

881955

TGS → Cogburn

MEMORANDUM

J.A. Chapman Mining Services

tel: 604.536.8356, fax: 604.536.8351, mobile: 604.612..9438

res: 604.535.0038, Email: jacms1@telus.net

Feb. 19/07
JC told TGS
- project is
UNECONOMIC
(at today's prices)

Feb. 19/07
JC told TGS
that at today's
(fuel, construction, etc.)
cost - project
is UNECONOMIC

Date: February 17, 2007
To: Leader Mining International Inc. Directors
From: John Chapman
Re: **Cogburn Magnesium Project Updated Pretax Cash Flows**
cc. Gerald Carlson, David Dreisinger, David Makepeace

The Hatch Feasibility Study dated May 2003 has been used as a reference to update the Cash Flow Model for the Cogburn Magnesium Project.

The following activities preceded the update:

- 1) Hatch was asked to confirm that STI/VAMI was still the most suitable technology for processing magnesium silicate ores at Cogburn. That was confirmed by Roman Deshko via email on January 22nd;
- 2) Merit Consultants was asked to provide an update on labour and material costs in the form of escalators from the first quarter of 2003 to the last quarter of 2006. That information was provided by Jay Collins on February 6th and showed that labour had increased by a factor of 1.17 and materials by 1.57. It was determined that labour represented 15% of capital and operating costs and the remaining 85% was allocated to materials. This resulted in a net increase factor of 1.51 on all costs.

Applying the escalators in (2) above resulted in the following increases (all dollars in US funds):

- 1) Capital cost: \$1.237 billion to \$1.868 billion.
- 2) Working capital: \$61.8 million to \$94 million.
- 3) Sustaining capital: \$15.6 million to \$23.5 million.
- 4) Operating cost: \$0.703 per pound to \$1.060 per pound.

