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METALS & MINING

### **Electric Graphite**

# Growing Demand From Electric Vehicles & Mobile Electronics

#### We are initiating coverage on:

◆Focus Metals Inc. Recommendation: Buy Target: \$1.90

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Disclosure statements located at the back and inside back cover

Unless otherwise denoted, all figures shown in C\$ We are using 1.00 US\$/C\$ exchange rate

Continuing our investment theme focused on the growth of electric vehicles, mobile electronics, and lithium batteries, we are initiating coverage on the graphite mining sector. Within the numerous end uses for graphite, we see favourable potential for growth of high-purity flake graphite for use in mobile electronics and battery grade graphite for use in lithium ion batteries. We note that there is approximately twice as much graphite as there is lithium in a lithium ion battery (lithium carbonate equivalence). With major automakers forecasting hybrid and full electric vehicles will achieve steady growth to 10-30% of annual light vehicle sales by 2020, we forecast natural flake battery grade graphite consumption increasing 250-500%.

In addition to growth in demand for high-purity flake and battery grade graphite, we see a shift in the broader graphite markets. China, by far the largest graphite producing country, has implemented export tariffs and environmental regulations reducing supply and increasing prices. At the same time, graphite demand is shifting to higher quality products resulting in an increased range of prices. While China is likely to continue to supply the majority of lower quality graphite products, there is an emerging opportunity for new projects outside China to enter production, focusing on the high-purity flake and battery grade graphite markets.

We are initiating coverage on Focus Metals Inc. (FMS-V) with a Buy rating and \$1.90 target. We view the Company as a favourable graphite mine developer with very high grades, highly scalable production potential, and a management team with critical graphite market experience.

# Investment Summary

Electric Vehicles Leading The Charge	Automotive industry majors forecast hybrid and full electric vehicles achieving steady growth to 10-30% of annual light vehicle sales by 2020, up from ~3% currently, with lithium batteries the best candidate for use. There is approximately twice as much graphite as there is lithium in a lithium battery (lithium carbonate equivalence). Total graphite used in batteries is forecast to increase from ~125,000 t in 2010 to 320,000-640,000 t in 2020, a 10-18% CAGR. Natural flake graphite is used to produce the highest quality batteries and is estimated to account for 35% of battery grade graphite use, but is likely to increase with demand for higher quality batteries and reduced synthetic graphite supply. With similar growth potential, expanded graphite is increasingly being used in mobile electronics (iPads & iPhones) providing heat dissipation at reduced weight and size relative to copper and aluminum alternatives.
Graphite Demand	Global consumption of natural graphite has increased from ~600,000 t in 2000 to 1.1 MM t in 2010, a CAGR of ~6%. Graphite is not a homogeneous product and is sold based on numerous purity and crystal size ranges, but can be broadly grouped into four categories: flake, amorphous, vein/lump, and synthetic. The largest use of natural graphite is in the manufacturing of steel for refractory products due to its high melting point, thermal conductivity, and low reactivity. In addition to use in refractory products, graphite is used in both lubricants and abrasive materials, pencils, batteries, carbon brushes, and expanded graphite products. While we forecast steady growth for the majority of graphite uses, in line with global GDP, we expect the market for expanded and battery grade graphite to grow at 10-20% pa due to strong growth in mobile electronics and electric vehicles.
Graphite Supply	Graphite production is heavily segmented at the company level with numerous small scale producers, the largest producer accounting for 6% of total production. Production is highly concentrated amongst a few countries, with China being the largest producer (73%). Natural graphite production can be divided into amorphous graphite (~60%), flake graphite (~40%), and vein graphite (~1%). Flake graphite has the widest range of end uses with premium prices paid for large flake product. Amorphous graphite is the most commonly occurring type but has fewer end uses and receives significantly lower pricing. Synthetic graphite, made from the graphitization of petroleum coke, is used in electric arc furnace electrodes and can be a substitute for natural flake graphite in certain applications, but is generally much more expensive.



Graphite Price	Graphite is not an exchange traded commodity; prices are negotiated between producers and end users with industry groups and governments tracking historical average prices. Graphite prices incorporate a number of factors including: carbon content, ash levels, impurity levels, impurity types, and flake size. As by far the largest graphite producing country, China has dictated price over the last two decades. Since 2006 prices have been steadily increasing due to several China-related events: consolidation of mines, export tariffs (20%) imposed, environmental regulations, and rising operating costs. In addition to supply changes in China, global demand has shifted to higher quality graphite products with increased benefaction required. Through long-term contracts and market stabilization we forecast longer term graphite prices of \$2,000/t for large flake (94-97% C), \$1,750/t for medium flake (94-97% C), and \$1,000/t for small flake graphite (94-97% C), a 20-30% drop from spot price for large and medium flake and a 50-60% drop in small flake price.
Focus Metals Inc. (FMS-V) Buy – \$1.90	Focus Metals is a graphite mine developer with its flagship asset, the Lac Knife project, located in northern Quebec, near the cities of Wabush and Labrador. Lac Knife is a uniquely high-grade flake graphite project with extensive historical work completed. We believe the project is capable of producing 42,000 tpa of small to large flake graphite at an average cash cost of \$300/t and an average sale price of \$1,525/t.
	The excitement surrounding the Lac Knife project is its potential to produce battery grade graphite. One year post achieving commercial production we believe the Company will have off-take agreements in place to sell 5,000 tpa of high-value battery grade graphite at an average sale price of \$10,000/t (versus \$10,000-30,000/t price estimates) and average cash cost of \$6,000/t (including consumed medium-large flake graphite sale price).
	Both the Lac Knife project and the subsequent battery grade graphite plant have the potential to be highly scalable operations and we view market demand as the limiting factor to increased scale. Global consumption of flake graphite in 2010 is estimated at $\sim$ 440,000 t and forecast to grow at 5-10% pa over the next 10 years and battery grade graphite consumption is estimated at 125,000 t and forecast to grow at 10-18% pa, making Focus Metals' impact on the flake and battery grade graphite market small and adding significant potential to expand annual production.
	We are initiating coverage on Focus Metals Inc. with a Buy rating and \$1.90 target price, based on 0.8x our NAV estimate for the Company. The Lac Knife deposit's unique high grade and extensive historical work completed give it a distinct advantage as a new entrant to the market. As a niche industrial product, the ability to establish a sales network and tailor production to customer specifications is critical, making management's experience in graphite marketing and sales for high technology applications a significant benefit. Our expectation for strong growth of the battery grade graphite sector and the highly scalable production potential of Lac Knife add long-term expansion upside to our valuation. Over the next year, we expect the following catalyst events to help achieve our target price: scoping study (Q1/C12), flake graphite off-take/joint venture partner (Q1-Q2/C12), battery grade graphite off-take/joint venture partner (Q2-Q3/C12), and construction commencement (Q3/C12). We view Focus Metals as a favourable graphite mine developer with very high grades, highly scalable production potential, and a management team with critical graphite market experience.



