INDUSTRIAL MINERALS EVENTS

2nd Graphite Conference

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Radisson Blu Portman Hotel, London

AMORPHOUS GRAPHITE and TURKEY

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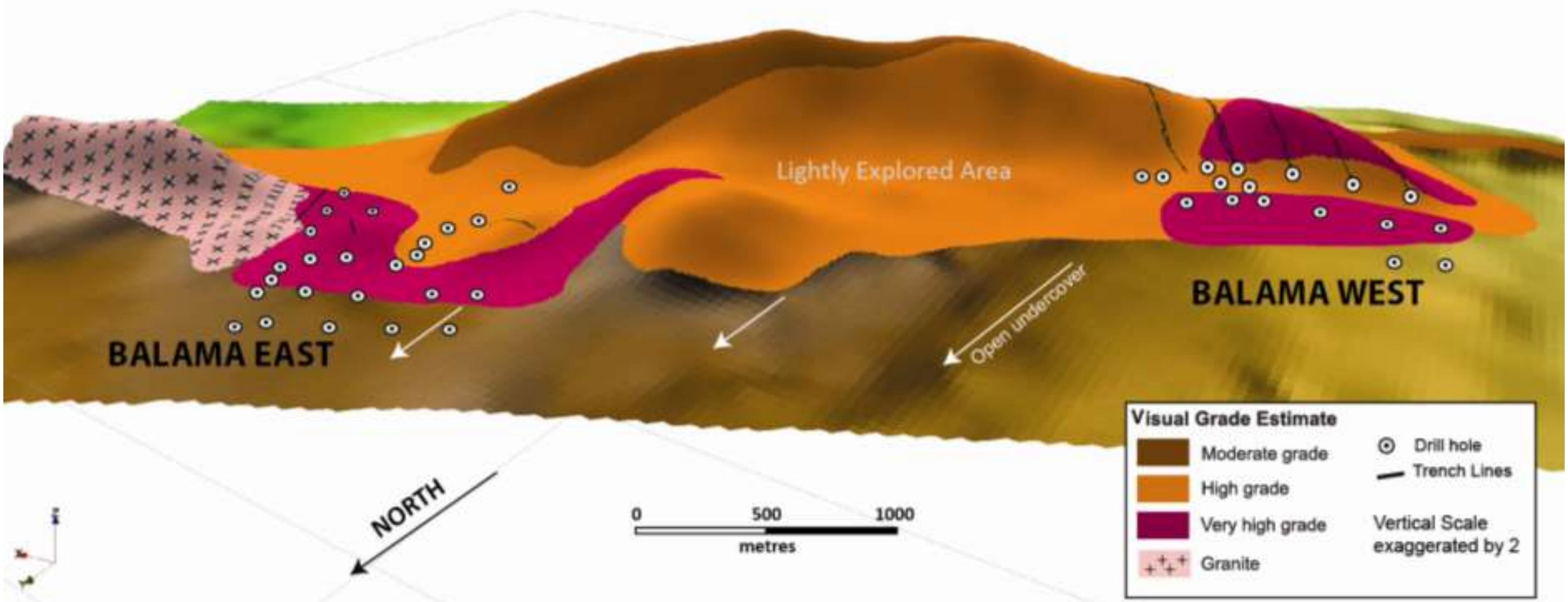
BALAMA FLAKE GRAPHITE & VANADIUM DEPOSIT

Exploration targets for Balama West and Balama East

Balama West – **400 to 500 million tonnes at 10% TGC and 0.20% V_2O_5**

Balama East – **300 to 400 million tonnes at 11% TGC and 0.30% V_2O_5**

Exploration target based on depth of 200 metres over the areas drilled, and based on the weighted average grade for every drill hole with assay results to date



Amorphous at a Glance

- Microcrystalline Graphite
- Geologic metamorphism of anthracite coal
- Used in Traditional Markets, like steel mills, foundries, refractories, paint, pen, foundry coatings
- China, North Korea and Mexico are producing countries

Investing in Amorphous

Why?