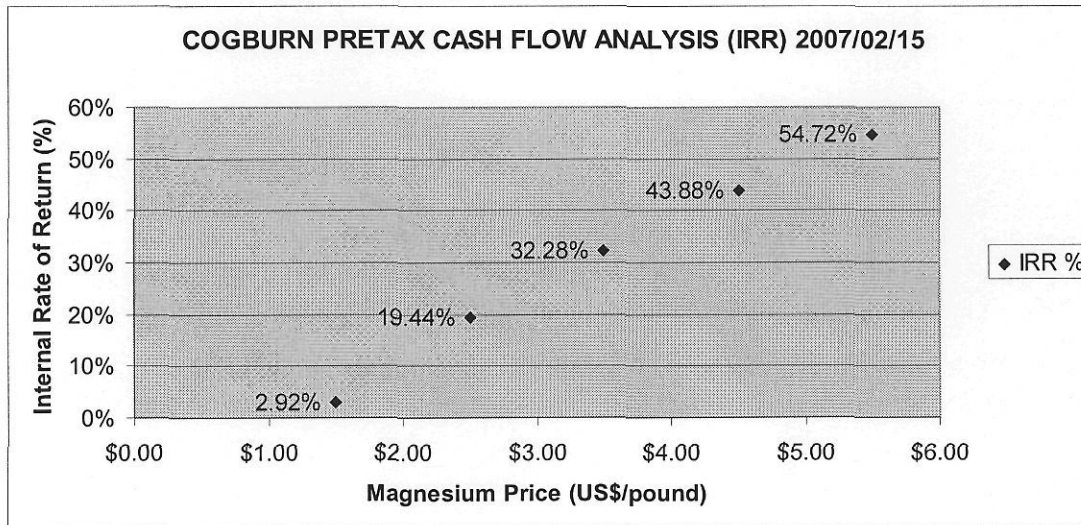


Figure 1

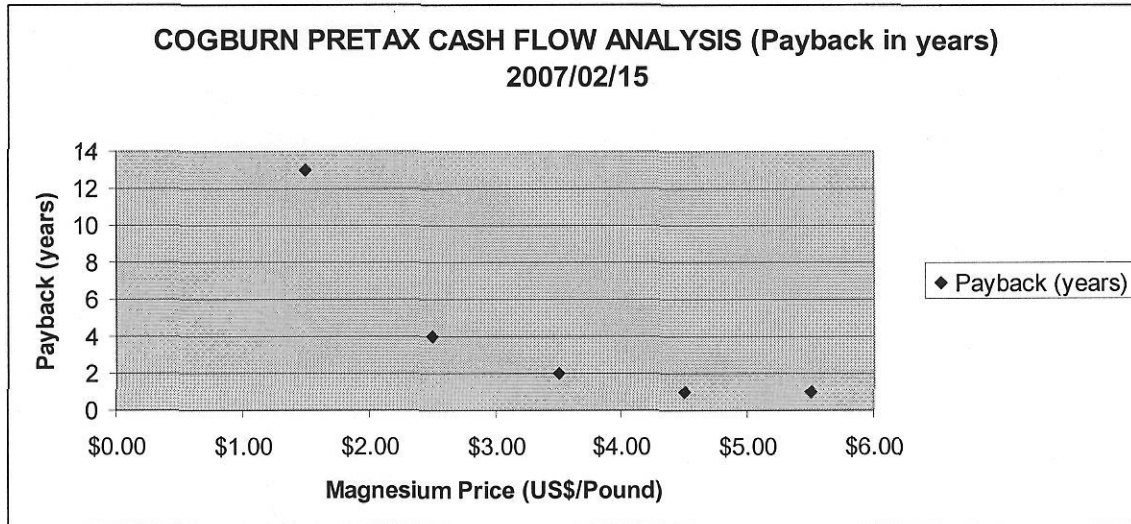


Figure 2

The analysis of the Pretax Cash Flows IRR's, at various magnesium metal prices, are presented in Figure 1. Figure 2 presents the Payback in years. Figure 3 shows Gross Revenue, Net Cash Flow and DCF-ROR10. The analysis shows that in the current cost environment it would require the magnesium metal price to be ~US\$2.50 per pound to provide a pretax 20% return and a four year payback on the \$1.868 billion investment (standard mining industry hurdle rates). The Hatch Feasibility modeled 25 years of operations while this study only used 17 years - as beyond 17 years values discounted at 10% become very small. The Cash Flow spread sheets are attached for reference.

It is important to note that by applying a Canadian/BC tax rate of 35% (65% net to Project) to the numbers presented in the figures gives an approximate after-tax number.

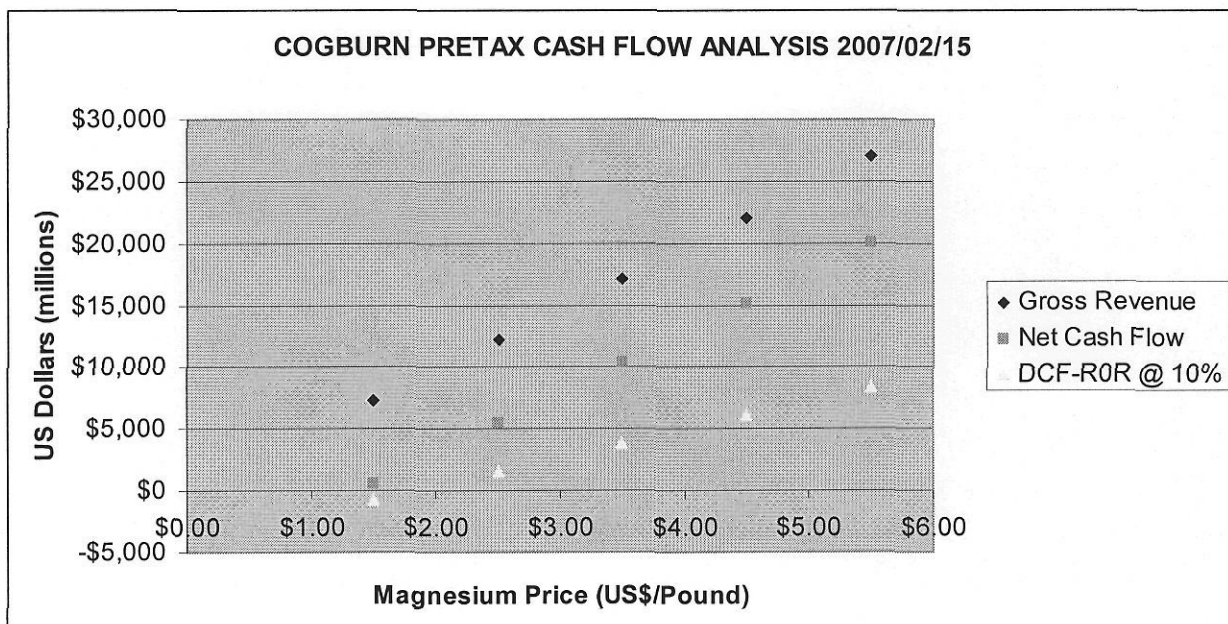


Figure 3

In my opinion the magnesium market is poised for a rapid expansion with a significant price increase. There has been a structural change in the markets for the following reasons:

- 1) The technological failure of the Magnola plant, that was to be the main supply for GM and Ford just as the autocos were moving aggressively into lightening vehicles, caused market disruption;
- 2) Financial troubles in the US auto industry since 2005 have caused them to shelve plans to embrace magnesium in lightening vehicles;
- 3) The rising supply of low cost Chinese magnesium caused the demise (shutdown and I believe dismantling) of Norsk Hydro's magnesium business (formerly the world's largest producer) in 2006. They were achieving large returns on their petroleum investments and "bleeding" in magnesium;
- 4) Labour shortages and rising labour costs are beginning to negatively impact China's magnesium operations (recently reported in Metals Week);
- 5) The global warming scare is causing California (and other jurisdictions) to drastically tighten emissions standards. This will probably cause autocos to be driven to again lighten vehicles as one method of achieving compliance;
- 6) The European autocos continue to expand the use of magnesium in their vehicles and supply is mainly from Israel (Dead Sea Works);
- 7) Japanese autocos have not embraced magnesium as yet – when they do it will become an exciting market.

