

EQUITY RESEARCH

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BUY

Current Price \$0.05

Ticker:		MOD
Sector:		Materials
Shares on Issue (m):		1,896.7
Market Cap (\$m):		102.4
Net Cash (\$m):		10.0
Enterprise Value (\$m):		92.4
52 wk High/Low:	\$0.09	\$0.04
12m Av Daily Vol (m):		5.57

ProjectsKalahari Copper Project

Target Price

T3 Reserve and Resource

	Tonnes	Cu	Cu
	(Mt)	Grade (%)	(kt)
Reserve	21.4	1.0	218
Resource	50.1	0.9	461

Development Stage	Feasiblilty Study
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Key Metrics

AISC	US\$1.36/Ib
Capex	US\$155m
Steady State EBITDA	\$76m pa

Directors

Mark Clements	Executive Chairman
Julian Hanna	Managing Director
Steve McGhee	Techical Director
Simon Lee AO	Non-Executive Director
Browyn Barnes	Non-Executive Director

Share Price Graph



Please refer to important disclosures from page 10

Wednesday, 21 February 2018

MOD Resources

Copper camp in the Kalahari – Site Visit

Analysts | Matthew Keane | James Wilson

Quick Read

\$0.10

Argonaut recently visited MOD Resources (MOD) copper development and exploration assets in the Kalahari Copper Belt, Botswana confirming our view that this is amongst the best copper development companies globally. The January 2018 Prefeasibility Study (PFS) on the T3 deposit (MOD 70%, Metal Tiger [LON:MTR] 30%) outlined a Base Case with ~9 years mine life producing 23ktpa copper and 690kozpa silver at average all-in sustaining costs (AISC) of US\$1.36/lb with development capex of US\$155m. BUY recommendation.

Event & Impact | Positive

Positive PFS, with attractive upside: The Base Case PFS for the T3 deposit outlined production averaging 23kt copper and 690koz silver over 9 years at an AISC of US\$1.36/lb. Capex for the 2.5Mtpa plant is estimated at US\$155m and Argonaut derives a post-tax NPV₁₁ of A\$243m and a 36% IRR (100% Basis). The Company also released an Expanded Case incorporating Inferred Resources and expanding the plant to 4Mtpa after Year 3. The expansion requires an additional US\$37m capex and extends production out to ~11 years averaging 28ktpa copper. Importantly, a large portion of the drilling to upgrade the Inferred Resources has been completed showing a likely conversion to the Measured and Indicated categories. We derive an A\$290m NPV₁₁ and 30% IRR for the Expanded Case. Conceptually, MOD could further increase production to 60ktpa with the incorporation of underground operations at T3 and the nearby T1 deposit.

Copper camp potential: Argonaut believes T3 will be the first of many discoveries on MOD's tenements in the Kalahari Copper Belt. While the Company has already defined a respectable resource at the T3 deposit with 461kt contained copper, we see a high probability for repeats on the 12,600km² tenement holding (MOD ownership ranging from 70% to 100%). In context, Cupric Canyon (private unlisted) has defined ~5.7Mt contained copper on its abutting 4,000km² land holding to the northeast. Key targets areas are likely to occur along fold hinges and in potential duplex thrust zones. We have detailed prospective targets from Page 6.

Next steps: To date, MOD had been largely restricted to drilling in the T-REX area, containing the T3 deposit and within the greater T3 dome. An Environmental Management Plan (EMP) is due to be approved by March/April to allow drilling of the greater T3 Dome. Subsequently, an EMP for the highly prospective T20 Dome should be completed by June. We expect a Resource update on the T3 deposit around mid-2018 and a Definitive Feasibility Study (DFS) in Q4 followed by a final investment decision (FID) late-2018. We model construction from early-2019 and first production in H1 2020.

Recommendation

Argonaut revised its sum of parts valuation to \$0.10ps (prior \$0.07ps) applying updated metrics from the PFS. Applying the Expansion Case metrics gives upside to our valuation to \$0.11ps. We upgrade MOD to BUY (prior SPEC BUY).