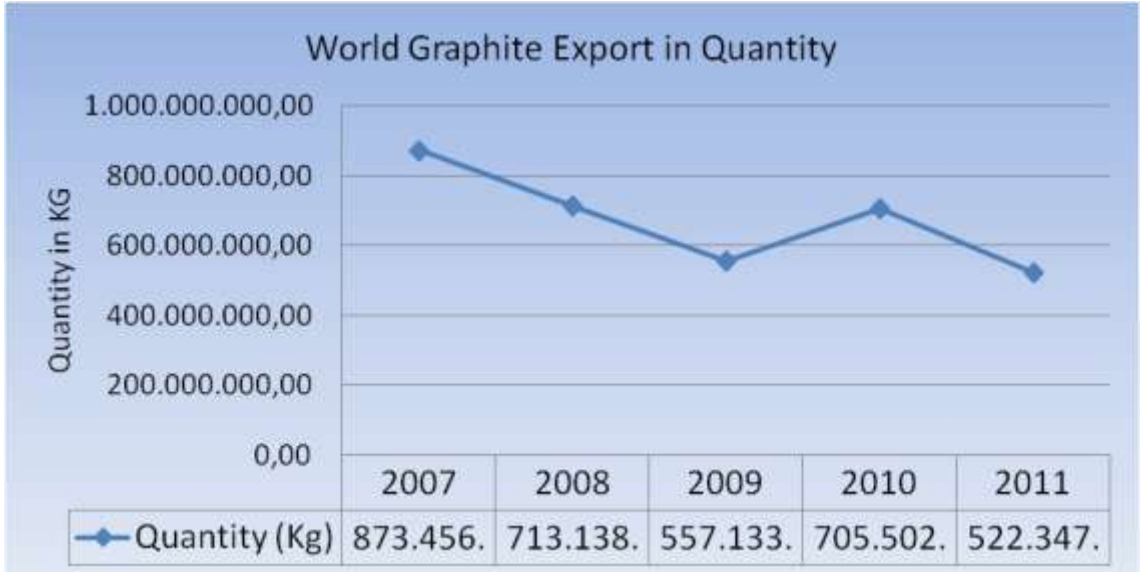
1
Understanding The Natural Graphite Market

1.1. Peaking prices in 2010 and 2011

Reason = Supply or Demand?

World Natural Graphite Export			
Year	**Value**	**Quantity (Kg)**	**Average price**
2007	$247.757.866,00	873.456.492,00	$283,65
2008	$329.995.720,00	713.138.850,00	$462,74
2009	$260.610.662,00	557.133.979,00	$467,77
2010	$376.826.435,00	705.502.287,00	$534,13
2011	$505.898.288,00	522.347.313,00	$968,51

Source=UN Trade Statistics


World Graphite Export in Quantity
Quantity in KG
1.000.000.000,00
800.000.000,00
600.000.000,00
400.000.000,00
200.000.000,00
0,00
2007
2008
2009
2010
2011
Quantity (Kg)
873.456.
713.138.
557.133.
705.502.
522.347.

