Performance of Public Sector and Disinvested Companies in Mining, Mineral Processing and Exploration

6.1 The Ministry of Mines has four public sector undertakings (PSUs) under its administrative control. National Aluminium Company Limited (NALCO), Hindustan Copper Limited (HCL) & Bharat Gold Mines Limited (BGML), are operating in the field of mining and mineral processing, and Mineral Exploration Corporation Limited (MECL) is operating in the field of mineral exploration. The BGML however is closed since March, 2001. In addition, the Government holds 49% equity in Bharat Aluminium Company Limited (BALCO) and 29.54% equity in Hindustan Zinc Limited (HZL) after their disinvestment. The performance of these undertakings during 2006-2007 is given below:

(A) NATIONAL ALUMINIUM COMPANY LIMITED (NALCO)

Introduction

6.2 Incorporated in 1981, as a public sector enterprise, under Ministry of Mines, Government of India, National Aluminium Company Limited (Nalco) is Asia’s largest integrated alumina-aluminium complex, encompassing bauxite mining, alumina refining, aluminium smelting and casting, power generation, rail and port facilities. NALCO has emerged to be a star performer in production and export of alumina and aluminium and more significantly, in propelling self-sustained growth.

6.3 Leveraging the technical collaboration of the erstwhile Aluminium Pechiney of France, ISO 9001:2001 certification of quality management, registration of products at London Metal Exchange, environment care conforming to ISO 14001, low cost operations and international customer base, NALCO enjoys the status of a Star Export House and a Mini Ratna category-1 Company and it has continued to add value and is poised to grow further.

6.4 Apart from exporting metal to more than 30 countries worldwide, the Company has opened stockyards at various parts of India to facilitate domestic marketing. With its consistent track record in capacity utilization, technology absorption, quality assurance, exports performance and posting of profits, NALCO is a bright example of India’s industrial capability.

Bauxite Mines

6.5 Nestled in the Panchpatmali hills of Koraput district in Orissa, a fully mechanised open-cast mine is in operation since 1985, serving feedstock to Alumina Refinery located on the foothills. The present capacity is 48,00,000 tonne per annum, which is being further expanded to 63,00,000 tonnes under 2nd Phase Expansion.

Alumina Refinery

6.6 NALCO’s 15.75 lakh tonne per annum (TPA) capacity alumina refinery is among the top ten alumina refineries in the world. It uses energy-efficient Bayer process technology of atmospheric pressure digestion at low temperature. Manufacturing of 26,000 TPA special grade alumina and hydrate as well as 10,000 TPA detergent grade zeolite are integrated with the main stream. After meeting the company’s smelter consumption, the balance quantity goes to international market through Visakhapatnam port.

The present capacity is being further expanded to 21,00,000 TPA under 2nd Phase Expansion.
**Table 6.1**

### Physical Performance of NALCO

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauxite (MT)</td>
<td>48,51,726</td>
<td>48,54,253</td>
<td>48,00,000</td>
<td>34,56,243</td>
<td>31,99,881</td>
</tr>
<tr>
<td>Alumina (MT)</td>
<td>15,75,000</td>
<td>15,90,000</td>
<td>15,75,000</td>
<td>11,86,600</td>
<td>10,79,500</td>
</tr>
<tr>
<td>Aluminium (MT)</td>
<td>3,38,483</td>
<td>3,58,955</td>
<td>3,57,500</td>
<td>2,69,081</td>
<td>2,69,914</td>
</tr>
</tbody>
</table>

**Table 6.2**

### Financial Performance of NALCO

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Details</th>
<th>2004-05 (Actual)*</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.’05)</th>
<th>2006-07 (Actual upto Dec’06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Income</td>
<td>4354.75</td>
<td>5122.39</td>
<td>6116.32</td>
<td>3488.08</td>
<td>4658.36</td>
</tr>
<tr>
<td>2.</td>
<td>Operating Cost</td>
<td>1965.16</td>
<td>2311.15</td>
<td>2484.70</td>
<td>1714.68</td>
<td>1721.34</td>
</tr>
<tr>
<td>3.</td>
<td>Interest etc.</td>
<td>60.61</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Depreciation &amp; Amortization</td>
<td>458.71</td>
<td>381.60</td>
<td>302.16</td>
<td>304.88</td>
<td>230.20</td>
</tr>
<tr>
<td>5.</td>
<td>Net Profit before Tax &amp; Dividend (PBT)</td>
<td>1870.27</td>
<td>2429.64</td>
<td>3329.46</td>
<td>1468.52</td>
<td>2706.82</td>
</tr>
<tr>
<td>6.</td>
<td>Net Profit after Tax but before Dividend (PAT)</td>
<td>1234.84</td>
<td>1562.20</td>
<td>2200.77</td>
<td>968.44</td>
<td>1789.90</td>
</tr>
</tbody>
</table>

* Figures for 2004-05 have been changed due to re-grouping.

**Table 6.3**

### Sale Performance of NALCO

<table>
<thead>
<tr>
<th>Items</th>
<th>Unit</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.’05)</th>
<th>2006-07 (Actual upto Dec’06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Export</td>
<td>MT</td>
<td>132730</td>
<td>95747</td>
<td>100000</td>
<td>68222</td>
<td>74196</td>
</tr>
<tr>
<td>Domestic Aluminium Sale</td>
<td>MT</td>
<td>205797</td>
<td>258094</td>
<td>245000</td>
<td>194982</td>
<td>192082</td>
</tr>
<tr>
<td>Total Aluminium Sale</td>
<td>MT</td>
<td>338527</td>
<td>353841</td>
<td>345000</td>
<td>263204</td>
<td>266278</td>
</tr>
<tr>
<td>Total Alumina/Hydrate Sale</td>
<td>MT</td>
<td>909081</td>
<td>862616</td>
<td>885000</td>
<td>648787</td>
<td>487512</td>
</tr>
</tbody>
</table>
Aluminium Smelter

6.7 The Aluminium Smelter of NALCO located at Angul, Orissa has a capacity of 3,45,000 tonnes per annum. The smelter produces, mainly primary aluminium in the form of ingots, sows, wire rods, billets and cast strips. The primary aluminium is registered at London Metal Exchange (LME). The present capacity of the smelter is being further expanded to 4,60,000 TPA under 2nd Phase Expansion.

On-Going Projects

6.8 Utkal-E Coal Block- NALCO has been allotted a Captive Coal Block, Utkal-E of around 70 million tonne mineable reserve in Talcher area by Ministry of Coal, Govt of India in August, 04. Various activities undertaken for Utkal-E Coal block are:

- Mining lease: The proposal for Mining Lease has been forwarded to Ministry of Coal, on 12.06.06 by Ministry of Mines and Government of Orissa. The consent of Department of Steel & Mines, Government of Orissa for Mining lease based on the mining lease as per revised Mine Plan is awaited.

- NALCO has conducted the Socio-economic, Flora/Fauna and Socio-economic Study and submitted final reports of three studies.

