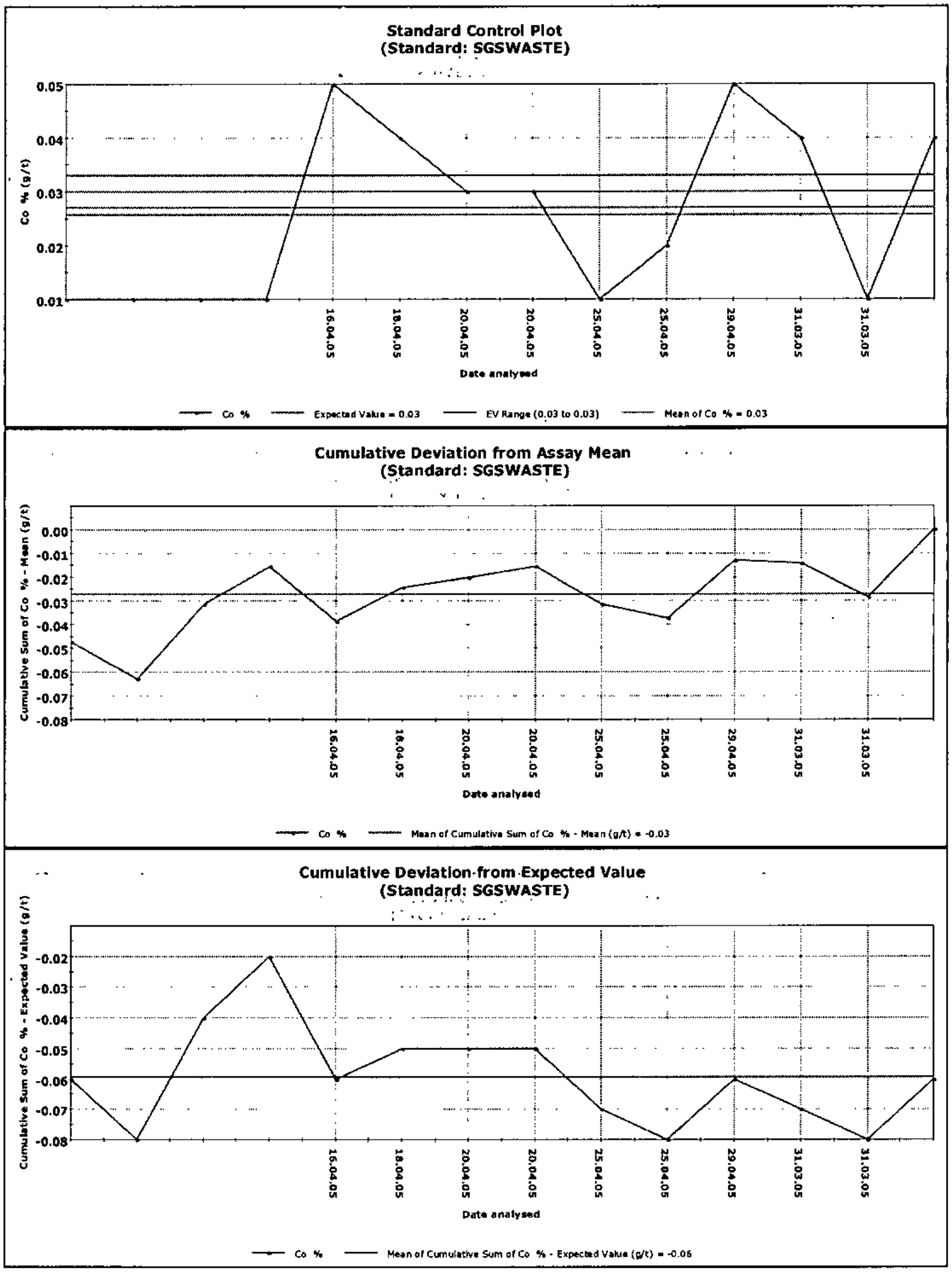
Standard:	SGSWASTE		No of Analyses:	14
Element:	Cu %		Minimum:	0.03
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.00
E.V. Range:	0.03 to 0.03		% in Tolerance	0.00 %
			% Bias	-16.67 %
			% RSD	0.00 %







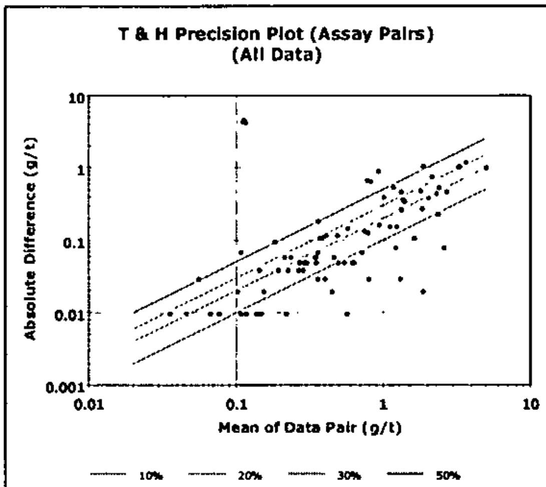
Standard:	SGSWASTE		No of Analyses:	14
Element:	Co %		Minimum:	0.01
Units:			Maximum:	0.05
Detection Limit:			Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.02
E.V. Range:	0.03 to 0.03		% in Tolerance	14.29 %
			% Bias	-14.29 %
			% RSD	60.09 %