# Graphite Markets

Growing Use In Technology	Graphite is used in a broad range of industrial applications due to its light weight, high electrical and thermal conductivity, high melting point (3,650°C), strength at high temperature, resistance to thermal shock, and low coefficient of thermal expansion. Chemically, graphite is inert, providing high resistance to acids and oxidation. Graphite's weakly bonded atomic layers make it a soft and lubricating material that is malleable and easy to compress.
	Global consumption of natural graphite has increased from ~600,000 t in 2000 to 1.1 MM t in 2010, a 6% CAGR. China is by far the largest graphite producing country, at 73% market share, but the implementation of tariffs and environmental regulations is reducing supply and increasing global prices. At the same time global demand for graphite is shifting to higher quality products, presenting the opportunity for new higher quality graphite projects to enter the market. While we forecast steady growth for the majority of graphite uses, in line with global GDP, we expect the market for natural flake expanded graphite and natural flake battery grade graphite to grow at 10-20% pa due to strong demand for mobile electronics and vehicle electrification.
Flake, Amorphous, Lump, And Synthetic Graphite	Graphite is not a homogenous commodity; it is produced and sold at numerous purity and crystal size ranges, but can be broadly grouped into four categories: flake, amorphous, vein/lump, and synthetic.
	Flake graphite has a flat crystalline structure greater than 0.001 mm in size with a distinctive 'flake' shape and can be subdivided into three size groups: large (larger than 80 mesh or $>0.18$ mm), medium (80-100 mesh or 0.15-0.18 mm), and small/fine (smaller than 100 mesh or $<0.15$ mm). Flake graphite generally occurs in metamorphic rocks with grades ranging from 2-12%. Post mining and processing, graphite concentrate purity levels range from 80 to 98% with standard flotation processing and greater than 99% with additional thermal or chemical processing. Flake graphite accounts for $\sim$ 40% of global graphite production.
	Amorphous graphite refers to graphite with a microcrystal structure of less than 0.001 mm. Amorphous graphite is found in weakly metamorphosed shale, slate, or coal seams with grades ranging from 25-80%. Amorphous graphite accounts for $\sim$ 60% of global natural graphite production.
	Vein/lump graphite refers to graphite found in well-defined veins cut through igneous or metamorphic rock. Generally vein graphite is very high grade (~95% C) and denser than other graphite sources. Due to its high purity relative to other graphite sources (without further beneficiation) vein graphite has historically traded at premium prices, but modern processing of flake graphite can yield a superior product and has reduced the relative value of vein graphite. While vein graphite occurs globally, Sri Lanka is the only country with commercial scale production, accounting for ~1% of global natural graphite production.
	Synthetic graphite is manufactured using by-product petroleum coke to which coal tar, coal, natural graphite, or carbon black is added and then heated, extruded, pressed, molded, and further heated. Graphitization occurs at 2,500-3,000°C as amorphous coke is transformed into crystalline carbon. The largest use for synthetic graphite is in electrodes for electric arc smelting of iron, steel, and aluminum, providing high mold-ability and conductivity. Due to the input materials and high energy requirement synthetic graphite (>99% C) is significantly higher cost than natural graphite material (94-98% C).
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Beneficiating natural graphite to high-purity (>99% C) levels can be similarly expensive and the decision to use either natural or synthetic graphite in certain applications can come down to cost.

The physical properties of synthetic, natural flake and high-purity natural flake, vein/lump, and amorphous graphite are not entirely the same and may not be used interchangeably in all applications (see Figure 1). Synthetic graphite tends to be of lower density and suffers from higher electrical resistance and porosity, while impurities or formability of natural flake graphite may prevent its use in synthetic graphite applications. Synthetic graphite is exclusively used in electrodes for electric arc furnaces for its much higher moldability and ability to carry very high electrical current. Natural flake graphite has the widest range of use due to lower cost, relative synthetic graphite, and superior characteristics in uses other than electrodes and carbon fibers. Amorphous graphite is selected for applications where generally lower quality product is acceptable or very fine material is needed. Due to the much higher grades of amorphous graphite is significantly lower.

#### Figure 1 Graphite Type By End Use

	Flake	Amorphous	Vein/Lump	Synthetic
Steel Manufacturing				-
Crucibles	•			
Electrodes				
Foundry Additive				
Ladles	•			
Recarbarising Steel				
Refractories				
Retorts				
Carbon Brushes, Batteries, & Expa	anded Grap	hite		
Batteries	-		•	•
Carbon Brushes	-			•
Expanded Graphite	-			
Foil	-			
Flame Retardants	-			
Fuel Cells	-			•
Carbon Pans	-			
Castings				
Coatings	-			
Foundry Core & Mold Washes	•	•		
Molds	-	•		
Powder Metallurgy	-		•	
Brakes	-	•		•
Lubricants	-	•	•	•
Pencils	-	•		
Other				
Carbon Additives		•		•
Catalysts	-			
Cloth & Fibers				•
Nuclear Reactors	-			
Paint		•		
Plastics & Resins	•			
Sources: Cormark Securities Inc. Roskill	Industrial Min	erals (2002)		



#### **Graphite Demand**

The largest use of natural graphite is in the manufacturing of steel for refractory products due to its high melting point, thermal conductivity, and low reactivity. Refractory products are used in high-temperature applications such as hot metal forming, including: furnace linings, crucibles, molds, ladles, and retorts. In addition to use in refractory products graphite is used in both lubricants and abrasive materials, pencils, batteries, carbon brushes, and expanded graphite products (see Figure 2). The weakly bonded atomic structure of graphite layers provides low levels of friction while strong bonding within each layer can allow for solid film lubricants to be made. The high thermal conductivity of graphite provides favorable heat dissipation in high-friction products like brakes. Pencils, one of the oldest uses of graphite, make use of the weakly bonded graphite layers brushing off on contact with surfaces and leaving a residue. Batteries and carbon brushes make use of graphite's light weight, low reactivity, and high electrical conductivity. Expanded graphite is used to make formed graphite products such as graphite foils which are used for their light weight and heat dissipating properties.