- Biological monitoring and Green belt design: M/s OUAT has submitted the final report for Green belt design. The report for Biological Monitoring is expected shortly.

- Mining Plan: The Mine Plan has been approved by Ministry of Coal on 31.07.2006.

- EIA/EMP Report: M/s CMPDI, Bhubaneswar has submitted the EIA/EMP report and Executive Summary for Public hearing.

Detailed Project Report: The Detailed Project Report is under consideration of the Board of Directors for Investment decision.

- Land acquisition: M/s IDCO have submitted the necessary documents for acquisition of Govt. and Private lands to district authorities on 21st March,06 and 15th Nov,06 respectively.

- Application for NOC from Orissa State Pollution Control Board has been submitted.

- Application for Site clearance submitted to MOEF.

Expansion & Diversification

6.9 Expansion: After successfully completing 1st phase of expansion of all units from its internal resources, the 2nd phase of expansion of NALCO was approved by the Government on 26.10.2004. NALCO will meet the expenses of expansion of Rs 4091.51 crore mainly through internal resources and partly from market borrowing, if required. The proposed expansion will augment the capacity of Bauxite Mines to 63 lakh tonnes from 48 lakh tonnes, Alumina Refinery to 21 lakh tonnes from 15.75 lakh tonnes, Smelter to 4.6 lakh tonnes from 3.45 lakh tonnes and Power generation to 1200 MW from 960MW. M/s Engineers India Limited (EIL) has been appointed EPCM consultant for Mines, Alumina Refinery and Aluminium Smelter on 28.3.2005. M/s MECON has been appointed EPCM consultant for Captive Power Plant and Steam
Generation Plant. M/s MN Dustur & Co. has been assigned the job for Cost and Time Monitoring for 2nd phase expansion. Site grading and other civil/structural works are under progress. Enquiries for several packages have been issued for each segment and are under process. Order has also been placed for 35 packages for Refinery, 51 packages for Smelter and 12 packages for CPP. Total financial commitment up to 31.12.2006 is Rs 2513.69 crore. Status on physical progress of project up to Dec, 06 is as below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Project Segment</th>
<th>Cumulative upto Dec'06</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Schedule</td>
</tr>
<tr>
<td>1.</td>
<td>Mines &amp; Alumina</td>
<td>15.3</td>
</tr>
<tr>
<td>2.</td>
<td>Smelter</td>
<td>20.2</td>
</tr>
<tr>
<td>3.</td>
<td>CPP</td>
<td>31.96</td>
</tr>
</tbody>
</table>

### Energy Conservation Measures

#### Alumina Refinery

6.10 Details of energy Conservation measures for the year 2006-07 (till December, 06) and projection from January, 07 to March, 07 are furnished below:

6.11 **Installation of hydrate by-pass system in Calciner-B**: This saved fuel oil to the tune of 0.5 to 1.0 litre per MT of production of alumina. Even if fuel oil saving of 0.5 litre/T of production is considered, this will result in a monetary saving of (0.5X18.5X15,65,000 X17/54) or Rs 45.57 lacs a year.

(18.5 is the cost of fuel oil per litre, 15,65,000 is annual production of calcined alumina & 17/54 is ratio of calciner-B production to the total production)

6.12 **Use of Spent liquor for Product Filter O/F line flushing instead of wash filtrate**: Necessary modification has been carried out to use Spent Liquor for flushing of product filter overflow lines instead of wash filtrate. Considering a steam economy of 2.9 T/T, this is equivalent to steam saving of 0.0103 T/T of production. In monetary term, this works out to (0.0103X0.23X1000X15,75,000) or Rs. 37 lacs a year. (Where 0.23 is coal consumption per MT of steam, Rs. 1000 is the cost per MT of coal and 15,75,000 MT is annual production.)

#### Operation of Condensate Polishing Unit resulted in the following advantages

6.13 Filter water consumption has reduced; burden on DM plant and water intake was therefore less. Higher DM water temperature from CPU enhanced the Boiler cycle efficiency and there is reduction in coal consumption. In the year 2006-07 till Oct’06, 17086 MT of DM water was generated from CPU. This has resulted in a saving of Rs. (17086X11.98) = Rs 2.05 Lakh (Approx).

#### Detailed Energy audit in Alumina Refinery

6.14 A detailed Energy audit of Refinery covering Boiler-4, compressed air system, cooling towers, Air conditioning system and LT electrical drives was carried out.

#### Smelter

6.15 Specific DC energy consumption has been reduced by taking several energy conservation measures. The following actions have been taken to reduce Specific DC energy Consumption from a level of 13720 KWHR/T to 13700 KWHR/T of hot metal production:

(a) Optimization of cell amperage and reduction of cell voltage without affecting other process parameters to get higher faradic production.

(b) Cell amperage has been increased to 185 KA and the cell voltage has been reduced from 4.33 Volts to 4.24 Volts. This has resulted in substantial reduction in energy consumption.

(c) Reduction in anode resistivity; etc.
Variable frequency drive has been installed in Old Green Anode Plant vibro-compactor unit to reduce energy consumption and achieve optimum process control.

6.16 Specific HFO consumption has been reduced from 81 Kg/T to 77.10 Kg/T by adopting better combustion control and fine tuning the processes.

6.17 To reduce fuel oil consumption in Cast House, modernization of furnace combustion system of 2 nos. of 45T Oil Fired furnaces (5&6) of Wire Rod Mill has been carried out.

**Captive Power Plant**

(a) Reduction of differential pressure across the feed regulating station resulted in the saving in power to the tune of 60 KW (apprx.) of Boiler feed pump;

(b) Excess recirculation of condensate in the condensate extraction pump has been avoided by checking the passing of the valve;

(c) Installation of online condenser cleaning system has been installed in Unit#3. Due to this, the vacuum of the system will improve after the commissioning during this financial year;

(d) Air leakage in the Air Heater of Unit#3 has been reduced by setting the seal thereby the boiler efficiency will improve;

(e) Overhauling of the air compressors is being done on regular basis thereby saving electric energy;

(f) Insulations have been provided in all manholes and peepholes of the boiler (above 22 Mtr.) as identified by M/s. TERI. This will reduce the losses in the boiler and will improve Boiler efficiency;

(g) Action is being taken to load the Conveyors of Coal Handling further by which energy can be saved; etc.

**Computerization**

6.18 The thrust of NALCO has been for implementation of Enterprise Resource Planning, implementation of e-

Mining operation of bauxite mine of NALCO at Pachpatmali

Governance initiatives and ensuring higher transparency in Company’s activities. NALCO has also taken various e-governance initiatives like e-payment to employees, vendors & service providers. With the Right to Information Act, 2005 coming into force NALCO’s website functionalities have been enhanced covering Right to Information Act, Publishing details of executed tenders and the related information. Filing of Income Tax returns through TINS (Tax Information Network) both yearly and quarterly has also been established.

