



**STANDING COMMITTEE ON  
PETROLEUM & NATURAL GAS  
(2008-09)**

**FOURTEENTH LOK SABHA**

**MINISTRY OF PETROLEUM & NATURAL GAS**

**OIL REFINERIES – A CRITIQUE**

**TWENTY-THIRD REPORT**



**LOK SABHA SECRETARIAT  
NEW DELHI**

*December, 2008/ Agrahayana, 1930 (Saka)*

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*Presented to Lok Sabha on 18.12.2008*

*Laid in Rajya Sabha on 18.12.2008*



**LOK SABHA SECRETARIAT  
NEW DELHI**

*December, 2008/ Agrahayana, 1930 (Saka)*

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**COMPOSITION OF THE STANDING COMMITTEE ON PETROLEUM & NATURAL GAS**  
**(2007-08)**

**Dr. N. Janardhana Reddy - Chairman**

**Members**

**Lok Sabha**

- 2 Shri M.Appadurai
- 3 Shri R. Dhanuskodi Athithan
- 4 Shri Ramesh Bais
- 5 Shri Kirip Chaliha
- 6 Dr. Tushar A. Chaudhary
- 7 Shri Lal Muni Choubey
- 8 Dr. M. Jagannath
- 9 Shri Jai Prakash (Hissar)
- 10 Adv. Suresh Kurup
- 11 Shri Sudam Marandi
- 12 Shri P. Mohan
- 13 Shri Sukdeo Paswan
- 14 Shri Nakul Das Rai
- @15 Lt. Gen. (Retd.) Tej Pal Singh Rawat (PVSM, VSM)
- 16 Shri Lakshman Singh
- 17 Shri Rajiv Ranjan 'Lalan' Singh
- 18 Shri Ramjilal Suman
- 19 Shri Ratilal Kalidas Varma
- 20 Shri A.K.S. Vijayan
- 21 Shri Ram Kripal Yadav

**Rajya Sabha**

- 22 Shri Ahmed Patel
- 23 Ms. Mabel Rebello
- 24 Shri Rajeev Shukla
- 25 Shri Ramdas Agarwal
- 26 Shri Amir Alam Khan
- 27 Shri Tapan Kumar Sen
- 28 Shri Subhash Prasad Yadav
- 29 Shri Satish Chandra Misra
- #30 Shri Dilip Singh Judev
- #31 Shri Sabir Ali

(iv)

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- 20 Shri Ram Kripal Yadav
- \*21 Vacant

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- 31 Shri Sabir Ali

**Secretariat**

1. Shri J.P.Sharma - Joint Secretary
2. Smt. Anita Jain - Director
3. Shri P.C.Tripathy - Deputy Secretary

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\* Shri Rajiv Ranjan 'Lalan' Singh ceased to be a Member of the Committee consequent upon his resignation from the Membership of Lok Sabha w.e.f. 11.11.2008

## **INTRODUCTION**

I, the Chairman, Standing Committee on Petroleum & Natural Gas (2008-09) having been authorised by the Committee to submit the Report on their behalf, present this Twenty-Third Report on 'Oil Refineries – A Critique' of the Standing Committee on Petroleum & Natural Gas.

2. The Committee took evidence of the representatives of the Ministry of Petroleum and Natural Gas and the concerned Public Sector Undertakings/Organisations at their sitting held on 06.06.2008.

3. The Committee considered and adopted the Report at their sitting held on 27.11.2008.

4. The Committee wish to express their thanks to the representatives of the Ministry of Petroleum and Natural Gas and the concerned Public Sector Undertakings/Organisations for placing their views before them and furnishing the information desired in connection with examination of the subject.

5. The Committee also place on record their appreciation for the invaluable assistance rendered to them by the officers of the Lok Sabha Secretariat attached to the Committee.

**New Delhi;**  
**15 December, 2008**  
**24 Agrahayana, 1930 (Saka)**

**N. JANARDHANA REDDY,**  
**Chairman,**  
**Standing Committee on**  
**Petroleum & Natural Gas.**



## CHAPTER I

### **Introductory**

The Ministry of Petroleum & Natural Gas (MOP&NG) is entrusted with the responsibility of exploration and production of oil and natural gas (including import of liquefied Natural Gas), their refining, distribution and marketing. The Indian oil sector can be divided into three sub-sectors:-

- (i) Oil and Gas Exploration & Production;
- (ii) Oil Refining; and
- (iii) Marketing (Gas & Refined Products)

#### **Oil Refineries – An overview**

1.2 Consequent on de-licensing of the refinery sector in June 1998, a Private or Public Enterprise can set up a refinery anywhere in India, depending on the promoters' assessment of its viability.

1.3 At present, there are 19 refineries operating in the country, out of which 17 are in public sector and two in private sector. Out of the 17 Public Sector refineries, 7 are owned by Indian Oil Corporation Limited (IOCL), 2 each by Chennai Petroleum Corporation Limited (a subsidiary of IOCL), Hindustan Petroleum Corporation Limited (HPCL), Bharat Petroleum Corporation Limited (BPCL) (Kochi Refinery merged with BPCL on 21-08-2006) and Oil and Natural Gas Corporation Limited, 1 each by Numaligarh Refinery Limited (a subsidiary of BPCL) and Bongaigaon Refineries and Petrochemicals Limited (a subsidiary of IOCL). The private sector refineries belong to Reliance Industries Limited and Essar Oil Limited.

### **Location & capacity of refineries**

1.4 The Ministry of Petroleum & Natural Gas, in its brief note, has furnished information about location & capacity of various refineries as under:-

<b><u>"S.No.</u></b>	<b><u>Name of the company</u></b>	<b><u>Location of the Refinery</u></b>	<b><u>Present Capacity (MMTPA)*</u></b>
	<b>Public Sector</b>		
1.	Indian Oil Corporation Limited (IOCL)	Guwahati	1.00
2	IOCL	Barauni	6.00
3	IOCL	Koyali	13.70
4	IOCL	Haldia	6.00
5	IOCL	Mathura	8.00
6	IOCL	Digboi	0.65
7	IOCL	Panipat	12.00
8.	Hindustan Petroleum Corporation Limited (HPCL)	Mumbai	5.50
9	HPCL	Visakhapatnam	7.50
10.	Bharat Petroleum Corporation Limited (BPCL)	Mumbai	12.00
11	BPCL	Kochi	7.50
12.	Chennai Petroleum Corporation Limited (CPCL)	Manali	9.50
13	CPCL	Nagapattnam	1.00
14.	Bongaigaon Refinery & Petrochemicals Ltd. (BRPL)	Bongaigaon	2.35
15.	Numaligarh Refinery Ltd.(NRL)	Numaligarh	3.00
16.	Mangalore Refinery & Petrochemicals Ltd. (MRPL)	Mangalore	9.69
17.	Tatipaka Refinery (ONGC)	Andhra Pradesh	0.078
	<b>Private Sector</b>		
18	Reliance Petroleum Ltd. (RPL)	Jamnagar	33.00
19	Essar Oil Limited	Vadinar	10.50
	<b>TOTAL</b>		<b>148.97"</b>

\* Million Metric Tonne Per Annum

1.5 The capacity additions, planned to be made during the 11<sup>th</sup> Plan by the public and private sector refineries, are as under:-

<b>S.NO.</b>	<b>REFINERY</b>	<b>MMTPA</b>
	<b>PUBLIC SECTOR</b>	
1	Indian Oil Corporation Limited, Haldia	1.50
2	Indian Oil Corporation Limited, Panipat	3.00
3	Indian Oil Corporation Limited, Paradeep	15.00
4	Hindustan Petroleum Corporation Limited, Mumbai	2.40
5	Hindustan Petroleum Corporation Limited, Visakh	7.50
6*	Hindustan Petroleum Corporation Limited, Bhatinda	9.00
7	Bharat Petroleum Corporation Limited, Bina	6.00
8.	BPCL, Kochi	2.00
9	Chennai Petroleum Corporation Limited, Chennai	1.70
10	Mangalore Refinery & Petrochemicals Limited, Mangalore	5.31
11	Oil & Natural Gas Corporation Ltd. Tatipaka	0.08
	<b>TOTAL PUBLIC SECTOR</b>	<b>53.49</b>
	<b>PRIVATE SECTOR</b>	
12	Reliance Petroleum Limited, Jamnagar (New)	29.00
13	Essar Oil Limited, Vadinar	3.50
14.	Nagarjuna Oil Corporation Limited ( NOCL)	6.00
	<b>TOTAL PRIVATE SECTOR</b>	<b>38.50</b>
	<b>GRAND TOTAL</b>	<b>91.99”</b>

\*HPCL – MITTAL ENERGY LIMITED

## CHAPTER II

### Oil Refineries

#### **(A) Paradip Refinery-cum-Petrochemical Project**

The Paradip-Refinery-cum-Petrochemical Project is one of the three new Refinery Projects of PSU companies on which work is going on at present – the other two being the Bhatinda and Bina Refinery Projects.

##### **(i) Salient features and progress of the project**

2.2 The Ministry, in a note, has furnished the salient features of the project as under:-

“A Memorandum of Understanding (MOU) between Government of Orissa and Indian Oil Corporation Ltd. (IOC) was signed on 16.2.2004 for setting up of a 9 million metric tonnes per annum (MMTPA) grass-root refinery at Paradip in Orissa. To improve the economic viability of the project, feasibility of an integrated Refinery-cum-Petrochemical Complex at Paradip against stand alone refinery as planned earlier was examined alongwith review of refining capacity. Based on Detailed Feasibility Report prepared for Paradip Refinery Project, IOC is setting up a Refinery-cum-Petrochemical Complex at Paradip in Orissa with installed capacity of 15 MMTPA at an estimated cost of about Rs.25,646 crores with completion schedule as October, 2011.

The progress made so far on the project is as under :

- (i) 3347 acre of land has been acquired for the project;
- (ii) Construction of bridges over Santra Creek, construction of about 7 KM approach road (including railway over- bridge) for the refinery connecting NH-5A to refinery site have already been completed;
- (iii) Residential accommodation for construction phase, CISF Colony, coastal approach road, green belt development, etc. are under various stages of construction;
- (iv) Work for laying of construction/drinking water line from Taldanda Canal to Township/Refinery has been completed;
- (v) Technology selection for all the process units has been completed;

- (vi) Project Management Consultant has been selected for Front End Engineering & Design (FEED) phase of the project on 1.12.2006; and
- (vii) Environment clearance for the project has been received on 6.7.2007;
- (viii) As on 31.10.2007, an amount of Rs.935.97 crores has been spent on the project.”

**(ii) Physical and Financial achievements on the project**

2.3 The Ministry of Petroleum & Natural Gas has provided the overall physical and financial achievements vis-à-vis targets on the Paradip Project as under:-

“The In-Principle approval was taken from Board in March’06. However, Investment approval will be taken after completion of FEL (Front End Loading) in March,’08.

In the in-principle approval, Board has approved Rs.1627 cr. for Pre-Project Activities. Year-wise Physical Progress of the Pre-Project Activities is as under :

Year	Cumulative Percentage		Remarks
	Plan	Actual	
Apr.’06-Mar.’07	38.12	37.14	Progress Includes
Apr.’07-Dec.’07	78.02	72.05	<ul style="list-style-type: none"> <li>✓ Licensor Selection &amp; Engg.</li> <li>✓ Pre-project Infrastructure Jobs.</li> <li>✓ Lining-up of PMC for Front End Engineering Loading (FEL)</li> <li>✓ FEL in job in 3 stages.</li> <li>✓ Cost Estimate (<math>\pm</math> 10%)</li> </ul>

**Financial Progress of Pre-Project Activities: Year-wise**

Year	Amount (In Rs. Cr.)	
	Commitment	Actual
Apr.’06-Mar.’07	787	46
Apr.’07-Dec.’07	566	401
Total	1353	447

The lower progress is mainly towards deferment in payment towards dredging activities and process licensors.”

**(iii) Clearances with respect to Paradip Project**

2.4 Regarding clearances with respect to Paradip Project, the Ministry has stated as under:-

**A. Clearances obtained:**

1. Environment Clearance from MOE&F
2. Land Allotment – Available for 3347 acres of land
3. ROW (Right of Way) for laying Raw Water pipeline from Cuttack to Paradip – In principle approval available from Chief Engineer Roads and Engineer-in-Chief Water Resources, Govt. of Orissa.
4. Raw Water Supply – Approval for 4 MGD Construction Water from Taldanda Canal and 40 MGD of Raw Water from Upstream of Mahanadi Barrage at Cuttack available from Department of Water Resources, Govt. of Orissa.
5. SIA approval for selection of Licensors – Available.

**B. Clearance yet to be obtained:**

1. The main clearance from MOE&F has already been obtained on 06/07/07. However, No Objection Certificate from Orissa Pollution Control Board for certain activities are under process, which will be made available by March, '08.
2. CCE (Chief Controller of Explosives) Clearance – Application for clearance from CCE will be submitted in Feb.'2008 for the refinery plot plan”.

2.5 When the Committee wanted to know the status of the No Objection Certificate from the Orissa Pollution Control Board, the Ministry gave the following details in a post-evidence reply:-

“The application for the No Objection Certificate (NOC) from the State Pollution Control Board, Orissa was submitted on 07.12.2006 followed by a presentation to their Technical Committee on 07.09.2007. Inspection of the site was carried out by the official of the Board on 25.06.2008. All the queries from the Board have been replied and the NOC is expected shortly”.

**(iv) Investment, funding and commissioning of the project**

2.6 Regarding the investment details with respect to Paradip Project, the Chairman of IOCL deposed before the Committee during oral evidence as under:-

“The Paradip project is going full on stream. What is now being done is, we have engaged an international consultant – First Management Consultant – and others are doing the front-end engineering which would give us the detailed cost estimate and that would be up to plus or minus 10 per cent. That is expected by March, 2008. Once those estimates are there, it will come to the Board for final investment approval. We have put a figure of Rs. 25,000 and odd crore based on DFR. Since then, of course, events have taken place and are being undertaken and a lot of things have changed – prices of crude, products, petrochemicals have changed. We are committed to this project. We expect the cost to go up certainly. But we also know that the realization of value added product has also gone up substantially, particularly petrochemicals, polyethylene, etc. We have no doubt that we will be able to approve this project on a fairly high rate of return at least 15 to 16 per cent because our people are working with them on the detailed engineering. That we will know but certainly figures are likely to go up because internationally we see – whether it is China or Gulf countries – the cost of 15 MT petrochemicals is in the range of Rs. 30,000 crore plus”.

2.7 When the Committee desired to know as to whether the Project Management Consultant has given recommendation regarding the final investment and completion schedule of the project, the Ministry informed as under:-

“Yes, Project Management Consultant has given the recommendation for final investment and completion schedule as below:

- Investment: Rs. 29,777 Crore
- Completion Schedule: 50 Months from Investment Approval”

2.8 During evidence, the Chairman of IOCL furnished the status of Board approval and other details regarding the Paradip Project as under:-

“The Board approval in principle was given in March, 2006 and at that time it was estimated that the cost would be on a rough and ready basis about 25,600 crore and the schedule of completion was October, 2011. It was planned to have a 15 million tonnes refinery with a petrochemical complex. We did the front-end engineering after that and recently we looked at the cost and in view of the massive increase in the cost because of the over-heated market and also long delivery of items internationally,

the cost, when we looked at it, was almost over 10 billion dollars and it was not possible for Indian Oil to fund, particularly the kind of cash flows that we are seeing now. We have reconfigured the refinery to do only the refinery which itself is about Rs. 29,000 crore. So, the Board last month had approved in principle that we should continue to go ahead with the refinery. We will do the petrochemical add on later for Rs. 20000 crore with a schedule of completion by February, 2012. The only concern that the Board has expressed is that the funding of this project will have to be seen through by advisors and also Board wants to examine before they can commit anything more than Rs. 1600 or 1700 crore which they have already approved for pre-project activities. So, for pre-project activities, a sum of Rs. 1500 crore has already been spent. We hope that by the next Board or so we will also be able to look at the funding part and the Board also considered last month that we are losing Rs. 400 crore a day and the 2008-09 picture was very dismal. Obviously it was not expected that the Board would approve a Rs. 45,000 crore project without knowing from where the cash would come. But notwithstanding all that, the engineering work is going on. We hope that we should be able to stick to the target and look at a funding proposal which is being examined. In terms of environment clearances we have only said that the Pollution Control Board clearance was awaited. The Orissa Pollution Control Board said anytime you want it, you have it”.

