

FORM IV
(Refer regulation 7(2))
Bureau of Energy Efficiency
REGISTER CONTAINING NAMES OF OFFICES AND FIRMS OF ACCREDITED
ENERGY AUDITORS

Serial Number (AEA- 0254)		As on:- 04/11/2014	
A.			
1	Name of accredited energy auditor	Shri Sanjoy P. Bordoloi	Photograph of the energy auditor
2	Father's name	Late H.C. Bordoloi	
3	Date of certification as Energy Manager	04.03.2014	
4	Date of passing the examination in "Energy Performance Assessment for Equipment and Utility Systems"	Exam held on 24 th August,2014 Result declared on 9 th December'2014	
5	Examination Registration Number of (i) Energy Manager (ii) "Energy Performance Assessment for Equipment and Utility Systems"	EA-16042 EA-16042	
6	Certificate Registration Number of (i) Energy Manager (ii) "Energy Performance Assessment for Equipment and Utility Systems"	10622 Certificate No.8005(Issued by NPC)	
7	Date of issue of accreditation certificate		
B. Information in respect of trade name or firms' name			
8	Trade name / firms name under which energy audit is proposed to be conducted	Indian Oil Corporation Limited	
9	Date of accreditation as accredited energy auditor		

10	Type of firm/ private/ Gov. / NGO etc.	Public Sector Undertaking
11	Name of contact person along with designation, address, telephone, mobile and fax number along with STD codes and email address (All details compulsory)	Sanjoy P. Bordoloi Tel. No. 0180-2578829 Fax No.0180-2578833 Mobile: 9416500955
12	Professional postal address with Pin Code of the accredited energy auditor	Panipat Refinery & Petrochemical Complex, Panipat Refinery, Panipat Haryana - 132140
13	E-mail address	bordoloisp@hotmail.com bordoloisp@indianoil.in
14	Telephone numbers . with STD Code (R) (O) Mobile no:	0180-2595076 0180-2578829 +91-9416500955
15	Year of establishment of the trade name / firms' name for undertaking the energy audit	Indian Oil Corporation was set up in 1964
16	Year of commencement of energy audit of the firm	Improvement of Energy Performance is a continuous process in Indian Oil Refineries
17	Whether any certificate to support the excellence in the system has been obtained (ISO etc.)	All the Refineries of Indian Oil Corporation is ISO 9001-2008, ISO 14001-2004, OHSAS 18001-2007 & EMS ISO 50001-2011 certified
18	No. of branch offices (List of complete addresses including heads of all branch offices with telephone, fax and email addresses)	There are 8 Refineries located in different states namely 3 in Assam, 1 each in West Bengal, Bihar, UP, Haryana & Gujarat.
C	Details of Associated Energy Experts	
19	Number of resource persons available	
20	I. Number. of full-time energy auditors in position with work experience of all energy auditors associated with the firm	See Annexure-1

	II. No. of part-time energy auditors in position during the current year / previous year associated with the energy auditor / energy auditor's firms.	Not applicable
21	Sectors in which the energy auditor/ energy audit firm has conducted energy audits since inception	Process Units, Thermal Power Station, Offsite & Utilities of Refineries of Indian Oil Corporation
22	Subject wise expertise	
(a)	Energy audit process system (list sectors) - If no energy audit has been carried out of the process system and parameters, please list nil. Bureau of Energy Efficiency will be calling for detailed information in case agency has listed its energy audit expertise in the process systems	See note attached as Annexure-2 & 3
(b)	Energy audit thermal utility system (list sectors)	-do-
(c)	Energy audit electrical utility system (list sectors)	-do-
23	Instruments available	
	(a) Electrical (list the name of the instruments)	List of Instruments is attached in Annexure-4. Similar Instruments are also available in other Units.
	(b) Thermal (list the name of the instruments)	Orsat Apparatus-3 nos, Gas Chromatograph-4 nos & Combustion Analyzers. In Panipat Refinery & Petrochemical Ltd. Similar Instruments are also available in other units.
24 (i)	Details of training Programme/ seminars/ workshops conducted during the last 3 years in the field of energy efficiency / energy audit	Training Programme conducted at Panipat Refinery & Petrochemical Complex is attached as Annexure- 5. Similar Programme is also regularly conducted in other units.

(ii)			
(iii)			

D	Remarks(if any)		

(Note: Responsibility of the authenticity of the above information rests with the concerned energy auditor/energy auditing agency.)

Annexure-1

A. Energy Auditor

Sl. No	Regd. No.	Name	Designation	Year of Passing
1	EA-18356	Gagan Aggarwal	SPNE	2013
2		Manav Gedam	DMPS	2011
3		Vikas Kashyup	SPSE	2011
4	EA-14524	A.Balaji	DMPN	2011
5	EA-5480	Rahul Prashant	CMNMEL	
6		Md. Abid Parwez	MNMEL	2011
7	EA-14744	Rakesh Roushan	SELE	2012
8	EA-14656	Shibu Koshy	SELE	2011
9	EA-17164	Swapan K. Das	SPUE	2013
10	EA-14527	Mousom Some	PNM	2011
11	EA-16042	Sanjoy P Bordoloi	GM(HS&E)	2015

B. Energy Manager

Sl. No	Regd. No.	Name	Designation	Year of Passing
1	EM-4949	A.MAITI	SPNE	2013
2	EM-8928	V K Singh	SPUE	2008
3	EM-7060	Shashikant Verma	DMPU	2014
4	EM-7166	Madhusudan Gowda	SPUE	2014

Note:

Indian Oil Corporation Limited has four Divisions namely Marketing, Refineries, Pipelines, R&D and Assam Oil Division. There are 8 Refineries under Refinery Division located at Vadodara(Gujarat) ,Mathura(UP),Panipat (Haryana), Barauni (Bihar), Haldia(WB),Bongaigaon (Assam),Guwahati (Assam)& Digboi(Assam) spreading all over India.