**Pollution Control and Environment**

6.19 NALCO continued to give required attention with respect to Pollution Control, Safety, Health & Environment Management and Forest & Plantation activities. Alumina Refinery Complex of NALCO received State Government’s Best Performance award for Safety & Environment Management. NALCO has completed EMS as per upgrading ISO-14001: 2004 version at all units and all the 5 units have been certified for the first time to OH&SAS-18001 System. All the units have valid consent to operate under Air & Water Act. For conservation and protection of environment NALCO has taken the following initiatives:

(a) rehabilitation of mined out area by plantation,

(b) to monitor fugitive emission in Pot rooms laser beam instrument was commissioned,

(c) 3,06,212 numbers of trees have been planted in
its units during the financial year 2006-07,

(d) The capacity of red mud pond was enlarged by raising its heights with new garland drains have been completed,

(e) 1,05,436 Tonnes of ash from CPP and Refinery was used in ash pond dyke rising, low-lying land reclamation, brick preparation and cement making. Dry fly ash was collected from old units and high concentration slurry was made and than disposed off to existing ash pond,

(f) Controlled burning of the carbon portion of the SPL in NALCO’s Captive Power Plant,

(g) Other major hazardous wastes like waste oil, used lubricants and rejected batteries are handled to preserve the environment.

Research and Development Activities

6.20 Both in-house Research & Development Centres of NALCO at M&R Complex, Damanjodi and S&P Complex, Angul have been recognized by Department of Scientific & Industrial Research (DSIR), Ministry of Science & Technology, Government of India. Renewal of extension has been granted up to 31 March, 2009. Facilities developed at both the R&D Centres are continuously being utilized for addressing day to day problem solving, process & product development, energy conservation, waste utilization activities with emphasis on development of in-house expertise for growth of indigenous technology in the Company by adopting novel innovative practices. Thrust has been laid on patenting of process know-how developed in the Company either through in-house or collaborative R&D efforts. So far 12 Numbers of National & International Patents have been filed by NALCO and 2 Patents have been granted in India on Special Grade Alumina & 5 Patents granted in China, Australia, Russia, Germany & France on Detergent Grade Zeolite-A.

Special Grade Alumina & Hydrate

6.21 Special Grade Alumina pilot plant facilities were run to its full capacity. The products produced from the facilities were supplied regularly to the user industries. 235.746 MT of Special Grade Alumina and 958.372 MT of Special Grade Hydrate were sold during the year up to end December, 2006.

Ongoing R&D Projects & Collaborative Activities

6.22 Basic Studies on Precipitation of Boehmite (Alumina Monohydrate) undertaken in collaboration with RRL, Bhubaneswar has been successfully completed and the final report submitted by RRL has been accepted. A Patent application on the same has been filed in India.

6.23 Following studies/projects are going on –

(i) Studies on Mechanochemical Activation of Bauxite to improve the performance of Bayer Process for Alumina Production and minimize Environmental impact of Red Mud in collaboration with NML, Jamshedpur.

(ii) Production of Value Added Materials from Partially Lateritised Khondalite (PLK) of NALCO Mines in collaboration with RRL, Bhubaneswar.

(iii) Development of Integrated Technology for Processing East Coast Bauxite for production of Alumina in collaboration with JNARDDC, Nagpur.

(iv) Study on Impurity Build-up during Bauxite Process and its effect on Bayer liquor chemistry in collaboration with JNARDDC, Nagpur.

(v) Ultrasonic Treatment of Spent Pot Lining in collaboration with JNARDDC, Nagpur.

(vi) Evaluation of Grain Refining Efficiency of commercially available grain refiner alloys in collaboration with JNARDDC, Nagpur.

(vii) Development of Effective Technology for Extraction of Alumina from NALCO’s Partially Lateritised Khondalites (PLK) with Moscow Institute of Steel & Alloys (MISA), Moscow, Russia/Romelt-SAIL India Limited (RSIL), New Delhi.
(viii) Development of a Viable Process Flow sheet to recover titanium and iron from the Plant Sand of NALCO’s Alumina Refinery, Damanjodi in collaboration with RRL, Bhubaneswar.

(ix) Investigation & Utilisation of Spent Pot Lining Materials (SPL) of Smelter Plant, Angul as a Co-Fuel at NALCO’s Captive Power Plant in collaboration with Central Fuel Research Institute (CFRI), Dhanbad.

(x) Development of Process for Extraction of Vanadium Sludge from NALCO’s Green Liquor in collaboration with JNARDDC, Nagpur.

(xi) Preparation & Certification of Reference Materials for Selected Ores & Other Materials in collaboration with JNARDDC, Nagpur.

(xii) Infrared Thermography Studies at Alumina Plant, NALCO, Damanjodi in collaboration with JNARDDC, Nagpur.

(xiii) Infrared Thermography Studies at Aluminium Smelter and Power Plant, NALCO, Angul in collaboration with JNARDDC, Nagpur.


In-house R&D Activities

(i) Alumina Refinery, Damanjodi

6.24 A methodology is under development to fix the technical parameters for manufacture of value added products from fly ash for use as building materials at R&D Centre, M&R Complex, Damanjodi besides addressing day-to-day process related problems.

(ii) Smelter Plant, Angul

6.25 Characterization of Baked Anode for process monitoring, determination of cell factor for prediction of net carbon consumption, performance monitoring of pots lined with partially damaged cathode blocks and development of indigenous tri-metallic anode clads etc. are the R&D activities in the Smelter Plant, Angul for the reported period. A suitable method has been developed for safe disposal of waste emulsion oil in Collaboration with RRL, Bhubaneswar and installation of a Pilot Plant is underway. Equipments have been ordered for the same by RRL.

6.26 Manufacture of Ordinary Portland Cement (OPC) from NALCO’s Spent Pot Lining Materials (SPL) is under progress at National Council for Cement and Building Materials (NCB), Ballabhgarh, Haryana.

Aluminium Survey

International Market

6.27 During the period April to December, 2006 the total world aluminium supply was around 25.701 million MT against the world consumption of 25.990 million MT, thus showing a deficit of 0.289 million MT. The market was driven by

- The overall reasonably solid US market.
- European extrusion demand growing at a good pace and healthy demand from transport and engineering markets.
- Strong Chinese primary demand due to the growth in semis demand and production.
Growing demand from Japanese extrusion market & construction market. The demand from automobile market remained firm.

Flat growth of South Korean primary demand.

Good demand from India.

The lower alumina and power prices have encouraged a raft of potential smelter restarts in Europe, North America and China. However, the current market conditions are tight and the falling alumina and power prices have little impact on the volume of material available to Western World now.

**Table 6.5**

MoU rating achieved by NALCO

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
<td>Excellent.</td>
</tr>
<tr>
<td>2004-05</td>
<td>Excellent.</td>
</tr>
<tr>
<td>2005-06</td>
<td>Excellent.</td>
</tr>
</tbody>
</table>

**Domestic Market**

6.28 The domestic aluminium market has shown steady improvements in terms of demand particularly from Power sectors, Auto sectors and Housing sectors. The overall demand for the primary aluminium remained encouraging in the face of improved LME prices.