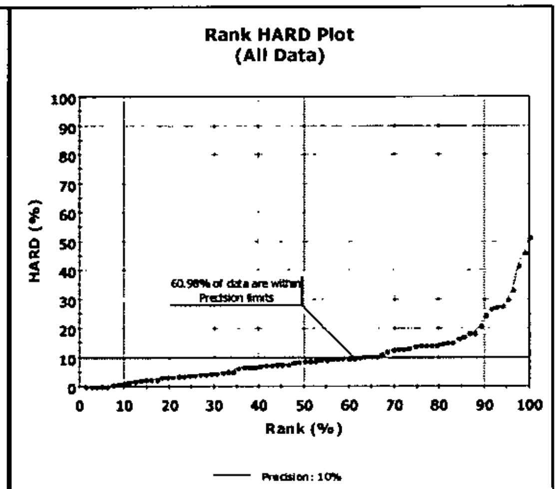


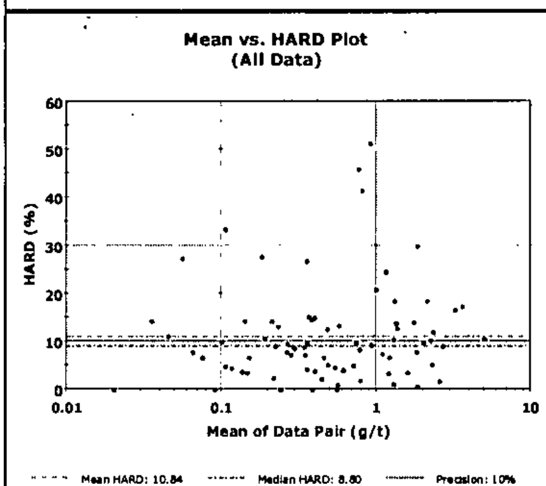
APPENDIX 2:

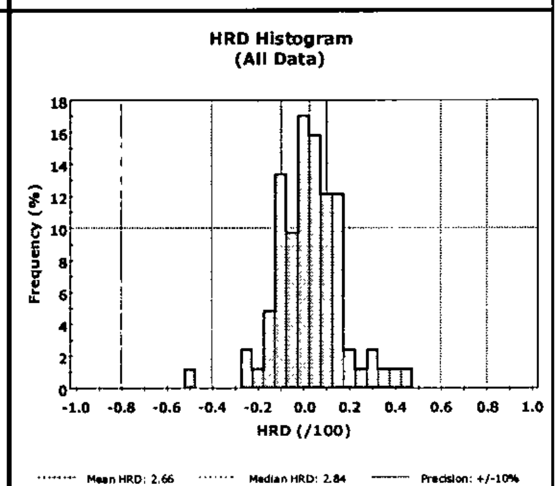
Repeats and Umpire Plots

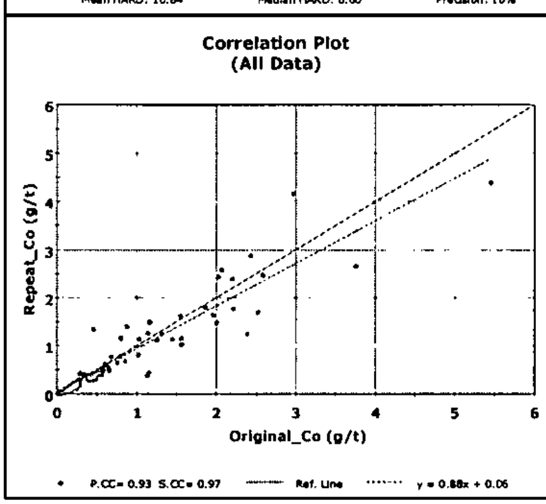
	Original_Co	Repeat_Co	Units			Result
No. Pairs:	82	82			Pearson CC:	0.93
Minimum:	0.02	0.02	g/t		Spearman CC:	0.97
Maximum:	5.44	4.41	g/t		Mean HARD:	10.84
Mean:	0.86	0.82	g/t		Median HARD:	8.80
Median	0.47	0.43	g/t			
Std. Deviation:	0.95	0.90	g/t		Mean HRD:	2.66
Coefficient of Variation:	1.11	1.10			Median HRD	2.84