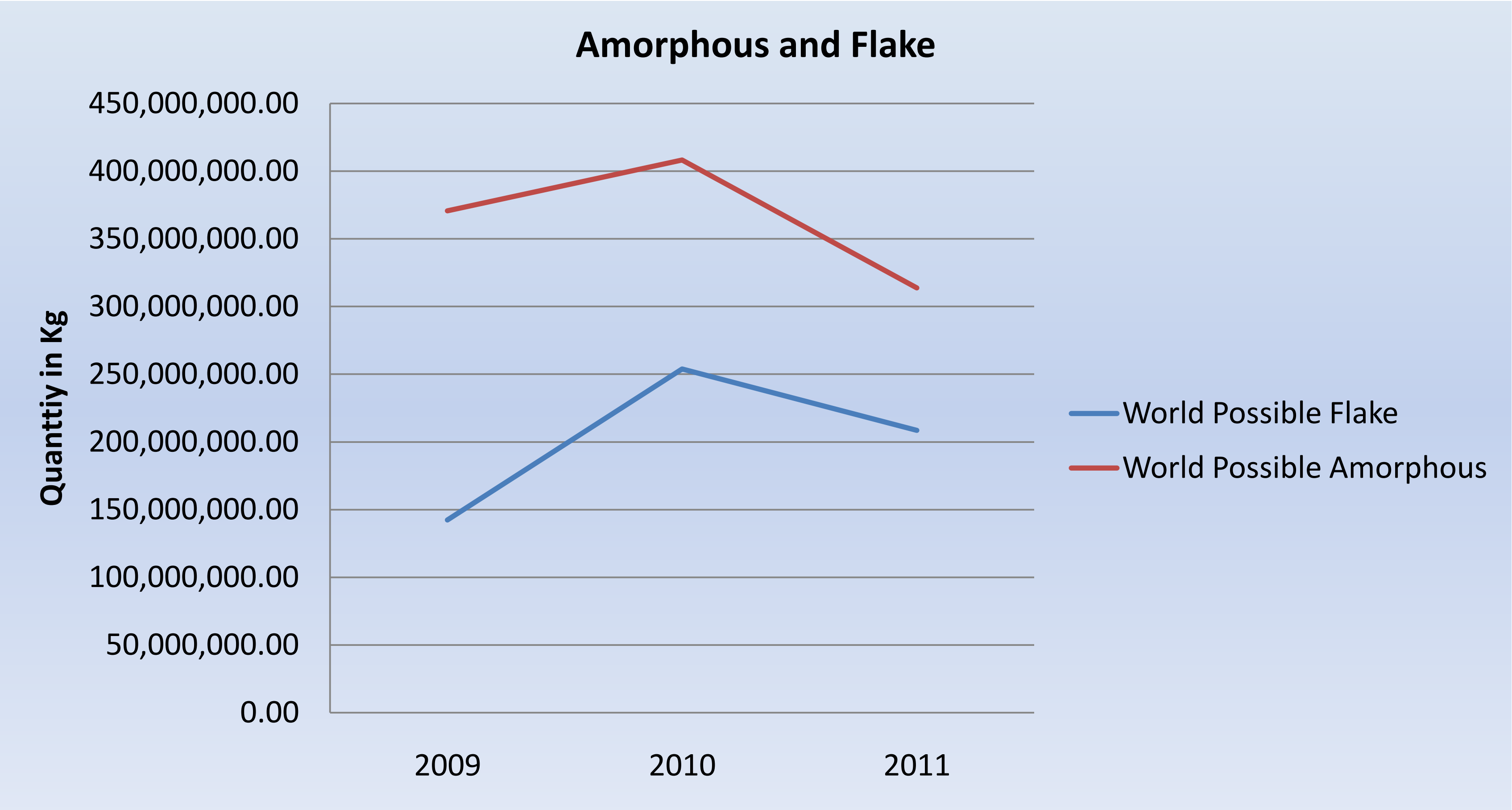

Average price
Price in US$
$1.200,00
$1.000,00
$800,00
$600,00
$400,00
$200,00
$0,00
2007
2008
2009
2010
2011
Average price
$283,65
$462,74
$467,77
$534,13
$968,51

1.2. Supply Problem of Flake or Amorphous?

Period	Trade Value (US$)	NetWeight (kg)	World Possible Flake	World Possible Amorphous	World Amorphous %
2009	$185.056.016,00	513.010.350,00	142.376.966,00	370.633.384,00	72,25%
2010	$279.976.533,00	662.265.163,00	253.895.209,00	408.369.954,00	61,66%
2011	$452.808.353,00	522.209.451,00	208.509.858,00	313.699.593,00	60,07%