6.29 The estimated primary aluminium production in India during the period April-December, 2006 has been around 8,53,832 MT, out of which approx. 6,62,400 MT has been supplied in the domestic market and 1,91,432 MT has been exported.

**B) HINDUSTAN COPPER LIMITED (HCL)**

**Introduction**

6.30 Hindustan Copper Limited (HCL) was incorporated on 9th November, 1967, under the Companies Act, 1956. It was established as a Government of India Enterprise to take over all plants, projects, schemes and studies pertaining to the exploration and exploitation of copper deposits, including smelting and refining from National Mineral Development Corporation Ltd.

6.31 The Government of India nationalised the only copper producing company in the private sector, Indian Copper Corporation Ltd. at Ghatsila in Jharkhand in March 1972 and handed over its management and ownership to Hindustan Copper Limited.

6.32 The Smelter Plant at Khetri Copper Complex (KCC) in Rajasthan with the capacity of 31,000 tonne was dedicated to the nation on 5th February, 1975.

6.33 In November 1982, Malanjkhand Copper Project comprising of a large and fully mechanised open pit mine and concentrator plant was dedicated to the nation.

6.34 The Continuous Cast Copper Rod plant at Taloja Copper Project of Hindustan Copper Ltd. was commissioned in December, 1989 with an installed capacity of 60,000 tonnes.

**Mines and Smelters**

6.35 The existing capacity of the mines and smelters of HCL is given below:

**Mines**

<table>
<thead>
<tr>
<th>Location of Mines</th>
<th>Ore Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khetri Copper Complex, Rajasthan</td>
<td>12.00 lakh tonne per annum</td>
</tr>
<tr>
<td>Malanjkhand Copper Project, Madhya Pradesh</td>
<td>20.00 lakh tonne per annum</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32.00 lakh tonne per annum</strong></td>
</tr>
</tbody>
</table>

**Smelters**

<table>
<thead>
<tr>
<th>Location of Smelters</th>
<th>Metal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khetri Copper Complex, Rajasthan</td>
<td>31,000 tonne per annum</td>
</tr>
<tr>
<td>Indian Copper Complex, Jharkhand</td>
<td>16,500 tonne per annum</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47,500 tonne per annum</strong></td>
</tr>
</tbody>
</table>
CC Rod Plant

Location of Plant  Capacity
Taloja Copper Project, 60,000 tonne
Maharashtra  per annum

Physical Performance

6.36  Production of ore, metal in concentrates, refined copper(cathode) and wirerod during the year 2004-05, 2005-06 and 2006-07 (upto Dec,06) are given in Table 6.6.

Financial Performance

6.37  Financial Performance of the Company since 2004-05 is given in Table 6.7.

Table 6.6
Physical Performance of HCL

<table>
<thead>
<tr>
<th>Products</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.'05)</th>
<th>2006-07 (Actual upto Dec'06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ore Production('000 T)</td>
<td>2923</td>
<td>2637</td>
<td>3100</td>
<td>1955</td>
<td>2414</td>
</tr>
<tr>
<td>Metal in concentrates(T)</td>
<td>28926</td>
<td>22984</td>
<td>29500</td>
<td>17326</td>
<td>21328</td>
</tr>
<tr>
<td>Refined Copper (Cathode)(T)</td>
<td>24186</td>
<td>36087</td>
<td>42000</td>
<td>27559</td>
<td>27415</td>
</tr>
<tr>
<td>Wirerod(Taloja)(T)</td>
<td>27423*</td>
<td>34749*</td>
<td>52000</td>
<td>24099</td>
<td>28734*</td>
</tr>
</tbody>
</table>

* Including tolling of cathode into wirerod on behalf of other parties.

Table 6.7
Financial Performance of HCL

(Rs.in crore)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Details</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.'05)</th>
<th>2006-07 (Actual upto Dec'06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Income</td>
<td>631.24</td>
<td>1107.60</td>
<td>1089.18</td>
<td>656.92</td>
<td>1451.22</td>
</tr>
<tr>
<td>2.</td>
<td>Operating Cost</td>
<td>480.43</td>
<td>910.47</td>
<td>876.42</td>
<td>505.23</td>
<td>1107.43</td>
</tr>
<tr>
<td>3.</td>
<td>Interest and Transaction cost</td>
<td>42.99</td>
<td>38.54</td>
<td>29.45</td>
<td>28.00</td>
<td>23.66</td>
</tr>
<tr>
<td>4.</td>
<td>Depreciation and Amortization</td>
<td>55.75</td>
<td>58.37</td>
<td>64.96</td>
<td>45.47</td>
<td>54.99</td>
</tr>
<tr>
<td>5.</td>
<td>Net Profit/(Loss) before Income Tax</td>
<td>52.06</td>
<td>100.22</td>
<td>118.35</td>
<td>78.22</td>
<td>265.14</td>
</tr>
</tbody>
</table>

Sales Performance

6.38  The Company has achieved total sales of 28,596 tonne of refined copper, amounting to Rs. 1298.27 crore during the year 2006-07(upto December, 06). The anticipated sales for 2006-07 would be 42,000 tonne.

Restructuring Proposal of HCL

6.39  The Company has formulated a Restructuring Proposal based on the Corporate Plan. The proposal is under active consideration of the Board for Reconstruction of Public Sector Enterprises (BRPSE) and Government of India. Mining has been identified as key thrust area in the proposal and company has
Physical Performance of HCL

Financial Performance of HCL
proposed to explore/exploit and develop new mining deposit and optimization of production of the existing mines. The Company has also proposed for restoration of retirement age to 60 years to retain the available talent in the company as well as to attract new talent. Company has sought non-cash support of Rs. 637 crore to strengthen and clean the Balance Sheet.

**Energy Conservation**

6.40 During the year 2006-07, M/s. Petroleum Conservation Research Association (PCRA) were appointed to undertake energy audit of all the units of HCL for achieving overall reduction in energy consumption. The recommendations of the consultant are being implemented. Energy audit cells of all the units are constantly monitoring the energy consumption and thrust has been given to improve power factor. The overall consumption of power and fuel from 2003-04 onwards is given in Table 6.8.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (Lakh KWH)</td>
<td>1983</td>
<td>1960</td>
<td>2298.31</td>
<td>1689.44</td>
</tr>
<tr>
<td>Fuel (Kilo litres)</td>
<td>22213</td>
<td>11879</td>
<td>27474.23</td>
<td>18444.90</td>
</tr>
<tr>
<td>Natural Gas (’000 NM³)</td>
<td>1655</td>
<td>1629</td>
<td>2011.88</td>
<td>1621.57</td>
</tr>
</tbody>
</table>

**Computerization**

6.41 Besides regular operations of all on going applications at the Head office, the Units and the Sales offices of the Company, following specific tasks were taken up with reference to IT related activity during 2006-07:-

(a) The Company is upgrading IT infrastructure and networking all the units, the Head office and the sales offices and planning to implement Enterprise Resource Planning (ERP) software integrating all functional areas for faster information flow and efficient decision making.