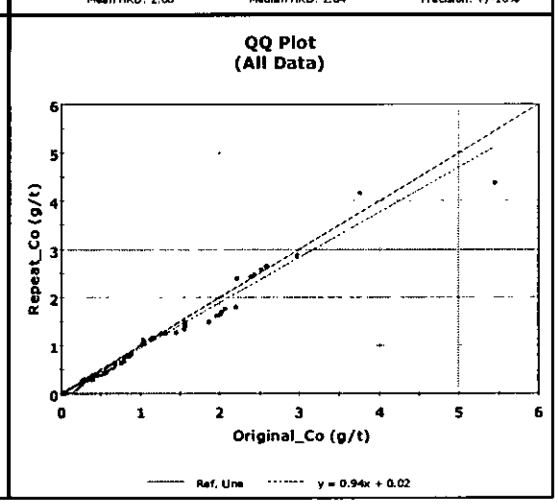




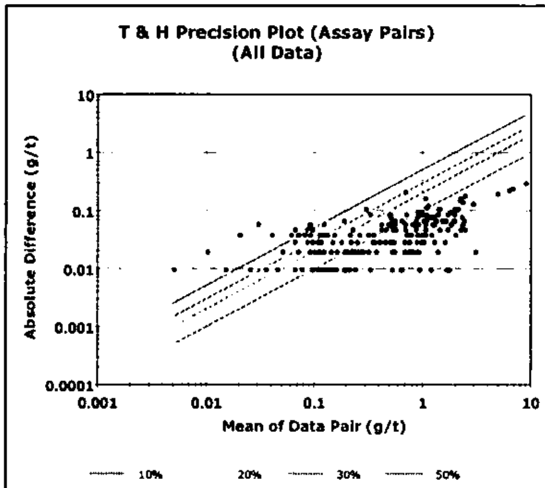


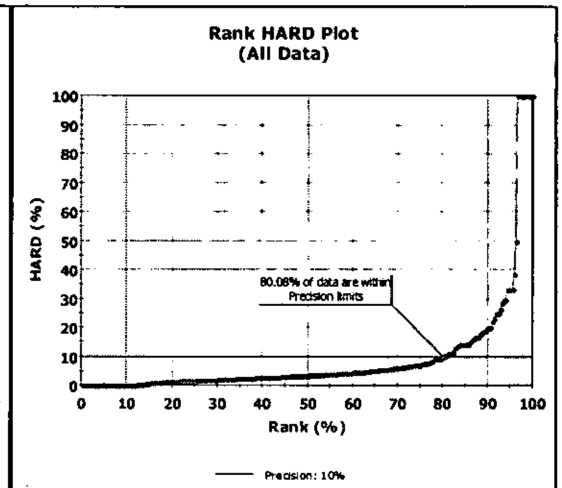


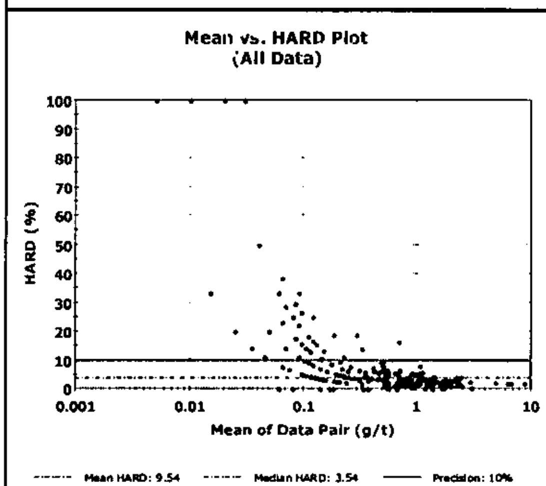


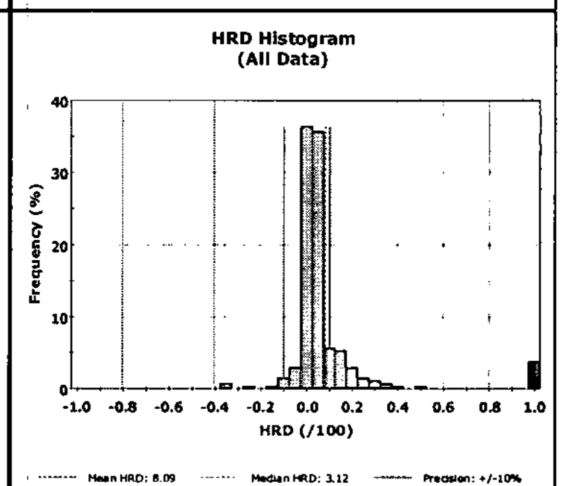


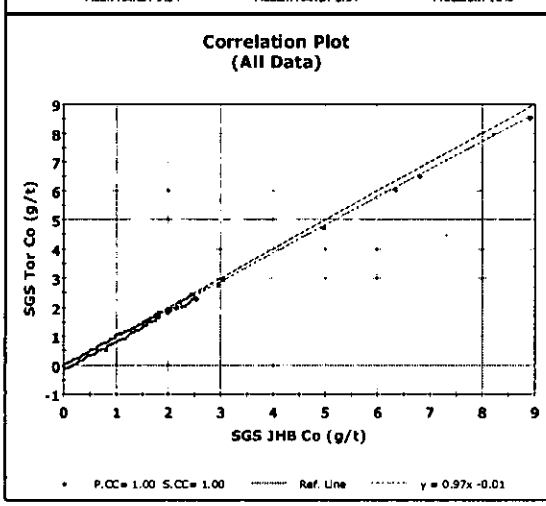
	SGS JHB Co	SGS Tor Co	Units			Result
No. Pairs:	266	266			Pearson CC:	1.00
Minimum:	0.00	0.00	g/t		Spearman CC:	1.00
Maximum:	8.89	8.58	g/t		Mean HARD:	9.54
Mean:	0.71	0.67	g/t		Median HARD:	3.54
Median	0.40	0.38	g/t			
Std. Deviation:	1.00	0.97	g/t		Mean HRD:	8.09
Coefficient of Variation:	1.40	1.43			Median HRD	3.12