MOD has a ~12,600km² land holding in the proven Kalahari Copper Belt

The T3 deposit has resource containing 456kt copper

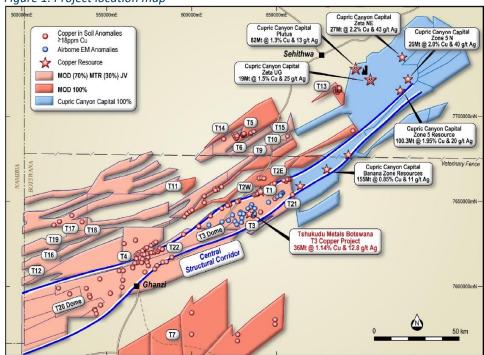
The recent PFS outline 23ktpa copper production...

...and Argonaut derived a A\$243m NPV₁₁

Project Overview

MOD has a ~12,600km² land holding in the Kalahari Copper Belt in Botswana. To date the Company has defined the T3 deposit with 51Mt @ 0.91% Cu and 10.6g/t Ag for 456kt contained Cu at a 0.25% Cu cut-off (21Mt @ 1.43@ Cu at a 1% Cu cut-off) and the Mahumo (T1) resource of 3Mt @ 2.0% Cu and 50g/t Ag. A very small portion of MOD's ground has been explored to date and over 20 targets have been identified. Ore grade intercepts to be followed up at other targets include 5m @ 2.3% Cu at the T2 prospect and 2m @ 6.1% Cu at the T4 prospect.

Figure 1. Project location map



Source: MOD

Positive PFS

Base Case

The Base Case PFS on the T3 deposit outlined production averaging 23kt copper and 690koz silver over $^{\sim}9$ years at a US\$1.36/lb AISC. Capex for the 2.5Mtpa plant is estimated at US\$155m and Argonaut derives a post-tax NPV₁₁ of A\$243m and a 36% IRR. A maiden Ore Reserve for T3 was estimated at 21.4Mt @ 1.02% Cu and 10.3g/t Cu applying a 0.34% Cu cut-off grade, US\$2.91/lb Cu price and US\$0.16.81/oz Ag price. While the Base Case returns a positive result, we believe the final DFS will generate a greater NPV through the incorporation of expanded reserves, optimised mine plans and higher metal recoveries.



The maiden Reserve for T3 contained 218kt copper

The Expanded Case for T3 produces ~28ktpa copper over 11 years

Table 1. Maiden Ore Reserve for T3

O D O-t	Tonnes	Copper Grade (%) kt		Silver		
Ore Reserve Category	(Mt)			Grade (ppm)	Moz	
Proved	8.78	1.13	98.95	11.1	3.14	
Probable	12.65	0.94	118.64	9.7	3.93	
Total Ore Reserve	21.43	1.02	217.59	10.3	7.07	

Source: MOD

Expanded Case

MOD has released an Expanded Case Scenario which incorporates Inferred Resources and a plant expansion to 4Mtpa after an initial three years at the 2.5Mtpa run-rate. Addition capex for this expansion is estimated at US\$37m and the mine life is extended out to $^{\sim}11$ years. The Expanded Case inventory is estimated at 41Mt @ 0.9% Copper. We derive an A\$290m NPV₁₁ and 30% IRR for the Expanded Case.

