

THRESHOLD VALUE OF MINERALS

MEET AT PANAJI, GOA

21.7.17

Threshold Value of minerals”

IRON ORE

- *means limit prescribed by the Indian Bureau of Mines from time to time shall be based on the beneficiability*
- *and or*
- *marketability of a mineral for a given region and a given time, below which a mineral obtained after mining can be discarded as waste."*
- There is a cost in stocking the low grade ores if not beneficial to upgrade and use.

THRESHOLD VALUE

- This has to be viewed with feasibility of upgradation of mineral content with the present/expected sale rates.
- The present TV is 45%Fe. However for siliceous ores of Goa, it is 35% Fe.
- The present conversion cost of upgradation to 63.5% Fe is around Rs.400 TO 500 depending on the mineralogy for feed grade of 52%Fe.
- If Feed grade is around 45%Fe (hematite Ores), the conversion cost will be around Rs.1200. Hence, it is not feasible to beneficiate 45%Fe, unless the ores are of **Magnetic**.
- If the sale value is **reasonable high** to absorb the cost of beneficiation, it is feasible for investment.

NMDC DIOM FINES PRICE LIST (FINES)

	GRADES Fe%	
MONTH	60.50	63.00
Apr-13	2179	NA
Apr-14	2457	2780
Jun-14	2698	3045
Dec-14	2611	2948
Apr-15	2047	2353
May-15	1554	1849
Jul-15	1258	1547
Oct-15	1060	1346
Jan-16	1322	1501
Apr-16	1676	1890
Oct-16	1929	2178
Apr-17	2282	2585
Jul-17	2109	2391

Typical Physical Analysis (Water Wash)

	WT %	Fe %
+ 10 mm	8.14	61.44
- 10 mm to + 8 mm	5.42	61.00
- 8 mm to + 6 mm	18.98	60.78
- 6 mm to + 3 mm	10.51	61.11
- 3 mm to + 1 mm	10.17	59.65
	53.22	60.75
- 1 mm to + 0.50 mm	10.68	55.62
- 0.50 mm to +100 Mesh	11.19	54.8
-100 mesh to + 150 mesh	2.03	53.29
-150 mesh to + 200 mesh	2.44	51.72
-200 mesh to + 350 mesh	3.05	40.19
-350 mesh	17.39	34.97
	46.78	46.44
	100.00	54.06

THE EFFECT ON E-AUCTION

- Recent E – Auction revealed that resource estimation is done with 45% cut off. Whereas the low grades are at the depth. The averaging the grades of the bore hole data is creating issue to maintain the average grade declared.
- The mineral resource volume is increasing if the threshold value is further reduced from 45% Fe, unless extra resources is exempted from the calculations.
- Thus the valuation of resources :the guarantee money Advolerm Royalty and other levies on this amount will also increases.

Upgradation depends on

1. Bond index
2. Liberation size of silica
3. Recovery (yield)%
4. As product is pellet feed, the present and future demand for pellet plant as to be ascertained.
5. At present Pellet plants requirement of fines is around 9 Million tons.
6. The present production of fines in Bellary sector is around 17 Million tons.

Installed capacity of pellet plants in Karnataka

Name of Pellet Plants	Location	Installed Capacity in Mnt	Operating Capacity in Mnt	Iron ore Fines required in Mnt
Minera	Bellary	0.6	0.6	0.66
MSPL	Koppal	1.2	1.2	1.32
KIOCL	Mangalore	4.8	3.6	3.96
BMM (using only 1 plant)	Danapur	2.4	1.2	1.32
Janaki	Bellary	0.6	0.6	0.66
NMDC	Donimalai	1.2	1.2	1.32
				9.24

Captive or closed plants in Karnataka

Rukmani rama (Closed)	MM Halli	0.4	0	0
JSW (Captive)	Toranagallu	8.4	9	9.9
X India (Closed)	Koppal	0.8	0	0
TOTAL CAPACITY Million Mt PA		9.6	9	9.9

SMALLER MINES/LOW CAPACITY MINES

- These mines can only stock at certain cost involved.
- They may not be able to beneficiate the ores at huge capex.
- Hence, for implementation of conservation of low grades depends on the capacity of mines.

R & D leading to reduction of use of steel (Iron ore)

Use of steel products will reduce as alternatives are being developed.

- Carbon fibre in fabrication of body of automobiles.
- Polymeric material for use under sea (ships)
- Bamboo fibre could be used as more sustainable and cheaper alternative to Steel in RCC.
- scientists have created a glass as tough, if not more so, than steel. Could a glass skeleton be a public reality in the foreseeable future.
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- USE OF SCRAP ALSO REDUCES THE CONSUMPTION OF IRON ORE

The proposal for consideration

- Incentives to mine the low grade ores and stock such as:
 - no royalty for lower than marketable grades if undertaken beneficiation within the lease. (no royalty on beneficiated ore)
 - **NSP 2017 says**
“Utilization of low grade fines lying at mine sites of captive iron ore miners will be promoted with any regulatory changes necessary . Beneficiation and agglomeration industries would be **strengthened through suitable support**”.

Conclusion /Opinion

- **No Royalty** for low grades even if upgraded within the lease area.
- The present threshold value may be continued as **45%Fe** for Hematite ores.
- Silicious ore also occurs in some areas in Bellary Dist. Hence **35%Fe** can be considered
- However if **magnetic** deposits are available in existing leases or future leases, threshold value can be **35% Fe** with incentives suggested

Thank You



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