2.9 When asked about the commissioning and cost of the project, the position was stated in the evidence as under:-

“The latest date is that we will commission the refinery alone in February, 2012. What was conceived 10 years ago was a six million tonne refinery and then the Orissa Government withdrew all the concessions, it was not possible for Indian Oil to do that project, much later when they signed an MoU to give the sales tax concession and the project became worthwhile, in between the Kuwaities went away and the refinery was reconfigured in the present form of 15 million, because over the years the scenario has changed so dramatically that a six million tonnes refinery was not viable. So, when we look at the Paradip project we must look at the project as it exists today. What has happened 10 years ago is history. As far as we are concerned the project was approved in its present form in 2006 and that is the zero date as far as we are concerned. . . . The price escalation is almost double. From Rs. 25,000 crore, it is not conceivable and it is not possible for Indian Oil to fund this project. But we have reconfigured it and even for Rs. 29,000 crore, the Board is expressing concern. First, you look at the funding. How are you going to fund this project on 1.5 to 1 equity? We need to generate those kinds of funds”.



2.10 As regards funding of the project, the Chairman, IOCL elucidated further during evidence as under:-

“We also have to get it funded by an outside agency. Financial institutions will have to fund it. Government does not fund any project of ours”.

2.11 On being asked about the preparation of a year-wise road map for carrying out various items of work on the project, the Ministry furnished the following details in a written reply:-

“The detailed project schedule with completion of the Paradip Refinery Project (which is now reconfigured as 15 MMTPA fuel refinery without petrochemicals) in 50 Months from investment approval has been finalised. The project schedule inter-alia includes the year-wise road map for carrying out various milestones of work.

The project schedule along with the proposal for investment approval was put up for the consideration of Board of Directors in its meeting held on 28.5.08. Keeping in view the stressed financial position of Indian Oil, it was decided that preliminary activities for the reconfigured project can be initiated upto the already approved amount of Rs. 1,627 crore for the project. The proposal shall be reconsidered based on the funding methodology to be put up to the Board.

The funding methodology is under finalisation for which M/s SBI Capital Markets Limited have been appointed as Financial Advisor & Debt Arranger for the Project. The Financial Closure of the Project is scheduled by Nov'08 after which the Investment Proposal will be put up for the approval of Board of Directors in Nov-Dec'08”.

**(B) Bhatinda Refinery Project**

2.12 The Committee have been informed that the Punjab Refinery Project for setting up a 9 million metric tonnes per annum (MMTPA) grass-root refinery at Bhatinda (Punjab), along with associated facilities at Bhatinda was initially sanctioned by the Government of India on 13.11.98 to be set up by HPCL through a JV company between HPCL and their co-promoter. A revised sanction was given by the Government on 13.10.2000 conveying approval to execute the project through 100% subsidiary company of HPCL. Guru Gobind Singh Refineries Limited (a wholly owned subsidiary of HPCL) was formed on 13.12.2000. At the initiative of the present Government and the discussion between the Union Minister of Petroleum & Natural Gas and the Government of

Punjab, a Deed of Assurance was signed by the State Government on August 12, 2005, which incorporates interest free loan of Rs. 250 crores per year for a period of five years in lieu of the sales tax deferment. About 1,996 acres of land has been acquired at Bhatinda for the refinery. DFR has been prepared and approved by the GGSRL Board on 02.08.06. The project is likely to be completed in the financial year 2010-2011. Government has approved formation of Joint Venture (JV) with the induction of M/s. Mittal Energy Investments Pvt. Ltd., (100% subsidiary of Mittal Investments S.a.r.l., Luxermourg), in Guru Gobind Singh Refineries Ltd. with 49% equity (based on the project cost approved by HPCL Board). The project activities are already underway with the initial milestone of appointment of PMC and Licensors having been completed. Various non-plant buildings, Green Belt, etc. are under progress at site.

**(i) Status of the project**

2.13 When the Committee desired to know the present status of the Bhatinda Refinery Project, the Ministry, in a written reply, furnished as under:-

“M/s EIL have been appointed as the PMC for the Refinery Project. The technology selection and the basic engineering activity for the major units have been completed. The detailed engineering activity has been initiated. The infrastructure development and preliminary construction activities at the refinery site have also been initiated. The refinery would be completed as per schedule and is likely to start production by 2<sup>nd</sup> / 3<sup>rd</sup> quarter of the year 2011”.

**(ii) Foreign Direct Investment**

2.14 The Ministry has informed the Committee that FDI up to 26% is permitted in case of Public Sector Undertakings through Foreign Investment Promotion Board (FIPB) whereas FDI up to 100% is permissible in case of private companies through automatic route. However, Government has approved formation of Joint Venture (JV) with the induction of M/s. Mittal Energy Investments Pvt. Ltd., (100% subsidiary of Mittal Investments S.a.r.l., Luxermourg), in Guru Gobind Singh Refineries Ltd. with 49% equity (based on the project cost approved by HPCL Board) relaxing the extant FDI Policy for a JV with a PSU in the refinery sector. HPCL has allotted the requisite number of

shares to M/s Mittal Energy Investments Pte. Ltd. This is the single largest investment, about Rs.19,000 crore, at any location in Punjab. The refinery will create a lot of job opportunities directly and indirectly in the region. There will be industrialisation and development of support industries. Transport industry will also receive a boost and ancillary industries will come up.

2.15 When asked about the reasons for making relaxations in the extant FDI Policy for a JV with a PSU in the refinery sector, the Ministry furnished the following in a written reply:-

“Government of India (GOI), MOP&NG vide letter No. R-31011/5/97-OR.II dated October 13, 2000, accorded its approval to execute the 9 MMTPA grass root refinery project with its associate facilities in Bhatinda in Punjab, through a 100% subsidiary company of HPCL, after tying up funding for the project. The above letter also mentioned that HPCL would induct a Joint Venture partner into the project, if so required, subsequently.

In view of the large capital investment required, it became necessary to induct a Joint Venture partner with adequate financial resources.

GG SRL commenced the project activities and simultaneously continued its search for a suitable JV partner. Subsequently, HPCL endorsed the proposed induction of M/s Mittal Energy Investment Pte. Ltd. as co-promoter with HPCL for execution of Punjab Refinery Project”.

2.16 The Committee have been further informed through a written reply about the benefits that would accrue as a result of allowing Foreign Direct Investment in Bhatinda Refinery as under :-

“The proposed investment is the first FDI brought into the refining sector by a PSU. The project itself is expected to have large economic benefits for industrialization of the State of Punjab. Besides, the investment will help to reduce the financial risk to be carried by HPCL while meeting the deficit in the northern States. In addition, HPCL would be in a position to leverage the strength of MEI in globalizing its operations as well as seeking equity oil abroad”.

**(C) Bina Refinery Project**

2.17 The Bharat Petroleum Corporation Limited (BPCL) is implementing a refinery project at Bina in Madhya Pradesh.

**(i) Present status of the project**

2.18 When asked about the physical and financial achievements and completion schedule of the said project, the Ministry submitted as under:-

“The status of Bina Refinery Project as on December 2007 is as under:-

Physical progress (%) – Cumulative

Scheduled : 36.2  
Actual : 40.9

Financial progress -

Cumulative commitments : Rs. 7854 crore  
Cumulative expenditure : Rs. 1612 crore

The Year wise performance vis-à-vis target is as follows:

Year	Physical Progress (%) – Cumulative		Expenditure (Rs. Cr)	
	Scheduled	Actual	Budget	Actual
2006-07	12.1	13.7	320	541
2007-08	47.6	40.9*	1200	1071*

\* Performance figures for 2007-08 are for the period April – Dec. 2007.

Based on the above, it is expected that the project would be completed as per schedule”.

**(ii) Salient features**

2.19 The broad details of the project, as furnished by the Ministry through a Note, are as under:-

“In December, 1995 Government had approved the proposal of Bharat Petroleum Corporation Limited (BPCL) for setting up 6 million metric tonnes per annum grassroots refinery at Bina (Madhya Pradesh) along with related crude import / transportation facilities, through a joint venture company, namely, Bharat Oman Refineries Limited (BORL). A Detail Feasibility Report for the refinery project was originally prepared in September, 1994. However, implementation of the project got delayed owing to the denial of certain environmental clearances. Land for the refinery block at Bina and for the crude oil terminal at Vadinar have been acquired. The acquisition of Right of User / Right of Way along the route of the crude oil pipeline has been completed. All major statutory and environmental approvals for the project have been received. The project

is scheduled to be completed by December, 2009 at an estimated cost of Rs.10,378 crore”.

**(D) New Refineries of Private Sector Companies**

2.20 Besides the Public Sector Companies, some Private Sector Companies are also planning new refineries. The Reliance Industries Limited (RIL) is planning a new refinery at Jamnagar with a capacity of 29 MMTPA, which is likely to be commissioned in 2008-09. Nagarjuna Oil Corporation Limited is also planning a new refinery at Cuddalore, Tamil Nadu with a capacity of 6 MMTPA, which is likely to be commissioned in 2011-12.

**(E) North-East Refineries**

2.21 Presently, North - East Refineries (IOC-Digboi, IOC-Guwahati, NRL and BRPL) are processing 6.00 MMTPA crude compared to the installed capacity of 7.00 MMTPA. Out of 6.00 MMTPA crude processed, about 4.5 MMTPA is available from North-Eastern Oil Fields and the balance 1.5 MMTPA Ravva crude is processed at BRPL. The North - East Refineries are designed to process low sulphur Assam crude. The low capacity utilisation of North - East Refineries is a matter of concern. Action has been initiated to draw an action plan for optimising the capacity utilisation of the North-East Refineries. At present, 50% excise concession is being extended to North - East Refineries to make them economically viable.

**(i) Functioning and capacity utilisation**

2.22 While referring to the functioning of the oil refineries in North-East region, the Chairman, IOCL deposed before the Committee during evidence as under:-

“On North-East, with your permission, I will only say that four refineries are there-BRPL, which is a standalone subsidiary of IOC company; we have the Guwahati refinery; we have Numaligarh, which is with the Bharat Petroleum and Digboi. They have installed capacity of 7 MT and the crude oil production has come down in Assam. All of them are based on the concept of North-East production. Today, the Production is about 4.5 MT. We are in fact moving Ravva crude tanks to the BRPL to sustain that refinery. We are operating all the refineries on an average 6 MT bringing in the Ravva crude which will get substituted by imported crude at a much higher cost than it would cost us to refine indigenous crude. We are also

moving products out of the region right up to Delhi. So, bringing in crude from outside and taking out the products of 1 MT is not an economical proposition. These refineries will be able to utilise their capacity only as and when North-East refinery production goes up. Otherwise, it will have to be a sub-optimal solution the way it is going today”.

2.23 When the Committee enquired about the declining condition of the North-East Refineries, the then Secretary of the Ministry of Petroleum and Natural Gas stated the following during oral evidence:-

“The four sub-economic size refineries in Assam suffer from locational disadvantage. The total consumption of petroleum products in the North Eastern region is much lower than the national average. The crude availability over the years in the North-Eastern region has been declining, so we have to bring in the raw materials from long distance, process it and carry it and evacuate it from the region to long distances. All these things add up to the cost. But I would like to assure the Committee that coming to the monetary investment in the North-East, the technologies of these refineries are among the best. No investment is being spared. They already export Euro III from outside the State. Money is being pumped in so that they can export Euro IV in the years to come”.

2.24 On being asked about the action plan to optimise the capacity utilisation of the North-East refineries, the Ministry stated as under:-

“To enhance the capacity utilisation of Numaligarh Refinery as well as other three North-East refineries, MOP&NG has taken the following initiatives:

- Ministry of Petroleum & Natural Gas has directed to conduct an economic study jointly by PPAC, CHT and Oil companies on ‘Optimisation of Capacity Utilisation of NE Refineries’. The study is in progress.
- Presently, 1.5 MMTPA ‘Ravva Crude’ has been allocated to BRPL by MOP&NG, thereby increasing the total crude availability to North-East refineries. As a result, NRL was able to process 2.5 MMT of crude during 2006-07, which was the highest ever crude processed in a year, against its installed capacity of 3.0 MMTPA.
- Crude oil production companies are also taking steps to increase their production in North-East.
- Government has allocated new blocks for crude oil exploration and production to OIL, ONGC as well as private parties under the NELP programme”.

2.25 On being asked about the status of economic study being conducted by PPAC, CHT and Oil Companies to enhance the capacity utilisation of the North-East Refineries, the Ministry gave following details in a post-evidence reply:-

“The need for the study arose due to reduction in projected production of Ravva crude oil in future which is being supplied to BRPL. This situation is likely to arise from 2010. Simultaneously, Diesel Hydro Treating (DHT) facilities at BRPL are scheduled to get commissioned by the end of 2009 to facilitate production of Euro III diesel from April 2010. Accordingly a medium term outlook was required to be prepared.

During the presentation made by BRPL in January 2007 to MoP&NG, on optimisation of capacity utilisation of NE Refineries, PPAC was advised to examine the modalities of compensating BRPL for loss in margin in processing imported crude and sharing their quota of Assam crude with other NE Refineries. PPAC had submitted the report to MoP&NG which brought out the following :

- (a) In pre-DHT scenario, there is a net reduction in Gross Refining Margin (GRM) by Rs. 212 crore for NE refineries. Thus, there was no gain from processing Ultra Low Sulphur Crude at BRPL in pre-DHT case.
- (b) In post-DHT scenario, there is an overall increase of Rs. 239 crore in GRM for NE refineries with 100% capacity utilisation by processing imported low sulphur crude at BRPL. Hence, it was economical to maximise imported crude processing at BRPL after DHT installation along with the allocation of Assam crude to other NE refineries to saturate their processing capacity.
- (c) Other NE refineries might compensate BRPL by surrendering a part of their gain to neutralize the higher crude cost to be incurred by BRPL.

After considering the report of PPAC, MoP&NG vide letter no R-29011/25/2006-OR.I dated 9<sup>th</sup> October 2007 had constituted a committee with the following members to look into the various aspects of the report submitted by PPAC in entirety:

- Director, PPAC, - Chairman
- Executive Director, CHT
- Executive Director (Refineries), IOCL
- Executive Director (Refineries), BPCL
- Managing Director, BRPL
- Managing Director, NRL

After several rounds of deliberations, particularly on the validity of estimates of future production of Ravva crude, demand for petroleum products, transportation infrastructure cost and returns of NE refineries, the Committee finalized the draft report in May 2008. However, in the meeting on 20<sup>th</sup> June 2008 it was suggested by oil companies that the report needed to be reworked based on

- Actual prices in 2007-08
- Pipeline transportation costs as advised by MoP&NG in May 2008
- Impact of changes in duty structure announced by the Government in June 2008

Refineries are working out the impact of these changes. Based on the revised estimates made available by NE refineries, the report is expected to be completed by July 2008”.