In recent months there has been increased talk of allowing nuclear power expansion in Canada (speeches by Gary Lund, Federal Minister of Resources). In my opinion, nuclear at Cogburn would have a very positive impact on the Project economics (substantially reduce operating costs) as it would replace grid power, which is rapidly rising in price, and at the same time would eliminate natural gas (heat and reformation for hydrogen). Another consideration is the fact the BCHydro has failed to generate enough power to meet demand in BC and has had to import expensive power from the USA and Alberta. Also, remember that electricity and natural gas represent 40% of the US\$306 million per annum Project operating costs. The high-grade waste heat from a 250MW(e) HTGR reactor would be in the order of 350MW(h) at temperatures exceeding 500 degrees C that could be used for fluid bed dehydration and for production of hydrogen (thermo-chemical process). I intend to work with the PBMR people to determine the impact of the HTGR reactor on the Cogburn Magnesium Project economics.

A handwritten signature in black ink, appearing to read "Chapman". The signature is fluid and cursive, with a large, stylized initial "C" that loops back. The name "Chapman" is written in a clear, cursive script following the initial.

Schroeter, Tom EMPR:EX

From: John Chapman [jacms1@telus.net]
Sent: Mon, February 19, 2007 4:20 PM
To: Schroeter, Tom EMPR:EX
Subject: FW: Cogburn Magnesium Project - Economics Update
Attachments: cogburn pretax cash flow \$5.50 20070215.pdf; cogburn pretax cash flow \$1.50 20070215.pdf; cogburn pretax cash flow \$2.50 20070215.pdf; cogburn pretax cash flow \$3.50 20070215.pdf; cogburn pretax cash flow \$4.50 20070215.pdf; RE: Cogburn Magnesium Project (and nickel exploration); COGBURN CASH FLOWS 20070217.pdf

Tom,

Attached is bedtime reading for you.

I have advised the EA office of the economic situation with Cogburn (see attached email).

John

From: John Chapman [mailto:jacms1@telus.net]
Sent: February 19, 2007 9:59 AM
To: chrisgulka@workingcapitalcorp.com; kurtmarty@bluewin.ch; Roland Kesselring (nascom@swissonline.ch); Wagner, Tomasz; Bob McGown (sagecroc@gmail.com)
Cc: Buddy Roach; David Dreisinger (drei@interchange.ubc.ca); David Flather (dhf@lorax.ca); Jack Butterfield ; Justin Stockwell; Roman Friedrich (rfriedrich@attglobal.net); Sandy Sveinson (info@meritminingcorp.com); Mel Smale; James Anson (janson@hatch.ca); Roger Urquhart (rurquhart@hatch.ca); Roman Deshko (rdeshko@hatch.ca); Bill MacMillan (Bill.MacMillan@BCHydro.bc.ca)
Subject: Cogburn Magnesium Project - Economics Update

Gentlemen,

Please read the file "COGBURN CASH FLOWS 20070217" first.

I plan to be in all week if you wish to set up a conference call to discuss this Cogburn economic update.

Best regards,
John Chapman
604.536.8356

From: John Chapman [mailto:jacms1@telus.net]
Sent: February 18, 2007 11:11 AM
To: cgulka@workingcapitalcorp.com; gcarlson@copper-ridge.com; dmakepeace@telus.net; Sandy Sveinson
Subject: Cogburn Magnesium Project - Economics Update

Hi Folks,

Please give the file "Cogburn cash flows 20070217" a read before we send these files off to the Leader board on Monday. Comments would be appreciated as I worked alone on this with no other eyes to check.