(b) The company has implemented ‘Web based LME real time booking’ to facilitate on-line booking by customers.

(c) Mailing system is being improved further by installing Mail server and creating uniform mail accounts across all units, Head office & Sales offices.

(d) The company has installed IBM servers and Oracle 10g database for improving IT infrastructure at units.

(e) At units and the head office, IT infrastructure is being strengthened with computer security features by installing Firewall and routers as suggested by CERT-IN.

(f) VSAT communication Link Stations were set up at the units to establish reliable and consistent communication links for smooth flow of data within the organization.

(g) Company website (both in English & Hindi version) is being improved and modified for better content and look.

**POLLUTION CONTROL AND ENVIRONMENT MANAGEMENT EFFORTS**

**Water Pollution Control Measures**

6.42 During the year 2006-07, effluent treatment facilities provided in all the Units of Hindustan Copper Limited worked satisfactorily and met regulatory norms set for discharged water by the State Pollution Control
Boards. The schemes for recycling the process of discharged water for use in the plants, after treatment, also continued to function throughout the year.

Air Pollution Control Measures

6.43 Air pollution control projects that have been commissioned for meeting Pollution Control Board standards for gaseous emission from HCL’s Smelter and other plants were also operational during the year 2006-07. The ambient air quality at all the units of HCL was regularly monitored at various monitoring stations located in the mines, works and residential areas throughout the year.

Afforestation

6.44 In addition to lumpsum payments towards compensatory afforestation by HCL for diversion of forest lands for mining purpose at all its Units, separate afforestation work as in all previous years continued during the year. Plantation in ultimate benches, slopes of waste dumps, plant area, tailing dumps and townships of the units were being carried out to uplift environment.

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-2004</td>
<td>Very Good</td>
</tr>
<tr>
<td>2004-2005</td>
<td>Very Good</td>
</tr>
<tr>
<td>2005-2006</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

Financial Restructuring

6.49 The Government of India on 8.8.2006 and 17.8.2006 approved financial restructuring and wage revision in MECL which stipulates:

(i) Waiver of interest of Rs.51.56 crore and penal interest of Rs. 7.28 crore as on 31.3.2005 and no interest liability after 31.3.2005.

(ii) Conversion of outstanding Government loan of Rs. 30.80 crore into equity effective from 31.3.2005 and conversion of Non-Plan loan of Rs. 15.00 crore into equity effective from 31.3.2005, thus raising the paid up capital from Rs. 73.75 crore to Rs. 119.55 crore.

(iii) Increase of authorized capital of the company from Rs. 100.00 crore to Rs. 125.00 crore.
(iv) Wage revision of the employees to be effective from 1.4.2003 and to be implemented w.e.f. 1.4.2006.

Physico-Financial Performance 2006-07

6.50 The physical performance in drilling, developmental mining and geological reports for 2004-05, 2005-06, 2006-07(Upto December, 06) and anticipated for January, 07-March, 07 is given in Table 6.10 and the Financial Performance is given in Table 6.11.

Awards

6.51 Safety Innovation Award: During 2006-07, MECL bagged the coveted Commendation Award 2006 for outstanding work of the Corporation relating to innovating steps on safety.

Energy Conservation

6.52 The core activities of Mineral Exploration Corporation Limited comprise of exploratory drilling, exploratory and developmental mining and associated geological and laboratory studies. These are carried out through temporary industrial establishments located in various parts of the country. The machineries and vehicles used are mainly run by diesel engines. The electrical energy consumption is limited to offices and at mining sites.

Table 6.10
Physical Performance of MECL

<table>
<thead>
<tr>
<th>Item</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.'05)</th>
<th>2006-07 (Actual upto Dec.'06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DrillingMeterage (m)</td>
<td>1,73,144</td>
<td>1,78,425</td>
<td>1,75,000</td>
<td>129494</td>
<td>131959</td>
</tr>
<tr>
<td>Productivity metre/drill/Months</td>
<td>282</td>
<td>242</td>
<td>250</td>
<td>442</td>
<td>232</td>
</tr>
<tr>
<td>Mining (Mtrs)</td>
<td>7,525</td>
<td>8,280</td>
<td>6,850</td>
<td>5910</td>
<td>4934</td>
</tr>
<tr>
<td>Final Geological Reports (Nos.)</td>
<td>51</td>
<td>45</td>
<td>22</td>
<td>36</td>
<td>—</td>
</tr>
</tbody>
</table>

Table 6.11
Financial Performance of MECL

<table>
<thead>
<tr>
<th>Details</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.'05)</th>
<th>2006-07 (Actual upto Dec.'06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Revenue</td>
<td>75.35</td>
<td>82.56</td>
<td>75.50</td>
<td>57.04</td>
<td>56.39</td>
</tr>
<tr>
<td>Operating Cost</td>
<td>56.46</td>
<td>60.74</td>
<td>56.24</td>
<td>43.70</td>
<td>52.76</td>
</tr>
<tr>
<td>Interest</td>
<td>10.23</td>
<td>—</td>
<td>10.85</td>
<td>7.89</td>
<td>—</td>
</tr>
<tr>
<td>Depreciation &amp; amortization</td>
<td>4.71</td>
<td>5.41</td>
<td>4.94</td>
<td>3.65</td>
<td>3.51</td>
</tr>
<tr>
<td>Net profit before income tax &amp; FBT</td>
<td>3.95</td>
<td>16.41</td>
<td>3.47</td>
<td>1.80</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Performance of Public Sector and Disinvested Companies

Physical Performance of MECL

<table>
<thead>
<tr>
<th>Year</th>
<th>Drilling</th>
<th>Mining</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>172,344</td>
<td></td>
</tr>
<tr>
<td>2005-06</td>
<td>178,425</td>
<td></td>
</tr>
<tr>
<td>2006-07</td>
<td>175,000</td>
<td></td>
</tr>
<tr>
<td>2005-06 (Target)</td>
<td>164,671</td>
<td></td>
</tr>
<tr>
<td>2006-07 (Actual upto Dec. '05)</td>
<td>141,100</td>
<td></td>
</tr>
<tr>
<td>2006-07 (Actual upto Dec. '06)</td>
<td>139,547</td>
<td></td>
</tr>
</tbody>
</table>

Financial Performance of MECL

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Revenue</th>
<th>Net Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>3.95</td>
<td>1.16</td>
</tr>
<tr>
<td>2005-06</td>
<td>8.25</td>
<td>1.61</td>
</tr>
<tr>
<td>2006-07</td>
<td>16.41</td>
<td>3.47</td>
</tr>
<tr>
<td>2005-06 (Actual upto Dec. '05)</td>
<td>14.04</td>
<td>3.57</td>
</tr>
<tr>
<td>2006-07 (Actual upto Dec. '06)</td>
<td>14.03</td>
<td>3.56</td>
</tr>
</tbody>
</table>
6.53 MECL has taken up the following steps for energy conservation:

(i) Maintenance of the machineries/vehicles used at different projects on regular basis to improve fuel efficiency.