Table 2. PFS and expansion metrics vs Argonaut model assumptions

Metric	Maasura	МО	D PFS	Argon	aut Est.
ivietric	Measure	Base Case	Expanded Case	Base Case	Expanded Case
Plant Feed	Mtpa	2.5	4.0	2.5	4.0
LOM	Yrs	9	12	9	12
LOM Feed	Mt	21.4	41.0	23.8	45.5
Cu Head Grade	%	1.02	0.86	1.02	0.86
Ag Head Grade	g/t	10.3	9.3	10.3	9.0
Development Capex	US\$m	155	192	155	192
Sustaining Capex	US\$m	3.4	4.5	3.4	4.5
AISC	US\$/lb Cu	1.36	1.46	1.38	1.48
Annual Cu Prod.	kt	23	28	23	29
Annual Ag Prod.	Moz	0.69	0.90	0.70	0.98
AUD/USD FX	#	0.76	0.76	0.72	0.72
Cu Price	US\$/lb	3.00	3.20 - 3.00	3.00	3.00
Ag Price	US\$/oz	18.00	18.00	18.00	18.00
Revenue	US\$m	1,410	2,268	1,556	2,476
EBITDA	US\$m	734	1,103	723	1,059
Pre Tax NPV ₈	US\$m	281	402	301	387
Post Tax NPV ₈	US\$m	N/A	N/A	232	297
Pre Tax IRR	%	39	38	43	35
Post Tax IRR	%	N/A	N/A	36	30

Source: Argonaut with the incorporation of MOD data

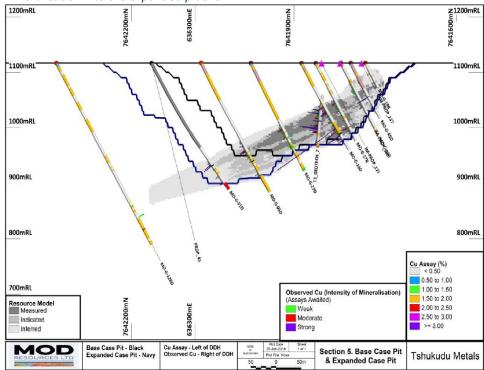
Argonaut believes there is enough confidence for recent drilling to support the Expanded Case

Importantly, a large portion of the drilling to upgrade Inferred Resources, predominantly down dip, has been completed. At the time when the PFS reserves and resources were defined there were just 51 holes drilled into T3. This has since been increased to ~143 holes, both infill and extensional. Argonaut's detailed review of recent drilling gives us confidence of the successful conversion of Inferred Resources to the Measured and Indicated categories. We also see potential for a boost to the overall grade within the expanded pit shells as high-grade veins continue down dip.



Recent drilling shows continuity of mineralisation into the Expanded Case pit shell

Figure 2. Section through the centre of the proposed T3 pit showing continuity of mineralisation into the expanded pit shell.



Source: MOD

Conceptually, MOD could produce 55-60ktpa copper by incorporating underground mines at T1 and T3

The T1 deposit is open at both depth and along strike

Conceptual Underground Mines further increase production

MOD has highlighted the potential to increase production by the incorporation of underground operations at T3 and T1. Conceptually, these two deposits could each contribute 1Mtpa at 1.5%-2.0% Cu for ~15kt contained copper. This would boost overall production to 55-60ktpa, on par with Sandfire Resources (excluding gold credits). We believe inventories >10-15Mt would be required to improve the economics of T1 and T3.

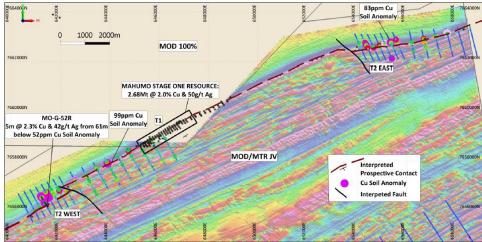
T1 upside potential down dip and along strike

T1 is ~20km from T3 and has a small, shallow Resource already defined at the Mahumo deposit (2.7Mt @ 2.0% Cu and 50g/t Ag). Mineralisation is steeply dipping ~3-5m wide and open along strike and down dip. The deepest intercept is 4m @ 2.8% CuEq ~500m below surface. Along strike to the west, 5m @ 2.4% CuEq has been intercepted at T2 West. To the East, prospective geology and structures are coincident with a soil anomaly at T2 East. Drilling is due to commence this week at this deposit.