Cheers, John

2007-02-20

COGBURN MAGNESIUM PROJECT CASH FLOW ESTIMATE - 150,000 mt/y MAGNESIUM METAL/ALLOY PRODUCTION (cost adjusted from HATCH 2003 Feasibility Study)

Warning: This cash flow contains several forward looking assumptions
 All Funds in US Dollars

by: JAG
 18-Feb-07
 09:34:30 AM

	MAGNESIUM PRICE: 6.50 US\$/pound																				
YEAR:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2022	2023	2024	TOTAL	
Production																					
Emory Zone Ore @ 24.6% Mg (mt/y)	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	9,053,846
Magnesium Alloys (mt/y)	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	2,227,000
Revenue:																					
Magnesium Price (\$/lb)	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13
Magnesium Price (\$/t)	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
Revenue (\$)	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$1,588,438,899	\$27,003,461,276
Revenue (\$/mt of ore processed)	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983	\$2,983
Unit Costs (\$/kg metal produced):																					
Total Operating Cost (\$/kg metal produced)	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	2.337
Total Operating Cost (\$/t metal produced)	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060
Costs:																					
Total Operating Cost	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$5,204,303,446
Royalty Payments	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$13,588,373	\$231,002,337
Depreciation (20% declining balance)	373,574,000	298,859,200	239,087,360	191,269,888	153,015,910	122,412,728	97,930,183	78,344,146	62,675,317	50,140,254	40,112,203	32,089,762	25,671,810	20,537,448	16,429,956	13,143,967	10,515,173	8,425,809,307	10,515,173	1,825,809,307	1,825,809,307
Total Cost	\$895,141,029	\$698,855,828	\$558,811,230	\$458,983,759	\$372,738,780	\$302,544,810	\$247,618,816	\$201,812,816	\$166,149,816	\$136,149,816	\$111,149,816	\$91,149,816	\$74,149,816	\$61,149,816	\$51,149,816	\$43,149,816	\$37,149,816	\$32,149,816	\$28,149,816	\$25,149,816	\$21,149,816
Pretax Earnings	\$895,141,029	\$698,855,828	\$558,811,230	\$458,983,759	\$372,738,780	\$302,544,810	\$247,618,816	\$201,812,816	\$166,149,816	\$136,149,816	\$111,149,816	\$91,149,816	\$74,149,816	\$61,149,816	\$51,149,816	\$43,149,816	\$37,149,816	\$32,149,816	\$28,149,816	\$25,149,816	\$21,149,816
Pretax Operating Cash Flow:																					
Depreciation (add back)			373,574,000	298,859,200	239,087,360	191,269,888	153,015,910	122,412,728	97,930,183	78,344,146	62,675,317	50,140,254	40,112,203	32,089,762	25,671,810	20,537,448	16,429,956	13,143,967	10,515,173	8,425,809,307	8,425,809,307
Preproduction Royalty	(55,000)	(1,060,000)																			(1,115,000)
Capital Investment	(650,000,000)	(1,217,870,000)																			(1,867,870,000)
Sustaining Capital			23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	354,945,000
Working Capital	(30,000,000)	(64,000,000)																			94,000,000
Pretax Net Cash Flow	\$149,065,000	\$1,292,930,000	\$1,269,716,028	\$1,269,716,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$1,292,378,028	\$20,054,115,493
Pretax Cumulative Cash Flow	(650,065,000)	(51,862,985,000)	(684,269,871)	\$674,446,068	\$1,866,823,087	\$3,159,201,116	\$4,451,579,145	\$5,743,957,174	\$7,036,335,203	\$8,328,713,232	\$9,621,091,261	\$10,913,469,290	\$12,205,847,319	\$13,498,225,348	\$14,790,603,377	\$16,082,981,406	\$17,375,359,435	\$18,667,737,464	\$20,054,115,493		
Pretax Net Present Value of Project Cash Flow:																					
@ 5% Discount Rate		\$12,604,383,176																			
@ 10% Discount Rate		\$8,361,423,640																			
@ 15% Discount Rate		\$5,822,488,592																			
Pretax DCF-ROR on Investment (%)		54.72																			

Notes: Assume that the residual value of assets at end of 17 years would equal closure costs.
 The magnesium resource is very large and would support operations for >150 years at similar economics to those presented in this 17 operating year subset.
 Cost escalation supplied by Merit Consultants for 2003 off one to 2003 off four; labour = 1.17, materials = 1.57. The percentage of labour in the capital and operating costs is 15%, materials represent 85% (blended escalation = 1.51).
 The largest impact on the economics of the Project are the electric power and natural gas prices (~40% of operating costs). In this cash flow the 2.2 billion kWh/annum of electric power and the 203 million cubic meters/annum of natural gas have been escalated from the HATCH Feasibility by the 1.51 factor.