#### Figure 2 Natural Graphite Consumption By End Use Other Pencils Brakes 4% 7% 14% Steel Manfacturing Lubricants & Refractories 14% 40% Carbon Brushes, Batteries, & Expanded Graphite 21% Sources: Roskill, Industrial Minerals (2009) Refractory demand should continue to be the main driving force for graphite consumption, underpinned by global demand for iron, steel, and other metal forming industries. We forecast growth of the major uses of graphite to be in line with global GDP, but see strong growth potential for use in batteries and expanded graphite. **Battery Grade And** Within the broader graphite market we see significant growth potential for high purity **Expanded Graphite** medium-large flake and battery grade graphite. Flake graphite accounts for ~40% of total natural graphite production, with medium to large flake graphite a subset of total flake graphite production. **Graphite In Batteries** Graphite is used in batteries as an electrode material primarily for its high electrical conductance and low reactivity. It is estimated that $\sim 125,000$ t of graphite (natural & synthetic) was consumed in batteries in 2010. Natural or synthetic graphite is used with price, quality, availability, and battery type being the basis for selection. Natural flake graphite, at similarly high purity levels as synthetic, provides superior properties for use in batteries and is generally used in the highest quality applications. Natural flake is estimated to account for 35% of battery grade graphite use, but is likely to increase with

Automotive industry majors forecast hybrid and full electric vehicles achieving steady growth to 10-30% of annual light vehicle sales by 2020, up from  $\sim$ 3% currently. Lithium batteries are the best candidate for use in electric vehicles which has been the basis for our positive view of the lithium sector. There is approximately twice as much graphite as



demand for higher quality batteries and reduced synthetic graphite supply.

there is lithium in a lithium battery (lithium carbonate equivalence) which forms the basis for our interest in the graphite sector. Approximately 30,000 t of lithium carbonate was consumed for use in batteries in 2010, implying ~57,000 t of graphite consumed. Lithium batteries accounted for 45% of all batteries produced in Japan in 2010 by number of units and value (Battery Association of Japan). With a similar percentage of graphite used in alkaline, nickel metal hydride, and lead acid batteries (5-10%), we can approximate the total graphite consumed in all batteries to be ~125,000 t.

Matching our assumption of a 15-25% annual growth in lithium battery demand and assuming growth in consumption of all other battery types is significantly lower (3-5%), total graphite consumption (natural & synthetic) is expected to increase to 320,000-640,000 t by 2020, a growth rate of 10-18%. Based on Roskill, USGS, and Industrial Minerals estimates, 4% of natural graphite consumption is used in batteries or ~45,000 t (35% of total graphite used in batteries). If natural flake graphite market share remains flat then we forecast a 10-15% annual growth rate over the next 10 years. Assuming natural flake, a superior product to synthetic graphite in batteries, gains market share, this supports an annual growth rate of 15-20%. By 2020 we forecast natural flake battery grade graphite consumption to be 115,000-275,000 t. While we present a large range of numbers for natural flake battery grade graphite demand, our conclusion is for strong growth in the sector.

#### **Expanded Graphite**

USGS notes that flexible graphite products, made from expanded graphite, are likely to be the fastest growing end-use sector for graphite. Expanded graphite is produced through the surface treatment of large flake graphite by intercalation (other chemicals are added between graphite layers) and thermal shock, allowing for exfoliation and expansion (up to 700x) of graphite flakes. Expanded graphite provides increased surface area for use in products such as batteries or can be pressed into sheets/foils for use as heat sinks, gaskets, and packaging. Increasing use of mobile electronics (iPads & iPhones), at smaller size, lower weight, and higher processing power, has resulted in increased use of graphite foils as heat sinks, providing similar heat dissipation properties to copper at reduced weight and size. Expanded graphite for use in graphite foils and other expanded graphite applications requires primarily large flake graphite, the least abundant graphite material, and has resulted in premium pricing for large flake material. We forecast strong growth of expanded graphite adding to our outlook for robust natural flake graphite demand.

#### **Graphite Supply**

China is by far the largest natural graphite producing country, with  $\sim$ 73% of total production in 2010 (see Figure 3). China accounts for  $\sim$ 90% of global amorphous graphite production and  $\sim$ 65% of flake graphite production. In the early 1990s China aggressively expanded market share from  $\sim$ 40% to current levels, leading to a 10-year period of low graphite prices. Graphite producers, outside China, pursued specialized and value added products to compete with lower quality, low cost, production from China. Since 2006 a combination of factors have reduced supply from China; in 2007 a 10% export tax was introduced in China, the export tax was later increased to 20% in 2008, environmental regulations have been implemented, and rising operating costs have reduced China's cost competitive advantage. In addition to supply changes in China, global demand has shifted to higher quality graphite products with increased benefaction required.





**Global Natural Graphite Production 2010** 



Source: USGS, January 2011

Graphite is a relatively abundant global resource, but known deposits of economic scale are found in China, India, parts of Europe, Mexico, Brazil, North/South Korea, Canada, Madagascar, and Australia. Mexico and North/South Korea deposits are largely amorphous while China's graphite resources are >50% amorphous and parts of Europe, Brazil, Canada, Madagascar and Australia have a range of small-large flake deposits (see Figure 4). Madagascar and Canada are known to host deposits that are primarily large-jumbo flake material, while China and other global deposits are a mix of flake sizes.



Graphite production is heavily segmented at the company level with numerous small scale producers. There are more than 75 graphite producers in China with production capacity ranging from 5,000-80,000 tpa. The largest producers in China are Heilongjiang Aoyu Graphite, Jixi Liumao Graphite Resources, and Hunan Chenzhou Lutang Crystallitic Graphite and Carbon, each with 70,000-80,000 tpa capacity (each ~6% of global production capacity). Outside China the largest producer is Nacional de Graphite in Brazil, with 70,000 tpa capacity. Publicly listed primary graphite producers and developers include; Graphit Kropfmuehl (GKR-FF) based in Germany with mines in Sri Lanka and Zimbabwe, Focus Metals (FMS-V) with development in Quebec, and Northern Graphite (NGC-V) with development in Ontario.