Source: UN Trade Statistics

Note : Only producing countries exports included – reexports excluded


Amorphous and Flake
Quanttiy in Kg
450,000,000.00
400,000,000.00
350,000,000.00
300,000,000.00
250,000,000.00
200,000,000.00
150,000,000.00
100,000,000.00
50,000,000.00
0.00
2009
2010
2011
World Possible Flake
World Possible Amorphous

1.3. Who is controlling the Market?

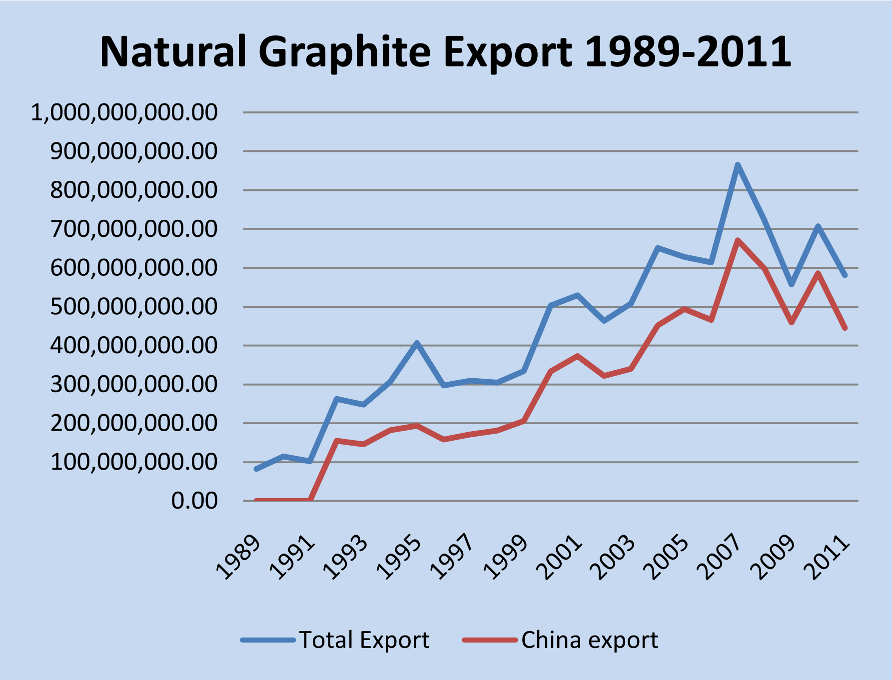
- Is China monopoly in Natural Graphite Market?

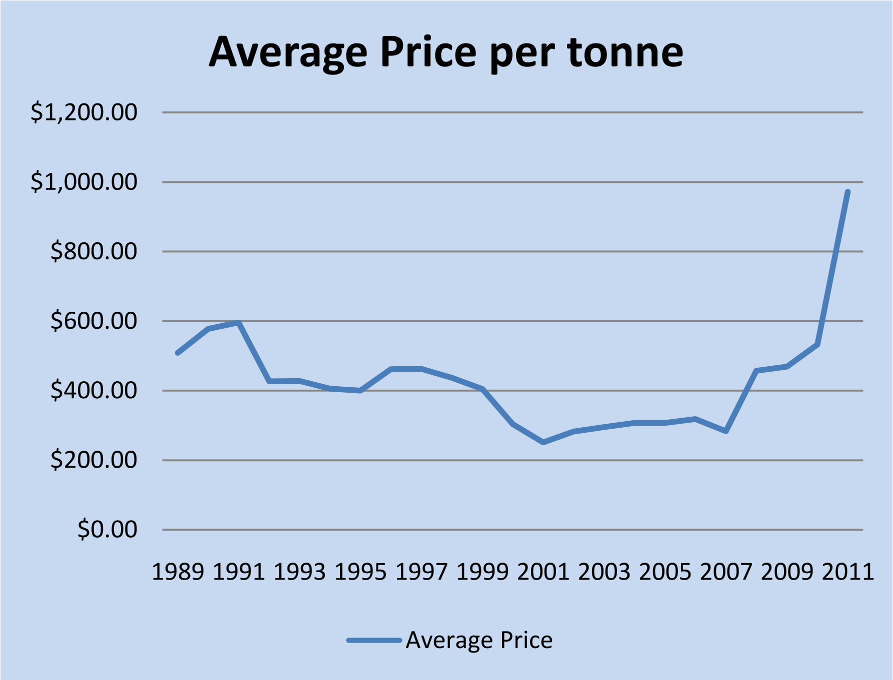
Period	Trade Value (US$)	NetWeight (kg)	World Possible Flake	World Possible Amorphous	China Total Export (kg)	China Flake	China Amourphous
2009	$185.056.016,00	513.010.350,00	**142.376.966,00**	**370.633.384,00**	458.894.992,00	97.641.387,00	361.253.605,00
2010	$279.976.533,00	662.265.163,00	**253.895.209,00**	**408.369.954,00**	585.483.721,00	188.690.626,00	396.793.095,00
2011	$452.808.353,00	522.209.451,00	208.509.858,00	313.699.593,00	444.808.657,00	149.409.160,00	295.399.497,00

