Welcome to GMDC

“ Threshold Value Workshop ”

Organised

by

Indian Bureau of Mines , Gandhinagar

Gujarat

Date : 7-10-2017

क्षणशः कणशश्चैव विद्याम् अर्थम् च साधयेत्।
क्षणे नष्टे कुतो विद्या कणे नष्टे कुतो धनम्।।

Every moment one should learn , from every bit one should earn.

If you waste a second (Kshan) , you can't get knowledge (Vidya)

And If you waste a bit (Kan), u can't get money (Artham)

About GMDC

Bauxite Projects

Manganese

Fluorspar

Threshold values

GMDC Activities

Mining

- 6 Working Lignite Mines
- 9 Working Bauxite Mines
- Manganese
- Fluorspar
- Other minerals- Base Metals, Silica Sand, Bentonitic Clay, Ball Clay, Limestone

Value Addition

- Beneficiation of Fluorspar
- Beneficiation of Manganese dump
- Pyrite removal from Lignite

Power

- 2*125 MW Lignite based Power Plant
- 5 MW Solar Power
- 150.9 MW Wind Power in operation
- 50 MW Wind Power under Execution

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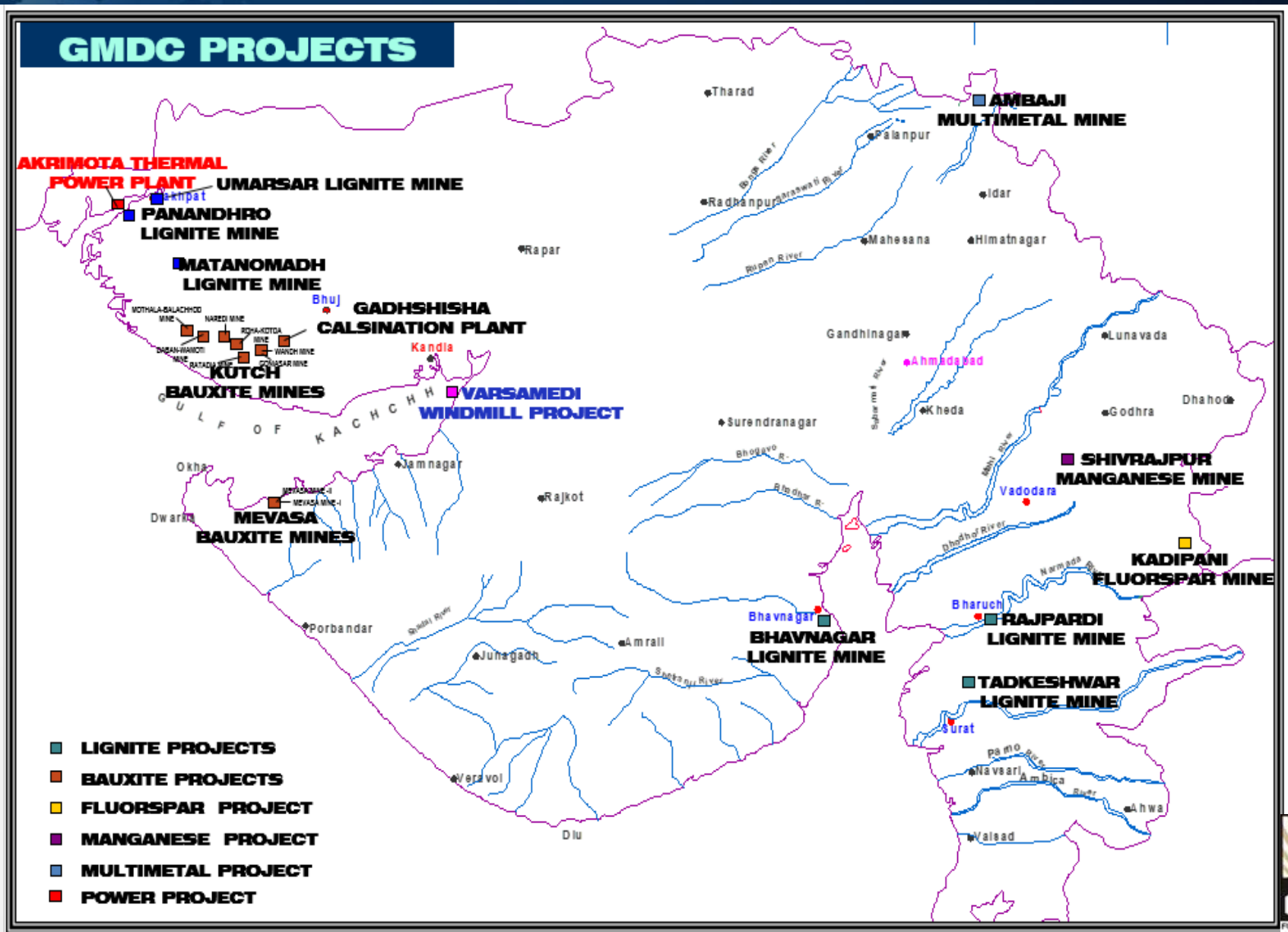
GMDC PROJECTS