(ii) Running of idle motors is kept to the minimum. Sequence control has been incorporated in the crushing plant at Birmitrapur.

**Perspective on Non-Ferrous Metals**

6.54 During 2006-07 upto December, 06, MECL has carried out exploration activity for lead zinc at Latio-ka-khera (East), Bajta Central, Central sub block, Rajasthan; for zinc in Kolari-Bhaonari, Maharashtra; for copper at Dariba Akola, Devtalai Ph-II, Sanganer in Rajasthan & Ramachandrapahar, in Singhbhum copper belt, Jharkhand. The company carried out the following exploration works:

**Lead-Zinc**

- **Latio-Ka-Khera (East)**: The exploration work was commenced in December, 05 and concluded in August, 06. During 2006-07, a total of 1577.75 m of drilling has been carried out along with matching geological and laboratory work. In the block a total of 3235 m of drilling has been carried out and mineralised zone has been intersected in most of the boreholes with zone thickness ranging between 4 – 16 m with grade varying from 6.21% (Pb + Zn) to 10.26% (Pb + Zn). The geological report is under preparation.

- **Central Sub block**: MECL commenced the exploration work in July, 2006. So far, a total of 3206.50 m of drilling has been carried out.

- **Bajta (Central)**: Exploration activity for Lead-Zinc commenced in the block in December, 2005 and concluded in May, 2006. A total of 1070 m of drilling with associated geological and laboratory work was carried out. Geological Report of block submitted in September, 2006. A total of 0.62 million tones ore reserves with average grade of 1.45% Pb and 3.37% Zn were estimated.

**Zinc**

- **Kolari-Bhanori**: The exploration in the block, was commenced in February, 06. During 2006-07, a total of 1879.75 m of drilling along with associated geological and laboratory work has been completed. The drilling in the block was concluded in September, 06. In the block a total of 2264 m of drilling has been carried out and the mineralization zone has been intersected in most of the boreholes. The thickness of mineralized varies from 3 to 11 m with grade ranging between 4 to 13% Zn. The geological reports is under preparation.

**Copper**

- **Ramachandrapahar**: MECL commenced drilling in December, 05 and concluded in May, 2006. In 2006-07, a total of 817.20 m of drilling has been completed. In the block, a total of 3000 m of drilling has been completed along with associated geological work. The geological report was submitted in November, 06 and established 2.03 million tonnes of ore reserves with 0.88% copper.

- **Dariba Akola**: Proposal involving 2375 m of drilling with matching geological and laboratory work was approved in 14th SCPP held on 8.6.06. MECL commenced exploration work in July, 2006. During the period a total of 2375 m of drilling with geological and laboratory work have been carried out.

- **Devtalai Phase-II**: Proposal involving 2900 m of drilling along with geological and laboratory work was approved in 14th SCPP held on 8.6.06. Exploration activities in the block commenced in July, 2006. A total of 2934.45 m of drilling has been done.

- **Sanganer**: The proposal for detailed exploration for copper involving 2510 m of drilling along
with associated geological and laboratory work was approved in 15th SCPP held on 17-11-06. 38.50 m. of drilling has been carried out.

**Action Taken on Abatement of Pollution and Environment**

6.55 The exploration activities of MECL do not cause any significant pollution. However, as a part of exploration work, MECL is carrying out environmental studies to generate baseline environmental data, which includes geology & geomorphology, meteorology, air quality, noise, land use / land cover studies, soil quality, biota, water regime and socio economics. For helping the exploitation agencies to plan measures for abating possible pollution and preparing Environmental Impact Assessment (EIA), a report on the same is included as a part of geological reports of various exploration projects.

**Information Technology (IT)**

6.56 Information Technology Services are being extensively used. Large number of new applications were developed to meet the requirements and to keep pace with changed scenario.

- Geological data processing of 15 exploration blocks of various minerals (Viz. Coal, Lignite, Copper, Gold, Bauxite, Chromite and Lead & Zinc) explored by MECL were carried out which includes online database creation, numerical & graphical modeling and Map database creation by scanning & digitizing surface features, contours, geological features & litho-contacts, administrative boundary, mine workings, section line, etc. from geological and topographical plans.

- Digital conversion of analog, geophysical logs of 13 boreholes pertaining to lignite blocks was done. This converted data and the digital data generated from geophysical loggers are brought into uniform format by using in-house developed utility interface. These geophysical logs are then plotted along with exploratory boreholes using indigenously developed software.

- Digital conversion of geological reports of coal, lignite, copper, lead-zinc & gold prospects explored. The reserves were calculated using in-house GIS technique developed on AutoCad map platform.

- NLC utilized the expertise of MECL in Development and Creation of Integrated Lignite Resource Database Information System.

- Carried out reassessment of Bauxite deposits of Gujarat district Sabarkantha, Porbander, Kheda, Jamnagar and Kutch on behalf of CGM, Gujarat. MECL reassessed the Bauxite deposits for different cut off (-8% SiO$_2$ and +35% Al$_2$O$_3$, -8% SiO$_2$ and +42% Al$_2$O$_3$, -8% SiO$_2$ and +45% Al$_2$O$_3$, -8% SiO$_2$ and +58% Al$_2$O$_3$).

The work of ILRIS-RDBMS Design Phase-I awarded in 2005 by NLC has been completed in December, 2006.

- The Application developed will provide integrated technical and scientific information of exploration and exploitation of potential Lignite areas and information to Government for strategies on regional, promotional and detailed Lignite exploration and exploitation.

- The work of Creation of ILRIS-RDBMS in ILRIS System Phase-II was awarded by NLC in July, 2006. It includes qualification, tabulation, validation and digitisation of reports in RDBMS, scanning and editing of maps, geo-physical logs for reports and scanning & uploading of toposheets, images in RDBMS library.

- About 24 Exploration and Special Studies Reports have been uploaded till date.

- Updation of MECMINDEX (Mineral Inventory of MECL’s exploration reports) was done and various reports were generated as per the requirement of user division.

**Business Development Activity**

6.57 Through business development group, vigorous
efforts are being made to obtain work from both private and public sectors through competitive bidding and a series of technical discussions. As a result during 2006-07 upto December, 06, a total of 48 number of work orders were received valued at Rs. 59.62 crores. The year wise break up of contractual work orders received during last 4 years is given in graph.

Contractual work orders of MECL

![Graph showing contractual work orders of MECL]

The work orders were received both from PSUs as well as Private organisations viz. M/s. ONGC, NTPC, UCIL, SMCPL, NLC, OMC, MCL, HZL, etc.