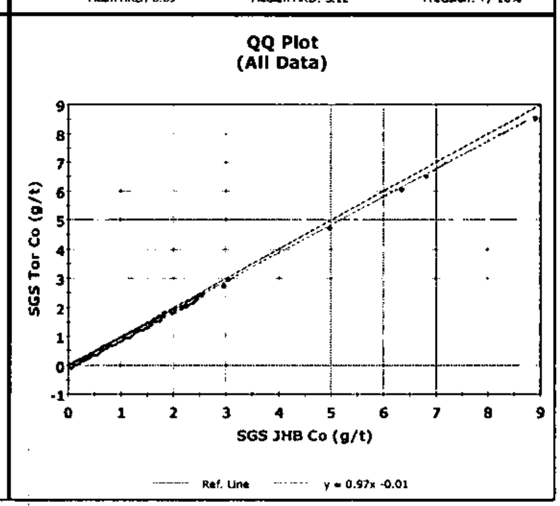




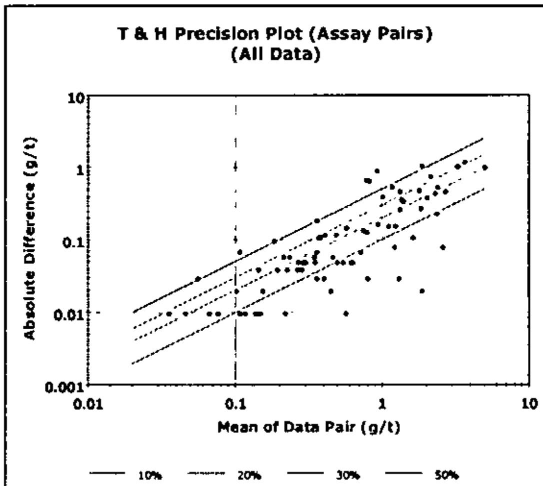


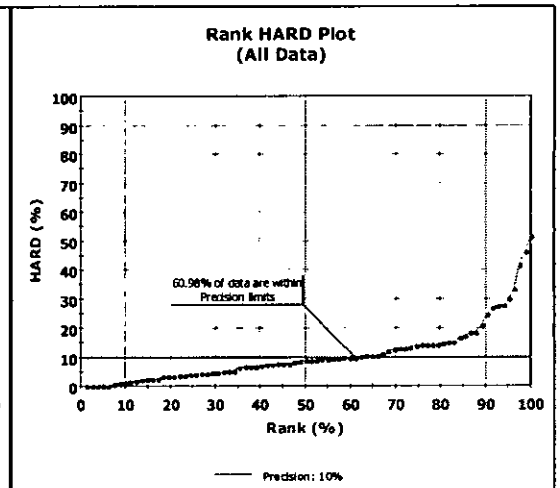


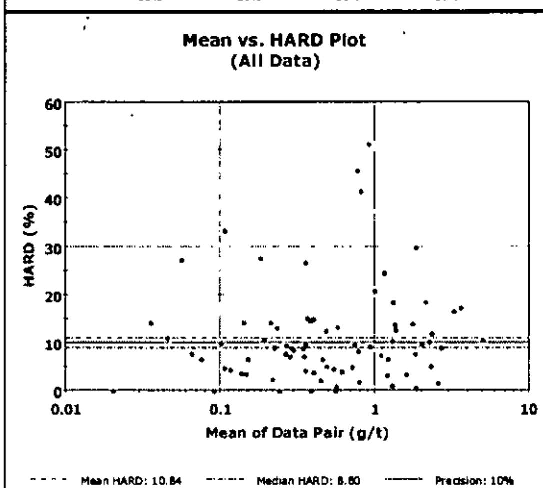


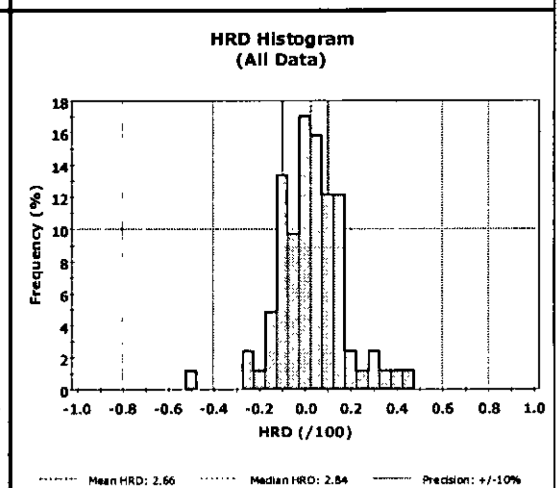


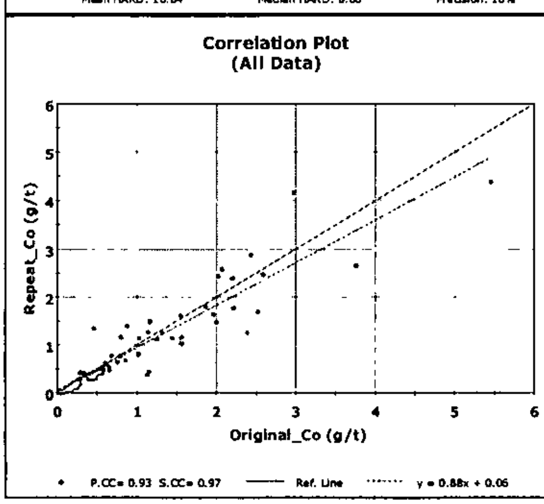
	Original_Co	Repeat_Co	Units			Result
No. Pairs:	82	82			Pearson CC:	0.93
Minimum:	0.02	0.02	g/t		Spearman CC:	0.97
Maximum:	5.44	4.41	g/t		Mean HARD:	10.84
Mean:	0.86	0.82	g/t		Median HARD:	8.80
Median	0.47	0.43	g/t			
Std. Deviation:	0.95	0.90	g/t		Mean HRD:	2.66
Coefficient of Variation:	1.11	1.10			Median HRD	2.84