The T1 Resource looks to be increased from targets at T2 West and T2 East

Figure 3. T1/Mahumo deposit and exploration upside



Source: MOD

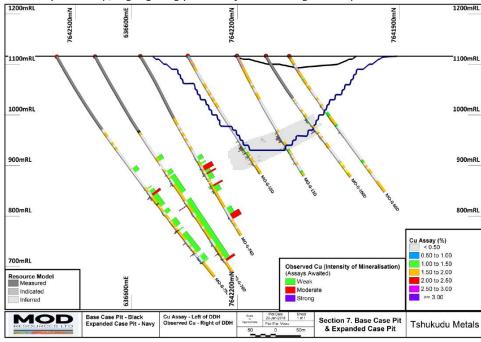
T3 has underground potential through the propagation of high

grade shoots/veins down dip

T3 underground potential

The three main hosting shoots/veins of the T3 deposit are showing continuity down dip to the north. We see potential for an underground operation, most likely driving in at a shallow angle from the hangingwall of the open pit. A simple room and pillar underground mine (for example) would require low capex to establish and likely run at low operating costs. Therefore, we see potential to define an underground resource with a modest cutoff grade of ~1.5% CuEq.

Figure 4. Cross section through the north-eastern end of the T3 pit showing grade continuity down dip, highlighting potential for an underground operation



Source: MOD



We see high potential for further discoveries on MOD's ground...

...with evidence of regional scale copper mineralisation within the NPF

MOD has a number of highly prospective targets...

...defined by copper in soil anomalism, AEM and magnetic surveys

High potential for a copper camp

Argonaut believes T3 will be the first of many discoveries on MOD's tenements in the Kalahari Copper Belt. We think a comparison to Cupric Canyon highlights this potential as Cupric has ~6Mt on its abutting ~4,000km² while MOD has just 0.5Mt on its ~12,600km² land holding. The key difference is the lack of surface expression of oxidated copper on MOD's tenements. This is due to the presence of an impermeable calcrete cap and shallow cover to the southwest.

Extensive basal mineralised zone = regionally mineralised system.

Of considerable note is an interpreted sheared horizon between the basal D'Kar and upper Ngwako Pan (NPF) formations. MOD has defined mineralisation on this horizon averaging 10-15m width at grades averaging 0.7-0.8% Cu over a $10 \, \mathrm{km^2}$ area from limited drilling. While this is not economic due to its grade and depth, it represents over 1.5Mt of contained copper. Notably, this is believed to be the mineralised horizon hosting Cupric Canyon's resources. We see key targets occurring along fold hinges and in potential duplex thrust zones within or proximal to the NPF. These structures have the potential to remobilise, upgrade, and thicken mineralisation. An important point is that this 0.7% copper zone only requires a 2-3 times grade uplift to become economic, compared to large $\sim 0.1\%$ porphyry or IOCG copper systems which require 10+ time upgrades.

Key targets within the T3 dome:

- A4 Less than 10km west of T3. This is a smaller domal feature (indicating an antiform) to T3
- A1-A3 This is an interpreted extension to the known (mainly) disseminated chalcocite
 mineralisation at Cupric's Banana Zone (155Mt @ 0.85% Cu). Calcrete at surface
 suggests any mineralisation on MOD's ground should contain fresh sulphides.
- A9 and A19 On magnetics these appear to be intrusive features coincident with a large northwest/southeast trending dyke. These could be IOCG or porphyry style mineralisation

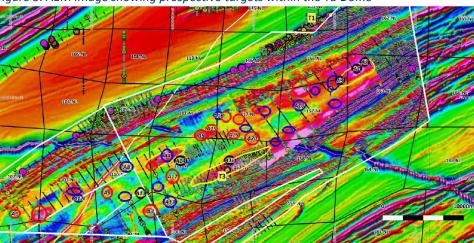


Figure 5. AEM image showing prospective targets within the T3 Dome

Source: MOD



Outside of the T3 Dome, we like the prospectivity of T20 and T7

Selected targets outside the T3 Dome include (Refer to Figure 1 on Page 2):