Graphite Off-Takes	Unlike other industrial minerals, due to the large number of small-scale graphite producers and network of intermediary graphite beneficiation companies, off-take and joint venture agreements are relatively uncommon. With decreasing graphite availability, sharply rising prices in the last year, and increasingly specialized product requirements (battery grade and expanded graphite material) we expect a shift in the market to off-take and joint venture agreements.
	New producers looking to enter the market will likely pursue off-take or joint venture agreements to demonstrate to the market the growing demand for the niche industrial product. Graphite intermediaries such as SGL Carbon or GrafTech International that specialize in manufacturing graphite products are likely to pursue alternative production sources as costs in China increase. Graphite comprises a relatively small percentage of overall cost of a battery, making manufacturers relatively price insensitive. As the market shifts to a shortage of high quality product and batteries increase in size, electric vehicle and battery manufacturers are likely to seek to secure long-term supply. We expect both graphite intermediaries and battery/electric vehicle manufacturers to pursue off-take or joint venture agreements over the next several years.
	On June 24, 2011, RHI, a large Austrian based refractory company entered into a five- year supply contract with Heilongjiang South Sea Graphite Limited (HSSG) for a minimum of 80,000 t graphite. The supply contract demonstrates the tightening market for graphite and we expect similar contracts going forward.
Graphite Prices	Graphite is not an exchange traded commodity; prices are negotiated between producers and end users with industry groups and governments tracking historical average prices. Graphite prices incorporate a number of factors including: carbon content, ash levels, impurity levels, impurity types, and flake size.
	As by far the largest graphite producing country, China has dictated price over the last two decades. China has increased market share of natural graphite production from $\sim 40\%$ in the early 1990s to 73% in 2010, with low-cost production forcing other global
	producers out of the market or into specialized value add products. Between 1990 and 2006 prices remained relatively flat, trading at \$115-190/t for amorphous and \$500-700/t for average (small to large) flake graphite.
	producers out of the market or into specialized value add products. Between 1990 and 2006 prices remained relatively flat, trading at \$115-190/t for amorphous and \$500-700/t for average (small to large) flake graphite. Since 2006, prices have been steadily increasing due to several China related events; consolidation of mines, export tariffs (20%) imposed, environmental regulations, and rising operating costs. In addition to supply changes in China, global demand has shifted to higher quality graphite products with increased benefaction required.





Synthetic graphite is a substitute for natural flake graphite in certain uses and sets an additional benchmark on natural flake graphite prices. The process for manufacturing synthetic graphite utilizes excess steel refining capacity and Cormark forecasts global steel capacity to remain tight resulting in reduced capacity for synthetic graphite production, increased prices, indirectly increasing natural graphite prices. The majority of synthetic graphite is used in electrodes for electric arc furnaces in formed metal manufacturing. Assuming continued growth in formed metal demand (iron, steel, aluminum, and glass) will lead to reduced availability of synthetic graphite and decreased synthetic graphite substitution in natural flake graphite end uses.

Batteries make use of either synthetic graphite (\$7,000-20,000/t) or natural flake (\$2,000-3,000/t). The industry estimated average recovery for making battery grade graphite from natural flake material is ~33%, with a few hundred dollars per tonne in additional processing costs, implying a minimum price of ~\$7,000/t for natural flake battery grade graphite. With no documented pricing details for battery grade graphite, we can only rely on several verbal estimates from graphite producers and intermediaries, \$10,000-30,000/t. The very large range on pricing can be explained by the large range of quality in battery manufacturing. Items such as children's toys, cheap watches, and discount/offbrand batteries would be manufactured on a lowest cost basis, making use of the cheapest graphite available. Higher end products such as medical devices, military equipment, power tools, cell phones, and laptops which require batteries with maximum power, capacity, and operating life, would make use of higher quality graphite.

We forecast a growing gap in prices between small and medium-large flake graphite. Based on the relative global abundance of small flake material versus medium-large flake and higher demand for medium-large flake product, an oversupply of small flake material is likely to occur when medium-large supply/demand is balanced.

Through long-term contracts and market stabilization we forecast longer term graphite prices of \$2,000/t for large flake (94-97% C), \$1,750/t for medium flake (94-97% C), and \$1,000/t for small flake graphite (94-97% C), which represents a 20-30% drop in large and medium flake prices and a 50-60% drop in small flake price.



### Focus Metals Inc. (FMS – \$1.07, TSXV)

#### **Recommendation: BUY**

### **Target Price: \$1.90**

Figure 6 Statistics and Estima					
Current Price	\$1.07	Shares Outstanding	g (MM)		
52 Wk High	\$1.78	Basic	76.5		
52 Wk Low	\$0.07	Diluted	92.4		
Cash (\$MM)	\$20.4	Mngt. & Dir.	9.8		
Total Debt (\$MM)	\$0.0	Market Cap.	\$98.8		
NAVPS	\$2.38	Float	\$71.4		
Price/NAV	0.5x	EV	\$78.4		

Sources: Cormark Securities Inc., Company reports



- Focus Metals is a graphite mine developer with its flagship asset, the Lac Knife project, located in northern Quebec.
- Lac Knife is a uniquely high grade graphite deposit with a historic resource of 8 MM t at 17% graphite (at least 40% medium-large flake). The resource is near surface (<2:1 strip ratio) and remains open along strike and at depth. We expect the deposit to grow with production scale and mine life needs, but is currently sufficient to support a +20 year mine life.
- Our conceptual mine model assumes 42,000 tpa of small-large flake graphite (25,000 tpa medium-large flake) production at an average cash cost of \$300/t and average sale price of \$1,525/t (versus \$2,200-2,600/t at spot price estimates).
- Additionally, Lac Knife has the potential to produce 5,000 tpa of high-value battery grade graphite. Price estimates range from \$10,000 to 30,000/t; we forecast a \$10,000/t realized price at \$6,000/t cash cost (including consumed flake graphite sale price).
- Having two previous feasibility studies completed on the project (Darvy/Roche 1991 & SNC Lavalin 2001) and a scoping study expected in Q1/C12, the Lac Knife project has the potential to be fast-tracked, skipping a third feasibility, with a Q3/C12 construction commencement.
- As a niche industrial product, the ability to establish a sales network and tailor production to consumer specifications is critical, making management's experience in the graphite sector a significant benefit.
- Off-take/joint venture discussions are ongoing with potential flake graphite and battery grade graphite users. We expect a flake graphite agreement (Q1-Q2/C12) and battery grade agreement (Q2-Q3/C12).
- We are initiating coverage on Focus Metals Inc. with a Buy rating and \$1.90 price target, based on 0.8x our NAV estimate. We view Focus Metals as a favourable graphite developer with very high grade, highly scalable production potential, and a management team with critical graphite market experience.