2.26 When asked specifically about the steps taken to enhance the crude availability / production in the North-East Region to ensure optimum capacity utilisation of NE Refineries, the Ministry submitted as under:-

“To enhance the capacity utilisation of the N-E refineries, MoP&NG has allocated 1.50 MMT Ravva Crude Oil (produced in the Krishna-Godavari basin off Andhra Pradesh coast) to BRPL with effect from 2003-04. The total available crude (Assam crude plus Ravva crude) is distributed amongst all the four N-E refineries uniformly based on the proportionate capacity of each refinery.

Prior to allocation of Ravva Crude Oil to BRPL, the capacity utilisation of NE refineries was at the level of around 62-63 %. After allocation of Ravva Crude oil since 2003-04, capacity utilization of all N-E refineries has increased to about 86%. Further, OIL and ONGC have taken various steps like augmenting drilling efforts, induction of suitable EOR/IOR processes, enhancement of water injection to improve oil recovery/production, adoption of state of the art reservoir management policies for optimizing field production etc”.

2.27 When asked once more about the steps contemplated to overcome the problem of low capacity utilisation in NE Refineries, the Ministry gave the following details in a post-evidence reply:-

“In order to overcome the problem of low capacity utilisation of North-East Refineries, following steps are being taken/proposed to be taken:-



- Maximum efforts are being made by the domestic crude oil producers like M/s OIL and ONGC and the JVs to increase exploration and production activities in the North East.
- Additional allocation of Ravva crude be made to BRPL over and above the present allocation of 1.50 MMTPA.
- Ravva crude should be continued to be allocated for N-E as long as available.

To saturate the capacity of N-E refineries, BRPL can import Low Sulphur crude from the year 2010 after commissioning of the DHDT unit. Import of ultra low sulphur crude oil for saturating capacity of the N-E refineries in the pre-DHDT scenario (up to 2009-10) is not an economically viable option”.

## **(ii) Marketing business of NRL**

2.28 The Committee have been informed that the Numaligarh Refinery Limited (NRL) has obtained permission from the Government to market MS and HSD directly.

2.29 When asked as to whether the Numaligarh Refinery Limited had decided to increase the retail selling prices of petroleum products at its retail outlets, the Ministry, through a post-evidence reply, explained as under:-

“NRL has 108 Retail Outlets at present. NRL envisaged increasing Retail Selling Price of MS and HSD from its retail outlets effective from 16.05.08 to partially off set the retail losses. However, keeping in view the concern shown by its different stakeholders, same was kept in abeyance”.

2.30 When asked about the reasons for losses in retail marketing and the inability of the NRL authorities to anticipate such losses beforehand, the Ministry of Petroleum and Natural Gas submitted the following in a post-evidence reply:-

“Due to non revision of Retail Selling Price of MS and HSD in line with the increase in crude prices, the Retail Selling Prices of MS and HSD in India is much lower than the procurement price of these products by Marketing Companies from refineries or imported sources. Hence, like all other Oil Marketing Companies in India, NRL is also incurring losses in retail marketing.

In view of the high retail marketing losses, Govt. of India has an ongoing arrangement to give partial relief to PSU Oil Marketing Companies, Viz IOCL, HPCL and BPCL The relief available to these companies, currently, are in the form of :

- I. Bonds issued by Govt of India to these PSU Oil Marketing Companies.
- II. Discount on crude and gas supplied to the refineries of these PSU Oil Marketing companies by M/S ONGC, OIL and GAIL.

NRL has not been included as part of the above two relief schemes and hence, the entire retail marketing loss is required to be borne by NRL which is a very heavy burden for a sub economic sized refinery like NRL(3 MMTPA).

NRL commenced retail marketing activities, with approval received from Govt of India in May 2002, as a value addition initiative based on declared policy by Govt of India at that point of time. After dismantling of APM, Retail Selling Price (RSP) of MS and HSD were to change periodically linked to international price of products. At that point of time it could not be envisaged that the crude oil price would increase to such a level and RSPs would not have corresponding increase. Hence, NRL had no means of predicting the current situation of such level of retail marketing losses”.

### **(iii) Silting problem at the Haldia Port**

2.31 The problem of silting of the Haldia Port was brought to the notice of the Committee during oral evidence. The Committee were apprised that this was affecting crude supply to the North-East Refineries. The then Secretary of the Ministry of Petroleum and Natural Gas enlightened the Committee during oral evidence as under:-

“There are serious port constraints. We should not be oblivious to the fact that the Haldia port is reeling under problems of heavy silting. Unless that port, in my view, mends its ways and provides a gateway, these refineries have no future. This is a bottleneck at the Haldia port. The State Government should help us by solving this problem instead of repeatedly asking us to expand. What do we do once we expand? Once the Haldia port improves upon its functioning, we have no hesitation in improving upon the size of the North-Eastern refineries because from there we could also export. That is a serious constraint. Today we are not able to do that”.

2.32 Regarding the effect of heavy silting of Haldia Port on the functioning of the North-East Refineries, the Ministry stated in a written reply as under:-

“IOCL refineries in North - East process indigenously available Assam Crude at its refineries at Guwahati and Digboi. However, Ravva crude supply to BRPL and crude supply to Haldia and Barauni Refinery is getting affected due to heavy silting. IOCL is installing Paradip Haldia Crude Pipeline to position crude from Paradip instead of Haldia in future”.

2.33 When the Committee desired to know about the progress made in removal of silting problem at the Haldia port and taking up of the matter with the State Government, the Ministry submitted the following details in a post-evidence reply:-

“It has been observed that due to silting at Haldia Port, the Fresh Water (FW) draft has been continuously declining over the years. The draft which was around 8.4 mts during rainy season in 2005 has come down to around 7.4 mts in 2008. Similarly, in winter months also the draft has come down from 7.7 mts in 2005 to about 7.0 mts in 2008. This has resulted in reduction in carrying capacity of our daughter vessels by about 8000 metric tones, which in turn lead to higher shipping cost.

Since the Haldia Port is under Kolkata Port Authority (KoPT), desilting operation is essentially carried out by KoPT. IOCL have been constantly communicating with KoPT authority at various forums expressing serious concern on the reducing Fresh Water draft and have been requesting KoPT to arrange for increasing the draft by desilting through effective dredging. To this effect, IOCL have written several letters to KoPT Authority since November 2007”.

2.34 The then Secretary, Ministry of Petroleum and Natural Gas, while referring to the silting problem at Haldia Port Trust, deposed before the Committee as under:-

“I had a meeting with the Chairman of the Haldia Port Trust some three months ago. We are confident that something is being worked out. We keep continuously trying to improve the situation satisfactorily”.

**(F) Barauni Refinery**

2.35 Barauni is an inland refinery in Bihar being operated by the IOCL.

**(i) Capacity expansion**

2.36 When asked as to whether there is any proposal for capacity expansion of the Barauni refinery, the Ministry, in a written reply, stated as under:-

“Barauni refinery of IOC was commissioned in 1964 with an installed capacity of 2.0 Million Metric Tonnes Per Annum (MMTPA). This refinery has since then been expanded in phases to 6.0 MMTPA by Dec’2002. With the availability of surplus capacity in the country and demand of products in the Barauni Fed Region, IOC do not have any plan to increase the capacity of the Barauni Refinery from 6 to 15 MMTPA. A number of projects are under implementation at Barauni Refinery to improve its overall performance.”

2.37 When the Committee desired to know the salient features of the Projects under implementation at the Barauni Refinery to improve its overall performance, the Ministry submitted the following details in a post-evidence reply:-

“IOCL is implementing Motor Spirit (MS) & Diesel (HSD) Quality Improvement projects at its Barauni Refinery. Details of the said projects are as under:

Project	Salient features of the Project	Remarks
MS Quality Improvement Project at Barauni Refinery	<p>The project is targeted for commissioning by Mar'10 at an approved cost of Rs.1492 crore.</p> <p>The project consists of installation of process units viz. Isomerisation, Naphtha Hydrotreater, Reformate Splitter, FCC Gasoline Desulphurisation, Hydrogen Generation Unit, Revamp of existing Catalytic Reforming Unit alongwith related Utilities &amp; Offsite.</p> <p>Work for all the new process units have been awarded and the work has commenced. The long delivery critical equipments viz. Reactors &amp; Compressors have been ordered well in advance.</p> <p>Tendering for utilities like DM Water Plant and extension of Captive Power Plant is in progress.</p> <p>Commitment upto Jun'08: Rs.1256.76 crore Expenditure upto Jun'08: Rs.19.39 crore</p>	<p>With the commissioning of the project, Barauni Refinery will be able to produce 600 TMTPA Euro-III equivalent quality of MS as per the requirement of Auto Fuel Policy of by Apr.' 2010.</p>
HSD Quality Upgradation	<p>The project is targeted for commissioning by Dec'09 at an approved cost of Rs.84 crore.</p> <p>The project envisages installation of 3<sup>rd</sup> Reactor in the existing Diesel Hydrotreating Unit to facilitate production of Euro-III equivalent quality HSD as per the requirement of Auto Fuel Policy of GOI.</p> <p>Reactor, the major equipment required for the project received at site. High-pressure piping is under procurement. Depending upon the opportunity of shutdown in refinery, erection of reactor along with the associated piping jobs will be completed by 3<sup>rd</sup> quarter of 2009-10.</p> <p>Commitment upto Jun'08: Rs. 81.91 crore Expenditure upto Jun'08: Rs. 7.08 crore</p>	<p>With the commissioning of the project Barauni Refinery will be able to produce 2040 TMTPA Euro-III equivalent quality of HSD to meet the requirement of Auto Fuel Policy”.</p>

2.38 Regarding capacity utilisation/expansion of the Barauni Refinery, the Chairman of IOCL enlightened the Committee during evidence as under:-

“Coming next to the Barauni refinery, it is not a question of expansion, the bigger challenge is the utilisation of Barauni refinery to its full capacity. If you kindly note, Barauni refinery had dwindled to two to three MTs processing. We have now brought it up to 6 MT. We are moving crude oil. It was supposed to be getting crude oil from Assam. We are moving in imported crude oil from Haldia. Now, we are going to move from down

to Paradip. So, crude will come from Paradip, get pumped to Haldia, then to Barauni. The bigger problem is, utilisation of the products at that inland location. Inland refinery has to process the crude, which the market can bear. So, at more than 6 MT that we find that we will not be able to absorb the product in that region because we have a refinery in Mathura and Panipat. It is not possible to run this refinery at a higher capacity than 6 MT and export products because we will run into huge transportation cost”.

**(ii) Petrochemicals complex near the refinery**

2.39 The Committee desired to know as to whether there is any proposal for setting up of a petrochemicals project near the Barauni Refinery. The Ministry stated the following in this regard:-

“The setting up of a Petrochemical Complex at Barauni essentially has to be based on naphtha. Availability of naphtha from Barauni refinery, after meeting the requirement for production of gasoline, is around 0.2 MMTPA, which is not adequate to sustain an economic size Petrochemical Complex at Barauni. For planning an aromatics complex, a minimum of 0.5 MMTPA of high aromatic naphtha is required, while for planning of an Olefinic Complex, requirement of paraffinic type naphtha will be in the range of 2.3 to 2.5 MMTPA. Since such volume of naphtha is not available at Barauni refinery, planning of Petrochemical Complex at Barauni, be it aromatic or olefinic based, does not merit consideration on techno-economic grounds.”

2.40 When the Committee raised the issue of setting up of a small unit of petrochemicals at the refinery during oral evidence, Chairman of IOCL deposed as under:-

“We will examine in terms of its economic viability and come back to you”.

## CHAPTER III

### **Financial and physical achievements**

#### **(A) Profitability of Refineries**

The Ministry has informed that in view of growing world crude oil prices and increased dependence on imports (75% of crude oil requirements is imported) as well as disparity in import parity pricing in respect of certain products, the refineries are walking tight rope to maintain the margins.

##### **(i) Gross Refining Margin (GRM)**

3.2 The Committee have been informed that the average Gross Refining Margin (GRM) of Indian Refineries were 3.3 \$/bbl and 4.1\$/bbl in 2005-06 and 2006-07 respectively. The above GRM for Indian Refineries has been calculated after removing tariff protection. However, the net margin was much lower in view of higher operating costs and depreciations. The price realization by refineries was also low in view of lower recovery of LPG, Kerosene subsidy and lower price allowed for petrol and diesel.

3.3 The Committee have further been informed that our refinery business operation is greatly affected by international price volatility. In view of continued rise in crude oil and product prices in international market in 2006-07, the GRM remained at a higher level (1<sup>st</sup> Qr 8.45\$/bbl). In spite of above, the net margin of Indian refineries is in red due to continued under-recovery on account of subsidies and lower petrol and diesel prices. In addition, various other factors like the level of development, domestic resources, technological advancements, environmental considerations, increasing trade in energy resources, etc. impact the energy mix and refinery margins.

3.4 On being asked about the Gross Refining Margins of Public Sector Refineries during the last four years, the Ministry stated as under:

“Gross refining Margin(GRM) of Public Sector Refineries from 2004-05 to 2007-08 is as under:-

## Gross Refining Margin (GRM)

in \$/bbl

Refineries	2004-05	2005-06	2006-07	2007-08
IOC				
Guwahati	14.03	10.17	10.48	8.61
Barauni	4.40	2.90	1.92	6.16
Gujarat	5.55	3.74	5.28	8.12
Haldia	4.88	3.06	3.38	5.41
Mathura	6.31	5.68	4.61	12.12
Panipat	7.35	5.36	2.62	10.36
Digboi	19.14	19.84	19.10	21.90
HPCL –Mumbai Refinery	5.60	3.22	4.78	5.98
HPCL –Vishakh Refinery	5.06	2.56	3.51	6.98
BPCL- Mumbai Refinery	4.56	1.64	3.64	4.60
BPCL-Kochi Refinery	5.88	3.17	3.46	7.18
CPCL	5.33	4.37	5.00	8.47
NRL	11.32	10.01	10.21	9.95
BRPL	13.8	10.5	14	16.5
MRPL	5.68	3.66	4.79	6.93

3.5 When asked about the projected GRM for the next three years, the Ministry replied as under:-

“GRM depends upon complexity of the refinery as well as crude and product prices in the international market. As the prices are volatile it is not possible to project GRM for next three years”.

**(ii) Composition of GRM**

3.6 The Committee desired to know the composition of the GRM and the extent to which different factors contribute to the GRM. The Ministry gave the following details in this regard:-

“Gross Refining Margin represents the difference between the average price realized on sale of finished products and the cost paid for crude oil.

Gross Refining Margins (GRMs) earned by refineries vary from refinery to refinery and period to period on account of the following:-

- plant configurations, types of crude processed
- spreads between international crude & product prices;
- Better operating parameters such as higher thruptut,, better distillate & lower fuel & loss”.

**(iii) GRM of Private Companies**

3.7 When asked about the GRM of Reliance and Essar Refineries, the Ministry gave the following details in a written reply:-

“The information regarding the Gross Refining Margins of Reliance and Essar Refineries is not available with Government. However, Reliance Industries Ltd. (RIL) has as per media release dated 18.10.2007 reported Gross Refining Margin of 14.5 \$/bbl for the first half of 2007-08 for their Jamnagar refinery”.

3.8 The Committee were subsequently informed through a post-evidence reply that the Gross Refining Margins of RIL during the last three years were as under:-

<u>Year</u>	<u>GRM \$/bbl</u>
05-06	10.30
06-07	11.70
07-08	15.00

3.9 When asked to specify reasons for lower GRM of public sector refineries vis-à-vis private sector refineries, the Ministry gave the following explanation:-

“Gross Refining Margins (GRMs) earned by refineries vary from refinery to refinery and period to period on account of the following:

- plant configurations, types of crude processed;
- spreads between international crude & product prices;
- Better operating parameters such as higher thruput, better distillate & lower fuel & loss”.