- T20 A large scale dome feature analogous to the T3 Dome. There is extensive calcrete cover over this region
- T7 Located on the lower trend of the Kalahari Copper Belt within another domal feature. Historic soil anomalies may indicate elevated copper in soils (unconfirmed)

Process for land access defined

Following delays for drill access in 2017...

land access

...MOD now has a clear process for

Following some delays gaining permits to drill in 2017, MOD now appears to have a robust process for attaining the requisite approvals. The Company is following an Environmental Management Plan (EMP) process which is submitted to the local authorities within the Ghanzi District. To date, MOD attained access to drill largely within the T-Rex zone, incorporating T3 and T1. An EMP report has been submitted for the greater T3 Dome and, following a Government review and ~4 week public review period, this should be granted in March/April 2018. Subsequently, MOD will submit an EMP for the T20 Dome which should enable drilling in May-June 2018.

The more encompassing EIA process for mine permitting is not dissimilar to most western jurisdictions and MOD has commenced associated baseline social, environmental, hydrological etc studies.

Next steps and project timeline

The Company should commence drilling in the greater T3 Dome from March/April...

Exploration and infill drilling

Next steps on the exploration front include:

- Large scale AEM surveys over the T20 Dome and the T4 prospect. AEM, in conjunction with aeromagnetic surveys, has proven to be an effective tool for regional geological mapping and target vectoring
- Broader scale drilling within the T3 Dome to test regional targets from April 2018
- Ongoing drilling within the T-Rex area including, extension drilling in and around T1
- Ongoing infill and extensional drilling at the T3 deposit, including deeper holes to test for repeats or offsets to known mineralisation
- Potential T7 drilling from mid-2018

We anticipate first production

...then commence drilling in the

T20 dome from May/June

from T3 in H1 2020

Project development

Key milestones in project development include:

- Completion of the T3 DFS by late 2018
- A Scoping Study on the underground potential for T3 within 2018
- A Scoping Study for T1 also within 2018
- Commence T3 construction in early-2019
- First production H1 2020



MOD will have a busy year with exploration drilling and further feasibility studies

Figure 6. MOD Plan of Works for H1 2018

Projects	Dec 17	Jan 18	Feb 18	March 18	April 18	May 18	June 18
RESOURCE		PFS	1		DFS	•	
T3 PIT							
T3 UNDERGROUND			RESOUR	CE DRILLING		RESOURCE & SCO	PING STUDY
T1 UNDERGROUND	DEA APPR	OVAL		RESOURCE EXT	ENSION DRILLING		SCOPING
EXPLORATION		D	RILLING	Δ.			
T-REX							
T3 DOME	AEM	D	EA APPROVAL	V//////		DRILLING	
10 201112		_		V///////		DRILI	ING
T20 DOME, T4			AEM	DEA APP	ROVAL		
T7 DOMES					AEM	DEA APPROVAL	DRILLING

Source: MOD

Valuation

Argonaut applies the Base Case metrics to our model...

Argonaut has increased its valuation of MOD after incorporating the metrics of the PFS which includes a larger inventory and higher throughput (from 2Mtpa to 2.5Mtpa applying the Base Case scenario). We assign \$70m to the T1 Resources and the exploration potential of MOD's 12,600km² land holding (70-100% ownership). We derive a sum of parts (NAV $_{11}$) valuation of \$0.10/sh. Applying the Expanded Case with 4Mtpa steady state mill throughput and an 11 year mine life, boosts our valuation to \$0.11/sh.