Chinese % in Total	Chinese % in Flake	Chinese % in Amorphous
89,45%	68,58%	**97,47%**
88,41%	74,32%	**97,17%**
85,18%	71,66%	**94,17%**

Source: UN Trade Statistics, China Custom Statistics

1.4. Chinese effects





Source: UN Trade Statistics, China Custom Statistics

1.5. As a Brief of the Market

- Supply side problems caused price peaks
- Amorphous Supply is the main problem – Flake graphite portion in total supply is increasing
- China is controlling almost all The Amorphous Market – Any supply problem from China will substantially effect the market
- China imported ~ 130,000 mt of graphite (almost all amorphous type mainly from North Korea) in 2011 and controlling the domestic production and export
- There are close to 200 Flake graphite projects but only 1-2 Amorphous project
- Flake graphite demand increase is easily responded by supply, but Amorphous supply not easily increase and continue to decrease

2. Market Potential

- China entered market in 1992, and increased the supply 150% and market absorb(150,000 mt increase) it but with a lower price level- prices were 30% decreased
- Amorphous Graphite mainly used in Traditional Markets, and mainly connected to Steel Industry. Increase in Steel Demand will trigger Graphite Demand, but there won't be enough amorphous to meet that demand.
- With collapse of Soviet Russia in 1990s, market, especially steel mills started to use Petroleum Coke as a substitute of Amorphous Graphite, mainly because it was cheaper

2.1. Why Petroleum Coke is important?

Period	Definition	Trade Value	NetWeight (kg)	Average Price per tonne
2011	Total Petroleum Coke imported	$20.046.943.235,00	62.883.571.378,00	$318,79
2011	Calcined Petroleum Coke imported	$4.087.265.634,00	6.980.190.813,00	$585,55