**(iv) Refining cost**

3.10 When asked about the refining cost of public sector vis-à-vis private sector refineries, the Ministry submitted the following in a written reply:-

“After dismantling of APM, Government has not been collecting Refining Cost of private and Public Sector Refineries”.



**(v) Steps to increase profitability/margins**

3.11 On being asked about the steps proposed to be taken to increase the profitability/margins of Public Sector Refineries, the Ministry, inter-alia, submitted the following reply:-

“The following steps have been undertaken for increasing the profitability / margin:

- (i) Reduction in operating cost through stringent cost control measures.
- (ii) Continuous efforts towards reduction in specific energy consumption and fuel & loss in the Refinery, maximising distillate yield.
- (iii) Identification and implementation of various value added projects for achieving consolidation and growth”.

**(B) R&D activities**

3.12 On being inquired about the success achieved by the oil PSUs in the recent past on the R&D field, the Ministry submitted the following details in a written reply:-

“The achievements of IOCL-R&D in the recent past are being summarised below:-

**Refining and Pipeline Technologies****INDMAX**

The biggest success in the refining technology front has been the development and commercialization of INDMAX technology for conversion of heavy residue to value added products like LPG and high octane gasoline. A 100,000 TPA demonstration INDMAX plant is operational since June, 2003 in Guwahati refinery. This novel technology has been selected for a 4 MMTPA INDMAX unit at Paradip, as well as for 0.74 MMTPA unit at BRPL. This would result in saving of Rs 29.4 crore to the corporation as license and other fees besides annual earning of Rs 1 crore from catalyst.

**Diesel Hydrotreater Technology (DHDT)**

IOC R&D has licensed DHDT technology along with EIL to BRPL for a 1.2 MMTPA unit resulting in benefit of Rs 1.68 crore. IOC R&D is also a partner in 5.0 MMTPA unit in Paradip refinery along with Shell resulting in benefit of 0.6 million US\$.

### **Needle Coke**

IOC is among the select few in the world to possess this technology for making high value Needle coke for application in graphite electrodes for use in steel making. The technology has been commercialized in BRPL and Guwahati Refinery. An non-IOC refinery has also shown interest in the technology

### **Light Naphtha isomerization**

This technology has been offered to BRPL along with EIL for modifying existing Xylene isomerisation unit for producing Euro IV, MS.

### **Catalyst Manufacturing Plant**

A JV Indocat Pvt. Ltd has been formed along with M/s Intercat, US for manufacturing 15,000 MTPA of FCC catalysts and additives in India at a cost of ~ Rs 100 Crore at Dahej. The plant is expected to be commissioned by end of 2008.

### **Specialty Bitumen**

Multigrade bitumen has been developed and satisfactory performance observed satisfactorily at both test tracks laid at Drass & Jaisalmer.

### **Lubricant / Fuel Technology**

- During the last three years, more than 250 lubricating oil formulations have been developed and OEM approvals for 126 products have been obtained.
- The Centre has developed and introduced many indigenous and cost effective products like energy efficient Railroad, Industrial / Textile oils, Marine oil, Synthetic industrial lubricants / Long life turbine & compressor oils, Greases based on unique non-conventional bases, Agricultural spray oils etc. Many novel products, closely guarded by multinationals like multigrade railroad, marine and aviation lubricants have been developed.
- Replacing imported fuel additives with indigenous cost effective additives like lubricity improver, antioxidant for gasoline have been developed and commercialized.
- R&D developed high performance Diesel MFA has shown excellent performance during the trials at Rajasthan State Road Transport Corporation (RSRTC). Commercial trials have been initiated in 12 depots of RSRTC and the trials are to be extended to the states of MP and Chhattisgarh.

- In order to check adulteration in 2T oil, a marker system has been developed and trials carried out successfully

### **Alternative Fuels**

#### **Biodiesel**

The technology for production of bio-diesel from various non-edible oils like Jatropha Curcas, Palm, Karanjia, Sunflower etc meeting ASTM Specifications has been optimized. The process has been scaled up to pilot plant level.

#### **Ethanol Blended Fuels :**

Studies on 5% and 10% blend of ethanol in gasoline completed and 5% ethanol gasoline blend is presently available in 20 states and 4 Union territories . Steps are being taken to implement 10% ethanol-gasoline blend.

#### **Bioremediation of Oily Sludge:**

The technology for bioremediation of oily waste sludge in refinery, marketing depots and for oil spills developed. This technology was provided to overseas companies viz. Kuwait oil Company and Abu Dhabi National Oil Company (ADNOC). A field trial at 200 tons scale was conducted at ADNOC, Abu Dhabi. The trial was found to be very successful in degrading the sludge within the fixed time schedule .This technology is helpful in keeping the environment clean

#### **Hydrogen**

Government of India initiated the programme on hydrogen energy in the year 2003 and consequently National Hydrogen Energy Board (NHEB) was constituted by the Ministry of New and Renewable Energy. Ministry of Petroleum & Natural Gas also took initiative in research activities on hydrogen and identified IOC R&D as the nodal agency for coordinating all research activities on hydrogen within oil and gas sector in India.

Following are the ongoing research activities / projects in the field of hydrogen:

#### **Use of H<sub>2</sub>-CNG Blends in existing CNG Vehicles:**

On the directions from MoP&NG, a demonstration project was initiated at IOC, R&D using mixture of Hydrogen and CNG in automotive vehicles /gensets. The required infrastructure for this demonstration project was

created at R&D Centre. This includes: Hydrogen Generation System, CNG Storage System, India's first dispensing Unit for H<sub>2</sub> – CNG mixture.

A demonstration project is going on at IOC, R&D for using mixture of Hydrogen and CNG in automotive vehicles /gensets. Currently, four vehicles and one portable genset are running on H<sub>2</sub>-CNG blended fuels”.

### **Setting up of H<sub>2</sub>-CNG Dispensing Facility at Delhi**

IOC is setting up a Hydrogen-CNG dispensing station at COCO retail outlet at Delhi at an estimated cost of Rs 5 crore. MNRE will fund to the extent of 50% (2.5 crore) and remaining 50% will be borne by IOC out of the contribution to corpus fund. This station is planned to be commissioned during the year 2008.

Several other demonstration projects worth Rs 19 crore have been initiated on the use of H<sub>2</sub>-CNG blends in Light Duty and Heavy duty Vehicles.

### **Bharat Petroleum Corporation Ltd.**

R&D has contributed to the value addition at the refineries through process optimization studies, leading to selection of optimum catalysts and additives like gasoline Sulphur reduction additive, detailed crude evaluations, crude pre-heat train fouling studies and selection of suitable ant-foulant chemicals. Successful resolution of corrosion problems faced in the crude and catalytic cracking units of the refineries was achieved through detailed studies.

A polybag packed bitumen plant based on technology developed by R&D has been set up at our Mumbai refinery. The centre has filed for three patents during 2006-07 arising from the innovative research.

The R&D centre in Mumbai has enabled lubes business to achieve higher growth and better profitability through development of several new formulations and alternate formulations for existing lubes and grease products . The new products developed include customer specific cutting fluids, metal forming fluids for aluminium and steel industry, spray oil for agriculture / horticulture sector, besides heat treatment oil for hot quenching operations. Further, exclusive grades were developed for the defence sector leading to viable indigenous alternatives. The alternate formulations developed have helped in improving operational flexibility besides reducing input / operating costs. A number of critical approvals of lube products were obtained from major Original Equipment Manufacturers and international approving bodies.

**Mangalore Refinery and Petrochemicals Ltd.:**

R&D achievements at MRPL are as under:-

- (i) Crude assay analysis like Sokol crude from ONGC's Sakhalin fields
- (ii) Spent caustic treatment with Chlorine Dioxide, process development
- (iii) Study on lubricity characteristics of Hydrocracker Diesel
- (iv) Production of ATF from Nile crude
- (v) Development of suitable bio-additive for use in HSD

**NRL**

NRL is expected to produce needle coke in technical collaboration with IOCL after successful result from the pilot plant".

**(i) R&D expenditure**

3.13 The Committee have been informed that the R&D expenditure incurred by the oil refining companies in the last 5 years are as under :

(Rupees in crores)

Name of the Company	2002-03	2003-04	2004-05	2005-06	2006-07
IOC	89.42	82.74	108.10	89.86	80.99
BRPL	0.05	0.05	0.02	-	-
CPCL	3.34	3.00	3.24	6.03	5.39
HPCL	1.21	2.46	1.75	1.49	0.47
BPCL	18.9	15.7	27.05	18.90	18.50
MRPL	-	-	0.44	0.50	0.72

3.14 When asked about the reasons for low R & D expenditure in recent years by most of the refineries, the Ministry submitted the following details in a post-evidence reply:-

“ R&D Centres by oil companies were put up mainly to support the refinery operations, trouble-shooting, modifications in the existing processes, testing of equipment and instruments, development of technology as well as lubricant formulations. However, main thrust was on support to the refinery operations, trouble-shooting, and modifications in the existing processes, testing of equipment and instruments, development of lubricant formulations etc. As a result, R&D expenses were very low compared to the turnover.

Notwithstanding very low expenditures on R&D activities by the oil companies in the down stream hydrocarbon sector compared to the turn over, Indian Oil has developed some of the finest process technologies viz. Diesel hydro de-sulphurisation (DHDS / DHDT), INDMAX (FCC) etc. INDMAX technology for upgrading heavy ends has already been implemented at IOC Guwahati Refinery. It is also in the process of implementation at BRPL and Paradip. DHDS / DHDT technology for sulfur removal from diesel streams is also being implemented at BRPL”.

**(ii) R&D Centres**

3.15 The Committee desired to know the details of Public Sector Refinery Companies which have got their own R&D centres, the number of such centres operating in the country and the manpower strength at these centres. The Ministry submitted the following reply in this regard:-

“Indian Oil Corporation (IOC) and Bharat Petroleum Corporation Limited (BPCL) have got major R&D Centres at Faridabad and Greater Noida respectively. Hindustan Petroleum Corporation Limited (HPCL) is already in the process of putting up the R&D Centre at Bangalore. Besides this, Engineers India Limited (EIL), an engineering PSU company associated mainly with oil companies is also having a very big R&D Centre at Gurgaon.

Chennai Petroleum Corporation Limited (CPCL), an Indian Oil group company is also having an R&D centre at Chennai but it is mainly supporting the refinery operations.

Manpower strength at IOC-R&D, BPCL, HPCL centre are 412, 64 and 7 respectively”.

**(C) Processing of High Sulphur Crude**

3.16 When asked about the high sulphur crude processed by the Public Sector Refineries during 2006-07 and 2007-08, the Ministry furnished the following details:

“The details of high sulphur crude processing for Public Sector Refineries are given below:-

	2006-07		2007-08		Increase/Decrease)	
	High Sulphur	%	High Sulphur	%	High Sulphur	%
HPC-Mumbai	4832	65.1	4538	61.7	(294)	(3.4)
HPC-Visakh	5174	56.0	5884	62.5	710	6.5
BPC-Mumbai	6345	52.7	6296	49.4	(49)	(3.3)

BPC-Kochi	3111	40.2	3693	45.2	581	5.0
IOC-Koyali	2926	22.6	3650	26.6	724	4.0
IOC-Mathura	5002	56.3	4735	58.9	(267)	2.6
IOC-Panipat	6612	70.1	10042	78.3	3430	8.2
IOC-Haldia	4103	70.3	4047	70.8	(55)	0.5
IOC-Barauni	576	10.5	713	12.7	137	2.1
CPCL-Chennai	6501	66.4	6585	67.2	85	0.7
MRPL	8707	69.5	10078	80.5	1371	11.0

NRL, IOC-Guwahati, IOC-Digboi, CPCL-Narimanam, BRPL and ONGC-Tatipaka refineries do not process any high sulphur crude as they are processing all indigenous crude which are low sulphur crude oils”.

3.17 When the Committee desired to know as to how the Public Sector Refineries are equipping themselves to process more high sulphur crude, the then Secretary of Ministry of Petroleum and Natural Gas submitted the following during oral evidence:-

“In the coming years, the energy economists are of the unanimous view that more and more sour crude is going to be available. That is the sweet crude availability is going to decline and sour crude availability will increase. There is another very important thing is there called the Total Acid Number, TAN. The more acid the crude is, it is more difficult to process. So, high TAN crude will increase in quantity. One redeeming feature is that such coarse crude that is containing high sulphur and which are basically heavy and which have a high TAN number – there are different grades of crude. There are over 200 varieties of crude. Out of this, we can pick the crude which is available at a huge discount, provided we had the facilities to process. That is exactly what our public sector refineries are doing now, given the constraints. We had started small in various regions in order to cater to the needs. We did not have the benefit of new entry like Reliance or Essar did. They could think of huge capacity; they could choose the location along the coast; they could also get themselves declared also; these happened because of the latter entry; but ours is a historical legacy. They had to locate sub-optimal size refineries in Assam, Barauni in Bihar and so on, which we are debottlenecking and are adding newer units. That has its limitations. Given that constraint, our public sector refineries have done a marvellous job in terms of the compliance of the rigours environmental standards; the environmental specifications in terms of auto fuels for this country are slightly stringent than Europe; but we had been able to advance our refineries

technologically to such an extent, that we are able to meet – much more than meet those rigorous, stringent environmental standards. This point is very important in deciding the operational utilization”.

**(D) Refinery Upgradation Projects**

3.18 The Committee have been informed that the refineries have embarked upon major time bound quality improvement programmes for supply of desired quality of petrol and diesel throughout the country in a phased manner. The Indian refineries have undertaken massive investments (Rs.35000 crore) for implementation of fuel quality improvement projects as per the road map given in “Auto Fuel Policy”.

**(i) Auto fuel quality**

3.19 The following quality of fuel has been introduced all over the country:-

<b>Fuel quality</b>	<b>States/cities</b>	<b>Date of introduction</b>
Euro-III Petrol and Diesel	13 cities (Delhi/National Capital Region, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad, Pune, Surat, Kanpur, Agra, Solapur and Lucknow)	1.04.2005
BS-II Petrol	All over country	1.04.2005
BS-II Diesel	All States except Rajasthan, West U.P, Uttaranchal, M.P, Punjab, H.P and Jammu & Kashmir	1.04.2005
	Rajasthan	1.06.2005
	West UP and Uttaranchal	1.07.2005
	Madhya Pradesh, Himachal Pradesh and Chandigarh	1.09.2005
	Punjab and Jammu & Kashmir	1.10.2005

3.20 Euro-III equivalent emission norms in the entire country and Euro-IV equivalent emission norms for all private vehicles, city public service vehicles and city commercial vehicles in the cities of Delhi/NCR, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad, Pune, Surat, Kanpur and Agra will be introduced from 1<sup>st</sup> April, 2010.



**(ii) Upgradation projects of different companies**

3.21 When the Committee wanted to know about the upgradation projects being implemented by various refineries, the Ministry submitted as under :-

**“Indian Oil Corporation Ltd. (IOCL)**

SN	Refinery	Project	Status
1.	Panipat	Naphtha Cracker Project	Overall progress is 53.5%, which is as per plan w.r.t. approved completion schedule.
		Panipat Refinery Additional Expansion Project	Major equipment have been ordered and delivery has commenced. Progress is as per schedule.
		MS Quality Upgradation	Construction activities of ISOM unit are in progress at site. Agency for execution of FCC GDS lined up on 22.01.08. Overall progress is 18.46%, which is as per plan.
		HSD Quality Upgradation	Reactors, the major equipment required for the project ordered and the delivery are expected by Mar'08. Depending upon the opportunity of shutdown in refinery, erection of reactor will be done by 3 <sup>rd</sup> quarter of 2009-10.
2.	Mathura	MS Quality Upgradation	Major equipment ordered. Enabling jobs at site are in progress. Overall progress is 12.35%, which is as per plan.
3.	Barauni	MS Quality Upgradation	Process packages received. PMC lined up in Dec'07. Front End Engineering & Design work is in progress. Enabling jobs at site are in progress. Lining up of contractors targeted by Apr'08.
		HSD Quality Upgradation	Reactor, the major equipment required for the project ordered and the delivery is expected by Mar'08. Depending upon the opportunity of shutdown in refinery, erection of reactor will be done by 3 <sup>rd</sup> quarter of 2009-10.
4.	Guwahati	MS Quality Upgradation	Process packages received. PMC lined up in Dec'07. Front End Engineering & Design work is in progress. Enabling jobs at site are in progress. Lining up of contractors targeted by Apr'08.