COGBURN MAGNESIUM PROJECT CASH FLOW ESTIMATE - 150,000 mt/y MAGNESIUM METAL/ALLOY PRODUCTION (cost adjusted from HATCH 2003 Feasibility Study)																			by: JAC					
Warning: This cash flow contains several forward looking assumptions																			18-Feb-07					
All Funds in US Dollars																			09:31:44 AM					
Magneisum Price: 1.50 US\$/pound																								
YEAR:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL		
Production																								
Emory Zone Ore @ 24.6% Mg (mt/y)		532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	8,052,848	
Magnesium Alloys (mt/y)		131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	2,227,000	
Revenue:																								
Magnesium Price (\$/kg)		3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	
Magnesium Price (\$/lb)		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	
Revenue (\$)		\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$433,210,609	\$7,364,880,348	
Revenue (\$/mt of ore processed)		\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	\$814	
Unit Costs (\$/kg metal produced):																								
Total Operating Cost (\$/kg metal produced)		\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	2.337	
Total Operating Cost (\$/lb metal produced)		\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	
Costs:																								
Total Operating Cost		\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$5,094,303,446	
Royalty Payments		\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$2,036,090	\$34,613,528	
Depreciation (20% declining balance)		\$73,574,000	\$68,859,200	\$64,144,400	\$59,429,600	\$54,714,800	\$50,000,000	\$45,285,200	\$40,570,400	\$35,855,600	\$31,140,800	\$26,426,000	\$21,711,200	\$17,000,000	\$12,285,200	\$7,570,400	\$2,855,600	\$1,140,800	\$460,000	\$185,200	\$70,400	\$28,000	\$11,200	\$1,825,809,307
Total Cost		\$681,745,587	\$677,030,787	\$672,315,987	\$667,601,187	\$662,886,387	\$658,171,587	\$653,456,787	\$648,741,987	\$644,027,187	\$639,312,387	\$634,597,587	\$629,882,787	\$625,167,987	\$620,453,187	\$615,738,387	\$611,023,587	\$606,308,787	\$601,593,987	\$596,879,187	\$592,164,387	\$587,449,587	\$582,734,787	\$7,064,726,280
Pretax Earnings		(\$248,534,978)	(\$173,820,178)	(\$109,105,378)	(\$44,390,578)	111,415,222	176,730,422	242,045,622	307,360,822	372,676,022	437,991,222	503,306,422	568,621,622	633,936,822	699,252,022	764,567,222	829,882,422	895,197,622	960,512,822	1,025,828,022	1,091,143,222	1,156,458,422	1,221,773,622	\$99,854,068
Pretax Operating Cash Flow:																								
Depreciation (add back)			373,574,000	298,859,200	239,087,360	181,289,888	153,015,910	122,412,728	97,930,183	78,344,146	62,675,317	50,140,254	40,112,203	32,089,762	25,671,810	20,537,448	16,429,958	13,143,967	10,515,173	8,252,179	6,561,743	5,169,397	4,075,516	
Preproduction Royalty		(65,000)	(1,060,000)																					
Capital Investment		(850,000,000)	(1,217,870,000)																				(1,867,870,000)	
Sustaining Capital		(30,000,000)	(64,000,000)		23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	84,000,000	
Pretax Net Cash Flow		(\$680,055,000)	(\$1,282,830,000)	\$125,039,022	\$125,039,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	\$148,702,022	
Pretax Cumulative Cash Flow		(\$680,055,000)	(\$1,962,885,000)	(\$1,837,846,978)	(\$1,712,806,956)	(\$1,564,204,934)	(\$1,415,502,912)	(\$1,266,800,890)	(\$1,118,098,868)	(\$969,396,846)	(\$820,694,824)	(\$671,992,802)	(\$523,290,780)	(\$374,588,758)	(\$225,886,736)	(\$77,184,714)	\$71,517,308	\$220,219,330	\$369,921,352	\$519,623,374	\$669,325,396	\$819,027,418	\$968,729,440	
Pretax Net Present Value of Project Cash Flow:																								
@ 5% Discount Rate			(\$289,495,893)																					
@ 10% Discount Rate			(\$792,634,421)																					
@ 15% Discount Rate			(\$1,093,494,084)																					
Pretax DCF-ROR on Investment (%)			2.92																					
Notes:	Assume that the residual value of assets at end of 17 years would equal closure costs.																							
	The magnesium resource is very large and would support operations for +100 years at similar economics to those presented in this 17 operating year subset.																							
	Cost escalation supplied by Merit Consultants for 2003 etc one to 2008 etc four: labour = 1.17, materials = 1.57. The percentage of labour in the capital and operating costs is 15%, materials represent 85% (blended escalation = 1.51).																							
	The largest impact on the economics of the Project are the electric power and natural gas prices (~40% of operating costs). In this cash flow the 2.2 billion kWh/annum of electric power and the 203 million cubic meters/annum of natural gas have been escalated from the HATCH Feasibility by the 1.51 factor.																							