Table 3. Argonaut's sum of parts valuation for MOD (Base Case)

to derive a T3 project valuation
of A\$170m (70% basis)

...and a sum of parts valuation for MOD of \$0.10ps

NAV Valuation		
Sum of Parts	AUD M	AUD / Share
B3 Copper Deposit (70%)	170.0	0.09
Exploration Assets	70.0	0.04
Corporate NPV	(60.3)	(0.03)
Cash	10.0	0.01
Debt	-	-
Sub Total	190	0.10

Source: Argonaut

Table 4. Argonaut model summary for MOD (Base Case)

Measure	2019	2020	2023	2024	2025	//	2029
#	0.72	0.72	0.72	0.72	0.72		0.72
US\$/lb	3.0	3.0	3.0	3.0	3.0		3.0
US\$/oz	18.0	18.0	18.0	18.0	18.0		18.0
Mt	-	1.3	2.5	2.5	2.5		2.5
%	1.02	0.75	1.20	1.15	1.00		1.02
g/t	10.3	10.3	10.3	10.3	10.3		10.3
%	92	92	92	92	92		92
kt	-	8.6	27.6	26.5	23.0		23.5
Moz	-	0.4	0.7	0.7	0.7		0.7
A\$m	-	84	260	250	220		224
A\$m	-	(52)	(103)	(103)	(103)		(103)
A\$m	(172)	(43)	(5)	(5)	(5)		-
A\$m	(10)	20	139	129	100		113
A\$m	(10)	9	90	81	57		60
A\$m	(172)	(16)	119	111	88		96
A\$m	243						
%	36%						
	# US\$/Ib US\$/oz Mt % g/t % kt Moz A\$m A\$m A\$m A\$m A\$m	# 0.72 US\$/lb 3.0 US\$/oz 18.0 Mt - % 1.02 g/t 10.3 % 92 kt - Moz - A\$m - A\$m - A\$m (172) A\$m (10) A\$m (10) A\$m (172) A\$m (172) A\$m (172)	# 0.72 0.72 US\$/lb 3.0 3.0 US\$/oz 18.0 18.0 Mt - 1.3 % 1.02 0.75 g/t 10.3 10.3 % 92 92 kt - 8.6 Moz - 0.4 A\$m - 84 A\$m - (52) A\$m (172) (43) A\$m (10) 20 A\$m (10) 9 A\$m (172) (16) A\$m 243	# 0.72 0.72 0.72 US\$/lb 3.0 3.0 3.0 US\$/oz 18.0 18.0 18.0 Mt - 1.3 2.5 % 1.02 0.75 1.20 g/t 10.3 10.3 10.3 % 92 92 92 kt - 8.6 27.6 Moz - 0.4 0.7 A\$m - 84 260 A\$m - (52) (103) A\$m (172) (43) (5) A\$m (10) 20 139 A\$m (10) 9 90 A\$m (172) (16) 119 A\$m 243	# 0.72 0.72 0.72 0.72 U\$\$/lb 3.0 3.0 3.0 3.0 U\$\$/oz 18.0 18.0 18.0 18.0 Mt - 1.3 2.5 2.5 % 1.02 0.75 1.20 1.15 g/t 10.3 10.3 10.3 10.3 10.3 % 92 92 92 92 kt - 8.6 27.6 26.5 Moz - 0.4 0.7 0.7 A\$m - 84 260 250 A\$m - (52) (103) (103) A\$m (172) (43) (5) (5) A\$m (10) 20 139 129 A\$m (10) 9 90 81 A\$m (172) (16) 119 111 A\$m 243	# 0.72 0.72 0.72 0.72 0.72 U\$\$/lb 3.0 3.0 3.0 3.0 3.0 U\$\$/oz 18.0 18.0 18.0 18.0 18.0 Mt - 1.3 2.5 2.5 2.5 % 1.02 0.75 1.20 1.15 1.00 g/t 10.3 10.3 10.3 10.3 10.3 10.3 % 92 92 92 92 92 92 kt - 8.6 27.6 26.5 23.0 Moz - 0.4 0.7 0.7 0.7 A\$\$m - 84 260 250 220 A\$\$m - (52) (103) (103) (103) A\$\$m (172) (43) (5) (5) (5) A\$\$m (10) 9 90 81 57 A\$\$m (172) (16) 119 111 88 A\$\$m 243	# 0.72 0.72 0.72 0.72 0.72 U\$\$/lb 3.0 3.0 3.0 3.0 3.0 U\$\$/oz 18.0 18.0 18.0 18.0 18.0 Mt - 1.3 2.5 2.5 2.5 % 1.02 0.75 1.20 1.15 1.00 g/t 10.3 10.3 10.3 10.3 10.3 10.3 % 92 92 92 92 92 92 kt - 8.6 27.6 26.5 23.0 Moz - 0.4 0.7 0.7 0.7 A\$m - 84 260 250 220 A\$m - (52) (103) (103) (103) A\$m (172) (43) (5) (5) (5) A\$m (10) 20 139 129 100 A\$m (10) 9 90 81 57 A\$m (172) (16) 119 111 88 A\$m 243