5.	Digboi	MS Quality Upgradation	Process packages received. PMC lined up in Dec'07. Front End Engineering & Design work is in progress. Enabling jobs at site are in progress. Lining up of contractors targeted by Apr'08.
6.	Gujarat	MS & HSD Quality Upgradation	Being implemented as a part of Residue Upgradation project. Overall progress of Residue Upgradation project is 16.00%, which is as per plan w.r.t. approved completion schedule.
7.	Haldia	HSD Quality Upgradation	Being implemented as a part of Hydrocracker project. Overall progress of Hydrocracker project is 38.62%, which is as per plan w.r.t. approved completion schedule.

### **Bongaigaon Refinery and Petrochemicals Ltd. (BRPL)**

- (i) Diesel Hydro treatment (DHDT) Project: This project will enable the Company to achieve the Euro – III quality specification of Diesel which will become applicable from April, 2010 as per Auto Fuel Policy of the Government. The estimated cost of this project is Rs.1431.91 crore. The project is likely to be completed by October, 2009.
- (ii) Motor Spirit Maximization Project: This project will reduce production of demand limited naphtha and increase the production of high value Motor Spirit. The estimated cost of this project is Rs.44.56 crore. The project is likely to be completed by August, 2008. The project progress is as per schedule. Environmental clearance has been received. EIL has submitted the Basic Design Engineering Package and Detailed Cost Estimate for the Feed Preparation Unit.

### **Numaligarh Refinery Ltd. (NRL)**

- (i) MS Plant for production of Euro-II and Euro-III grade MS (Commissioned): In order to add value to surplus Naphtha produced in the Refinery, NRL has commissioned a Motor Spirit Plant with a rated capacity to produce 185 TMT of MS per annum during the financial year 2006-07. The Project was completed within the approved cost of Rs. 296.86 crores during the X<sup>th</sup> Five Year Plan (2002-07). Production of MS conforming to BS-II and Euro-III grade commenced from July 2006 and March 2007 respectively. The Plant has since been in smooth operation.

- (ii) Diesel Quality Up-gradation Project (Under Implementation) : In line with 'Auto Fuel Policy', NRL has been producing HSD conforming to BS-II & Euro-III grade up to 90% capacity utilization of the Crude Distillation Unit without additional capital investment. Since the present capacity utilization of the Refinery is restricted upto 90% for producing Euro-III grade HSD, a project for revamping the Hydrocracker and Hydrogen Units has been formulated for production of Euro-III HSD at 100% capacity utilization to meet requirements of the 'Auto Fuel Policy' from April, 2010. A provision of Rs. 299 crores has been kept in the 'XI<sup>th</sup> Five Year Plan' outlay for completion of the Project within the Five Year Plan period. Detailed Feasibility Report (DFR) for the revamp project prepared through M/s Engineers India Limited (EIL) has been completed.

### **CPCL:**

For meeting Euro-IV specifications for MS and HSD, CPCL has taken up projects like Installation of a new Diesel Hydro Treating Unit (DHDT) and Installation of a new Isomerisation Unit (ISOM). CPCL have initiated activities towards Licensor Selection and have completed the process packages for DHDT and ISOM Units. Engineering and Ordering activities are currently in progress. The ordering of long lead items like reactor for the DHDT Unit was completed in November, 2007 with a delivery schedule of 21 months. The commissioning of ISOM Unit and DHDT Unit is expected in December, 2009 and June, 2010 respectively.

CPCL is embarking on a Resid Up-gradation Project at a cost of Rs 3000 crore. This project will enhance the distillate yield by about 10% besides reducing the production of fuel oil. For Resid Upgradation project, Licensor selection has been completed. Process Flow Diagram for Hydrocracker revamp is under review. The project is scheduled for completion during 2011.

### **Bharat Petroleum Corporation Ltd.**

BPCL Mumbai refinery has commissioned the project 'Refinery modernization' project in August 2005. The project envisaged upgradation of the refinery facilities for producing environment-friendly products in line with future specifications and for reducing source emission from the refinery, improve distillate yield, and energy efficiency of the main processes and enhance the crude oil processing capacity to 12 MMTPA.

Mumbai refinery is implementing a project for low cost plant modifications as a short term measure for production of MS & HSD meeting Euro IV specifications to fulfill demand of Mumbai region in line with the Auto fuel policy. The approved cost of the project is Rs. 390 crore. The cumulative

physical progress is 10.4% as of 31.10.2007 and is scheduled for commissioning in January 2010.

At BPCL Kochi refinery Expansion cum Modernisation Project (CEMP), which envisages facilities for production of Auto fuels conforming to BS-II emission norms, was completed in 2005. As part of this project, the DHDS was revamped to achieve a capacity of 2.6 MMTPA and reduction in the outlet sulphur of diesel to 200 ppm and the FCCU was revamped for increased conversion and capacity increase to 1.75 MMTPA.

**Hindustan Petroleum Corporation Ltd.**

**Mumbai Refinery:**

- (i) Green Fuels and Emissions Control Projects at Mumbai Refinery of HPCL is to upgrade the motor spirit quality and meet the specifications of Euro-III for MS with a capability to make Euro-IV MS. The estimated cost of the project is 1731 crore with completion schedule as May,2008. LPG Treating, SWS and ARU are mechanically completed. Physical and financial progress achieved are 95% and 76.77%. LPG Treating, SWS & ARU are mechanically completed. Balance units are also nearing completion except boilers and heaters construction of which is under progress by BHPV.
- (ii) The FCCU project envisages setting up a new grass root FCCU with a capacity of 1.456 MMTPA to meet the specifications of MS conforming to Euro-III norms with a capability to make Euro IV MS, at an estimated cost of Rs.900.47 crore with anticipated date of completion in September,2009.

The current status of the project is given below:-

- Part equipment, including reactor / regenerator procured.
- Process data sheets for equipment and piping and instrumentation diagrams issued. Engineering design basis, equipment layout, and contracts & purchase procedures finalised.
- Engineering activities including preparation of MRs for main air blower, fractionator column and other long lead items in progress.
- Tender for civil works under preparation.

- (iii) HPCL is also implementing Lube Oil Base Stock Quality

Upgradation Project (LOBS) to improve LOBS specification to API Grade-II category with a capability to produce API Grade –III at a total estimated cost of Rs. 638.9 crore with anticipated completion as August, 2009. Against the scheduled physical progress of 25% , actual physical progress achieved is 11.5%. Financial progress achieved is 3.9%.

#### **Visakh Refinery:**

Clean Fuel Projects at Visakh Refinery of HPCL involves revamp of existing Fluidised Catalytic Cracking Unit-II and facilities for production of MS conforming to Euro-III norms with a capability to produce Euro-IV MS at a total estimated cost of Rs.2147.79 with anticipated date of completion in June,2008. All major units are nearing completion except boilers and heaters, construction of which is under progress by BHPV”.

#### **MRPL:**

MRPL has undertaken expansion and up-gradation project to increase its refining capacity to 15 MMTPA with completion in 2010. SIA clearance for the technology licensing of major process units obtained. Site grading contract is in the final stage of finalization. Apart from above, low cost revamps of CDU Phase-I Unit and GOHDS Unit are also being taken up. These revamp projects are expected to be completed by 2010”.

3.22 On being asked about the execution of projects at various public sector refineries to upgrade the auto fuel quality to meet the requirement of Euro IV equivalent fuel, the Ministry stated as under:-

“Public Sector Refineries are executing projects to upgrade auto fuel quality to meet the requirement of Euro IV equivalent fuel. The status of various projects is as given below:-

#### **Refineries preparedness on Euro- IV equivalent fuel supply from 01.04.2010**

<b>Refinery</b>	<b>MS Projects- anticipated commissioning</b>	<b>HSD Projects- anticipated commissioning</b>
Panipat	December 2009	December 2009
Mathura	December 2009	No project required
Gujarat	December 2009	December 2009
Haldia	No project required	December 2009
CPCL	December 2009	June 2010
BPCL-Mumbai	January 2010	January 2010
BORL-Bina	December 2009	December 2009

KRL	January 2010	January 2010
NRL	No project required	By 2010
HPCL- Mumbai	September 2008	Last Quarter of 2010
HPCL- Visakh	October 2009	Last Quarter of 2010”

**(iii) Kochi Refinery Capacity Expansion-cum-Modernisation Project**

3.23 The Ministry has informed the Committee that as part of its consistent effort to improve the quality of the products, Kochi refinery is implementing the Capacity Expansion cum Modernisation Project (CEMP). The project has been conceived for meeting quality norms as stipulated by Auto fuel policy and is being implemented in two phases.

The Phase-I of the project has been completed which envisaged setting up facilities to enable production of auto fuels (MS and HSD) conforming to BS-II emission norms and revamp of Fluid Catalytic Cracking Unit (FCCU) to increase its capacity to 1.75 MMTPA from 1.4 MMTPA.

The Phase-II of the project envisages setting up facilities for enhancing the refining capacity from the present 7.5 MMTPA to 9.5 MMTPA and modernization of the refinery to produce auto-fuels conforming to Euro-III emission norms at an approved cost of Rs. 2591.82 crore.

Engineers India Ltd has been appointed project management consultant. Process technology has been tied up with M/s. UOP, USA for VGO hydro desulphurization, Naphtha hydro treater & CCU revamp and with Delta Hudson, USA for Sulphur Recovery unit. The process package has been received from UOP licensor and the detailed engineering and procurement is in progress. Site grading job has been complete and the civil work contract has been awarded. The overall physical progress as on 31.12.2007 is 18% and is scheduled for commissioning in September 2009.

**(E) Fuel Consumption and Product Loss**

3.24 The Committee desired to know the actual fuel consumption and product loss by the refineries in the country during the last 5 years and also the world standards in this regard. The Ministry submitted the following reply:-

“The Fuel & Loss and Hydrocarbon Loss of PSU refineries during the last 5 years were as under :

<b><u>Fuel &amp; Loss (% wt. on crude)</u></b>					
<b>REFINERY</b>	<b>02-03</b>	<b>03-04</b>	<b>04-05</b>	<b>05-06</b>	<b>06-07</b>
HPCL-M	6.88	6.55	6.57	6.76	6.34
BPCL-M	5.88	6.01	6.16	6.74	6.82
BPCL-K	5.90	6.07	6.04	6.95	6.64
CPCL-M	8.22	8.45	9.7	9.53	9.47
CPCL-CBR	4.29	4.27	4.22	3.9	4.03
HPCL-V	5.95	6.13	6.11	5.99	5.8
IOCL-H	10.03	9.97	8.9	9.39	9.16
IOCL-J	6.76	6.52	7.37	7.46	7.63
IOCL-M	6.56	6.59	7.21	9.06	8.78
IOCL-B	10.15	11.24	10.18	10.07	10.27
IOCL-G	17.68	14.64	13.26	15.51	14.48
IOCL-D	9.06	12.82	11.75	12.11	12.51
IOCL-P	8.57	8.33	8.51	10.77	14.58
BRPL	7.09	5.49	5.45	5.48	5.31
NRL	11.37	9.94	9.8	10.65	10.75
MRPL		6.89	6.55	6.5	6.46
<b>Consolidated</b>	<b>7.27</b>	<b>7.28</b>	<b>7.46</b>	<b>7.95</b>	<b>8.26</b>

<b><u>Hydrocarbon Loss (%wt. on crude)</u></b>					
<b>Refinery</b>	<b>02-03</b>	<b>03-04</b>	<b>04-05</b>	<b>05-06</b>	<b>06-07</b>
HPCL-Mumbai	0.58	0.49	0.61	0.87	0.64
HPCL-Visakh	0.62	1.01	0.66	0.47	0.58
BPCL-M	0.51	0.62	0.68	0.56	0.47
BPCL-K	0.29	0.29	0.40	0.37	0.24
CPCL-Manali	0.46	0.44	0.68	0.43	0.4
CPCL-CBR	0.41	0.37	0.45	0.41	0.41
IOCL-Haldia	0.30	0.26	0.25	0.25	0.25
IOCL-Gujarat	0.25	0.25	0.27	0.27	0.29
IOCL-Mathura	0.37	0.30	0.35	0.39	0.36

IOCL-Barauni	0.32	0.32	0.29	0.32	0.29
IOCL-Guwahati	0.53	0.49	0.52	0.58	0.52
IOCL-Digboi	0.46	0.55	0.56	0.48	0.5
IOCL-Panipat	0.21	0.21	0.20	0.20	0.28
BRPL	0.25	0.25	0.25	0.24	0.23
NRL	0.61	0.40	0.34	0.35	0.37
MRPL		0.62	0.68	0.50	0.69
<b>Consolidated</b>	<b>0.39</b>	<b>0.44</b>	<b>0.47</b>	<b>0.42</b>	<b>0.42</b>

There is no such world standard in respect of Fuel & Loss. Also, most of the global refineries outsource Utilities required to run the refineries, which gives advantage on account of Fuel & Loss. As per the recent Shell GSI benchmarking study, done by CHT, 6 of our PSU refineries are in 1<sup>st</sup> Tercile at global level & 8 at Asia Pacific level, i.e. majority of Indian refineries are at par with best performing global refineries in respect of Hydrocarbon Loss”.

**(i) Reasons for increase in Fuel and loss**

3.25 When the Committee desired to know about the reasons for increase in Fuel and loss percentage of the Public Sector Refineries, the Ministry stated as under:-

“Fuel & Loss of a refinery is presented in terms of % wt. on crude throughput and is directly proportional to the refinery configuration, i.e., the number of secondary processing units. The consolidated Fuel & Loss percentage of the Public Sector Refineries has gone up from 7.27% in 2002-03 to 8.26% in 2006-07 mainly because of extra fuel consumption on account of addition of many new secondary processing units as well as revamp of existing units in the refineries over the last few years to meet the stringent auto fuel policy and environmental regulations. The progressive increase of high sulphur heavy crude also resulted in additional fuel requirement in the refineries. The major secondary processing units added in the refineries during the last five years are listed below: -

- Hydrocracker Unit at BPCL-Mumbai & CPCL-Manali
- Visbreaker Unit at CPCL-Manali
- Second Hydrocracker Unit & H<sub>2</sub> Unit at IOCL-Panipat
- Delayed Coker Unit at IOCL-Panipat
- LAB plant at IOCL-Gujarat
- INDMAX at IOCL-Guwahati
- MS Quality Improvement Projects at IOCL-Mathura, IOCL-Haldia, IOCL-Gujarat & MRPL
- DHDT at IOCL-Mathura, IOCL-Digboi & IOCL-Panipat
- Revamp of FCCU at BPCL-Kochi & CPCL-Manali

The consolidated Fuel & Loss percentage in 2007-08 is 8.0% (provisional)”.



**(ii) Reasons for increase in Hydrocarbon loss**

3.26 When asked to give reasons for increase in Hydrocarbon loss, the Ministry submitted as under:-

“There was continuous addition of secondary processing units in all PSU refineries over the last few years. The pre-commissioning and commissioning activities followed by stabilization of these new units resulted in slight increase in Hydrocarbon Loss (about 8% only) from a level of 0.39% wt. on crude throughput in 2002-03 to 0.42% in 2006-07.