Mile Stone of GMDC

GMDC came in existence on 15th May 1963

Silica Sand Project, Surajdeval
- Year of operation – 1963

Bauxite Mine Gadhsisa
- Year of operation – 1964

Bauxite Project, Bhatia
- Year of operation – 1965

Fluorspar Project, Kadipani
- Year of operation – 1967

Lignite Project, Panandhro
- Year of operation – 1974

Lignite Project, Rajpardi
- Year of operation – 1984

Calcination Project, Gadhsisa
- Year of operation – 1994

Lignite Project, Mata-no-madh
- Year of operation – 2002

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Mile Stone of GMDC

- 250 MW Thermal Power –Akrimota & Lignite Project, Tadkeshwar
  - Year of operation – 2005
- Manganese Project, Shivrajpur
  - Year of operation – 2006
- Lignite Project, Bhavnagar
  - Year of operation – 2008
- 150.9 MW Wind Power – Kutch, Porbandar & Jamnagar
  - Year of operation – 2010/ 2012
- 5 MW Solar Power, Panandhro
  - Year of operation – 2011
- Set up joint Ventures with Pvt. Companies
  - Year – 2012
- Lignite Project, Umarsar
  - Year of operation – 2015
- Allotted Lignite Blocks: Panandhro Extension, Bharkandam, Ghala and Valia
  - 3 Granted and 1 reserved by MoC- 2016
- 50 MW Wind Power
  - Under Execution- 2016-17

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CSR- Beyond Responsibilities

GMDC has CSR Policy in line with Companies Act 2013

- As per CSR Policy of the company, Project proposal for any CSR activity shall be examined by the Standing Committee consisting of executives of different disciplines/GMs with strength of (six) members and submit report/ recommendations to the MD GMDC.

CSR Committee

- **Managing Director (Chairman)**
- **Chief General Manager**
- **General Manager (HR)**
- **Sr.General Manager (Finance) and CFO**
- **Sr.General Manager (LP,P, R&D)**
- **Sr.General Manager (Geology)**
- **General Manager (Sales)**
- **Officer In Charge- CSR**

Focus areas in CSR Policy

Water Conservation and Environment

Micro Irrigation and Agriculture

Health

Education

Employability Enhancement

Rural Infrastructure

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- ***Threshold Value of Minerals***

“ Threshold value of minerals means limit prescribed by the Indian Bureau of Mines from time to time 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.”

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In view of the changing market dynamics and availability of new technologies for upgrading the low grade resources, it is once again proposed to review the threshold value for the major minerals like apatite & rock phosphate, bauxite, chromite, fluorite, graphite, iron ore, limestone, magnesite, manganese ore and wollastonite notified in the year 2009

In view of the above, IBM has invited comments and suggestions from all the Stake holders including general public on the following aspects:

1. Inclusion or deletion of any major mineral from the list of minerals for which threshold value was notified in 2009,
2. Changes in the threshold value of the major minerals values oif which were notified in 2009, with justifications,
3. Suggested threshold value for the new major minerals proposed to be included in the list with justification.

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Bauxite Mining - General

Bauxite mining in Eastern Ghat of India

Massive high level lateritic plateau - deposit with OB of 5-8mts and thickness 10-5- mts

Bauxite mining in Kutch by GMDC

Low lying, coastal , pocketary deposit with thin OB and thickness varies from 1-3 mts in kutch area

Bauxite – Gujarat

Districts	Resources (Million tons)	No. of Mines
Devbhumi Dwarka	138.42	61
Kutch	49.9	9
Sabarkantha	20.92	3
Junagadh	18.78	1
Porbandar	4.55	5
Kheda	2.3	13
Amreli	0.8	1
Bhavnagar	0.638	-
Valsad	0.38	-
Total	236.688	93

Ref.: National Mineral Inventory- Bauxite on 01-04-2010

Bauxite – Hydrous aluminium oxide with impurities such as silica, iron, TiO_2 and lime etc.

Geological formation
It occurs as segregated pockets in palaeocene or post Laki Gaj age found in mainly Kutch and Jamnagar districts.

Reserves – 236 million tonnes of resources are available

Quality – Avg. – Al_2O_3 50%, Silica – 4 – 5%, Fe_2O_3 7 – 11%, TiO_2 – 3 – 4 %

Industries – Calcination Plants along with alum manufacturing units are established in Gujarat. The leading companies are Carborundum Universal, Okha, Ashapura Minechem, Kutch, Orient Abrasives, Bombay Minerals, Saurashtra Calcined Bauxite and allied industries for various value added products of bauxite

This resources will substantially increases as result of changing cut-off and incorporating large unexplored areas in future laterite /lithomerge will be the source for alumina.