COGBURN MAGNESIUM PROJECT CASH FLOW ESTIMATE - 150,000 mt/y MAGNESIUM METAL/ALLOY PRODUCTION (cost adjusted from HATCH 2003 Feasibility Study)																		by: JAC	
Warning: This cash flow contains several forward looking assumptions																		18-Feb-07	
All Funds in US Dollars																		09:32:56 AM	
	Magnesium Price: 2.50 US\$/pound																		
YEAR:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Production																			
Emory Zone Ore @ 24.6% Mg (mt/y)		532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	9,052,846
Magnesium Alloys (mt/y)		131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	2,227,090
Revenue:																			
Magnesium Price (\$/kg)		5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51
Magnesium Price (\$/lb)		2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Revenue (\$)		\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$722,017,681	\$12,274,300,580
Revenue (\$/mt of ore processed)		\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356	\$1,356
Unit Costs (\$/kg metal produced):																			
Total Operating Cost (\$/kg metal produced)		\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	2.337
Total Operating Cost (\$/lb metal produced)		\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060
Costs:																			
Total Operating Cost		\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$5,204,303,446
Royalty Payments		\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$4,924,161	\$83,710,730
Depreciation (20% declining balance)		\$73,574,000	\$298,859,200	\$239,087,360	\$191,269,888	\$153,015,910	\$122,412,728	\$97,930,183	\$78,344,146	\$62,675,317	\$50,140,254	\$40,112,203	\$32,089,762	\$25,671,810	\$20,537,448	\$16,429,958	\$13,143,967	\$10,515,173	\$1,825,809,307
Total Cost		\$684,633,657	\$609,918,857	\$550,147,617	\$502,329,545	\$464,075,568	\$433,472,386	\$406,989,840	\$389,403,804	\$373,734,974	\$361,199,911	\$351,171,860	\$343,149,420	\$336,731,467	\$331,597,105	\$327,489,616	\$324,203,624	\$321,674,831	\$7,113,823,493
Pretax Earnings		\$37,384,024	\$112,098,824	\$171,870,064	\$219,688,136	\$257,942,113	\$286,545,295	\$313,027,841	\$332,613,878	\$348,282,707	\$360,817,770	\$370,845,821	\$378,868,262	\$385,286,214	\$390,420,576	\$394,528,065	\$397,814,057	\$400,442,850	\$5,160,477,097
Pretax Operating Cash Flow:																			
Depreciation (add back)			373,574,000	298,859,200	239,087,360	191,269,888	153,015,910	122,412,728	97,930,183	78,344,146	62,675,317	50,140,254	40,112,203	32,089,762	25,671,810	20,537,448	16,429,958	13,143,967	1,825,809,307
Reproduction Royalty		(55,000)	(1,060,000)																(1,115,000)
Capital Investment		(650,000,000)	(1,217,870,000)																(1,867,870,000)
Sustaining Capital					23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	354,945,000
Working Capital		(30,000,000)	(64,000,000)																94,000,000
Pretax Net Cash Flow		(\$680,058,000)	(\$1,282,930,000)	\$410,958,024	\$410,958,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$434,621,024	\$5,472,246,404
Pretax Cumulative Cash Flow		(\$680,058,000)	(\$1,962,985,000)	(\$1,562,026,976)	(\$1,141,068,952)	(\$706,447,928)	(\$271,826,905)	\$162,784,119	\$597,415,143	\$1,032,036,166	\$1,466,657,190	\$1,901,278,214	\$2,335,899,238	\$2,770,520,261	\$3,205,141,285	\$3,639,762,309	\$4,074,383,333	\$4,509,004,356	\$4,943,625,380
Pretax Net Present Value of Project Cash Flow:																			
@ 5% Discount Rate			\$2,933,973,874																
@ 10% Discount Rate			\$1,590,880,085																
@ 15% Discount Rate			\$635,504,082																
Pretax DCF-ROR on Investment (%)			19.44																
Notes:	<p>Assume that the residual value of assets at end of 17 years would equal current costs.</p> <p>The magnesium resource is very large and would support operations for +100 years at similar economies to those presented in this 17 operating year subset.</p> <p>Cost escalation supplied by Mint Consultants for 2003 or one to 2008 per fourth: labour = 1.17, materials = 1.57. The percentage of labour in the capital and operating costs is 15%, materials represent 85% (blended escalation = 1.51).</p> <p>The largest impact on the economies of the Project are the electric power and natural gas prices (~40% of operating costs). In this cash flow the 2.7 billion kWh/annum of electric power and the 203 million cubic meters/annum of natural gas have been escalated from the HATCH Feasibility by the 1.51 factor.</p>																		