The consolidated Hydrocarbon Loss percentage in 2007-08 is 0.41% (provisional)”.

**(iii) Monitoring system**

3.27 As regards the monitoring system to exercise control over the refining cost, energy consumption, optimal product pattern, fuel & loss percentage, etc. in various refineries, the Ministry furnished the following information:-

“The monitoring system/mechanism in place at refineries level as well as at Govt. level, to exercise control over the refining cost, energy consumption, optimal product pattern, fuel & loss percentage, etc. is elaborated below:-

**Monitoring at Refinery level**

Refineries have their own mechanism for regularly monitoring the Operational Performance and production costs. They monitor the Energy Performance using the Process Unit-wise Factors mentioned above.

**Quarterly Performance Review (QPR)**

The Ministry of Petroleum & Natural Gas (MoP&NG) regularly monitors, through QPR Meetings chaired by Secretary, P&NG, the Performance of the Public Sector Refineries w.r.t. major Physical & Financial parameters that have a bearing on the Profitability of the Oil Companies

Centre for High Technology (CHT), a nodal agency under the aegis of MoP&NG regularly collects & reconcile the Refinery Performance data w.r.t. major Physical Parameters such as crude T'put, Distillate Yield, Energy Consumption, product pattern, fuel & loss and Capacity Utilization, etc in Standard Formats, calculates average performance figures at industry level and prepares a Refinery-wise consolidated report after due analysis of the performance. The report is submitted to MoP&NG. Petroleum planning and Analysis Cell (PPAC), another agency under the MoP&NG, prepares similar report mainly w.r.t. Financial Parameters such

as Refinery Margins, Refining Cost & Marketing Cost, Planned V/S Actual Outlay for ongoing Projects, etc.

### **Benchmarking & Performance Analysis**

CHT, under the guidance of MoP&NG, monitors the Energy Performance of refineries by carrying out detailed Annual Energy Performance Analysis and Oil & Gas Conservation Fortnight (OGCF) Surveys in refineries (to monitor Steam Leaks and Furnace/Boiler Efficiency & Insulation Effectiveness year after year). CHT also carries out, in association with Global Consultants, the Performance Benchmarking of Public Sector Refineries and develops Programmes in consultation with the Refineries, for implementation to improve the Operational Performance, which in turn increases the Refinery Margin.

Additionally, CHT also works in tandem with Engineers India Ltd., (EIL) to regularly undertake 'Energy Improvement Studies' at Refineries and develop Process Unit-wise Energy Factors".

### **(F) Exports and Imports made by the Oil Refineries**

3.28 When the Committee desired to know about the exports and imports made by Public Sector refineries during the last three years, the Ministry gave the following reply:-

"The details of exports and imports made by the public sector refineries during last three years are given below :

YEAR	IMPORT				EXPORT	
	Crude Oil		Products		Products	
	Quantity (TMT)	Value (RS. Crore)	Quantity (TMT)	Value (RS. Crore)	Quantity (TMT)	Value (RS. Crore)
2004-05	64508	81864	3806	7126	7424	11375
2005-06 (P)	69013	123530	5128	12262	9552	19909
2006-07 (P)	77527	157689	5453	14720	11630	25911

The trend of petroleum products export by PSU refineries during 2007-08 (Provisional) is given below.

MONTH	EXPORT QTY. (TMT)
APR '07	983
MAY '07	1022
JUN '07	1172
JULY'07	1134
AUG '07	1061

SEP '07	1204
OCT '07	1270
NOV '07	930
DEC '07	678

As can be seen from the above table, there has been a declining trend in quantum of petroleum product exports by the PSU refineries, since November 2007.”

3.29 As regards decline in the export of petroleum products after October 2007, the Ministry has explained as under:-

“IOC regularly exports Surplus Naphtha after meeting domestic demand. During the year 2007-08, exports of Naphtha reduced after Oct 2007 due to consumers reverting to use of Naphtha consequent to reduced availability of Natural Gas”.

3.30 When asked about the reasons for increase in the import of petroleum products in the last few years, the Ministry gave the following justification through a post-evidence reply:-

“LPG and SKO are regularly imported to meet the domestic demand as availability of these is less. Imports of MS and HSD are comparatively limited and are done to meet the deficit arising occasionally due to exigencies”.

**(i) Product-wise imports and exports**

3.31 When the Committee wanted to know about the quantum of exports and imports made by the refineries during the last three years, product-wise and refinery-wise, the Ministry came up with the following response:-

“As the export / import of petroleum products are handled by the parent companies of PSU refineries, that data is given PSU company wise in the table below:-

<b>2005-06</b>						
Quantity in Thousand Metric Tons						
	IOCL	HPCL	BPCL	MRPL	ONGC	RIL
<b>Import</b>						
LPG	2233		217			
MS	127	141	217			
Naphtha	298					
Aviation Gasoline	2					
SKO	679	197				

HSD	331	308	61			
Fuel Oil	277					601
Others	40					
Total	3988	646	494			601
<b>Export</b>						
LPG	53					
MS	137	21		57		2054
Naphtha	1000	821	393	1116	1109	556
ATF	33			1100		1648
SKO	121					
HSD	351	209	172	1792		5922
LDO	0.2					
Lubes	4					
Fuel Oil	90	89	140	1480		
Bitumen	31					
Others				317		664
Total	1819	1140	705	5862	1109	10844

<b>2006-07</b>							
Quantity in Thousand Metric Tons							
	IOCL	HPCL	BPCL	MRPL	ONGC	RIL	EOL
<b>Import</b>							
LPG	1558	217	192				
MS	47	292	83				
Naphtha	628						
Aviation Gasoline	2						
SKO	1078	253					
HSD	264	636					
Fuel Oil	202				2009		
Total	3780	1398	275		2009		
<b>Export</b>							
LPG	86					26	
MS	128	207		89		3154	
Naphtha	1565	1163	598	1042	1127	2302	206
ATF	48			594		2834	174
SKO	150						
HSD	489		65	1323		9147	344
LDO	0.1						
Lubes	8						
Fuel Oil	529	504	746	1940			39
Bitumen	66						
Others		2	5	280		187	312
Total	3069	1877	1414	5269	1127	17651	1076

<b>2007-08</b>							
Quantity in Thousand Metric Tons							
	IOC	HPC	BPC	MRPL	ONGC	RIL	EOL
<b>Import</b>							
LPG	1678	180	298				
MS	14	97	113				
Naphtha	504						
Aviation Gasoline	3						
SKO	2036	202	250				
HSD	680		1925				
Fuel Oil	296		52			2472	
Total	5211	479	2637			2472	
<b>Export</b>							
LPG	99						
MS	76		25	124		3602	395
Naphtha	2073	944	1212	725	430	3273	642
ATF	54			437		3276	719
SKO	137						
HSD	269	88	131	1092		11415	1313
LDO	0.2						
Lubes	15	28					
Fuel Oil	1123	411	632	2204		5	343
Bitumen	41						
Others			225	258		503	990
Total	3886.2	1471.7	2224.9	4840.1	429.6	22072.9	4402.0"

**(ii) Import and selling prices of products**

3.32 On further being asked about the import rates of petroleum products and prices at which the imported products were being made available to the consumers, the Ministry furnished the following details:-

“The average FOB price of imports by PSU oil companies and Basic Selling Price (excluding taxes, duties & commission) for the period 01.04.07 onwards is as follows:

		Basic Selling Price realized by Public Sector OMCs - Delhi		Average import price of PSU OMCs (FOB)	
		01.04.07 to 14.02.08	15.02.08 to 04.06.08	2007-08	April-May'2008
<b>Petrol</b>	Rs./Ltr	20.39	21.96	26.18	31.24
<b>Diesel</b>	Rs./Ltr	21.61	22.45	26.33	39.20
<b>Domestic LPG</b>	Rs./Cyl	252.94	252.94	431.65	517.59

<b>SKO</b>	Rs./Ltr	7.97	7.97	26.02	38.33
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From the above table, it is clear that public sector companies are selling products at lower prices in domestic market compared to actual import cost incurred by them”.

**(iii) Earnings from export of products**

3.33 The Committee desired to know the amount of foreign exchange earned from the export of petroleum products during the last three years. The Ministry submitted the following reply in this regard:-

“The foreign exchange earned from the export of petroleum products during the last three years is as given below

	Foreign Exchange earned Million US \$
2005-06	11232
2006-07	17908
2007-08 (Prov.)	26771”

**(iv) Supply of products by Private Companies for domestic consumption**

3.34 When asked as to whether the Government proposed to lay down a policy making it mandatory for the Private Sector Companies to meet a fixed percentage of domestic oil/gas needs and export the surplus only after meeting the domestic needs, the Ministry informed that there was no such proposal under consideration of the Government at present.

3.35 When asked to specify reasons for not imposing condition on Private Companies in the country to first supply petroleum products for domestic consumption and then export the remaining products, the Ministry, in a post-evidence reply, submitted as under:-

“The import and export of petroleum products is governed by EXIM Policy notified by the Ministry of Commerce, Government of India. As per the current EXIM Policy export of petroleum products is free except for Kerosene and LPG for which export is allowed subject to obtaining NOC from Ministry of Petroleum & Natural Gas. Besides, PSU oil companies are buying petroleum products from private oil companies as per mutual commercial agreements between companies”.

3.36 When asked as to whether the Government proposed to impose some restrictions on exports made by the Private Companies till the normalisation of oil prices, the Ministry submitted as under:-

“Private Oil Companies export/import their petroleum products in accordance with EXIM policy formulated by Ministry of Commerce and Industry. Under this Policy, restriction on export of crude oil, LPG and Kerosene is already there”.

## CHAPTER IV

### Miscellaneous

#### **(A) Operational Benchmarking of Refineries**

The Committee have been informed that Operational benchmarking of Refineries has been carried out through M/S Shell Global Solutions International, Netherlands for consecutive years of 2003-04 & 2004-05. The study covered all major areas of operation having a bearing on profitability margin, covering important modules like Energy, Maintenance, Environment, Personnel & Finance. The study provided an opportunity to compare performance of these refineries vis-à-vis refineries at Asia Pacific Region as well as at global level. A significant gap (US \$ 400 MM) in Energy and Asset Management areas were identified. Most of refineries fall in the 2<sup>nd</sup> and 3<sup>rd</sup> quartile of performance. An “Integrated Refinery Business Improvement Programme” of Shell Global Solutions International, Netherlands has been started from January 2007 to bridge the gap identified, at four refineries (BPCL-Kochi, IOCL-Mathura, CPCL-Manali & HPCL-Visakh) in the first phase, which are mostly coastal Refineries.

4.2 When asked about the salient features and findings of the Programme and plan to introduce the Programme in respect of other refineries, the Ministry submitted as under:-

“The Programme covers the three main key performance areas of refinery operation, namely ‘Margin Improvement’, ‘Energy & Loss Management’, and ‘Operations & Asset Management. This is carried out in two phases - Assessment Phase & Implementation Phase. Based on the Assessment Phase study conducted by Shell in the 4 refineries (BPCL-Kochi, IOCL-Mathura, CPCL-Manali and HPCL-Visakh), various projects have been identified in the above areas that have a good potential to improve refinery margin. These projects with a return potential of US \$ 75 Million /Year for all these 4 refineries together are being implemented. There is no proposal to introduce this programme in other refineries”.



**(B) Rainwater Harvesting Facility**

4.3 The BPCL Kochi refinery has developed rainwater reservoir facility which is fully functional. The Committee desired to know the details of the facility developed by the BPCL Kochi Refinery and similar initiatives proposed to be taken by other refineries. The Ministry furnished the following details in a written reply:-

“Kochi Refinery has developed rainwater reservoir facility which is fully functional. The details of the scheme are as follows:-

**Roof top rainwater harvesting.**

- a. Roof water collected from the roof of main Administrative building of Kochi refinery, which has a roof area of around 2455 M<sup>2</sup> has been routed through concrete/ steel pipes to an underground storage tank. The stored water after filtration is used for process cooling water makeup. The surplus water is diverted for charging the ground water table. Based on the rainfall data available, the quantum of water anticipated to be collected from the Administration building roof alone would be around 5400 KL/ annum.

Roof water from the roof of four buildings located at the process unit area, which has a roof area of around 2425 M<sup>2</sup> has been routed through concrete / steel pipes to an underground storage tank constructed near the existing raw water quarry. The stored water is diverted to fresh water quarry and is used for all purposes including drinking. Quantum of water anticipated to be collected from these buildings is around 5300 KL/ annum. Kochi refinery is also harvesting the rainwater fall on the land area of its tank farm and DHDS area also. Kochi refinery is now collecting around 1,25,000 KL of water during monsoon period though the total surface runoff generated in this area is much more than the capacity of detention pond.

Initiatives to harvest rain water are being actively implemented in BPCL refineries. Over the years BPCL has strived to conserve water through harvesting, improved efficiency in usage as well as reuse and recycling of process water. The process water is sent to effluent treatment plant and routed back to the process through the oil water separator. The recycled water is also stored in tanks for use in fire fighting.

Gujarat, Panipat, Mathura, and Digboi Refineries of IOC have developed rain water harvesting facilities. In CPCL, rain water harvesting is being carried at the tank form to improve the ground water level. There is no separate reservoir for collecting the rain water”.

4.4 Regarding implementation of the Rain water harvesting facilities in MRPL and HPCL refineries, the Ministry, through a post-evidence reply, informed as under:-

“In MRPL, 2nos of rain water harvesting projects have been implemented and are in operation for more than 3 years. The water recovered is about 750 m<sup>3</sup>/hr during peak monsoon.

Apart from the above two, Lowering Ground water table programme in Waste water plant area was also commissioned. This fetches 20 m<sup>3</sup>/hr during dry period and about 50 m<sup>3</sup>/hr during monsoon.

Mumbai Refinery of HPCL had constructed a check dam in the catchment area between HPCL boundary and BARC hilly region in collaboration with BARC. However, there is a limitation of space due to new facilities required to be set up for “Product upgradation projects”. Therefore some rationalizations have been made.

Mumbai Refinery has also carried out a study for Rain Water Harvesting (RWH) facilities from Administrative Buildings. However it was observed that the rain water collected is very small in quantity and cost of recovery & supply was not economical.

With regard to Visakh Refinery, it has a reservoir of 135600 M3 capacity, which is located adjacent to a hill. The rain water runoff from the hill as well as surrounding area is received in this reservoir. The water accumulated in the reservoir is further used for the Refinery operations”.

**(C) Corporate Social Responsibility**

4.5 When asked about the major initiatives taken by the Public Sector Refineries as a part of corporate social responsibility and expenses incurred by the refineries on such measures during last 5 years, the Ministry provided the following details in a post-evidence reply:-

“PSU refineries have undertaken various Community Development activities in and around the surrounding villages / areas where refineries are located. As per policy guidelines, Community Development activities are normally undertaken in the three focus areas viz., Clean Drinking Water, Health & Medical Care and Expansion of Education to the extant

possible. Details of the expenditure incurred by refineries on social obligation are as under:-

(Rs. in lakhs)

Name of Co/Refinery	2003-04	2004-05	2005-06	2006-07	2007-08
IOCL					
Guwahati	24.96	29.97	26.16	30.61	54.23
Barauni	28.79	31.50	25.52	26.76	25.07
Gujarat	69.97	43.00	27.38	33.62	38.65
Haldia	19.98	21.00	13.76	17.64	25.20
Mathura	29.33	27.53	14.1	24.13	30.65
Panipat	30.37	46.98	22.06	29.25	30.21
Digboi	34.70	36.65	21.79	27.5	28.99
BPCL					
Mumbai	58.34	123.53	78.75	112.28	129.24
Kochi	116	332	110	578	182
HPCL					
Mumbai	26.65	22.15	48.11	18.86	28.61
Vishakh	23.64	33.83	57.29	29.09	14.06
MRPL	13.19	16.34	24.29	154.74	253.79
NRL	129.27	106.29	127.26	30.06	349.84
BRPL	109.2	112.20	131.89	124.43	130.40
CPCL	18.66	40.69	43.00	85.00	113.86"

**(i) Social welfare activities of Private Companies**

4.6 The Committee desired to know as to whether the Government has any information regarding social welfare activities being carried out by the private sector oil companies and also whether such companies are mandated/required to discharge corporate social responsibilities. The Ministry submitted the following reply in this connection:-

“Government has no information regarding the social welfare activities being carried out by the Private Sector Oil Companies in the country”.