Source: Argonaut



Sensitivities

Argonaut provides tables below to test the sensitivity of our model to capex, opex, grade recoveries, copper price FX and throughput.

Tables 5 - 8. Sensitivity tables to Argonaut's Base Case valuation

T3 Copper Deposi	t NPV (70%)	Cu Price (US\$/lb)						
		2.50	2.75	3.00	3.25	3.50		
	0.85	74.5	109.3	144.0	178.7	213.3		
	0.80	79.1	116.1	153.0	189.8	226.7		
AUD / USD	0.72	87.9	129.0	170.0	210.9	251.9		
	0.65	97.4	142.9	188.3	233.6	279.0		
	0.60	105.5	154.8	204.0	253.1	302.2		

T3 Copper Deposit NPV (70%)		Average Cu Head Grade						
		0.8%	0.9%	1.0%	1.1%	1.2%		
Average Cu Recovery	98%	202.0	202.0	202.0	202.0	202.0		
	95%	186.0	186.0	186.0	186.0	186.0		
	92%	170.0	170.0	170.0	170.0	170.0		
	89%	153.9	153.9	153.9	153.9	153.9		
	85%	132.6	132.6	132.6	132.6	132.6		

T3 Copper Deposit NPV (70%)		Capex (US\$m)						
		100	125	155	175	200		
Opex (US\$/t)	35.0	163.4	146.6	126.4	112.8	95.9		
	32.0	188.5	171.7	151.6	137.9	121.1		
	29.8	206.9	190.1	170.0	156.3	139.5		
	27.0	230.4	213.5	193.4	179.8	162.9		
	25.0	247.1	230.2	210.1	196.5	179.6		

T3 Copper Deposit NPV (70%)		Steady State Throughput (Mtpa)					
		2.25	2.50	2.75	3.00		
1.1%	146.5	161.1	175.7	190.3	204.9		
1.1%	142.9	157.5	172.1	186.7	201.4		
1.0%	140.8	155.4	170.0	184.6	199.2		
1.0%	135.8	150.4	165.0	179.6	194.2		
0.9%	132.3	146.8	161.4	176.0	190.7		
	1.1% 1.1% 1.0% 1.0%	2.00 1.1% 146.5 1.1% 142.9 1.0% 140.8 1.0% 135.8	2.00 2.25 1.1% 146.5 161.1 1.1% 142.9 157.5 1.0% 140.8 155.4 1.0% 135.8 150.4	2.00 2.25 2.50 1.1% 146.5 161.1 175.7 1.1% 142.9 157.5 172.1 1.0% 140.8 155.4 170.0 1.0% 135.8 150.4 165.0	2.00 2.25 2.50 2.75 1.1% 146.5 161.1 175.7 190.3 1.1% 142.9 157.5 172.1 186.7 1.0% 140.8 155.4 170.0 184.6 1.0% 135.8 150.4 165.0 179.6		

Source: Argonaut



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