(I) UNIT PROFILE

Bongaigaon Refinery & Petrochemicals Limited was set up as a Government of India undertaking in February 1974. Government of India disinvested its entire shares holding (74.46%) in BRPL in favour of Indian Oil Corporation Limited (IOCL) w.e.f 29.3.2001. With sustained growth, BRPL has consolidated itself as a vibrant business organization in the entire country, and more particularly in the North-East.

BRPL is in the business of refining crude oil for production of petroleum fuels and other value added petrochemicals. The Refinery sector has a capacity to process 2.35 million tonnes of crude oil per annum. It produces various types of domestics, industrial and automotive fuels.

The Refinery was designed to process 1.0 million tonnes per annum of Assam Crude Oil. The processing capacity of the Refinery was augmented to 2.35 MMTPA by debottelenecking the Crude Distiller Unit-I in March 1987 and commissioning of new Crude Distillation Unit (CDU-II) in May 1995. The Refinery Complex consists of Crude Distillation Unit-I & II (CDU-I &II), Delayed Coking Unit-I &II (DCU-I &II) along with Naphtha Splitter and LPG Recovery unit. It has also a Coke Calcination Unit (CCU) for the production of Calcined Petroleum Coke (CPC).

The basic unit of Petrochemicals sector is a Xylene plant of 107,000 tonnes per annum naphtha processing capacity. The Para-Xylene produced in the Xylene plant is further processed in the DMT plant. The major part of DMT produced is consumed for production of various grades of Polyester Staple Fibre (PSF) in the PSF plant.

BRPL CDU-I Unit

(II) ENERGY CONSUMPTION:

BRPL is putting continuous efforts on Energy conservation through continuous monitoring and control of operational activities.

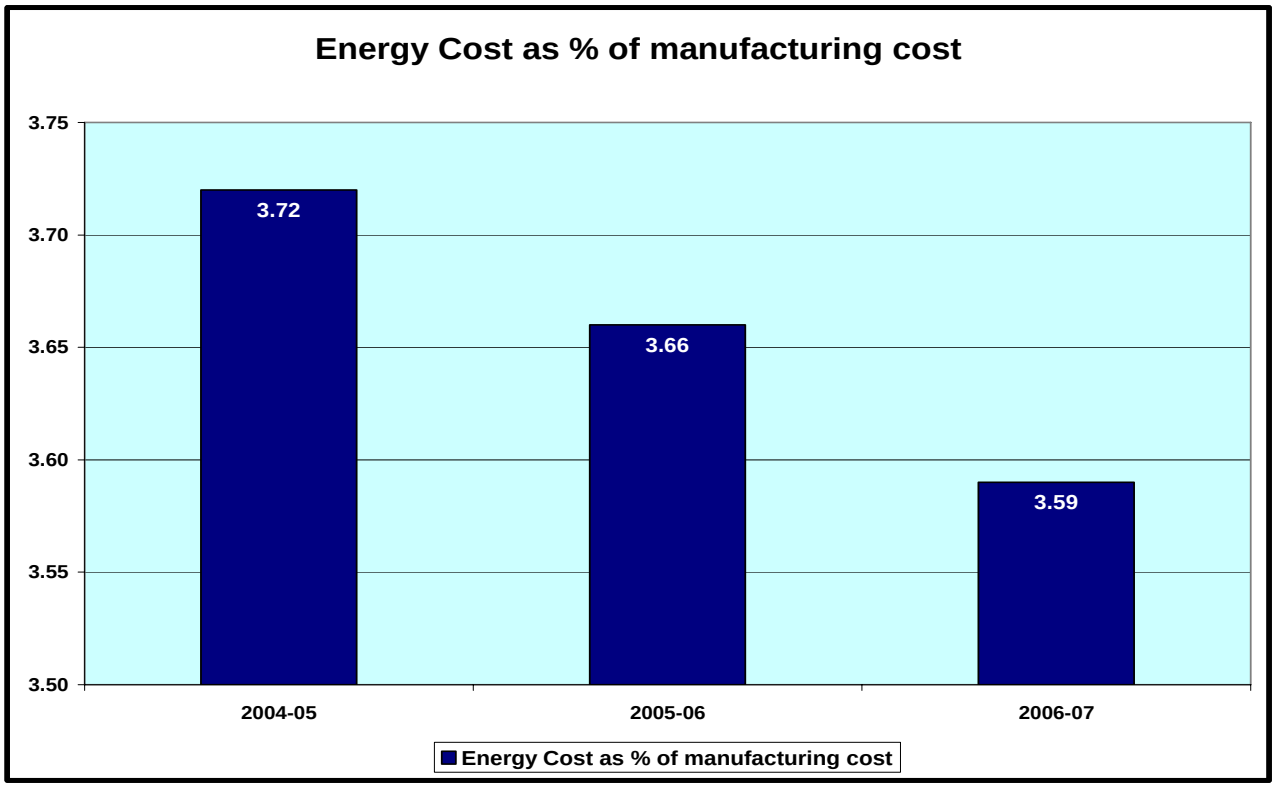
The fuel consumed in the entire complex is the combination of the liquid fuel oil and the fuel gas generated from the different units of the refinery sector.