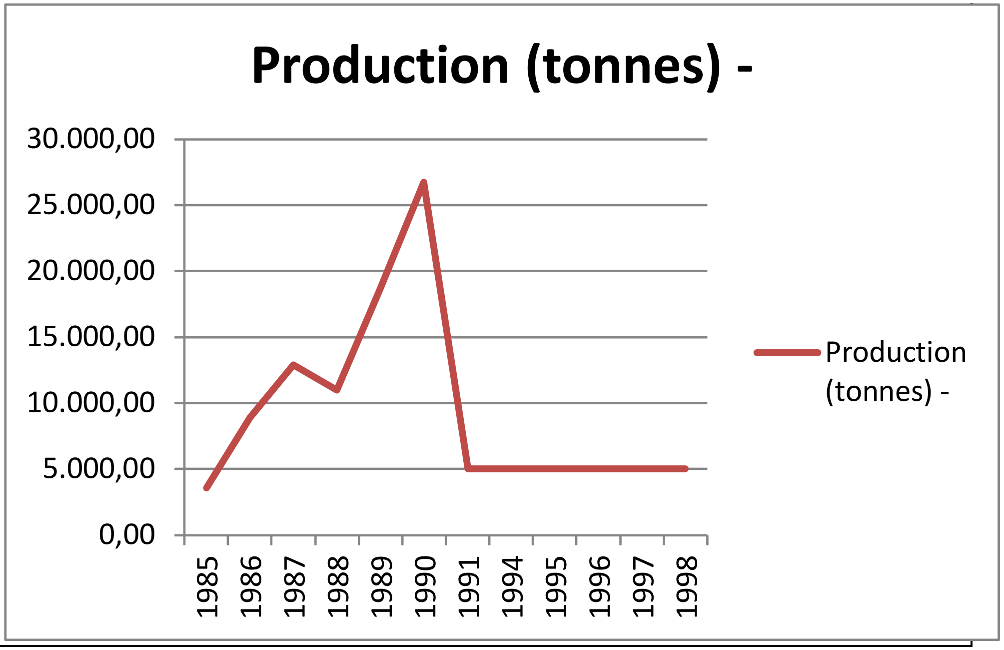
- Lower price Amorphous graphite could have chance to get some market share of Petroleum Coke- Low cost projects are important

TURKEY

Brief About Turkey

- Majority of the graphite occurrences in Turkey is “amorphous” type.
- Production costs are considerably low (US$ 50-US$140 per tonne of 80-85 % C content Concentrate)
- Turkey has historical production up to 26,000 mt/year
- Turkey has high grade mineralization (up to 60% C content)
- Political and Economical stability
- Close to the Europe- Turkey has important competitive advantages in Europe Market (Europe importing 150,000 mt graphite/year)
- Currently no producing mine – Low interest from local and international investors in Amorphous
- Local miners problem -lack of finance

Year	Production (tonnes)	Consumption (tonnes)
1985	-	4.100,00
1986	3.586,00	4.000,00
1987	8.900,00	3.400,00
1988	12.911,00	13.000,00
1989	11.000,00	12.000,00
1990	18.712,00	18.712,00
1991	26.763,00	26.763,00
1994	5.000,00	25.000*
1995	5.000,00	25.000*
1996	5.000,00	25.000*
1997	5.000,00	25.000*
1998	5.000,00	25.000*
1999	5.000,00	25.000*



Source: Turkey State Planning Institute, 8th Quinquennially Development Plan, 2001

* = Rounded roughly

Some of The Turkey Amorphous Reserves		
Place/City	**Reserve Quantity (Tonnes)**	**Average C%**
Yozgat	> 100 000	45
Kastamonu	Unknown	60
Aydin	150 000	10
Istanbul	150 000	30
Mersin	500 000	35
Adiyaman	Unknown	45
Mugla	510 000	40-70
Kutahya-Oysu	130 000	20
Source : MTA reports (MTA = General Directorate of Minerals Research and Exploration)		

An Amorphous Graphite Mine with average 26% C fix carbon content and 300,000 mt potential reserve in Turkey.

Could it offer an interesting and profitable mining?

Data we have

Definition	
Possible Reserve (Mt)	307.146,62
Intended Concentrate Production per year (Mt)	20.000,00
Average Ore Grade (Fix C)	26,45%
Waste-Overburden/ore (Strip Ratio)	6,14

Ore Grade	Concentrate Grade	Efficiency	**Produciton Recovery**	**Tonnes of ore processed for 1 mt of concentrate**
26,45%	85,00%	95,00%	**29,56%**	**3,38**

Planned Flotation Plant Input Capacity mt/day	Planned %85 C Concentrate Production mt/day
250	73,90