4.7 Subsequently, the Ministry was again asked to collect data regarding the social welfare activities carried out during the last three years by the private oil companies in the country from the concerned companies. The Ministry submitted the following information in this regard:-

“RIL has informed that Social Welfare and Community Development is at the core of Reliance’s Corporate Social Responsibility(CSR) Philosophy and continues to be a top priority for the Company. RIL contribution to the community is in the area health, education, infrastructure development(

drinking water, improving village infrastructure, construction of schools etc . During 2007-08, Company has implemented HIV/AIDS and DOTS programme at Hazira and Jamnagar for creating awareness to providing treatment, care and support. RIL has adopted a Primary Health Centre (PHC) from State Government at Dahej and has converted it into model Primary Health Centre. A Community Medical Centre was established in Motikhavdi, a village near Jamnagar. This Medical Centre provides comprehensive medical services free of cost around the clock. RIL also operates free medical diagnostic and therapeutic services at neighbouring villages of its manufacturing locations.

Essar Oil Ltd. has informed that they have undertaken following social welfare activities:-

- Drinking Water Tankers supplied to villages
- Essar Community Health Centre is being operated on 24 hrs. basis, where by the services of 3 doctors, 3 paramedic, laboratory technician with full fledged laboratory 1 Ambulance with 2 Drivers have been provided. These facilities are being rendered to villagers totally free of cost
- Essar Arogya Vahini (Mobile Clinic) covers one village per day (totally 10 villages) with a doctor, a paramedic and assistance.
- Construction of Causeway/Culvert (This helps villages to access of Goddesses situated on the other bank of a small village river).
- Mother & Child Care Centers are run where services of a Gynecologist, a Pediatrician and a Physician are provided. Also an OPD Centre at Kajurda Village is being run”.

4.8 When the Ministry was specifically asked as to whether the private oil companies are mandated to carry out social obligatory activities, it submitted the following information in a post-evidence reply:-

“Government guidelines cover Public Sector Undertakings for carrying out social obligation activities. However, private oil companies are undertaking social activities on their own.”

**CHAPTER V**  
**RECOMMENDATIONS/OBSERVATIONS OF THE COMMITTEE**

**5.1 The Committee find that the present refining capacity of the Public and Private Sector Refineries is 105.47 MMTPA and 43.50 MMTPA, respectively. The capacity additions planned by the Public and Private Sector Refineries during the 11<sup>th</sup> Plan are 53.49 MMTPA and 38.50 MMTPA, respectively. The increase in percentage terms in the additional capacity turns out to about 51% in case of Public Sector Refineries and approximately 89% in case of Private Sector Refineries. Thus, while the Public Sector Refineries have decided to go in for lower capacity addition (in percentage terms), the Private Sector Refineries have taken a gigantic stride in this direction. The Committee are at a loss to understand the lower capacity addition (in percentage terms) by the Public Sector Refineries. Since additional capacities would give more and more opportunity to companies to increase their export quantum and improve their bottomlines, the Committee would like the Public Sector oil companies to go in for further expansions in their existing Refineries and also set up new ones at strategic locations, having export advantages.**

**5.2** Out of the proposed 53.49 MMTPA capacity addition by Public Sector Refineries during the 11<sup>th</sup> Plan, as many as 15 MMTPA capacity would be generated by a single project viz. the Paradip Refinery and Petrochemical Project. The Committee are unhappy to find that the work on this important project has not been progressing satisfactorily. There have been shortfalls in the financial and physical performance relating to the project. The expenditure incurred on the project from April 2006 to December 2007 has been to the extent of only Rs. 447 crore vis-à-vis the target of Rs. 1,353 crore. Similarly, the physical achievement has been 72.05% as against the target of 78.02%. The Committee desire the IOCL to attach due importance to this project and execute the different components of work on this project as per the road map prepared for the purpose.

**5.3 The initial envisaged capacity of the Paradip Refinery in Orissa was 6 MMTPA. Subsequently, an MoU between the IOCL and the Government of Orissa was signed in 2004 for setting up of a 9 MMTPA grass-root refinery at this site. Again, in 2006, the IOCL decided to set up a Refinery-cum-Petrochemical complex at Paradip with a capacity of 15 MMTPA to improve the economic viability of the project. In the opinion of the Committee, the tendency to go in for frequent changes in the configuration of refinery projects and preparation of multiple feasibility reports needs to be avoided as the same leads to enormous avoidable delay, besides additional expenditure. The Committee, therefore, desire the oil companies to thoroughly study all aspects of a project such as augmentation of capacity, economic viability, etc. carefully in the beginning and thereafter, get one feasibility study conducted by a competent agency. Such a course of action would obviate the need for preparation of multiple feasibility reports and frequent changes in the capacity and other details of the project.**

**5.4 The Committee find that based on the Detailed Feasibility Report, the estimated cost of the Paradip Refinery-cum-Petrochemical Project is Rs. 25,646 crore with a completion schedule of October, 2011. The Committee have subsequently been informed during evidence that the cost of the refinery alone would be Rs. 29,000 crore and that of the petrochemical complex, about Rs. 20,000 crore. Thus, the cost of the project has nearly doubled. The completion schedule, as per the Consultant of the project, is 50 months from Investment Approval. The Committee learn that the financial closure of the project is scheduled by November, 2008 after which the Investment Proposal would be put up to the Board of Directors of IOCL. Adding 50 months to this event, it is seen that the project is not going to be completed before the end of 2012. Thus, the completion schedule of October, 2011 stipulated for the project is not going to be adhered to. Besides, the funding methodology for execution of the project is yet to be finalised. The Committee advise the IOCL to expedite the fund-raising process and complete the project as early as possible so as to avoid further cost overruns.**



**5.5 The Committee note that BPCL is implementing a 6 MMTPA refinery project at Bina, Madhya Pradesh at an estimated cost of Rs. 10,378 crore with a completion schedule of December, 2009. Similarly, HPCL has also formed a joint venture for implementation of a 9 MMTPA refinery project at Bhatinda, Punjab at an estimated cost of Rs. 19,000 crore which is scheduled for completion in 2010-11. The Committee earnestly desire that these projects should be completed as per schedule so as to avoid cost overruns.**

**5.6 The North-East Refineries are having uneconomic operations due to a number of factors like limited demand, limited crude availability, sub-economic size, locational disadvantage, etc. The Committee have been informed that to support their operations, the Government has taken some pro-active measures like supply of Ravva crude to BRPL, excise duty concessions to these Refineries, etc. However, these efforts have not proved enough to enable the North-East Refineries to overcome the problem of lower capacity utilisation. In the opinion of the Committee, the capacity utilisation of these refineries can go up if crude oil production in the region is enhanced. The Committee, therefore, desire ONGC and OIL to redouble their efforts in enhancing the crude production in the North-East. The Committee also desire that in order to improve the economic viability of the North-East Refineries, the supply of Ravva crude to BRPL should be increased from the present level of 1.5 MMTPA to 2.5 MMTPA until the commissioning of the Diesel Hydro Treating (DHT) facilities in the refinery. The Committee further recommend that 100% excise duty concession should be granted to these Refineries instead of the existing 50% until the time these Refineries become profitable.**

**Further, the Committee have been informed that there would be an overall increase of Rs. 239 crore in GRM for NE refineries in the post-DHT scenario with 100% capacity utilisation. The Committee recommend that the Government should enhance the capacity of BRPL to further add to the profitability, provided it is economically viable to export the surplus petroleum products generated from the refinery through Haldia and other ports.**

**The Committee have further been informed that a joint study by PPAC, CHT and oil companies is in progress for optimisation of capacity utilisation of North-East Refineries. The Committee desire that the said study should be completed in a time bound manner and its recommendations be scrupulously implemented.**

**5.7 The Numaligarh Refinery Limited (NRL) is incurring losses in the retail marketing business. The Committee have been informed that the NRL had envisaged increasing the retail selling price of petrol and diesel at its 108 retail outlets w.e.f. 16.05.2008. However, the same was kept in abeyance in view of the concern shown by different stake-holders. In the opinion of the Committee, hiking the prices of petrol and diesel would lead to inconvenience and hardship to the consumers. Therefore, Instead of thinking of price hike, the NRL authorities should pay attention to effective utilisation of the vacant/unutilised premises at their retail outlets to earn additional revenues. The Committee believe that the recent cooling down of crude price would have significantly reduced the marketing losses of the company. They desire that the remaining marketing losses of the company be made up by initiating profitable non-fuel activities at its retail outlet premises.**

**5.8 Crude supply to Haldia, Barauni and BRPL is being affected by heavy silting in the Haldia port. The silting has resulted in reduction of carrying capacity of vessels of oil companies, thereby leading to higher shipping cost. The Committee have been informed that the IOCL has been constantly communicating with the port authorities in this regard. Besides, the former Secretary of the Ministry of Petroleum and Natural Gas had also held a meeting with the Chairman of the concerned port trust to improve the situation. The Committee desire the Secretary of the Ministry of Petroleum and Natural Gas and Chairman of IOCL to play a pro-active role in the matter and hold regular meetings with the port authorities in order to find a solution to the problem.**

**5.9 The present capacity of the Barauni Refinery of IOCL is 6 MMTPA. The lower capacity of the refinery coupled with the absence of a Petrochemical Complex at the location is hampering its profitability. The Committee have been informed that there are constraints in expanding the capacity of this refinery. The major constraint lies in utilisation of the products. Since Barauni is an inland refinery, it would become difficult to absorb the products in case its capacity is further expanded. The Committee desire that the capacity of the refinery should be expanded and the surplus petroleum products exported through the nearest ports. As regards setting up of a Petrochemical Complex at this refinery, the Chairman of IOCL has assured the Committee to have the matter examined. The Committee would like the company to complete the study and intimate the outcome to the Committee at the earliest.**

**5.10 Gross Refining Margin (GRM) represents the difference between the average price realized on sale of finished products and the cost paid for crude oil. An analysis of data relating to GRM of the 15 major Public Sector Refineries during the last 4 years indicates that GRMs have been as low as 1.64 dollar per barrel (BPCL Mumbai in 2005-06) and as high as 21.90 dollar per barrel (IOCL Digboi in 2007-08). Only 4 Refineries (IOCL Mathura, IOCL Panipat, IOCL Digboi and BRPL) have registered double digit GRMs during 2007-08. All other Refineries have earned GRMs of less than 10 dollar per barrel during the year. Further, the Committee also find that the Gross Refining Margins earned by two refineries viz. IOCL Guwahati and NRL during 2007-08 have been less as compared to the previous three years. The Committee would like to be apprised of the reasons for the same. The Committee have further been informed that the GRMs registered by RIL have been 10.30, 11.70 and 15.00 dollar per barrel during 2005-06, 2006-07 and 2007-08, respectively. They find that only two Public Sector Refineries viz. IOCL Digboi and BRPL have registered higher GRMs vis-à-vis RIL during these years. The Committee desire the Public Sector Refineries to enhance their GRMs by bringing in technological sophistication, controlling operating cost, reducing fuel and loss, etc.**

**5.11 A glance at the R&D expenditure incurred by the oil Refineries/Companies during the last five years reveals that only a relatively small amount has been spent by these companies on this most important activity. Besides, the R&D expenditure has shown a downward trend in case of IOCL, HPCL and BPCL after 2004-05. One company viz. BRPL has not incurred any expenditure on R & D during 2005-06 and 2006-07. The Committee are unhappy that such an important activity as R&D is not being given due attention by the oil Public Sector Companies. They, therefore, desire these companies to pay adequate attention to the R&D spending in future.**

**5.12 The Committee have been informed that a number of technologies such as INDMAX, DHDT, needle coke, bio-remediation of oily sludge, etc. have been developed through R & D activities carried out by the Oil Companies. The Committee, while appreciating the efforts of the oil Companies, desire that such technologies should be extensively used in the various refineries which would lead to improvement in refining margins, savings and other benefits. The Committee also desire that adequate manpower should be deployed in the R&D Centres of oil companies.**



**5.13 The Committee find that the processing of high sulphur crude by some of the refinery companies has not been satisfactory. Out of the 11 public sector refineries which are processing high sulphur crude at present, the percentage of high sulphur crude processing in 2007-08 has been less than 50% in case of 4 refineries viz. BPCL (Mumbai), BPCL (Kochi), IOCL (Koyali) and IOCL (Barauni). Besides, the Committee also find that the quantum of such crude processed by four refineries in 2007-08 has been less as compared to 2006-07. These refineries are HPCL (Mumbai), BPCL (Mumbai), IOCL (Mathura) and IOCL (Haldia). In view of the low cost of high sulphur crude and the likely decline in low sulphur crude availability in future, the committee recommend that the public sector refineries in the country should enhance their ability to process more and more high sulphur crude which would reduce their input cost and generate handsome profits.**

**5.14 A number of upgradation projects are being implemented by different Refinery Companies in the country. The Committee find that among the IOCL Refineries, the overall progress in the Panipat MS Quality Upgradation Project, Gujarat MS and HSD Quality Upgradation Project and Mathura MS Quality Upgradation Project has been to the extent of 18.46%, 16% and 12.35%, respectively. Though the Government has stated that the overall progress has been as per schedule, the Committee view this progress as slow and apprehend that these projects might not meet their scheduled completion targets. They, therefore, recommend that special attention should be paid to these projects so as the ensure their timely completion. The Committee further find that for meeting the Euro-IV specifications, the CPCL is implementing a project for installation of a new Diesel Hydro Treating Unit which is scheduled to be completed in June, 2010. Similarly, the Residue Upgradation Project of the CPCL is targeted to be completed during 2011. Since Euro -IV equivalent fuels in select cities are due to be introduced in April, 2010 as per the Auto Fuel Policy, the Committee desire the company to advance the completion dates of these projects in line with the schedule/stipulation of the Auto Fuel Policy. The Committee also desire that the upgradation projects of different Public Sector Oil Refinery Companies should be completed in accordance with the stipulation of the Auto Fuel Policy.**

**5.15 The Committee note that the BPCL Kochi Refinery is implementing a Capacity Expansion cum Modernisation Project. While the Phase-I of the project has been completed, work on the Phase-II, which envisages setting up of facilities for enhancing the refining capacity from the present 7.5 MMTPA to 9.5 MMTPA and production of auto fuels conforming to Euro-III norms, is going on at present. The Committee have been informed that the project is scheduled to be completed in September, 2009 and that the overall physical progress as on 31.12.2007 was 18%. The Committee feel that the progress on the project has not been very satisfactory. Since less than one year is left for the commissioning deadline, the Committee desire the BPCL to act fast on the project and complete it as per prescribed schedule.**