Fast-Track To Production	<ul> <li>Focus Metals is a graphite mine developer with its flagship asset, the Lac Knife project, located in northern Quebec, near the cities of Wabush and Labrador. Lac Knife is a uniquely high-grade flake graphite project with extensive historical work completed. An updated NI 43-101 compliant resource estimate and scoping study are ongoing with results expected in early 2012. We believe the project is capable of entering production in Q3-Q4/C13, with a run rate production of 42,000 tpa of small-large flake graphite (25,000 tpa medium-large flake) at an average cash cost of \$300/t and an average sale price of \$1,525/t (versus \$2,200-2,600/t at spot price estimates).</li> <li>The excitement surrounding the Lac Knife project is its potential to produce battery grade graphite. One year post achieving commercial production, we believe the Company will have off-take agreements in place to sell 5,000 tpa of high-value battery grade graphite at an average sale price of \$10,000/t and cash cost of \$6,000/t (including consumed medium-large flake graphite sale price). We view Focus Metals as a favourable graphite mine developer with very high grades, scalable production potential, and a management</li> </ul>				
	team with critical graphite ma	rket experience.			
Capital Structure	Focus Metals trades on the TS September. The company was asset, the Lac Knife graphite p private placement financings The Company currently has ~ and directors holding ~6% into	5XV under the symbol FMS and s listed on the TSXV in May 201 project, in August 2010. The Con- since listing, most recently raisi 77 MM shares outstanding (see li- erest (see Figure 9).	has a financial year ending 10 and acquired its primary mpany has completed three ing \$20 MM in May 2011. Figure 8) with management		
Figure 8	Focus Metals Capital Structure				
	Shares Outstanding (Basic) (00 Options (exercisable @ \$0.10) Options (exercisable @ \$0.15) Options (exercisable @ \$0.25- Warrants (exercisable @ \$0.10 Warrants (exercisable @ \$1.00 Warrants (exercisable @ \$1.25 Shares Oustanding (Fully Dilu Cash (\$000) (Q3 FY2011) Debt (\$000)	00s) 0.40) 0) 0) 5) ted)	<b>76,540</b> 2,258 7,735 6,767 2,845 1,400 10,000 <b>107,544</b> \$20,422 \$0		
	Source: Company Reports				
Figure 9	Major Institutional Sharehol	ders			
	Top ShareholdersFront StreetEverton ResourcesIAMGold CorporationJeffery YorkRBC Asset ManagementAGFJean-Pierre PoulinAndre D AudetCaldwell InvestmentTop Holders	Shares Held (000s)           6,000           5,400           4,000           3,848           3,000           2,500           2,146           1,607           1,520           30,021	Basic Ownership (%) 8% 7% 5% 5% 4% 3% 3% 2% 2% 2%		
	Sources: Cormark Securities Inc., Blo	omberg			



### Lac Knife Graphite (FMS – 100%)

Focus' flagship asset is the Lac Knife graphite project, located in northern Quebec, near Wabush and Labrador City (see Figure 10). The region is host to Quebec's large-scale iron ore mines with neighbouring companies ArcelorMittal, Iron Ore Company of Canada, and Cliffs Natural Resources. The project has good infrastructure with road access and nearby Quebec grid power.

The Company is currently updating the historic resource estimate to NI 43-101 standard, with results expected early Q1/C12. With two feasibility studies previously completed the project has been largely de-risked, a scoping study is ongoing to verify and update previous results allowing the Company the opportunity to skip a third feasibility study and provides a fast track development opportunity for the project.

Figure 10	Lac Knife Property
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Source: Company Reports



Project History	In 1988, the Lac Knife graphite property was discovered in a joint venture between Mazarin Inc. (industrial mining company) and the town of Fermont. Between 1989 and 1990, Mazarin delineated a resource of 8.1 MM t grading 16.7% graphite (historic estimate). A feasibility study was completed in 1991, but the project was not developed due to a drop in the economy and weak graphite market as China began to boast graphite market share. In 1999, GrafTech International, a subsidiary of Union Carbide, started working with Ballard Power Systems on "Grafcell", a new fuel cell application. Lac Knife was identified as an ideal deposit to supply graphite for the Grafcell product. In 2002, a joint GrafTech/Mazarin study was to be completed targeting a 2004 mining start. Production was planned for up to 50,000 t/y of graphite flake. Processing would be standard on-site crushing and milling followed by flotation. Slower than expected market development of fuel cells and Ballard Power's collapse prevented construction in 2003. In 2004, Mazarin was purchased by Cambior Inc. and in 2006 Cambior was purchased by IAMGold. As a non-core asset to IAMGold, Lac Knife was sold to Focus Metals in August 2010.
Graphite Resource	In November 1989, resource consultants Davy Canada Inc. and Roche Ltee Groupe Conseil estimated a total graphite resource of 8.1 MM t grading 16.7% graphite (prior to NI 43-101 reporting standards). Greater than 22% of the deposit is comprised of large flake graphite, $\sim 20\%$ is medium flake, and the remainder small flake. The estimate is based on 93 drill holes completed for a total of 7,732 m. The resource extends to a depth of 125 m, but remains open for extension.
Production Potential	For our base case production plan, we assume Lac Knife to produce 25,000 tpa of medium and large flake material and ~17,000 tpa of small flake material. A ~300,000 tpa production rate (830 tpd on a 365 per year operation or ~1,620 tpa on a 5 day per week 8 month per year operation) at 17% C average grade, 10% dilution, 90% mining recovery, and 90% processing recovery, would achieve our production targets. We have assumed a 2:1 waste to ore strip ratio which we believe is conservative. Based on comparable scale mining (\$3.50/t), processing & sales (~\$18/t), and G&A (\$4 MM pa) costs we estimate a cash cost of ~\$300/t flake graphite concentrate.
	A 12 diamond drill-hole program was completed in May 2011, to confirm Lac Knife's historic resource estimate of 8 MM t grading 17% flake graphite. Due to assay lab delays, the results of this program are not expected to be completed until Q4/11. A resource estimate and scoping study will immediately follow the completion of drill assay results. With two feasibility studies previously completed on the property the scoping study is expected to confirm and update previous results and we believe the Company will be able to proceed to construction without the need for a third feasibility study to be completed. Over the next 12 months we expect the Company to secure off-take agreements, construction permits, and financing to begin mine construction. Based on a 12-15 month construction time first production would be achieved Q4/C13 and ramp to full production in 2015. With an 8 MM t historic resource that remains open along strike and at depth we expect at least a 20 year mine life is achievable.