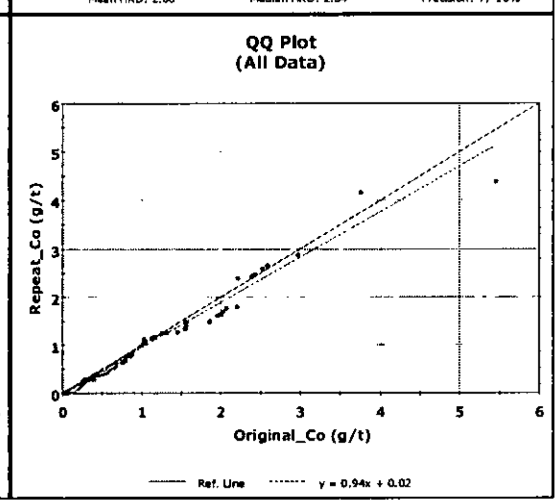




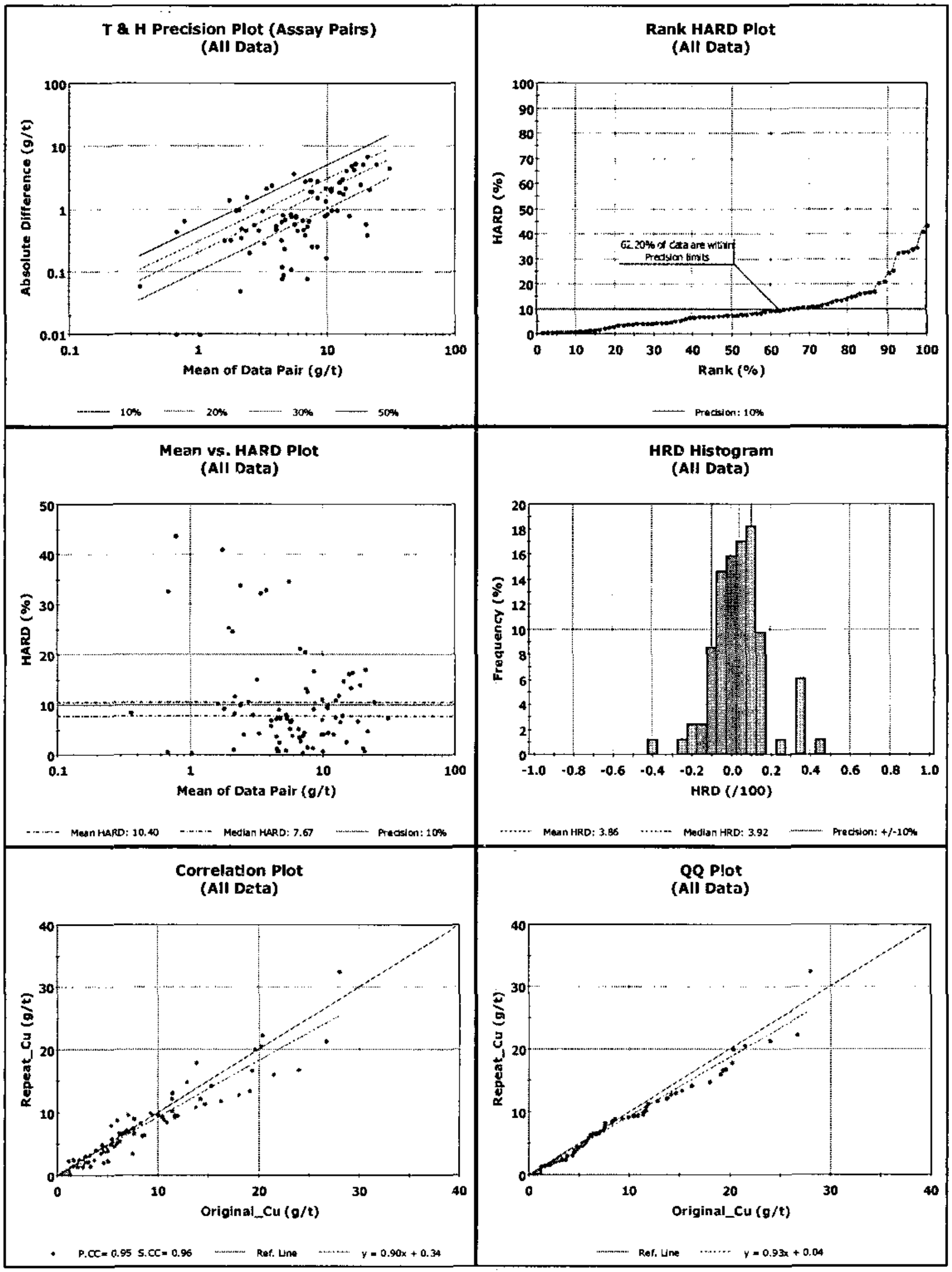




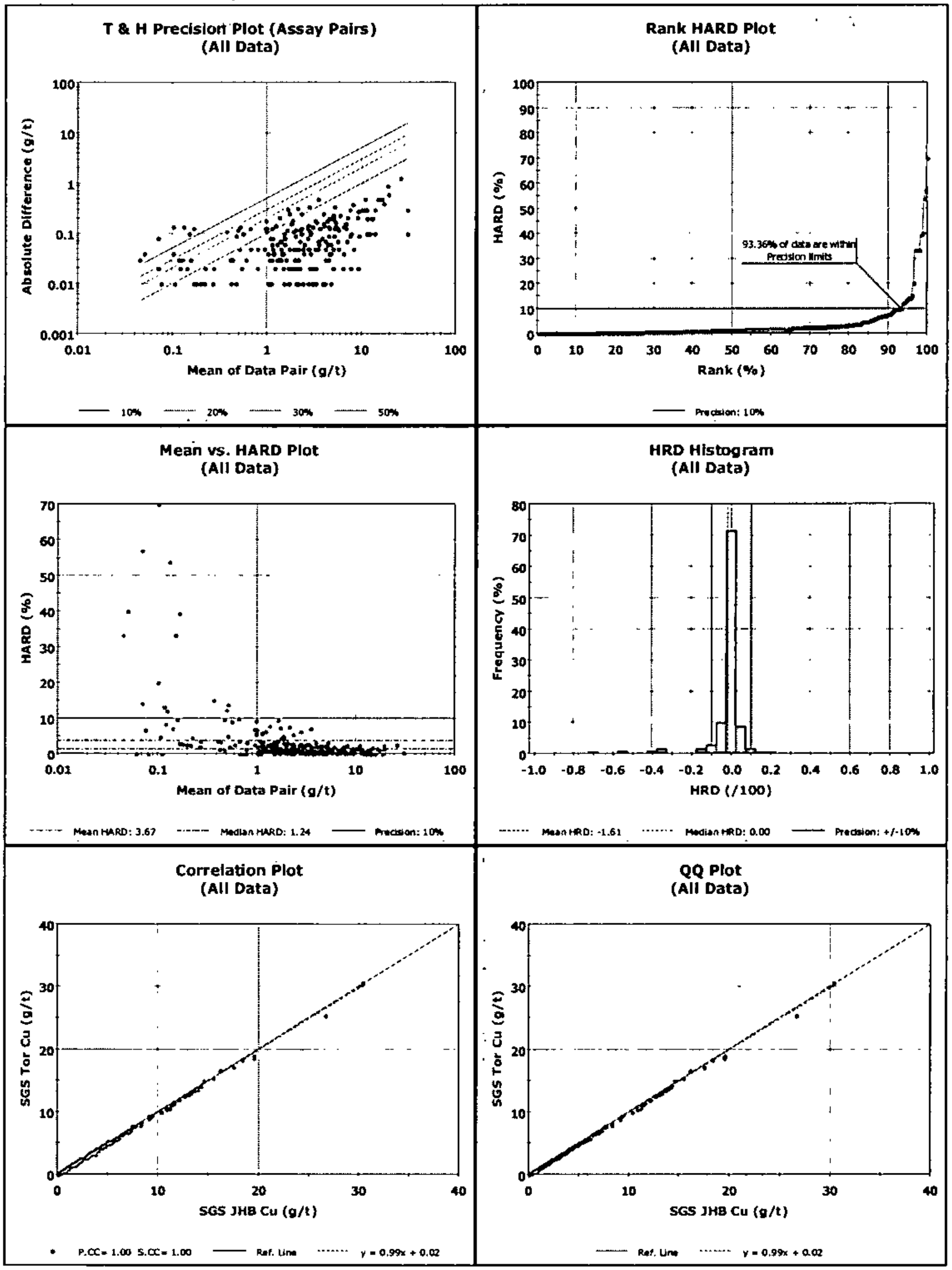




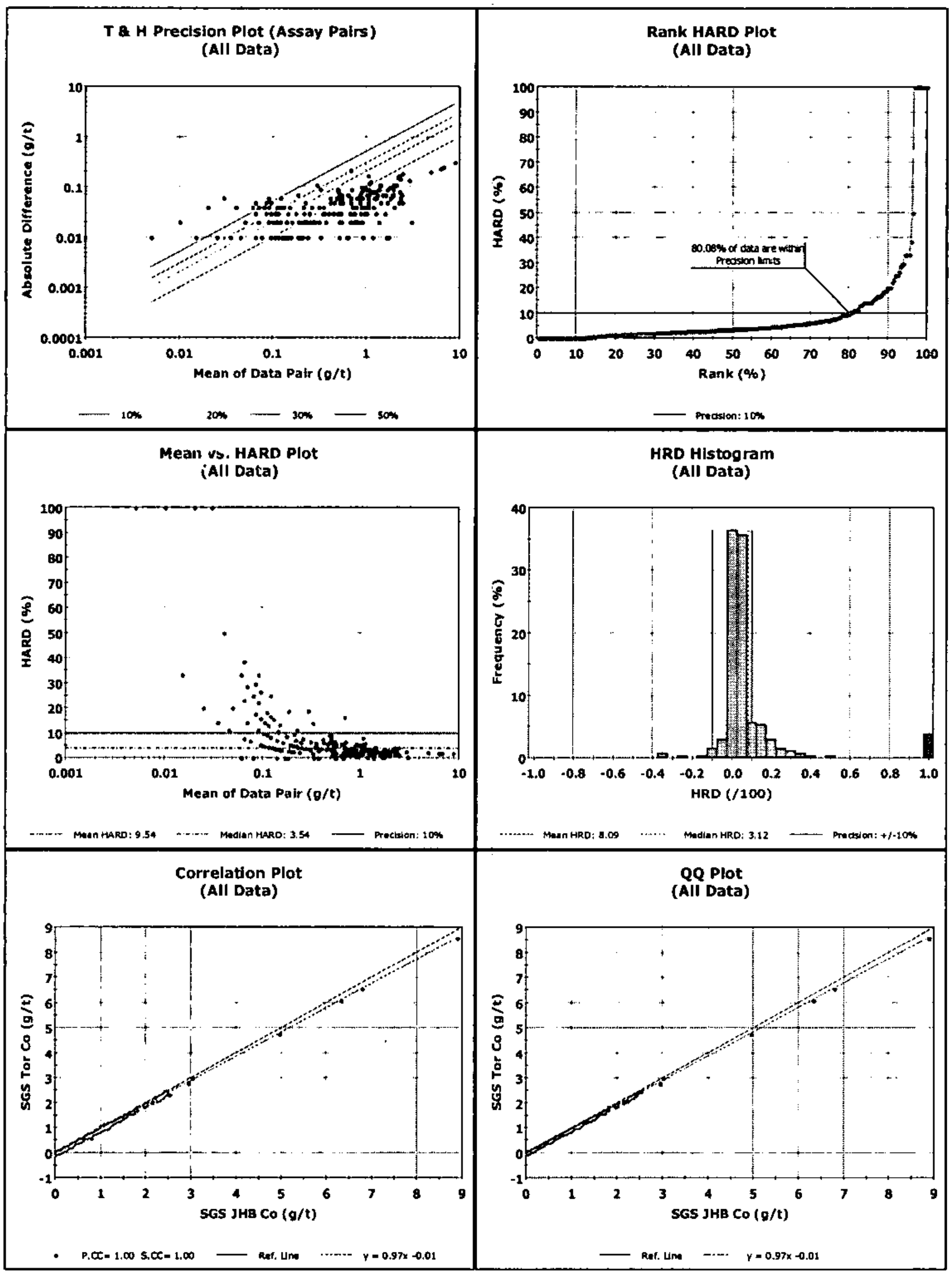
	Original_Cu	Repeat_Cu	Units			Result
No. Pairs:	82	82			Pearson CC:	0.95
Minimum:	0.38	0.32	g/t		Spearman CC:	0.96
Maximum:	28.00	32.60	g/t		Mean HARD:	10.40
Mean:	8.20	7.68	g/t		Median HARD:	7.67
Median	6.05	6.46	g/t			
Std. Deviation:	6.33	5.98	g/t		Mean HRD:	3.86
Coefficient of Variation:	0.77	0.78			Median HRD	3.92