Yearly ore process and production	
Working days for a month	26
Effective working month/year	11
Working days for a Year	286
Overburden/waste excavation in a year (mt)	438.662,16
Ore excavation in a year (mt)	71.500,00
Concentrate Production in a year (mt)	21.136,66

Mine Life

	Metric Tonnes
Possible Reserve	307.146,62
Ore excavation in a year	71.500,00
Possible Mine Life	4,30
	4 year 4 Months
Possible Mine Life as Months	52

Costs

Production Costs per tonne	
Overburden&Waste	$3,81
Mining Costs Ore	$4,11
Processing Cost	$13,69

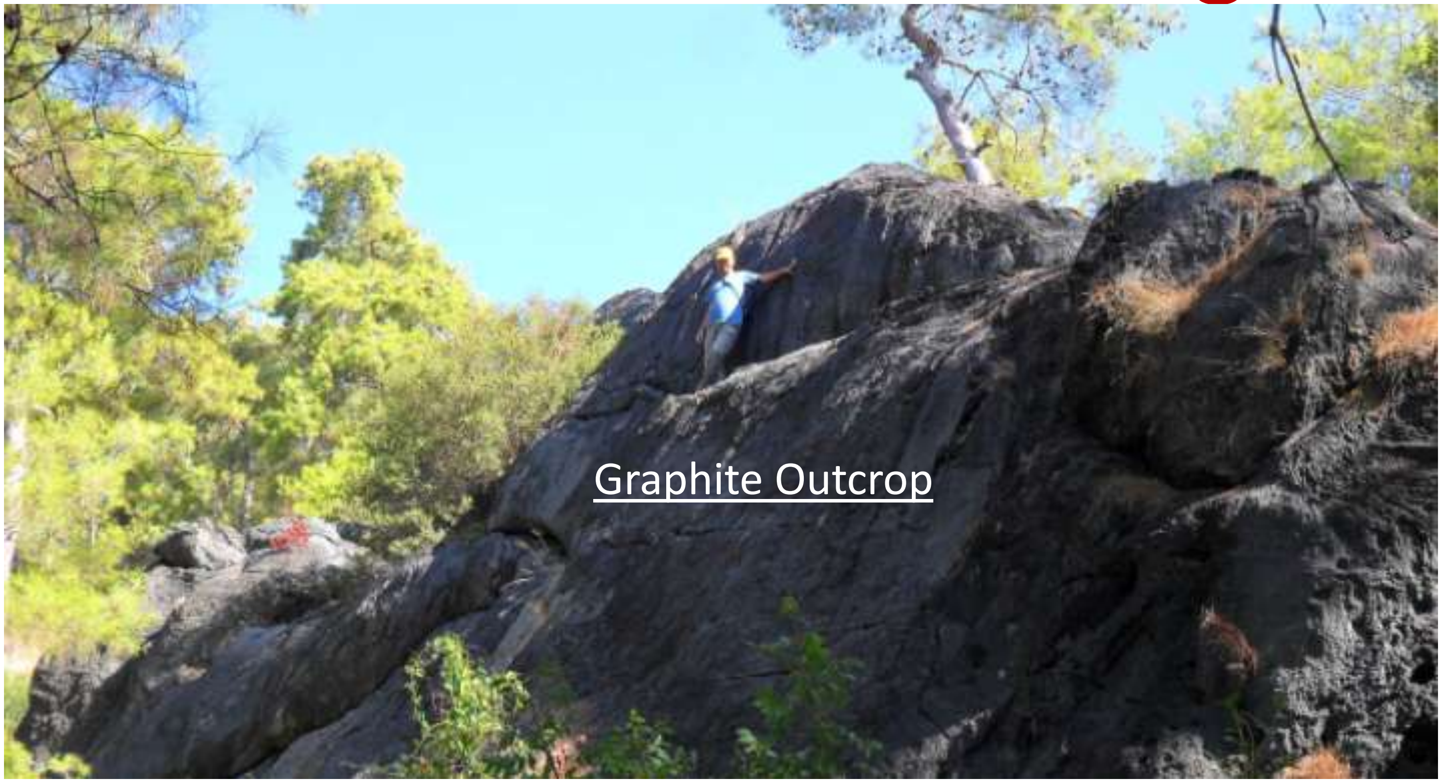
Annual Cost Calculation	
Overburden&Waste	$1.671.302,84
Mining Costs Ore	$293.865,00
Processing Cost	$978.835,00
Total	$2.944.002,84