### Battery Grade Graphite Potential

In addition to a base case mining operation producing 95-98% C flake graphite, Focus Metals has the potential to establish a high-purity battery grade graphite product and sales network. Our conceptual model assumes 42,000 tpa of flake graphite production, of which 25,000 t is medium-large flake, and 15,000 t medium-large flake used in the production of battery grade graphite (see Figure 11). In line with industry recoveries reported, we have assumed ~15,000 t of medium-large flake graphite is consumed to produce 5,000 t of battery grade graphite. The range of quality and prices varies substantially on battery grade product (estimates ranging from \$10,000/t to \$30,000/t); it is our belief that Focus Metals will be able to achieve a premium quality product, but at this time we assume a 10,000/t battery grade price is achievable.

The global market for battery grade graphite (synthetic, flake, and amorphous) is  $\sim$ 125,000 t, of which we estimate  $\sim$ 45,000 t is made from natural flake graphite. A 5,000/tpa production rate is likely to have a small impact on the market. Automotive industry majors forecast hybrid and full electric vehicles achieving steady growth to 10-30% of annual light vehicle sales by 2020, which would result in a total battery grade graphite demand of 115,000-275,000 t in 2020. Focus Metals' most significant upside opportunity is in its ability to increase battery grade graphite production over time.

Figure 11 Lac Knife C	onceptual M	odel Summa	ry			
Fiscal YE September 30 (in C\$000s, except where noted)	2012E	2013E	2014E	2015E	2016E	2017E
Commodity Price Assumptions (\$/t) Small Flake Graphite (95% - 98% C) Medium Flake Graphite (95% - 98% C) Large Flake Graphite (95% - 98% C) Battery Grade Graphite (99.9% C)	\$1,000 \$1,750 \$2,000 \$10,000	\$1,000 \$1,750 \$2,000 \$10,000	\$1,000 \$1,750 \$2,000 \$10,000	\$1,000 \$1,750 \$2,000 \$10,000	\$1,000 \$1,750 \$2,000 \$10,000	\$1,000 \$1,750 \$2,000 \$10,000
Sales Profile (000 t) Small Flake Graphite (95% - 98% C) Medium & Large Flake Graphite (95% - 98% C) Battery Grade Graphite (99.9% C)	- -	- -	8 13 -	17 18 3	17 10 5	17 10 5
<u>Cash Costs (\$/t)</u> Small-Large Flake Graphite Battery Grade Graphite Including Flake Graphite Sale Price	\$- \$- \$-	\$- \$- \$-	\$396 \$- \$-	\$300 \$1,384 \$6,000	\$300 \$1,384 \$6,000	\$300 \$1,384 \$6,000
Revenue Cost of Sales	<b>\$-</b> \$-	<b>\$-</b> \$-	<b>\$31,771</b> \$8,250	<b>\$74,804</b> \$13,762	<b>\$86,066</b> \$15,024	<b>\$86,066</b> \$15,024
EBITDA	\$-	\$-	\$23,521	\$61,042	\$71,042	\$71,042
Cash Taxes	\$-	\$-	\$-	\$4,219	\$21,162	\$21,162
Cash Flow From Operations	\$-	\$-	\$23,521	\$56,823	\$49,879	\$49,879
Capital Expenditures	\$20,000	\$45,000	\$-	\$500	\$500	\$500
Free Cash Flow	\$(20,000)	\$(45,000)	\$23,521	\$56,323	\$49,379	\$49,379
Source: Cormark Securities Inc.						

#### **Fastest To Production**

Focus Metals has the opportunity to be the first new major producer in the graphite sector. With two feasibility studies completed on the Lac Knife project and a scoping study to update and verify results expected in the new year, the project has the potential to be permitted and in construction within a year. This near-term production advantage offers Focus Metals the opportunity to secure favorable off-take agreements with graphite distributers as well as with battery and electric vehicle manufacturers.



#### Kwyjibo Project (FMS – 50%)

In addition to Focus Metals' flagship Lac Knife asset the Company also holds an earn in for a 50% interest in the Kwyjibo rare earth and iron oxide, copper, gold (IOCG) property. Over the next year the Company plans to invest ~\$2 MM in exploration of the property and may seek to spin out, joint venture, or sell the project in the future. Due to the property's early stage and management's focus on, and development timeline for, the Lac Knife project we assign no value to the project at this time.

#### Figure 12

#### Kwyjibo Property



#### Valuation

Based on our conceptual mine model for the Lac Knife graphite project, assuming a \$1,525/t average realized flake graphite price, 42,000 tpa total flake (25,000 tpa mediumlarge flake) graphite production rate, and 5,000 tpa battery graphite production rate, our DCF valuation of the project is \$270 MM. This assumes a 10% discount rate for the graphite mine, in line with our base metal and industrial metal modeling assumptions, and a 12.5% discount rate for the battery grade graphite stream. While we firmly believe in the growth of mobile electronics and electric vehicles, based on the specialized market for battery grade graphite and limited information available, we take a more conservative view on pricing and discount rate. Greater clarity on pricing and demand, through graphite market news, off-takes, or joint venture agreements, would result in a lower discount rate and an increase to our valuation.

Our sum-of-the-parts NAV for the Company is \$337 MM, assuming the project is solely equity financed, full exercise of options/warrants, and construction financing is completed at 0.6x our pre-construction financing NAV estimate (see Figure 13). With 107.5 MM fully diluted shares outstanding and ~34 MM shares issued for construction financing, we arrive at ~142 MM fully diluted shares outstanding and a \$2.38 per share NAV.

Within one year we expect Focus Metals to be fully financed for construction and ascribe a 0.8x NAV construction stage multiple to arrive at our price target of \$1.90 per share.



Figure 13	NAV Breakde	own				
		Discount	Pre-Construction	n Financing	Post Constructio	n Financing
Mining Assets	Ownership	Rate	\$MM	C\$/Share	\$MM	C\$/Share
Lac Knife Mine	100%	10.0%	\$198.9	\$1.85	\$198.9	\$1.40
Lac Knife Battery Grade Plant	100%	12.5%	\$70.8	\$0.66	\$70.8	\$0.50
Total Operating Assets		_	\$269.7	\$2.51	\$269.7	\$1.90
Corporate Adjustments			\$(18.4)	\$(0.17)	\$(18.4)	\$(0.13)
Financial Assets Cash and Cash Equivalents Cash From Dilution (Options/Wa Construction Financing Total Debt Net Financial Assets	ırrants)	-	\$20.4 \$18.0 \$- <b>\$38.5</b>	\$0.19 \$0.17 <u>\$0.00</u> <b>\$0.36</b>	\$20.4 \$18.0 \$47.5 \$- <b>\$86.0</b>	\$0.14 \$0.13 \$0.33 \$0.00 <b>\$0.61</b>
Net Asset Value		-	\$289.8	\$2.69	\$337.3	\$2.38
Fully Diluted Shares Outstanding Construction Financing Shares I	g (MM) ssued (MM)			107.5		107.5 34.4
Total Fully Diluted Share Outs	tanding (MM)	-		107.5		141.9
Current Focus Metals Share Price	e			\$1.07		\$1.07
Price / NAV				0.4x		0.5x
Source: Cormark Securities Inc.						