	SGS JHB Cu	SGS Tor Cu	Units			Result
No. Pairs:	256	256			Pearson CC:	1.00
Minimum:	0.00	0.00	g/t		Spearman CC:	1.00
Maximum:	30.30	30.60	g/t		Mean HARD:	3.67
Mean:	3.87	3.85	g/t		Median HARD:	1.24
Median	2.00	2.08	g/t			
Std. Deviation:	4.96	4.91	g/t		Mean HRD:	-1.61
Coefficient of Variation:	1.28	1.27			Median HRD	0.00



	SGS JHB Co	SGS Tor Co	Units			Result
No. Pairs:	266	266			Pearson CC:	1.00
Minimum:	0.00	0.00	g/t		Spearman CC:	1.00
Maximum:	8.89	8.58	g/t		Mean HARD:	9.54
Mean:	0.71	0.67	g/t		Median HARD:	3.54
Median	0.40	0.38	g/t			
Std. Deviation:	1.00	0.97	g/t		Mean HRD:	8.09
Coefficient of Variation:	1.40	1.43			Median HRD	3.12



APPENDIX 3:

Confirmation of Title

DJUNGA & RISASI

7ème Etage, Avenue des Aviateurs, Immeuble UBC
Kinshasa/Gombe, République Démocratique du Congo
Tel: (243) 818846225/818848336
Fax: (243) 813016638
E-mail: jurisconsults@ic.cd

4 April 2006

Michael Keating
Chief Operating Officer
Africo Resources Limited
Johannesburg
South Africa

Re: **Swanmines – Title Opinion**

Dear Michael,

We refer to your letter dated 27 March 2006 in which you requested that we provide with a legal opinion concerning the standing of the Kalukundi mining title held by Swanmines.

For the purposes of this opinion we have examined the laws and regulations of the Democratic Republic of Congo ("**DRC**") as well as the records of the Mining Registry.

1. Mining right status

Our review of the records of the Mining Registry indicates that Swanmines is the holder of Exploitation Permit No. 591 in respect of the Kalukundi deposit (the "**Kalukundi Exploitation Permit**"). We have seen a copy of the Kalukundi Exploitation Permit dated 28 January 2004. The Kalukundi Exploitation Permit was issued by the Mining Registry (*Cadastre Minier)* further to an application by Swanmines to convert its old mining title (Concession No. 242) into an Exploitation Permit. Indeed, under the previous mining legislation of the DRC (Ordinance-Law No 81-013 of 2 April 1981), Swanmines was the holder of Concession No. 242 granted by Ministerial Decree No. 135/CAB.MINES-

HYDRO/01/2001 of 11 October 2001. Following the enactment of Law No. 007/2002 of 11 July 2002 (the "**Mining Code**") and Decree No. 038/2003 of 26 March 2003 (the "**Mining Regulations**"), the holders of mining rights were required to validate their mining rights and to apply with the Mining Registry for the conversion of their existing mining right into one of the mining rights as recognized under the Mining Code and to adapt the shape of their mining perimeters to the new cadastral grid. It appears from the list of validated mining rights published in the official gazette on 15 April 2003 that Swanmines had duly validated its right over Concession No. 242. Concession No. 242 was then converted by Swanmines into Exploitation Permit No. 591 once the shape of the mining perimeter which it covers had been adapted to the new cadastral grid.

The Kalukundi Exploitation Permit has been validly created and is duly registered in the name of Swanmines.

2. Nature of the Permit

The Kalukundi Exploitation Permit consists of 23 blocks for a total area of 19.54 square kilometres approximately and confers on Swanmines the exclusive right to carry out, within the perimeter over which it has been granted, exploration, development, construction and exploitation works for copper, cobalt, gold and nickel and associated mineral substances, in accordance with its terms.

3. Term of the Permit

The Mining Code provides that the term of an exploitation permit is thirty years, renewable several times for a period of fifteen years (Mining Code, Article 67). However, given that the Kalukundi Exploitation Permit stems from Concession No. 242 granted under the former mining legislation, it is valid for the duration of the original term, i.e. from 11 October 2001 to 10 October 2021, and renewable thereafter twice for periods of fifteen years.

4. Swanmines' Obligations

4.1 Surface area fees

Under the Mining Code, the holder of an exploitation permit must pay the annual surface area fees per quadrangle before the end of the first quarter of the calendar year. Failure to pay the annual surface area fees per quadrangle is punishable by withdrawal of the permit (Mining Code, Article 198).

We have been able to ascertain that Swanmines has paid the annual surface area fees for 2005 and 2006 to maintain the Kalukundi Exploitation Permit current.

4.2 Obligation to commence works

The Mining Code requires the title holder to commence development and construction works within three years of the date the exploitation permit is issued (Mining Code, Article 197). Failure to comply with the obligation to commence the exploitation works is also punishable by withdrawal of the permit.