**5.16 The Committee are unhappy to find that the Fuel and Loss and Hydrocarbon Loss data of the Public Sector Refineries during the last five years have not been very encouraging. The consolidated Hydrocarbon Loss, which was 0.39% in 2002-03, has gone up to 0.42% in 2006-07. Worse is the case with Fuel & Loss of Refineries during the said period. The consolidated Fuel & Loss, which was 7.27% in 2002-03, has gone up during each successive year to register 8.26% in 2006-07. Five of the Refineries viz. NRL, IOCL-Panipat, IOCL-Digboi, IOCL-Gujarat and BPCL-Mumbai have registered increases in the Fuel and Loss percentage since 2004-05. The Committee desire the PSU Refinery Companies to pull up their socks and bring in improvements in the Fuel and Loss and Hydrocarbon Loss percentages.**

**5.17 The Committee find that the Private Sector Oil Companies have made substantial exports of petroleum products and negligible imports vis-à-vis Public Sector Companies during the last three years. These Companies are exporting/importing in accordance with the EXIM Policy. As per the current EXIM Policy, export of petroleum products is free except for Kerosene and LPG for which export is allowed subject to obtaining of a No-Objection Certificate from the Ministry of Petroleum and Natural Gas. Thus, while some restriction has been imposed on export of LPG and Kerosene, no such restriction is in place for export of other petroleum products. Since there have been shortages of petrol/diesel at some places from time to time, the Committee feel that there is a need to put similar restriction on the export of petrol and diesel by the Private Companies to effectively tackle such situations.**

**5.18 The Operational Benchmarking of our refineries has been carried out through an international agency viz. M/s Shell Global Solutions International, Netherlands in respect of the years 2003-04 and 2004-05. The Committee have been informed that a significant gap of 400 million US dollars in Energy and Asset Management areas has been identified in the various refineries and that in order to bridge this gap, an Integrated Refinery Business Improvement Programme has been introduced from January 2007 at four refineries viz. BPCL-Kochi, IOCL-Mathura, CPCL-Manali and HPCL-Visakh. They have further been informed that a number of projects are being implemented in these refineries with a combined return potential of 75 million US dollars per year. The Committee would like to know the actual return achieved so far as a result of implementation of these projects. They recommend that these projects should also be introduced in other potential refineries of the country in order to improve their bottomlines.**

**5.19 The BPCL Kochi Refinery has developed a rainwater reservoir facility at its premises. The Committee have been informed that the company is collecting around 1,25,000 KL of water during the monsoon season. Besides harvesting the rainwater fall on the land area of its tank farm, the BPCL Kochi Refinery is also processing water from the roof of four buildings located at the process unit area, which is being used for all purposes including drinking. Apart from the BPCL Kochi Refinery, IOCL Refineries at Gujarat, Panipat, Mathura and Digboi, MRPL and HPCL-Visakh Refinery have also developed rainwater harvesting facilities. The Committee appreciate the initiative taken by these companies. However, they are unhappy to note that some other refineries like IOCL Refineries at Guwahati, Barauni, Haldia and BRPL have not yet developed the facility in their premises. The Committee recommend that these companies should also take the initiative to develop such a facility at the earliest. Though some initiative has been taken by CPCL to harvest rainwater at the tank farm to improve the ground water level, there is no separate reservoir for collecting the rainwater. The Committee desire the company to go in for a full-fledged development of rainwater harvesting facility in its premises.**

5.20 The Public Sector Refineries are undertaking various Community Development activities in and around the areas where these refineries are located. These activities are concentrated on three focus areas viz. Clean Drinking Water, Health & Medical Care and Expansion of Education. A glance at the expenditure details of these refineries during the last 5 years reveals that the expenditure incurred by the BPCL Kochi Refinery on such activities during 2007-08 has gone down drastically to Rs. 182 lakhs from Rs. 578 lakhs in 2006-07. Again, the expenditure incurred by the Numaligarh Refinery Limited during 2006-07 (Rs. 30.06 lakhs) and the HPCL Visakh Refinery during 2007-08 (Rs. 14.06 lakhs) are significantly lower as compared to the remaining 4 years. The Committee desire to be apprised of the reasons for low expenditure by these companies on such activities. The Committee recommend that adequate amount should be spent by the oil refining companies on Community Development activities. The Committee further recommend that the Government should consider the feasibility of laying down certain guidelines for the Private Sector Oil Companies also for carrying out Community Development activities.

NEW DELHI;

15 December, 2008  
24 Agrahayana, 1930(Saka)

N. JANARDHANA REDDY,  
*Chairman,*  
Standing Committee on  
Petroleum & Natural Gas.



**EXTRACTS OF MINUTES****STANDING COMMITTEE ON PETROLEUM & NATURAL GAS  
(2007-08)****SIXTH SITTING****(14.12.2007)**

**The Committee sat on Friday, 14 December 2007 from 1130 hrs. to 1330 hrs. in Committee Room 'E', Parliament House Annexe, New Delhi.**

**PRESENT**

**Shri N. Janardhana Reddy - Chairman**

**MEMBERS****Lok Sabha**

- 2 Shri M.Appadurai
- 3 Shri Ramesh Bais
- 4 Shri Kirip Chaliha
- 5 Shri Lal Muni Choubey
- 6 Dr. M. Jagannath
- 7 Adv. Suresh Kurup
- 8 Shri Nakul Das Rai
- 9 Shri Rajiv Ranjan 'Lalan' Singh
- 10 Shri Ramjilal Suman
- 11 Shri Ram Kripal Yadav

**Rajya Sabha**

- 12 Shri Rajeev Shukla
- 13 Shri Amir Alam Khan
- 14 Shri Tapan Kumar Sen
- 15 Shri C. Perumal
- 16 Shri Subhash Prasad Yadav

**Secretariat**

- 1 Shri N.K.Sapra - Joint Secretary
- 2 Smt. Anita Jain - Director
- 3 Shri P.C. Tripathy - Deputy Secretary
- 4 Shri Ram Kishan - Under Secretary

### **Representatives of Ministry of Petroleum & Natural Gas**

- |    |                     |   |                      |
|----|---------------------|---|----------------------|
| 1. | Shri M.S.Srinivasan | - | Secretary            |
| 2. | Shri S.Sundareshan  | - | Additional Secretary |
| 3. | Shri Prabh Das      | - | Joint Secretary      |

### **Representatives of Public Sector Undertakings/Organisations**

- |    |                     |   |   |
|----|---------------------|---|---|
| 1. | Shri S. Behuria     | - | C&MD, Indian Oil Corporation Limited              |
| 2. | Shri Ashok Sinha    | - | CMD, Bharat Petroleum Corporation Limited         |
| 3. | Shri C.Ramulu       | - | Director, Hindustan Petroleum Corporation Limited |
| 4. | Shri K.K.Acharya    | - | MD, Chennai Petroleum Corporation Limited         |
| 5. | Shri Nilmoni Bhakta | - | Director (Finance), Numaligarh Refineries Limited |
| 6. | Shri Mukesh Rohtagi | - | CMD, Engineers India Limited                      |
| 7. | Dr. B.Mohanty       | - | Director, Petroleum Planning & Analysis Cell      |
| 8. | Shri R. Rajamani    | - | MD, Mangalore Refineries & Petrochemicals Limited |

2. At the outset, the Hon'ble Chairman welcomed the Secretary of the Ministry of Petroleum and Natural Gas and other accompanying officials to the sitting of the Committee.

3. Thereafter, the Committee were briefed by the representatives of the Ministry/PSUs on the subject 'Oil Refineries – A Critique'. During the course of the briefing, the Members were enlightened on various issues relating to the subject such as capacity utilisation of North-East refineries, export of petroleum products, capacity addition by oil refineries, performance of Public Sector and Private Sector oil refineries, profitability of oil refineries, safety measures undertaken by oil refineries, latest status of merger of the Bongaigaon Refinery and Petrochemicals Limited (BRPL) with IOC, expansion and modernisation of BPCL Kochi Refinery, Progress of the Joint Venture Refinery at Bhatinda, expenditure on the Paradeep Refinery of IOCL, Status of Kakinada Refinery

Project, expansion of Barauni Refinery, functioning of retail outlets set up by the Numaligarh Refinery Limited, technology upgradation in oil refineries, etc.

4 The Members sought clarifications on some issues relating to the subject and the representatives responded to some of them. The representatives assured the Committee that the data which were not readily available with them, would be furnished to the Committee in writing.

5. \*\* \*\* \*\* \*\* \*\* \*\* \*\* \*\* \*\* \*\*

6. A verbatim record of the proceedings of the sitting has been kept.

**The Committee then adjourned.**

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**\*\*Matters not related to this Report.**

**ANNEXURE-II****EXTRACTS OF MINUTES****STANDING COMMITTEE ON PETROLEUM & NATURAL GAS****(2007-08)****TENTH SITTING****(6.6.2008)**

**The Committee sat on Friday, the 6<sup>th</sup> June, 2008 from 1100 hrs. to 1300 hrs. in Committee Room 'E', Parliament House Annexe, New Delhi.**

**PRESENT**

**Dr. N. Janardhana Reddy - Chairman**

**MEMBERS****Lok Sabha**

- 2 Shri M.Appadurai
- 3 Shri Kirip Chaliha
- 4 Shri Lal Muni Choubey
- 5 Adv. Suresh Kurup
- 6 Shri P Mohan
- 7 Shri Sukdeo Paswan
- 8 Lt. Gen. (Retd) Tej Pal Singh Rawat (PVSM, VSM)
- 9 Shri Rajiv Ranjan 'Lalan' Singh
- 10 Shri Ramjilal Suman
- 11 Shri Ratilal Kalidas Varma

**Rajya Sabha**

- 12 Ms. Mabel Rebello
- 13 Shri Ramdas Agarwal
- 14 Shri Amir Alam Khan
- 15 Shri Tapan Kumar Sen
- 16 Shri Subhash Prasad Yadav
- 17 Shri Sabir Ali

### Secretariat

1. Shri J.P.Sharma - Joint Secretary
2. Shri P.C.Tripathy - Deputy Secretary
3. Shri Ram Kishan - Under Secretary

### Representatives of the Ministry of Petroleum & Natural Gas

1. Shri M.S.Srinivasan - Secretary
2. Shri D.N. Narsimha Raju - Joint Secretary

### Representatives of Public Sector Undertakings and other Organisations

1. Shri S. Behuria - Chairman, Indian Oil Corporation Limited
2. Shri Ashok Sinha - C&MD, Bharat Petroleum Corporation Limited
3. Shri R.S.Sharma - C&MD, Oil & Natural Gas Corporation Limited
4. Shri Mukesh Rohtagi - C&MD, Engineers India Limited
5. Shri R. Rajamani - MD, Mangalore Refinery & Petrochemicals Limited
6. Shri K.K.Acharya - MD, Chennai Petroleum Corporation Limited
7. Shri B.K. Das - MD, Numaligarh Refineries Ltd
8. Shri A.K. Sarmah - MD, Bongaigaon Refineries and Petrochemicals Ltd
9. Shri M.A.Tankiwala - Director (Refineries), Hindustan Petroleum Corporation Ltd.
10. Dr. K.S. Balaraman - Executive Director, Centre of High Technology
11. Shri J.B. Verma - Executive Director, Oil Industry Safety Directorate
12. Dr. B. Mohanty - Director, Petroleum Planning & Analysis Cell
13. Shri Ram Singh - Director(Finance), Petroleum Planning & Analysis Cell

2. At the outset, the Hon'ble Chairman welcomed the Members to the sitting of the Committee and informed them that three new Members viz. Lt. Gen. (Retd.) Tej Pal Singh Rawat (PVSM, VSM) from Lok Sabha, Shri Dilip Singh Judev and Shri Sabir Ali from Rajya Sabha had recently been nominated to the Committee. Two of these three Members were present in the Meeting who were cordially welcomed to the Committee by the Hon'ble Chairman.

3.       \*\*                               \*\*               \*\*                               \*\*                               \*\*                               \*\*

4.       The Committee, then, took oral evidence of the representatives of the Ministry of Petroleum and Natural Gas and Public Sector Undertakings on the subject 'Oil Refineries – A Critique'. The Secretary of the Ministry of Petroleum and Natural Gas gave opening remarks highlighting various issues relating to the subject.

5.       Thereafter, the Members of the Committee raised queries relating to a number of issues viz. capacity utilisation and refining cost of refineries, exports and gross refining margin/profit of Refineries, financial health and under-recoveries of Oil Marketing Companies, role played by various Refineries in meeting the domestic needs, saving the consumer from the hike in product prices, reasons for crude oil price escalation, closure of retail outlets of a Private Company, social obligations of various Refineries, gestation period of Refinery Projects, Paradip and Bina Refinery Projects, motivating vehicle-users to switch over to CNG mode, restrictions imposed by the Petroleum and Natural Gas Regulatory Board on PNG supply in Delhi, functioning of Numaligarh Refinery Limited, status of Kakinada Refinery and SEZ Projects, revenue earned by the Government from the Public Sector Oil Companies/Refineries, use of high sulphur crude in Refineries, installation of Paradip-Haldia Crude Pipeline, flight of skilled personnel/engineers from the Public Sector Oil Companies/Refineries, etc. Some of these queries were responded to by the representatives of the Ministry/Public Sector Undertakings. The Hon'ble Chairman asked the Secretary to submit written replies to those queries/points which could not be covered during the meeting.

6.       A verbatim record of the proceedings of the sitting has been kept.

***The Committee then adjourned.***

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**\*\*Matters not related to this Report.**

**EXTRACTS OF MINUTES****STANDING COMMITTEE ON PETROLEUM & NATURAL GAS****(2008-09)****FOURTH SITTING****(27.11.2008)**

The Committee sat on Thursday, the 27<sup>th</sup> November, 2008 from 1100 hrs. to 1300 hrs. in Committee Room 'C', Parliament House Annexe, New Delhi.

**PRESENT**

**Dr. N. Janardhana Reddy** - **Chairman**

**MEMBERS****Lok Sabha**

- 2 Shri M.Appadurai
- 3 Shri Kirip Chaliha
- 4 Shri Lal Muni Choubey
- 5 Dr. M. Jagannath
- 6 Shri Jai Prakash
- 7 Adv. Suresh Kurup
- 8 Shri P. Mohan
- 9 Shri Sukdeo Paswan
- 10 Shri Nakul Das Rai
- 11 Lt. Gen. (Retd) Tej Pal Singh Rawat (PVSM, VSM)
- 12 Shri Ram Kripal Yadav

**Rajya Sabha**

- 13 Shri Rajeev Shukla
- 14 Shri Amir Alam Khan
- 15 Shri Tapan Kumar Sen
- 16 Shri Subhash Prasad Yadav

**Secretariat**

1. Smt. Anita Jain - Director
2. Shri P.C.Tripathy - Deputy Secretary

**Representatives of the Ministry of Petroleum & Natural Gas/Public Sector Undertakings and other Organisations**

1. Shri R.S.Pandey - Secretary (MOP&NG)
  2. Shri S.Sundareshan - Additional Secretary, (MOP&NG)
  3. Shri D.N. Narsimha Raju - Joint Secretary, (MOP&NG)
  4. Shri L.N. Gupta - Joint Secretary, (MOP&NG)
  5. Shri Arun Balakrishnan - C&MD, HPCL
  6. Shri S. Behuria - Chairman, IOCL
  7. Shri Ashok Sinha - C&MD, BPCL
  8. Dr. B. Mohanty - Director ,PPAC
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2. \*\*                \*\*                \*\*                \*\*                \*\*                \*\*
  3. \*\*                \*\*                \*\*                \*\*                \*\*                \*\*
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6. Thereafter, the Committee took up for consideration the draft Report on 'Oil Refineries – A Critique' and adopted the same without any amendment.

7. The Committee authorised the Chairman to finalise the Report after making consequential changes, if any, arising out of the factual verification of the Report by the Ministry and present the same to both the Houses of Parliament.

8. A verbatim record of the proceedings of the sitting has been kept.

*The Committee then adjourned.*

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**\*\*Matters not related to this Report.**