The longer term upside we see for Focus Metals is in its highly scalable operations (see Figure 14). The Company's large resource and very high grade make doubling annual production dependent on market demand and not limited by resource or operational restrictions. As Focus Metals establishes itself as a graphite producer with off-takes and sales to major battery and electric vehicle manufacturers it has the potential to further increase operations to meet growing graphite demand.

#### Figure 14

#### NAVPS Sensitivity To Graphite Production

		Total Flake Graphite Production (000 tpa)					
		21	31	42	62	83	
0	0.0	\$0.60	\$1.15	\$1.75	\$2.80	\$3.35	
ade e on	2.5	\$0.85	\$1.45	\$2.05	\$3.10	\$3.75	
/ Gi ohit ucti	5.0		\$1.75	\$2.38	\$3.45	\$4.10	
ter) 3ra  odi 000	7.5			\$2.70	\$3.75	\$4.50	
Bat Pr	10.0				\$4.10	\$4.85	
	15.0					\$5.60	

Note: Estimates rounded to nearest five cents Source: Cormark Securities Inc.

Figure 14 assumes that capital costs are held constant for production rate scenarios lower than our base case 42,000 tpa total graphite (25,000 tpa medium-large flake), but scales accordingly with higher production scenarios. Battery grade product requires the input of  $\sim$ 3x as much medium-large flake graphite and is limited by total flake production.

At current spot prices Focus Metals would realize an average price of \$2,200-2,600/t for its mix of small to large flake graphite production. We assume, through longer term contracts and markets stabilizing, that the average price Focus Metals will realize is \$1,525/t flake graphite. In Figure 15, we present the NAV sensitivity range for different price assumptions while holding our 42,000 tpa total graphite (25,000 tpa medium-large flake) and 5,000 tpa battery grade graphite assumptions constant. At sufficiently high flake graphite prices and low battery grade graphite prices, the production of battery grade graphite is not profitable and the scenario is not presented. Similarly, if graphite



prices were to decrease to historical levels it is less likely that battery grade prices would be at higher levels.

Based on the changing graphite markets (reduced supply from China, growth of mobile electronics and electric vehicles) we view the opportunity for pricing upside as outweighing the risk of a downturn in graphite prices, but Focus Metals' low cost production potential provides significant downside protection.

Figure 15	NAVPS Sensitivity To Graphite Price							
		-	A	verage Realiz	zed Flake Gra	phite Price (\$	/t)	
			\$1,000	\$1,250	\$1,525	\$1,750	\$2,000	
	ce de	\$5,000	\$0.95					
	attery Grac raphite Pri (\$/t)	\$7,500	\$1.30	\$1.65	\$2.00	\$2.25		
		\$10,000	\$1.70	\$2.00	\$2.38	\$2.65	\$3.00	
		\$12,500		\$2.40	\$2.80	\$3.05	\$3.40	
	ũ ū	\$15,000			\$3.20	\$3.45	\$3.80	
	Note: Estimate: Source: Corma	s rounded to nea rk Securities Inc	rest five cents					
Upcoming Events / Catalysts	Focus Meta the Compan to a 0.8x NA	ls currently to y to advance AV multiple d	rades at 0.5x the Lac Knif lue to the foll	our NAV es è graphite pr lowing cataly	stimate. Over oject through vst events:	the next yea to constructi	ar, we expect on and rerate	
	• Graphite	e off-take/joir	nt venture pa	rtner agreeme	ent (Q4/C11 -	– Q2/C12)		
	• NI 43-101 compliant resource estimate and scoping study (O1/C12)							
	• Construction financing $(O1/C12 - O2/C12)$							
	• Battery grade graphite off-take/ioint venture partner (02/C12-03/C12)							
	<ul> <li>Construction commencement (O3/C12)</li> </ul>							
	Over the ne Metals' fave supply short to higher qu and electric	xt year we w orable marke age of the br aality product vehicle manu	tould expect to opportunity oader graphi t, and moves ifacturers.	further grap y, including: te market, up to secure ba	bite sector no price increa odates on the attery grade g	ses due to the to the changing ma graphite supp	emonstrate Focus to the short-term 3 market dynamic supply by battery	
Initiating Coverage With A Buy Rating & \$1.90 Target	We are initial based on 0. equity raise extensive his market. Sim network an managemen strong grow potential of Metals as production p	ating coverag 8x our NAV within the storical work nilarly, as a nd tailor p t's experience th of the ba Lac Knife ac a favourable potential, and	e on Focus M estimate for next year. completed very niche roduction t e in the grap ttery grade d long-term e graphite r a manageme	Metals Inc. w r the Compa The Lac Kr give it a dist industrial pro o customer hite sector a graphite sect expansion u nine develop ent team with	rith a Buy rat ny, assuming nife deposit's inct advantag oduct, the al specification significant be or and the h pside to our per with ven critical graph	ing and \$1.90 g a construct s unique hig ge as a new o pility to esta ons is criti enefit. Our ex- ighly scalabl valuation. We ry high grad- hite market est	) target price, ion financing h grade and entrant to the blish a sales cal, making spectation for le production e view Focus des, scalable xperience.	