Diversification Activity

6.58 MECL diversified its activities in the following fields:

(i) Deep drilling for Coal Bed Methane (CBM) studies on behalf of ONGC and other organisations.;

(ii) Remote Sensing and Environmental studies;

(iii) Coal sampling and analysis., and

(iv) Supply of ballast stone to SE Railway.

Manufacturing Unit

6.59 MECL has a well equipped central workshop and manufacturing unit at Nagpur to cater to the needs of drilling and developmental mining projects and to provide engineering support to field operations. It carries out repairing/overhauling of drilling and mining equipments and light/heavy vehicles. It manufactures TC bits, spares & accessories for coring and non-coring drill machines. During 2006-07, upto December, 06, a total of 9667 items were manufactured, which included 3236 Nos. of TC bits, 2126 Nos. of other drill accessories and 4305 Nos. threading / re-threading of drill rods & casings.

Coal Sampling and Analysis

6.60 As a third party agency, MECL continued coal sampling and analysis work on behalf of various Coal Companies, Steel Plants, Thermal Power Plants and Electricity Board. During the quarter, eight projects are in operation at different coalfields and a total value of work carried out during the year upto December, 06 amounts to Rs. 137.85 lacs.

Salient Aspects of the Work Being Done by Advisory Boards/Councils

6.61 MECL is a member of several Boards / Committees of Central and State level which deal with geological / exploration work of various minerals viz. Standing Committee on Promotional Projects (SCPP), Central Geological Programming Board (CGPB), various sub-committees of CGPB for different minerals, National Mineral Advisory Council and State Geological Programming Boards (SGPBs). During the year 2006-07, (Upto December, 2006), MECL has participated in a number of meetings in connection with formulation / review of exploration schemes and for work generation.

Table 6.12
MoU rating achieved by MECL

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-2004</td>
<td>Very Good</td>
</tr>
<tr>
<td>2004-2005</td>
<td>Very Good</td>
</tr>
<tr>
<td>2005-2006</td>
<td>Excellent*</td>
</tr>
</tbody>
</table>

* Based on provisional data

(D) BHARAT GOLD MINES LIMITED (BGML)

6.62 The Bharat Gold Mines Limited (BGML) was incorporated as a public sector undertaking in 1972.
Since its inception, BGML has been consistently making losses (except for a brief period of two years, namely, 1979-80 & 1980-81) due to depletion of reserves, deep level of mining, high cost of inputs and surplus manpower. The cost of production of gold by BGML was Rs. 19,729/- per 10 grams at the time of closure. The total number of employees at the time of closure was 3580.

6.63 BGML was referred to the Board for Industrial and Financial Reconstruction (BIFR) in 1992 when its net worth became negative due to continuous losses. The Government considered various options for its revival including joint venture route but came to the conclusion that it was not feasible to revive BGML as even after infusion of fresh funds the revival of the company was uncertain. BIFR passed its final order on 12.6.2000 concluding that it was just, equitable and in public interest to wind up BGML under Section 20(1) of SICA, 1985 and forwarded its opinion to the High Court of Karnataka on 30.6.2000. The employees union challenged the order of BIFR in Appellate Authority for Financial and Industrial Reconstruction (AAIFR). AAIFR dismissed the appeal filed by the employees and upheld the orders passed by the BIFR vide its order dated 15.11.2000. In a separate proceeding the Ministry of Labour, Government of India, accorded permission of closure of BGML w.e.f. 1.3.2001 under Section 25(O) of the Industrial Disputes Act, 1947 vide their letter dated 29.1.2001.

The Employees' Union filed a number of Writ Petitions against the orders of BIFR, AAIFR, Ministry of Labour and introduction of Voluntary Separation Scheme (VSS) by the company in December, 2000. The Single Judge Bench of High Court of Karnataka passed orders on 16.3.2001 dismissing the writ petitions against introduction of VSS. However, orders of BIFR to wind up the company and the order of the Ministry of Labour for closure of the company w.e.f. 1.3.2001 under Section 25(O) of I.D. Act. 1947 were quashed and BIFR was directed to reconsider the claim made by the employees and find ways and means to revive BGML. Government of India moved the Division Bench of High Court of Karnataka against the order of the Single Judge Bench. The Division Bench in its order dated 26.9.2003 has set aside the order of the Single Bench, thus upholding the winding up/closure orders passed by BIFR/AAIFR and Ministry of Labour. The High Court has made certain recommendations which have been considered by the Government.

6.64 Government on 27.7.2006 has approved a proposal regarding VRS / STBP for Bharat Gold Mines Limited ex-employees, sale of houses etc. and calling of global tender for sale of assets and giving purchase preference to the Employees’ Co-operative Society/Society’s Company subject to the approval of the High Court of Karnataka (Company Court) and viability of the project. Company Application has been filed by BGML in the Hon’ble High Court of Karnataka (Company Court) in this regard which is being persued.

**DISINVESTED COMPANIES**

**(E) BHARAT ALUMINIUM COMPANY LIMITED (BALCO)**

6.65 Bharat Aluminium Company Limited (BALCO) was incorporated on 27th November, 1965 as a Central Public Sector Undertaking with an integrated Alumina/Aluminium Complex and a 270 MW Captive Power Plant at Korba presently in Chhattisgarh. The Alumina Plant on the date of disinvestment had 2,00,000 tonnes per annum (TPA) capacity and the smelter had a capacity of 1,00,000 MT per annum.

6.66 The Government disinvested 51 % equity in the Company along with the transfer of management control in favour of M/s Sterlite Industries (India) Limited with effect from 2nd March, 2001 and consequently, the Company has ceased to be a public sector undertaking.

6.67 BALCO have informed that they have embarked on a major expansion project and have implemented the expansion at a cost of over Rs. 4000 crores leading to threefold increase in capacities. The smelter capacity has been increased to 3,45,000 TPA and the capacity of the captive power plant from the existing 270 MW
to 810 MW. The expanded capacities have been fully commissioned in the third quarter of 2006-07.

**Highlights of BALCO in 2005-06:**

6.68 During 2005-2006 the company’s major achievements are:

- Highest ever Hydrate production of 2,17,270 MT.
- Highest Calcined Alumina production of 2,19,485 MT.
- Highest hot metal production of 1,05,593 MT.
- Highest ever saleable metal production of 1,04,732 MT.

**Recognitions and Awards**

- Greentech Environment Excellence Award 2006 received for the second consecutive year on 31.5.2006.

**Table 6.13**

Physical Performance of BALCO

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2005-06 Actual (upto Dec.’05)</th>
<th>2006-07 Actual (upto Dec.’06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production(Metal)</td>
<td>100272</td>
<td>184070*</td>
<td>114152</td>
<td>226985</td>
</tr>
<tr>
<td>Sales</td>
<td>100142</td>
<td>171206*</td>
<td>109749</td>
<td>218759</td>
</tr>
</tbody>
</table>

*including production/sales during trial run of new smelter.