Source : SGS

Profit Scnerios

	Selling Price 1	Selling Price 2	Selling Price 3
	$500,00	**$600,00**	**$800,00**
Concentrate Production Per year (mt)	21.136,66	21.136,66	21.136,66
Sales Income	$10.568.330,88	$12.681.997,06	$16.909.329,41
Production Costs	$2.944.002,84	$2.944.002,84	$2.944.002,84
Costs Per tonne	$139,28	$139,28	$139,28
Transportation Costs Per tonne	$60,00	$60,00	$60,00
Annual Transportation Cost	$1.268.199,71	$1.268.199,71	$1.268.199,71
First Year Sales Profit (EBITD)	$6.356.128,34	$8.469.794,52	$12.697.126,87
Sales Profit Over Mine life	$27.304.382,31	$36.384.178,43	$54.543.770,65

Thanks For Listening



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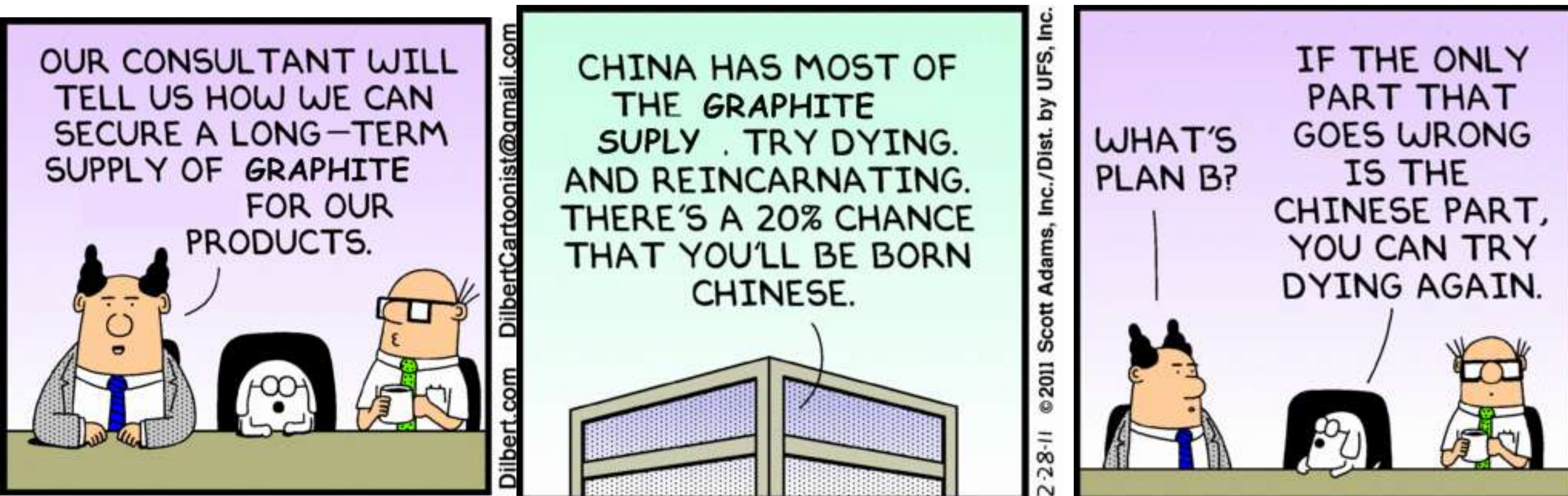

adapted by Sait

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