However, the obligation to commence works within the prescribed period is not applicable to Swanmines pursuant to Article 580(f) of the Mining Regulations insofar as the Kalukundi Exploitation Permit originates from a permit (Concession No. 242) which existed prior to the entry into force of the Mining Code.

4.3 Environmental obligations

All mining operations are required to be the subject of an environmental study (Mining Code, Article 204 and Mining Regulations, Article 450). When a permit such as the Kalukundi Exploitation Permit is obtained pursuant to the conversion of a pre-existing mining right, the Mining Regulations require the holder to submit for approval to the Department in charge of the Protection of the Mining Environment ("**DPEM**") an environmental adjustment plan ("**EAP**") which must describe the state of the mining site and its surroundings as well as the measures already taken, in progress or envisaged to protect the environment over the course of ten years if the exploitation will use a chemical treatment or concentration plants (Mining Regulations, Articles 466 and 467). Failure to submit an EAP may entail the suspension of works.

It is our understanding that Swanmines has not yet submitted an environmental study for approval by the DPM given that the mining operations have not commenced, but Swanmines has engaged the services of a consultant to prepare such an environmental study in respect of the Kalukundi mining project to comply with the provisions of the Mining Code.

5. Liens or encumbrances over the Permit

Our review of the records of the Mining Registry reveals that at the date of this opinion the Kalukundi Exploitation Permit is free and clear of any liens, mortgage or security interest of any kind. There are no special conditions placed on the Kalukundi Exploitation Permit other than the general conditions applicable to all exploitation permits pursuant to the Mining Code.

6. Litigation and judicial judgements

Pursuant to the records of the tribunals of Grande Instance of Lubumbashi and Kinshasa and to the best of our knowledge, there is no litigation currently pending in which Swanmines is involved as either a plaintiff or defendant with respect to the Kalukundi Exploitation Permit.

We hope that the foregoing has been responsive to your request. If you have any questions, please do not hesitate to contact us.

Sincerely,

DJUNGA & RISASI

Pierre Risasi

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SPECIALISTS FROM BOARDROOM TO MINE FACE

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2008 OCT 14 A 11:28
OFFICE OF INTERNATIONAL

Julian Verbeek
Coffey Mining Ltd
1162 Hay Street, West Perth, WA, 6005, Australia
Telephone: +61 8 9324 8800
Fax: +61 8 9324 8877

CONSENT OF QUALIFIED PERSON

TO: Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
The Toronto Stock Exchange

I, Julian Verbeek, am one of the authors of the technical report on the Kalukundi Property titled "Kalukundi Project - Technical Report" dated June 2006, as revised July 2008 (the "Kalukundi Report"). Africo Resources Ltd. (the "Corporation") has extracted certain information from the Kalukundi Report, which is included in the Corporation's Annual Information Form dated March 28, 2008 (the "AIF"), and which Kalukundi Report is incorporated by reference and is deemed to be included in the Corporation's AIF, which has been filed.

I hereby consent to the use of my name in the AIF and the use, inclusion or incorporation by reference of the information extracted from, and reference(s) to, the Kalukundi Report in the AIF.

I also certify that I have read the written disclosure filed and that it fairly and accurately represents the information in the Kalukundi Report that supports the disclosure.

Dated 18th September, 2008

J Verbeek

Signature of Qualified Person
Julian Verbeek, BSc (Hon) PhD (Geol), MAusIMM
Principal Consultant - Resources

[Seal or Stamp of Qualified Person]

coffey mining
SPECIALISTS FROM BOARDROOM TO MINE FACE

John Hearne
Coffey Mining Ltd
1162 Hay Street, West Perth, WA. 6005, Australia
Telephone: +61 8 9324 8800
Fax: +61 8 9324 8877

CONSENT of AUTHOR

TO: Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
The Toronto Stock Exchange

I, John Hearne, am one of the authors of the technical report on the Kalukundi Property titled "Kalukundi Project - Technical Report" dated June 2006, as revised July 2008 (the "Kalukundi Report") Africo Resources Ltd. (the "Corporation") has extracted certain information from the Kalukundi Report, which is included in the Corporation's Annual Information Form dated March 28, 2008 (the "AIF"), and which Kalukundi Report is incorporated by reference and is deemed to be included in the Corporation's AIF, which has been filed.

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I also certify that I have read the written disclosure filed and that it fairly and accurately represents the information in the Kalukundi Report that supports the disclosure.

Dated 18th September, 2008

Signature of Qualified Person
John Hearne, BEng., MBA, MAusIMM
Principal Consultant – Mining Engineering

[*Seal or Stamp of Qualified Person*]

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CONSENT of AUTHOR

TO: Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
The Toronto Stock Exchange

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I hereby consent to the public filing of the Kalukundi Report and to extracts from, or a summary of, the Kalukundi Report in the written disclosure being filed, to the use of my name in the AIF and the use, inclusion or incorporation by reference of the information extracted from, and reference(s) to, the Kalukundi Report in the AIF.

I also certify that I have read the written disclosure filed and that it fairly and accurately represents the information in the Kalukundi Report that supports the disclosure.

Dated 19 September, 2008.

J Verbeek

Signature of Qualified Person
Julian Verbeek, B.Sc. (Hon), PhD (Geol.), MAusIMM
Principal Consultant - Resources

[Seal or Stamp of Qualified Person]

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SPECIALISTS FROM BOARDROOM TO MINE FACE

CONSENT of AUTHOR

TO: Alberta Securities Commission
British Columbia Securities Commission
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I also certify that I have read the written disclosure being filed and that it fairly and accurately represents the information in the Kalukundi Report that supports the disclosure.

Dated 19 September, 2008.

Signature of Qualified Person
John Hearne, BEng., MBA, MAusIMM
Principal Consultant – Mining Engineering

[Seal or Stamp of Qualified Person]

END