**Table 6.14**

Financial Performance of BALCO

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2005-06 Actual (upto Dec.’05)</th>
<th>2006-07 Actual (upto Dec.’06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales</td>
<td>1045</td>
<td>1772</td>
<td>989.30</td>
<td>2822</td>
</tr>
<tr>
<td>Profit before interest &amp; depreciation</td>
<td>262</td>
<td>494</td>
<td>252.70</td>
<td>1062</td>
</tr>
<tr>
<td>Depreciation</td>
<td>53</td>
<td>172</td>
<td>80.60</td>
<td>324</td>
</tr>
<tr>
<td>Interest</td>
<td>9</td>
<td>60</td>
<td>26.60</td>
<td>121</td>
</tr>
<tr>
<td>Exceptional Items (VRS)</td>
<td>10</td>
<td>10</td>
<td>7.60</td>
<td>8</td>
</tr>
<tr>
<td>Profit before Tax</td>
<td>127</td>
<td>252</td>
<td>137.90</td>
<td>609</td>
</tr>
</tbody>
</table>
January 1966 as a public sector company after the take over of the erstwhile Metal Corporation of India Limited, to develop mining and smelting capacities to meet substantially the domestic demand of zinc and lead metals. The Govt. of India disinvested its 26% stake in the equity capital of the company along with transfer of management control in favour of Strategic Partner (SP) i.e. M/s. Sterlite Opportunities and Ventures Ltd. (SOVL) and management control of the company has been transferred to SP with effect from 11th April, 2002. Subsequently, the SP also acquired 20% equity shares from the market through its open offer. As per share purchase agreement with SP, the Govt. of India further off loaded 18.92% of Govt. share to SP under call option. Presently, the current shareholding of SOVL in HZL is 64.92%, and the stake of Government of India is 29.54%.

6.70 HZL’s operations are broad based and its activities range from exploration, mining and ore processing to smelting and refining of zinc, lead, silver, cadmium, and sulphuric acid as by products. HZL with its headquarters at Udaipur operates three lead-zinc mines (Zawar Group of Mines in Udaipur, Rajpura Dariba Mine in Rajsamand, Rampura Agucha Mine in Bhilwara, all in Rajasthan) with a total lead-zinc ore production capacity of about 5.85 million tonnes per annum. HZL also operates three smelters (Debari Zinc Smelter in Udaipur, Chanderiya Lead-Zinc Smelter in Chittorgarh, both in Rajasthan and Vizag Zinc Smelter in Andhra Pradesh) with a combined capacity of 4.11 lakh tonnes per annum of zinc and 85,000 tonnes per annum of lead.

### Physical Performance

The physical performance of the company for the last three years is given in Table 6.15.

### Financial Performance

The financial performance of the company is given in the following Table 6.16.

### Expansion Projects

6.71 HZL has undertaken Phase-II expansion projects, which include 170,000 tpa zinc smelting plant, one 80 MW captive power plant and matching mine expansion, at an estimated investment of Rs.1100 crore. All these projects are expected to be completed by 2008.

### Research & Development Efforts Poly Metallic Nodule Pilot Plant

6.72 The ocean nodules are one of the sources of the metals like copper, nickel and cobalt. These Poly Metallic Nodules (PMN) are found in various shapes like

<table>
<thead>
<tr>
<th>Product/Production</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2006-07 (Target)</th>
<th>2005-06 (Actual upto Dec.’05)</th>
<th>2006-07 (Actual upto Dec’06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead-zinc ore</td>
<td>3928540</td>
<td>4795124</td>
<td>5605000</td>
<td>3655800</td>
<td>3872115</td>
</tr>
<tr>
<td>Lead-zinc conc.</td>
<td>750675</td>
<td>984745</td>
<td>1114268</td>
<td>723724</td>
<td>799865</td>
</tr>
<tr>
<td>Saleable Zinc</td>
<td>265924*</td>
<td>317558*</td>
<td>400000</td>
<td>185758</td>
<td>253711*</td>
</tr>
<tr>
<td>Saleable Lead</td>
<td>15727</td>
<td>23636</td>
<td>70000</td>
<td>13098</td>
<td>31953</td>
</tr>
</tbody>
</table>

*Includes tolled zinc of 53479 tonnes in 2004-05, 34890 tonnes in 2005-06 and 251 tonnes in April-Dec.2006 produced through outside smelters by conversion of own produced concentrate.
spheroids, ball and knots shape. They contain iron and manganese hydroxides as the main components besides copper, nickel and cobalt. These metals have high market potential and extracting these from the nodules in an eco-friendly economic way would be much beneficial to the country.

6.73 In line with this, the Department of Ocean Development (DOOD), Ministry of Earth Sciences, Government of India, had financed a Project to HZL for extracting metals (cobalt, nickel, copper) from ocean nodules. A pilot plant for the project was set up in Central Research Development Laboratory (CRDL) of Hindustan Zinc Limited. Besides processes developed by other CSIR laboratories, the process developed by HZL has been tested on continuous basis in this pilot plant.

6.74 At the request of DOD, Hindustan Zinc Limited has assured to extend all support to the project up to March, 2010 to complete techno-commercial evaluation of all the short listed process routes.

**Ore Dressing**

- Development of beneficiation process flow sheet for new lead-zinc mine at Sindesar Khurd;
- Optimization of silver recovery from lead-zinc ores & waste Products;
- Improvement in Grinding and Classification circuits through modeling and simulation studies;

**Extractive Metallurgy**

- Recovery of Cobalt from Waste Residue (Beta Cake);
- Optimization of metal recoveries in smelters using problem solving and applied research techniques;
- Recovery of value metals such as zinc, lead, copper, silver, etc. from slag/wastes/residues;

**Step Change Technologies**

- Microwave aided ore grinding to reduce specific power consumption and increase in mill throughput in the beneficiation plant;
- Recovery of zinc values from Rampura Agucha Mill tailings using bio-technology.

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Table 6.16

Financial Performance of HZL

(Rs. in Crore)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2004-05 (Actual)</th>
<th>2005-06 (Actual)</th>
<th>2005-06 Actual (upto Dec.'05)</th>
<th>2006-07 Actual (upto Dec.'06)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income (Excluding Excise Duty)</td>
<td>2337.20</td>
<td>3992.78</td>
<td>2099</td>
<td>6687.85</td>
</tr>
<tr>
<td>Operating cost</td>
<td>1319.47*</td>
<td>1575.13</td>
<td>978</td>
<td>1524.00</td>
</tr>
<tr>
<td>Interest</td>
<td>1.80</td>
<td>47.40</td>
<td>44</td>
<td>26.12</td>
</tr>
<tr>
<td>Depreciation &amp; Amortization</td>
<td>89.01</td>
<td>140.68</td>
<td>103</td>
<td>110.93</td>
</tr>
<tr>
<td>Net Profit (PBT)</td>
<td>926.92</td>
<td>2229.57</td>
<td>974</td>
<td>5026.80</td>
</tr>
</tbody>
</table>

*Unaudited
# The figures have been regrouped to correspond with current figures.