# Appendix A – Management & Directors

Gary Economo President, CEO & Director	Mr. Economo has served as CEO of both public and private technology companies in the past. He was formerly co-founder, President and CEO of Dynasty Components Inc. from 1985 to 2001, where he was responsible for graphite marketing and sales for high technology applications. Prior to Dynasty Components, Mr. Economo provided strategic consulting and representation services to numerous technology companies in North America and Asia. He has over 30 years of high tech experience, including as President and CEO of SPI technologies, selling graphite products.					
Jeffrey York Chairman	Mr. York is currently CEO of Farm Boy stores. He worked for 3 years for Ward Mallette Chartered Accountants and 20 years for Giant Tiger Stores. Mr. York was President of Giant Tiger Stores for 10 years and oversaw the growth of the company from a regional discount retail chain into a national billion dollar company. He has been a member of Young Presidents Organization since 2002 and graduated with an Economics degree from Princeton University.					
Marco Gagnon Director	Mr. Gagnon is a senior mining exploration professional with over 15 years experience with major mining companies. From 2004 to 2007, he was Vice-President Exploration and Acquisitions with Société d'exploration minière Vior Inc., a Quebec-based mining exploration company. Prior to 2004, Mr. Gagnon worked for Inmet Mining involved in designing, implementing and managing exploration programs on archean base metal and gold properties in Eastern Canada and in Finland.					
Francis Pomerleau Director	Francis Pomerleau is currently President of Pomerleau Ontario, a construction contracting company, and co-President of Beaubois, an architectural millwork company. He completed a civil engineering degree from Ecol Polytechnique de Montreal and an MBA at the International Institute for Management Development in Lausanne, Switzerland.					
Marc-Andre Bernier VP Exploration	Mr. Bernier is a geoscientist with more than 26 years of professional experience, specializing in exploration geochemistry in support of regional and international mineral development initiatives. A resident of Chibougamau, Quebec, he has directed or managed mining development projects in Canada, the Caribbean, Africa and South America. In addition to his work with Focus Metals Inc., Mr. Bernier also holds the position of Senior Geoscientist with the Table Jamésienne de Concertation Minière (TJCM) a regional development agency dedicated to promoting sustainable mineral development across northern Québec and an advisor to Makivik Corporation, the economic and political representative of the Inuit of Northern Québec.					
Judith Mazvihwa-MacLean CFO	Ms. Mazvihwa-MacLean has over 16 years of experience in mineral exploration, mining, management and corporate finance. Formerly CFO for Golden Harp Resources Ltd., Logan Resources Ltd., and Acme Resources Ltd (formerly, International KRL Resources Corp.). She also served as a member of the Board for both Logan Resources Ltd., and Acme Resources Ltd. Ms. Mazvihwa holds a B.Sc. (Geology) from the University of Zimbabwe, a M.Sc. from Brunel University in England and an MBA from Simon Fraser University in British Columbia. She was accredited a Certified Management Accountant by the Certified Management Accountants Society of British Columbia.					



### **Risks To Target**

The following is a list of the most common material risks to the companies achieving our targets:

**Commodity Price Risk:** Our short- and long-term commodity price assumptions are based on detailed research, and viewed to be reasonable based on current information. However, the timing and magnitude of commodity price fluctuations are always a significant risk that, in most cases, strongly affects the value of mining and mineral exploration/development companies focused on a specific commodity.

**Cost Risk:** Both capital and operating costs may be affected by changes in input prices (fuel, steel, chemicals, etc.) and also be affected by relative currency changes. Focus Metals may be at risk of unexpected cost escalation as a result of these potential threats.

**Financing Risk:** The company may require access to additional funding from capital markets to support its growth initiatives. There can be no guarantee that such funding will be available, when required. In addition, shareholders may also be subordinated by lenders to finance an exploration project.

**Geopolitical Risk:** This risk deals with policies such as permitting and tax laws that are managed by governments of a jurisdiction (country, state, province, etc.). These policies usually affect mining companies more than exploration companies. Generally, developing countries are seen as being more risky because of the potential of a quick change in power to drastically change policies. Developed countries have their own geopolitical risk issues, and jurisdictions with powerful environmental lobbies can also make mining or exploration difficult.

**Technical Risk:** Ore reserve and resource risk is a technical risk that is derived from the subjective nature of geological interpretation. Engineering-based forecasts are by nature imprecise, and unexpected risks include events, such as earthquakes and strikes. Such events could materially affect the value of shares.

**Regulatory Risk:** The mining industry is highly regulated, and as such, changes in the scope of environmental practices can have a significant impact on the cost and viability of a company's mining operations.

**Exploration Risk:** In some cases, the market may build in expectations for exploration success before the actual exploration work has taken place. In the event that results do not meet with the market's expectation, the value of the shares may be negatively affected.

**Logistical Risk:** Focus Metals is exposed to the inability to deliver its products to the market due to issues with the long logistical supply chain to move graphite from the mines to consumers, which is beyond management's control.



Recommendation Terminology	Cormark's recomme	Cormark's recommendation terminology is as follows:				
	Top Pick Buy Market Perform Reduce	our best investment ideas, the greatest potential value appreciation expected to outperform its peer group expected to perform with its peer group expected to underperform its peer group				
	Our ratings may be and has a higher deg	Our ratings may be followed by "(S)" which denotes that the investment is <i>speculative</i> and has a higher degree of risk associated with it.				

Additionally, our target prices are based on a 12-month investment horizon.



#### **Disclosure Chart**



						Date	C\$
The Investment Industry Authority Rule 2711 (US) Securities Inc. and Corm. noted recommendations, any non-securities or no or any member of his/her company(les).	Regulatory Or require certa ark Securities rules, and reg n-investment l r household, s	ganization of Canada Rule 3400 in disclosure and compliance in (USA) Limited (collectively "Corr ulations where they apply. The banking related services. Neither erve as an officer, director or a	and the Financial In research reports in nark") are in complia firm does not receiv the analyst nor the dvisory board memb	dustry Regu general, Co ance with th ve compens associate ( per of the su	ulatory rmark ation for (if any) , ubject	20-Jul-11	1.90 ()
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During the last 24 months having provided investm	s, has Cormar ent banking se	k received or is expected to reco prvices to this issuer?	eive compensation f	or 🛞 Yes	ON₀		
During the last 24 months pool that included investr affiliated with it?	s, has the ana nent banking r	lyst of this company received co evenue from this issuer earned	mpensation from a by Cormark or entiti	es 🏵 Yes	⊖ No		
Does the analyst or a me securities of this compar	mber of the a vy?	nalyst's household have a finan	cial interest in the	⊕ Yes	O №		
lfYES 1) ls it a lo	ng and/or sho	Long					
2) What ty	pe of security	/isit?	Common/Warrar	nts			
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Does the analyst or Corr other material conflict of	nark and / or o interest with f	ne or more entities affiliated wit he issuer?	n Cormark have any	O Yes	⊛ No		
*Cormark has this percentage of its universe assigned as the following: Buy or Top Pick 76%			e following percenta sk" or "Buy", a "Mark «Securities Inc., hav ervices during this j	age of issue ket Perform' ve engaged period.	ers whose ', or a Cormark to		
Market Perform	18%	Buy or Ton Diak	5701				
Reduce	2%	Market Perform	07.76 200/				
Not Rated	3%	Reduce	20%				

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I, Edward Otto, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject company(ies) and its (their) securities. I also certify that I have not been, and will not be receiving direct or indirect compensation in exchange for expressing the specific recommendation(s) in this report.



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