The various energy parameters for the past three years is given below:

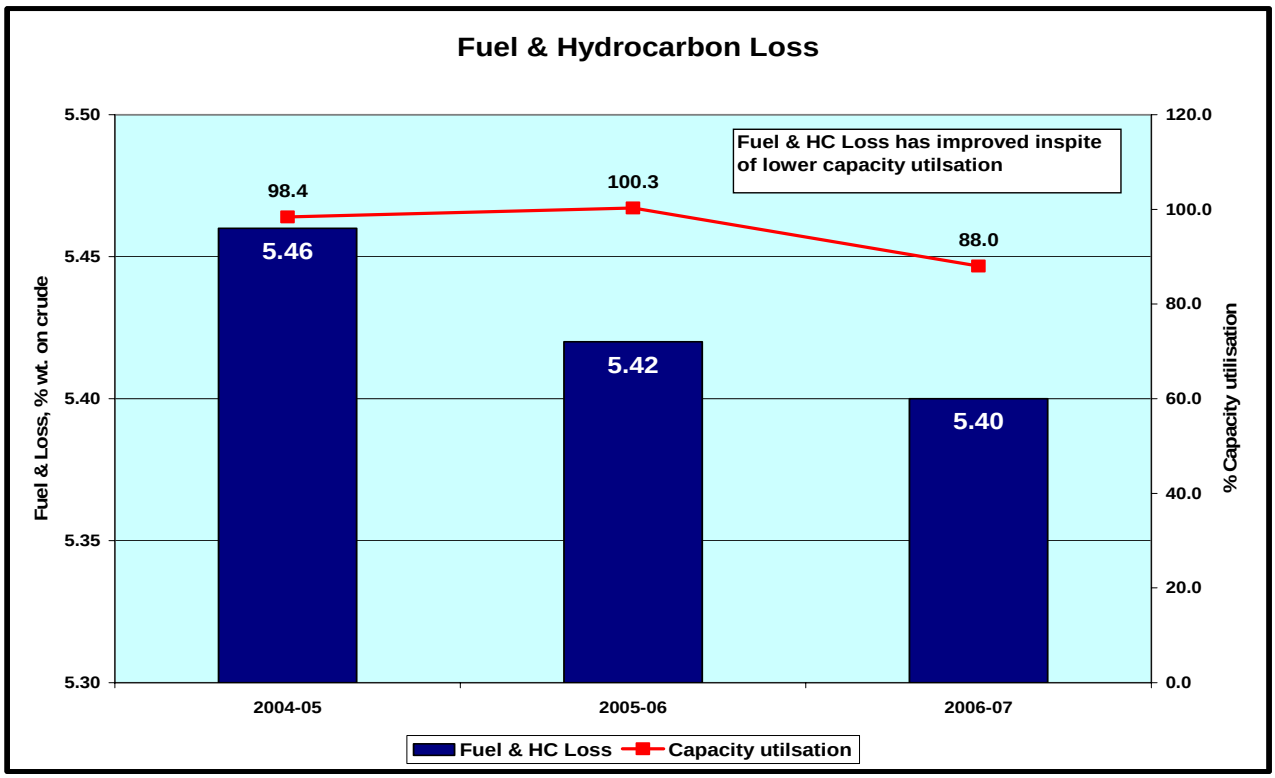
Sl. No.	Parameters	2004-05	2005-06	2006-07
(1)	**Energy cost as % of manufacturing cost**	3.72	3.66	3.59
(2)	**Fuel & Hydrocarbon Loss** Fuel,% on crude	5.21	5.18	5.17
	Hydrocarbon Loss,% on crude	0.25	0.24	0.23
	Fuel & Loss,% on crude	5.46	5.42	5.40
(3)	**Sp. Energy Consumption (MBTU/BBL/NRGF)**	94.10	92.14	91.11
(4)	**Specific Power Consumption** Kwh/ MT of crude	33.38	33.80	33.34
(5)	**Sp. Thermal Energy Consumption** Million Kcal/MT of crude	0.425	0.421	0.419
(6)	**% Capacity Utilisation**	98.4	100.3	88.0

Graphics in the areas of energy conservation is given below:

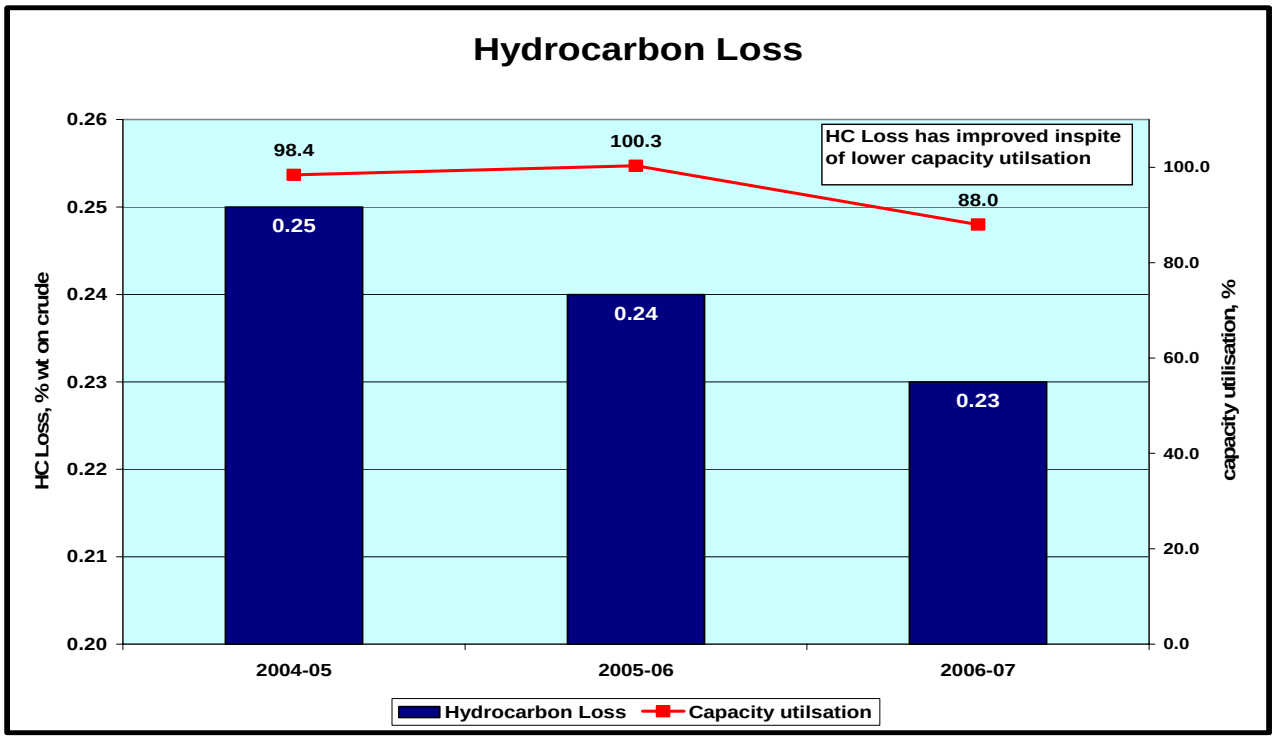
(a) Energy Cost as % of manufacturing cost:



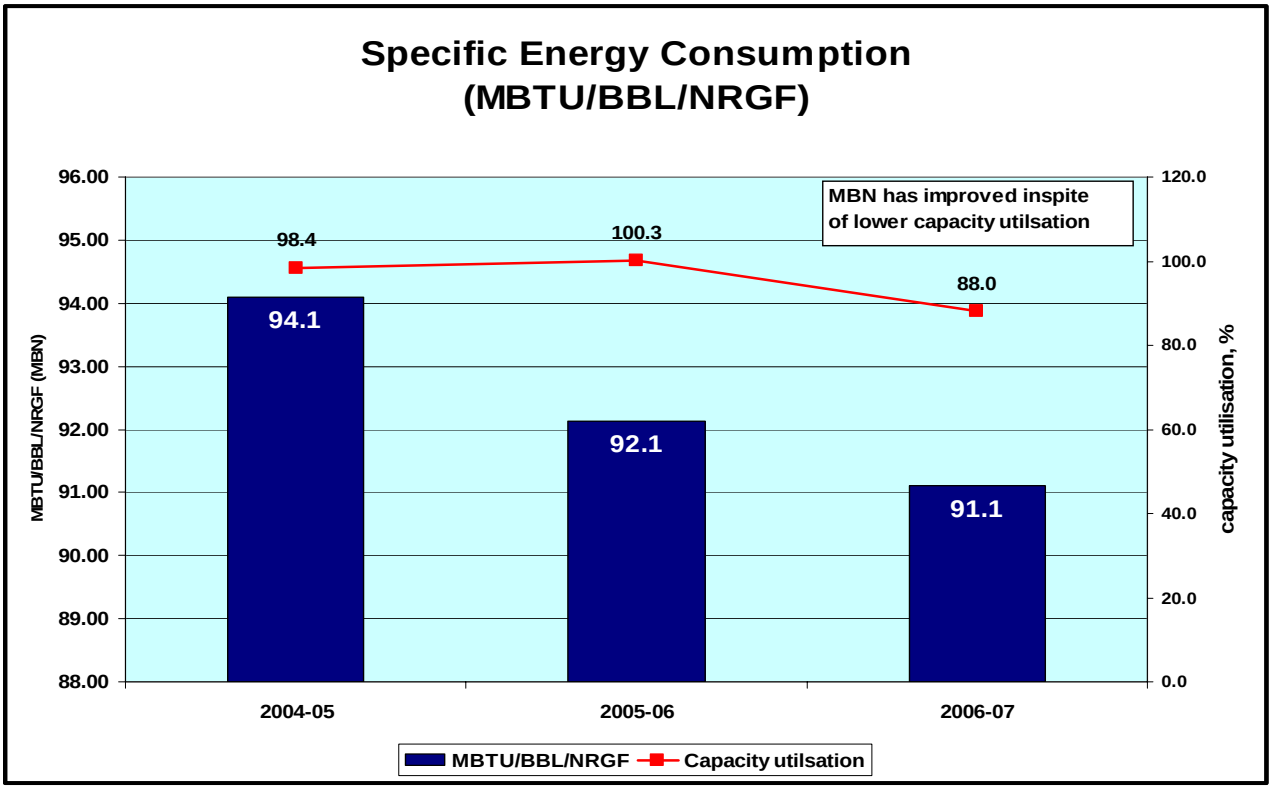
(b) Fuel & Hydrocarbon Loss, % on crude:



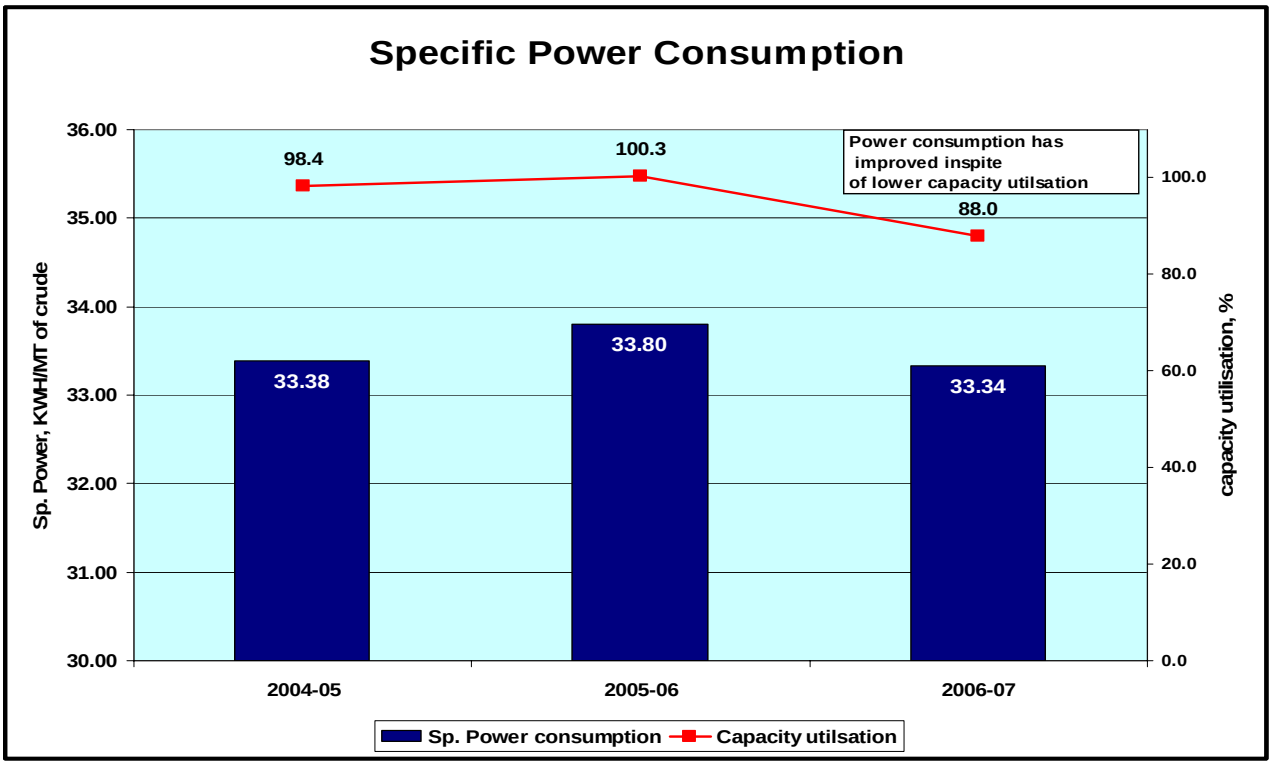
(c) Hydrocarbon Loss, % on crude:



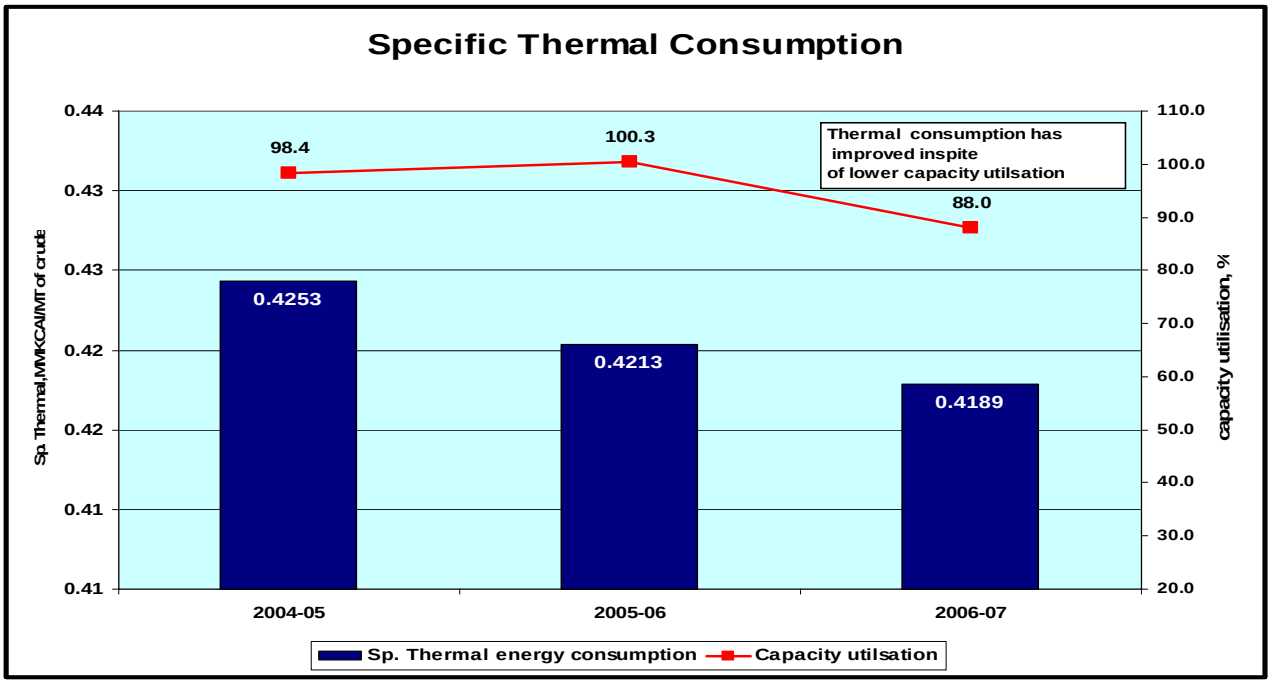
(d) Specific Energy Consumption (MBTU/BBL/NRGF):



(e) Specific Power Consumption, KWH/MT of crude:



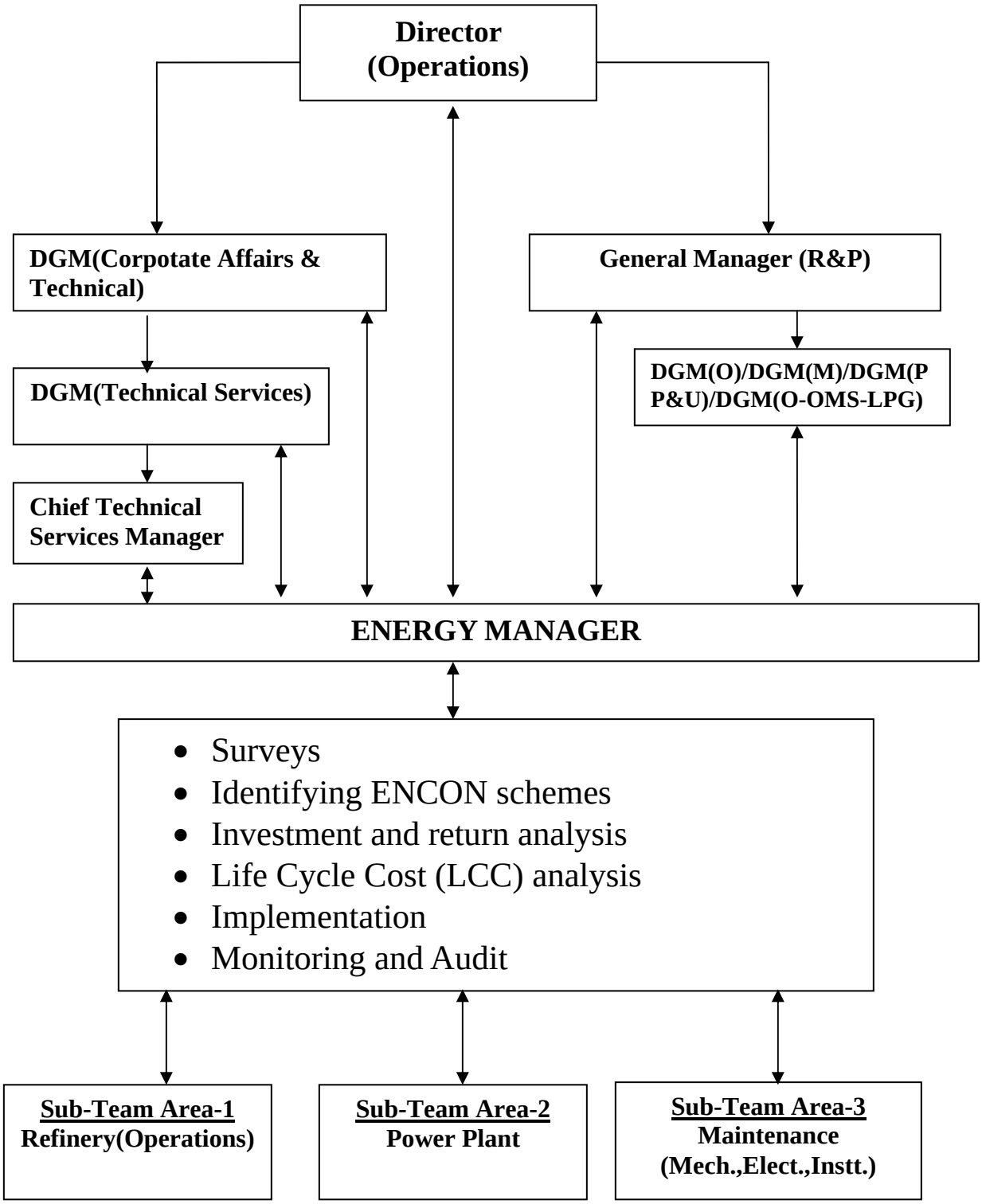
(f) Specific Thermal Energy Consumption, Million Kcal/MT of crude