COGBURN MAGNESIUM PROJECT CASH FLOW ESTIMATE - 150,000 mt/y MAGNESIUM METAL/ALLOY PRODUCTION (cost adjusted from HATCH 2003 Feasibility Study)

by: JAC

Warnings: This cash flow contains several forward looking assumptions

18-Feb-07

All Funds in US Dollars

09:33:31 AM

	Magnesium Price: 3.50 US\$/pound																				
YEAR:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2022	2023	2024	TOTAL	
Production																					
Emory Zone Ore @ 24.6% Mg (mt/y)		532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	9,052,846
Magnesium Alloys (mt/y)		131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	2,227,000
Revenue:																					
Magnesium Price (\$/kg)		7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72	7.72
Magnesium Price (\$/lb)		3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Revenue (\$)		\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$1,010,824,754	\$17,184,020,812
Revenue (\$/mt of ore processed)		\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898	\$1,898
Unit Costs (\$/kg metal produced):																					
Total Operating Cost (\$/kg metal produced)		\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34
Total Operating Cost (\$/lb metal produced)		\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060	\$1,060
Costs:																					
Total Operating Cost		\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$306,135,497	\$5,204,203,446
Royalty Payments		\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$7,812,231	\$132,807,832
Depreciation (20% declining balance)		\$375,574,000	\$286,859,200	\$239,087,360	\$191,269,800	\$153,015,910	\$122,412,728	\$97,930,183	\$78,344,146	\$62,875,317	\$50,140,254	\$40,112,203	\$32,089,762	\$25,671,810	\$20,537,448	\$16,429,958	\$13,143,967	\$10,515,173	\$8,425,809,307	\$1,825,809,307	\$1,825,809,307
Total Cost		\$687,521,728	\$612,806,928	\$553,035,088	\$505,217,618	\$466,963,639	\$436,360,466	\$411,877,811	\$392,291,874	\$376,623,045	\$364,087,982	\$354,059,931	\$346,037,490	\$339,619,538	\$334,465,176	\$330,377,686	\$327,091,695	\$324,462,901	\$321,820,685	\$319,220,685	\$7,162,920,685
Pretax Earnings		\$323,303,026	\$398,017,826	\$457,789,666	\$505,607,136	\$543,861,115	\$574,464,287	\$598,946,843	\$618,532,879	\$634,201,709	\$646,736,772	\$656,764,823	\$664,787,263	\$671,205,216	\$676,339,578	\$680,447,067	\$683,733,059	\$686,361,852	\$688,220,127	\$689,220,127	\$10,021,106,127
Pretax Operating Cash Flow:																					
Depreciation (adj back)			\$73,574,000	\$296,859,200	\$239,087,360	\$191,269,888	\$153,015,910	\$122,412,728	\$97,930,183	\$78,344,146	\$62,875,317	\$50,140,254	\$40,112,203	\$32,089,762	\$25,671,810	\$20,537,448	\$16,429,958	\$13,143,967	\$10,515,173	\$8,425,809,307	\$1,825,809,307
Preproduction Royalty		(\$5,000)	(\$1,060,000)																		(\$1,115,000)
Capital Investment		(\$50,000,000)	(\$1,217,870,000)																		(\$1,867,870,000)
Sustaining Capital					\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$23,663,000	\$354,945,000
Working Capital		(\$30,000,000)	(\$64,000,000)																		\$4,000,000
Pretax Net Cash Flow		(\$480,055,000)	(\$1,282,930,000)	\$696,877,026	\$696,877,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$720,540,026	\$10,332,869,434
Pretax Cumulative Cash Flow		(\$680,055,000)	(\$1,962,885,000)	(\$1,266,107,974)	(\$569,230,949)	\$181,309,077	\$871,849,102	\$1,692,389,128	\$2,312,929,153	\$3,033,469,179	\$3,754,009,204	\$4,474,549,230	\$5,195,089,255	\$5,915,629,281	\$6,636,169,306	\$7,356,709,332	\$8,077,249,357	\$8,797,789,383	\$9,518,329,408	\$10,332,869,434	\$10,332,869,434
Pretax Net Present Value of Project Cash Flow:																					
@ 5% Discount Rate		\$6,157,443,641																			
@ 10% Discount Rate		\$3,794,394,610																			
@ 15% Discount Rate		\$2,364,502,249																			
Pretax DCF-ROR on Investment (%)			32.28																		

Notes: Assume that the residual value of assets at end of 17 years would equal closure costs

The magnesium resource is very large and would support operations for +100 years at similar economics to those presented in this 17 operating year subset

Cost escalation supplied by Mint Consultants for 2003 to 2009 by fourth: labour = 1.17, materials = 1.57. The percentage of labour in the capital and operating costs is 15%, materials represent 85% (blended escalation = 1.51).

The largest impact on the economics of the Project are the electric power and natural gas prices (~40% of operating costs). In this cash flow the 2.2 billion kWh/annum of electric power and the 203 million cubic meters/annum of natural gas have been escalated from the HATCH Feasibility by the 1.51 factor.