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Different Grades of Bauxite……

+52% (PG) Grade Stack

40-51.99 % (NPG) Grade Stack

Mine Dust Stack

Bauxite Dust – Kutch & Devbhumi Dwarka

- Bauxite Dust is generated due to Mining , breaking of bauxite / rock and also at manual grading or separation by labour,
- Ratio of dust is generally 3 to 10% of Total production.
- The difference between bauxite lumps and bauxite dust is only size, bauxite dust is generally in size less then 2 mm
- Chemical analysis of bauxite lumps and bauxite dust are generally same only silica % is much higher generally more then 10% in bauxite dust .
- Bauxite Dust is generally used by cement industries.
- In cement making ,dust is used as “sweetener”. It helps to make proper color of cement/proper bounding of cement / Fe is brought form bauxite dust to maintain Fe ratio in cement making. It is also used in emery industries

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Value added products of Bauxite

- Bauxite
  - Non-Metallurgical Grade
    - Calcined Producats
      - Fused Products → Refractory Abrasive
      - Special Uses → Proppant Welding Flux
    - Special Products → Slag-adjuster → Iron & Steel Making
    - Cement Products → Portland Aluminous Cement
    - Chemical Products → Alum $Al_2(SO_4)_3$ $AlCl_3$
  - Metallurgical Grade
    - Aluminium Trihidrate
      - Calcined Alumina
        - Smelter Alumina → Aluminium Metal
        - Ceramics
        - Specially Grade Alumina
          - Fused Products → Refractory Abrasive
          - Special Uses → Catalyst
      - Specially-grade Alumina
        - Fused Products → Absorbents Desiccant
        - Special Uses → Chemical Pigments zeolite Flame-retardant

Manganese waste dump management - Gujarat

Manganese ore

Old workings at Shivrajpur by Click –Nikson

Dump lifting at Shivrajpur

- In Gujarat Manganese deposits is reported in Panchmahal ,Vadodara and Dahod District.
- Shivrajpur Manganese Mine was started by M/s Click Nixon in the year 1906 and worked by them for about 50 years on large scale by opencast and under ground mining
- At that time , Mining was carried out for high grade Manganese with low P2O5. The remaining material were stacked as unusable or uneconomical ore .With advancement in technology , above material was considered economical for industrial purpose to produce value added products.

Processing

Production of MnSO4

The Process

Low Grade Mn Ore from Shivrajpur having 14% Mn.

Mn 150 Mesh Powder

Manganese Sulphate solution having 10% Mn Content.

Manganese Sulphate Powder having 32% Mn Content

Applications of MnSO4

- Animal feed as additive to promote nutrition or better growth,
- As a pigment- Manganese white,
- Agrochemical intermediate,
- Metal treatment industry,
- Micro nutrients
- Paint Industries
- Feed premix plant
- Trace Minerals of Poultry and Cattle Feed Industries.
- MnSo4 is mainly used for making dryer of ink and paint, catalyst of synthetic fatty acid.

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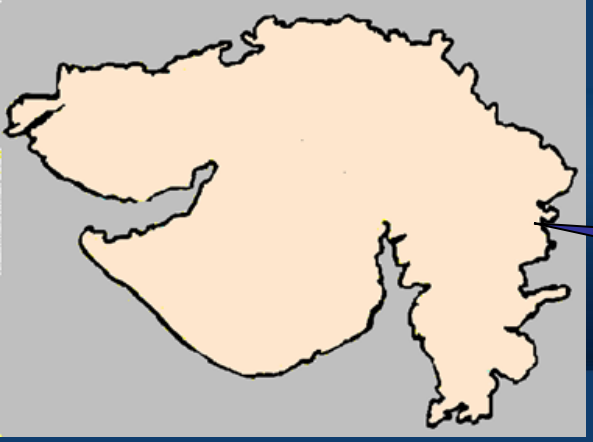

FLUORSPAR PROJECT

LEASE DETAILS

Location	:	Ambadungar, Kadipani
Lease areas	:	31.2 Hect & 32.00 Hect
Year Of Commencement :	:	1964

RESERVES

Original	:	8.7 Million Tonnes
Mined out	:	3.5 Million Tonnes
Balance	:	5.2 Million Tonnes

USES

Fluoro chemicals , Flux metallurgical industries , Cement.

CURRENT STATUS

GMDC , Navin Fluorine International Ltd & Gujarat Fluoro chemicals has formed a Joint Venture Company to up grade the beneficiation techniques

Fluorspar open cast mines

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Fluorspar Beneficiation Plant at Kadipani

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Grades Produced

• Acid-A	CaF2 –> 96% & above
• Acid-B	CaF2 -> 93 – 96 %
• Met-Grade	CaF2 –> 85 – 93%
• MFC	CaF2 -> 65 – 80 %
• Starch & silicate briquettes	

Past & Present threshold hold value for different minerals of Gujarat

Mineral	THV - 1990	THV – 2009
Bauxite	42% Al2o3 5% Sio2 9% Module	30% Al2o3 5% r Sio2
Manganese	10% Mn	10% Mn
Fluorspar	10% CaF2	5% CaF2

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Thanks…

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