(III) ENERGY CONSERVATION COMMITMENT, POLICY AND ORGANISATIONAL SET UP:

BRPL continued its efforts on energy Conservation through continuous monitoring and control of operational activities and implementing new energy conservation schemes. The fuel & loss, Hydrocarbon loss, Specific energy consumption in terms of MBTU/BBL/NRGF, Specific Power Consumption and Specific Thermal Energy Consumption during the year 2006-07 was the lowest ever against the previous years inspite of lower capacity utilisation.

Energy Conservation Team structure:



The monthly energy & loss performance is being reviewed in the Functional Review Meeting (FRM) being chaired by MD and attended by functional Directors, GM, DGMs and HODs. Presentation is made on the energy & hydrocarbon loss performance and status of ENCON projects.

Energy Management Cell of BRPL has a dedicated Certified Energy Manager who is responsible for the energy management activities of company.

BRPL has adopted its Energy Management Policy on 27.04.2004. (The copy of the same is enclosed).

ENERGY MANAGEMENT POLICY

Bongaigaon Refinery & Petrochemicals Ltd. is committed to utilize various forms of energy in a cost effective and efficient manner in order to conserve energy resources for a cleaner environment.

To achieve the above goals, we will:

- Adopt cleaner, energy efficient and cost effective technologies.
- Carry out periodic internal & external energy audits to identify areas for improvement.
- Set norms for energy consumption and continuously compare with the best in the world and endeavour to reduce the gap.
- Monitor and control energy consumption through effective information system and periodic reviews as well as to take suitable measures in order to ensure continual improvement.
- Promote energy conservation awareness amongst our employees.

(IV) ENERGY CONSERVATION ACHIEVEMENTS:

Various energy conservation measures have been adopted in the plants/processing complex to make the operations more efficient. The details of energy saving is enclosed against Sl. No (16) Energy conservation measures taken during the year 2006-07 is given below:

Surveys:

1. Furnace/ Boiler efficiency survey was conducted on weekly/monthly basis.
2. Preheat train survey of refinery units was conducted on daily basis. Actions were taken to improve the preheat temperature.
3. Furnace efficiency related parameters were monitored on daily basis and accordingly corrective actions were taken to improve the furnace efficiency.
4. Cooling Tower Survey was conducted on monthly basis and corrective actions were taken to improve the cooling tower performance.
5. Quarterly System Audit of Furnace/Boilers was conducted by the in-house team to identify the improvement in the area of furnace/ boiler efficiency.
6. Oil & Gas Conservation survey in the areas of steam leak, organized by Centre for High Technology (CHT), was conducted by external members during 22-25th January, 2007.

Operational measures:

1. Moisture Removal Section of Pretreater unit was bypassed leading to fuel savings of 819 tonnes per annum equivalent to Rs. 132.2 lakh per annum.

2. Pretreater furnace COT has been reduced from 297 to 290 ^{o}C leading to fuel savings of 56 tonnes per annum equivalent to Rs. 9.0 lakh per annum.

3. Replacement of 965 nos of passing traps by improved version of BPT/TD trap leading to fuel savings of 355 tonnes per annum equivalent to Rs. 57.3 lakh per annum.

4. 1 TG & 2 Boilers were in operation for 65 days due to lower power & steam demand leading to fuel savings of 1100 tonnes per annul equivalent to Rs. 177.6 lakhs.

The following energy conservation schemes were commissioned during the year 2006-07:

1. Replacement of 17 nos. metallic fin fan cooler blades with FRP blades in DCU-II resulted in fuel savings of 206 tonnes per annum equivalent to Rs. 33.3 lakh per annum.