COGBURN MAGNESIUM PROJECT CASH FLOW ESTIMATE - 150,000 mt/y MAGNESIUM METAL/ALLOY PRODUCTION (cost adjusted from HATCH 2003 Feasibility Study)

Warning: This cash flow contains several forward looking assumptions
 All Funds in US Dollars

by: JAC
 18-Feb-07
 09:33:57 AM

Mgesium Price: 4.50 US\$/pound																							
YEAR:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL	
Production																							
Emory Zone Ore @ 24.6% Mg (mt/y)			532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	532,520	9,052,846
Magnesium Alloys (mt/y)			131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	131,000	2,227,000
Revenue:																							
Magnesium Price (\$/kg)			9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	
Magnesium Price (\$/lb)			4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
Revenue (\$)			\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$1,299,631,826	\$22,093,741,644
Revenue (\$/mt of ore processed)			\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441	\$2,441
Unit Costs (\$/kg metal produced):																							
Total Operating Cost (\$/kg metal produced)			\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34	\$2.34
Total Operating Cost (\$/lb metal produced)			\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060	\$1.060
Costs:																							
Total Operating Cost			\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$306,135,487	\$6,204,303,444
Royalty Payments			\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$10,700,302	\$181,905,135
Depreciation (20% declining balance)			\$73,574,000	\$28,859,200	\$23,087,360	\$19,269,888	\$15,015,910	\$12,412,728	\$10,330,183	\$8,344,146	\$6,275,317	\$5,014,254	\$4,112,203	\$3,209,762	\$2,671,810	\$2,037,448	\$1,629,958	\$1,343,967	\$1,051,173	\$825,809,307	\$669,452,854	\$537,280,854	\$428,628,156
Total Cost			\$690,409,789	\$645,694,389	\$595,923,199	\$508,105,887	\$469,851,709	\$439,248,527	\$414,765,882	\$395,179,845	\$378,511,116	\$366,876,052	\$356,848,002	\$348,925,561	\$343,807,699	\$337,373,247	\$333,265,757	\$329,879,765	\$327,350,972	\$325,810,787	\$325,117,887	\$325,117,887	\$7,212,017,887
Pretax Earnings			\$609,222,027	\$643,937,437	\$743,708,627	\$781,526,139	\$829,780,117	\$860,383,299	\$884,865,846	\$904,451,981	\$920,120,710	\$932,655,774	\$942,683,824	\$950,706,265	\$957,124,217	\$962,268,578	\$966,566,069	\$969,852,061	\$972,280,854	\$973,881,725	\$974,542,156	\$974,542,156	\$14,881,725,156
Pretax Operating Cash Flow:																							
Depreciation (add back)			\$73,574,000	\$28,859,200	\$23,087,360	\$19,269,888	\$15,015,910	\$12,412,728	\$10,330,183	\$8,344,146	\$6,275,317	\$5,014,254	\$4,112,203	\$3,209,762	\$2,671,810	\$2,037,448	\$1,629,958	\$1,343,967	\$1,051,173	\$825,809,307	\$669,452,854	\$537,280,854	\$428,628,156
Preproduction Royalty			(55,000)	(1,060,000)																			(1,115,000)
Capital Investment			(650,000,000)	(1,217,870,000)																			(1,867,870,000)
Sustaining Capital						23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	23,663,000	354,945,000
Working Capital			(30,000,000)	(64,000,000)																			94,000,000
Pretax Net Cash Flow			(660,055,000)	(1,282,930,000)	\$982,796,027	\$982,796,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$1,006,459,027	\$15,193,492,463
Pretax Cumulative Cash Flow			(660,055,000)	(1,942,985,000)	(860,188,973)	\$2,607,054	\$1,009,056,082	\$2,015,526,108	\$3,021,984,136	\$4,029,443,163	\$5,034,902,191	\$6,041,361,218	\$7,047,820,245	\$8,054,279,272	\$9,060,738,300	\$10,067,197,327	\$11,073,656,354	\$12,080,115,381	\$13,086,574,408	\$14,093,033,436	\$15,099,492,463	\$15,099,492,463	
Pretax Net Present Value of Project Cash Flow:																							
@ 5% Discount Rate			\$9,380,913,408																				
@ 10% Discount Rate			\$6,087,909,125																				
@ 15% Discount Rate			\$4,093,500,415																				
Pretax DCF-FOR on Investment (%)			43.88																				

Notes: Assume that the residual value of assets at end of 17 years would equal closure costs
 The magnesium resource is very large and would support operations for ~100 years at similar economics to those presented in this 17 operating year subset
 Cost escalation supplied by Merit Consultants for 2003 on one to 2008 on fourth: labour = 1.17, materials = 1.57. The percentage of labour in the capital and operating costs is 15%, materials represent 85% (blended escalation = 1.51).
 The largest impact on the economics of the Project are the electric power and natural gas prices (~40% of operating costs). In this cash flow the 2.3 billion kWh/annum of electric power and the 203 million cubic meters/annum of natural gas have been escalated from the HATCH Feasibility by the 1.51 factor.