2. Re-insulation of two numbers of RCO tanks 803 & 804 was completed. Estimated fuel savings is 533 tonnes per annum equivalent to Rs. 86.1 lakh per annum.

Savings for schemes implemented during the year 2006-07 under operational measures and ENCON projects is Rs. 495.5 lakh per annum based on fuel price of Rs.16,144.81 per tonne which was the weighted average cost of fuel during 2006-07.

ENERGY CONSERVATION AWARDS:

Sl.No.	Year	Awards
(1)	1990-91	1st prize from MOP&NG for achieving the "Best Improvement in Energy Conservation" amongst refineries.
(2)	1993	"National Energy Conservation Award, 1993" - First prize in the Petrochemicals Sector, Instituted by the Ministry of Power.
(3)	1993	1st prize from MOP&NG for achieving "Minimum Steam Leaks" amongst refineries.
(4)	1993-94	Jawaharlal Nehru Memorial National Award, Instituted by the International Greenland Society, Hyderabad, for the "Excellent Performance in the Energy Conservation".
(5)	1996	1st prize from MOP&NG for "best performance in Furnace/Boilers efficiency" amongst refineries.
(6)	2001-02	2nd prize from MOP&NG for "Best Improvement in Energy Conservation" amongst refineries.
(7)	2002	1st position declared by CHT,MOP&NG for "best performance in Furnace/Boilers efficiency" amongst refineries.
(8)	2003	Oil Conservation Award by PCRA during OCF, 2003 for "Exemplary work in Energy Conservation under the Large Project Category".
(9)	2004	2nd prize from MOP&NG in the area of "Furnace/Boiler efficiency" amongst refineries of country.
(10)	2004-05	1st prize from MOP&NG for "Best performance in Specific Energy Consumption" under Group-II category of refineries having NRGF less than or equal to 4.0.
(11)	2005	3rd Prize from MOP&NG for achieving "Minimum Steam Leaks" amongst all 17 refineries of country.
(12)	2007	1st Prize from MOP&NG for achieving the "Minimum Steam Leaks" amongst 17 refineries of country. The award was presented on 20.09.07 by Hon'ble Minister of Petroleum & Natural Gas.

(V) ENERGY CONSERVATION PLANS AND TARGETS:

BRPL is committed for improvement in the energy conservation areas. The various ENCON projects under implementation is given below:

Sl. No.	Energy Conservation measures under implementation/planned	Expected completion year
(1)	Replacement of existing burners of DCU-I with high efficiency burners.	2007-08 (Implemented)
(2)	Addition of two additional rows in the convection bank of DCU-I.	2007-08 (Implemented)
(3)	Ceramic fiber module along with pyrex type glass peep hole in DCU-I furnace	2007-08 (Implemented)
(4)	Repair of sootblowers in DCU-I (16 Nos).	2007-08 (Implemented)
(5)	Replacement of soot blowers in CDU-I (6 Nos).	2007-08 (Implemented)
(6)	Reuse of steam condensate from DCUs reboilers within DCUs for steam generation instead of sending to DM water tank of CPP.	2007-08
(7)	Addition of two additional rows in the convection bank of DCU-II	2007-08
(8)	Ceramic fibre module (end walls of radiation wall & radiant arch in DCU-II furnace)	2007-08
(9)	Replacement of existing burners of one Boiler with low Nox burners.	2007-08
(10)	Installation of variable speed drive in FD fan of Boiler # 2&3.	2007-08
(11)	Reinsulation of 2 nos of RCO tanks (Phase-II)	2007-08
(12)	Steam condensate recovery from steam tracers in CDU-I,II, DCU-I,II, Offsites, RCO tanks etc.	2008-09
(13)	Replacement of Process steam line insulation with better insulation material (Phase-II)	2008-09
(14)	Additional Unit Oil Separator (UOS) to recover oil from the tankage areas	2008-09
(15)	Auto decantation valve (9 Nos) Phase-III	2008-09
(16)	Flare Gas Recovery System (FGRS)	2008-09

Total investment on the above scheme is Rs. 22.81 crore. All the projects are in the advance stage of implementation.

Target

Sl. No.	Year	Fuel & Loss, (% on Crude)
(1)	2006-07 (base year)	5.40
(2)	2007-08	5.35
(3)	2008-09	5.30

(VI) ENVIRONMENT & SAFETY:

ENVIRONMENT:

BRPL gives highest priority for environmental protection and conservation and is committed for continual improvement in its environmental performance. BRPL has a well-established Environmental Management System (EMS). It is an ISO-14001, 2004 certified Company for its Environment Management System.

Constant monitoring of environmental parameters of plant effluent, emission of work and habitation area is being done to ensure that ambient air emission and quality of treated effluent is well within

the limits specified by the statutory bodies. BRPL has not received any complaints relating to environmental issues either from the public or from any statutory agencies.

The waste generated from the complex is disposed in accordance with the Hazardous Waste (Management & Handling) Rules-1989.

Rapid Environment Impact Assessment (REIA) studies through M/s Engineers India Ltd. for the DHDT & MS Maximisation projects have been carried out. Environment clearances from Ministry of Forest & Environment & No Objection Certificate from Pollution Control Board of Assam for DHDT project & MS Maximisation project has been obtained.

BRPL has achieved a rare distinction of near zero discharge status through its efficient effluent management. 95% of the effluent water generated in the complex is reused in the plants and rest 5% is used for construction work, gardening etc. Due to reuse of treated effluent, BRPL could significantly reduce the ground water consumption for the complex of the Company, achieving virtually zero discharge in the non-monsoon period.

BRPL is carrying out fugitive emission survey for detection of hydrocarbon leaks from plant area and takes corrective action for rectification, if any leakage is detected, in accordance with proposed CPCB guidelines under the Leak Detection and Repair programme (LDAR)

About 40% of the complex is under green cover. The Ecological Park inside the plant area serves as an excellent habitat for a variety of plants, birds and aquatic lives.

ENVIRIONMENT AWARDS:

Sl.No	Year	Awards
(1)	2002-03	BRPL received Rajiv Gandhi Jathiya Paryavaran Gold Award, 2002-03 for Excellence in Indian Industries for “best Pollution Control Implementation”.
(2)	2003-04	BRPL received Greentech Environment Excellence Award (Gold Award) for the year 2003-04 in Petroleum Refinery sector for “outstanding achievement in Environment Management”.
(3)	2004-05	BRPL received Greentech Environment Excellence Award (Gold award) for the year 2004-05 in Petroleum Refinery sector for “outstanding achievement in Environment Management”.
(4)	2007	BRPL has been awarded “Greentech Environment Excellence Gold Award - 2007” for its outstanding achievement in Environment Management in Petroleum Refinery Sector on 29th August, 2007.

SAFETY:

BRPL is concerned and committed for the safety of its employees, equipment and materials. Safety activities are aimed at achieving credible safety performance at work by individual employees as well as contract laborers. BRPL did not have any **Lost Time Accident (LTA) since 24.02.2002 and achieved continuous 1862 days (20.51 million man-hours) without any lost time accident as on 31.03.2007**, which is the longest LTA free period ever achieved by BRPL.

To eliminate accidents of all kinds, a new system and criteria for identification of near-miss incidents have been introduced and preventive actions initiated to prevent their occurrence.

To enhance the safety awareness among the employees, training and educational programmes were regularly conducted. Safety training was given to substantial numbers of contract workers, contract supervisors, and drivers. Safety Training certificates were issued to them and these were linked with the Gate entry passes. This is in addition to the training imparted to the employees of the Company.

SAFETY AWARDS:

Sl.No	Year	Awards
(1)	2002-03	BRPL was given "Oil Industry Safety Award", 2002-03 -Third best overall Safety performance award amongst Refineries by Ministry of Petroleum & Natural Gas.
(2)	2004	National Safety Award for "Longest Accident Free Period" for the year 2004. The award was instituted by Ministry of Labour & employment.
(3)	2005	National Safety Award for outstanding performance in Industrial Safety during the Award year 2005 in achieving "Lowest Average frequency Rate" by Ministry of Labour & Employment.
(4)	2005	National Safety Award for outstanding performance in Industrial Safety as runner-up during the Award year 2005 in achieving "Accident Free Year" by Ministry of Labour & Employment.
(5)	2006	BRPL received the " National Safety Awards-2006" – Winner under scheme-I for " Lowest Average Frequency Rate" from Ministry of Labour and Employment, Govt. of India. The award was presented on 24.09.07 by Hon'ble Minister of Labour & Employment.
(6)	2006	BRPL received the " National Safety Awards-2006" – Runners up under scheme-II for " Accident free year-2005" from Ministry of Labour and Employment, Govt. of India. The award was presented on 24.09.07 by Hon'ble Minister of Labour & Employment.
(7)	2006	BRPL has been awarded the "Prashansa Patra" for its safety performance during the year 2006 by the "National Safety Council". The award is expected to be given on 07.12.2007.

ISO CERTIFIED MANAGEMENT SYSTEM:

BRPL is effectively maintaining the integrated Safety, Health and Environmental Management System conforming to the international standards ISO 14001:2004 & OHSAS 18001:1999 apart from continuing the international Quality Management System Standard ISO 9001:2000. All the three certificates have been awarded by M/s DNV and the system compliance is being verified by them periodically.

All the system and facilities of patient care and hospital administration of BRPL hospital have been developed to meet the quality management system standard -ISO 9001. Accordingly M/S DNV has certified BRPL's Hospital for ISO 9001: 2000 Quality Management System effective from 22nd October 2006 as a vital support service to enhance the capability of Medical & Occupational Health services extended to employees of the Company.

TPM IMPLEMENTATION:

BRPL is implementing Total Productive Maintenance (TPM). After implementation of TPM unit appearance of the plants, and performance of equipments and units as a whole has improved to good extent. BRPL is now extending the TPM to office areas as well.