Panipat Refinery:

The Refinery typically consists of Process Units, off sites, Tankages, Utility system say Cooling Tower, Compressed Air System, Nitrogen System, Hydrogen Generation System and Captive Power Plant.

Presently I am working as General Manager (HS&E) in Panipat Refinery & Petrochemical Complex which is one of the largest Refinery & Petrochemical Complex in South East Asia.

A small write up of the Panipat Refinery & Petrochemical Complex is as under:

Panipat Refinery is Indian Oil's seventh and most technically advanced public sector refinery complex of India so far. Panipat Refinery complex is located in the district of Panipat, Haryana meeting the demand of petroleum products not only in Haryana, but in the entire North-Western region, including Punjab, J&K, Himachal Pradesh, Chandigarh, Uttarakhand, and parts of Rajasthan, U.P. and Delhi. It has a capacity to process a wide range of both indigenous and imported grades of crude oil.

Set up with an initial installed capacity of 6.0 MMTPA in 1998, Indian Oil's Panipat Refinery was built using world-class technology from IFP France; Haldor-Topsoe, Denmark; UNOCAL/UOP, USA and Stone & Webster, USA. However, with a view to meet the growing deficit of petroleum products, especially in the Northern region of the country, the capacity of Panipat Refinery was expanded to 12 MMTPA in August, 2006.

To meet environmental standards to produce Euro III / IV quality MS, the MSQ project consisting of PENEX (Isomerization) – 400 TMTA, Naphtha Hydrotreater Unit 410 TMTA, Reformate Splitter – 470 TMTA and FCC Gasoline Desulphurisation – 370 TMTA was completed and commissioned in November, 2009. Panipat Refinery is Indian Oil's first Refinery to switch over from BS-II/BS-III fuels to more Eco-Friendly BS III / IV fuels.

Panipat Refinery Additional Expansion Project (PRAEP) was a low cost option through maximum utilization / revamp of existing units / facilities for increasing the refining capacity of Panipat

Refinery from 12 MMTPA to 15 MMTPA (330,000BPD). The expansion was based on processing of 3 MMTPA high sulphur Crude. The project consisted of capacity revamp of

- a) Crude and Vacuum Distillation Units (CDU/VDU-I) from 6.0 to 7.5 MMTPA,
- b) Once through Hydrocracking Unit (OHCU) from 1.7 to 1.9 MMTPA
- c) Delayed Coking Unit (DCU) from 2.4 to 3.0 MMTPA;
- d) Amine Regeneration Unit (ARU) from 296 M3/Hr to 400 M3/ Hr

The project was completed and commissioned in November, 2010 and is fully operational, thereby increasing the installed capacity of Panipat to 15 MMTPA.

The Captive Power Plant has 3*25 MW TGs, 5*30 MW GTs totalling 225 MW. The average Power demand of the Refinery is 150 MW

Petrochemical Complex:

Realising the potential for value-addition to exportable surplus Naphtha, Indian Oil identified Petrochemicals as a prime driver of future growth and made huge investments in the petrochemical business. Towards achieving its erstwhile vision of becoming a leading petrochemical player in the country, Indian Oil embarked upon setting up world class Petrochemicals units comprising of PX/PTA complex and Naphtha Cracker Complex. The project was designed to synergise with the existing Panipat Refinery to generate a bouquet of value-added products.

With the commissioning of country's largest Purified Terephthalic Acid (PTA), Indian Oil has emerged as a leading petrochemicals player in the country.

Country's largest world-class Panipat Naphtha Cracker, built at a cost of Rs. 14, 439 Cr was commissioned in March 2010. Indian Oil People, with dedication and determination, completed the constructor and commissioning of the project in a record time of 46 months. Its flawless commissioning compares with the best in the world.

With a number of niche products to its credit today, the project is a cornerstone for Indian Oil's entry into petrochemicals and a new business line for growth. For the state of Haryana, the project has spurred the creation of a world class petrochemicals hub, which has engendered significant industrial activity in the last few years.

The polymer products from the Naphtha Cracker comprise of LLDPE, HDPE, Polypropylene, and the Petrochemical/ chemical feed stocks are MEG, DEG and Benzene. Applications of LLDPE include multilayer film for packaging, milk packing, water storage tanks and road barriers etc.

While HDPE is used for making bins and crates, pipes and pipe coating, woven sack bags, mosquito nets, containers, shopping bags etc. Benzene is used for production of detergents, pesticides, solvents, paints and varnishes, adhesives in rubber processing etc.

The project comprises of the following key processing facilities:

Process Units	Configuration	Licensor
Naphtha Cracker Unit (NCU) & Associated Units:	857,000 TPA Ethylene 660,000 TPA Propylene	ABB Lummus, USA
ii. Downstream Block		
Linear Low Density/ High Density Polyethylene (LLDPE/HDPE) Swing unit	350,000 MTPA	Nova Chemicals, Canada.
High Density Polyethylene Unit (HDPE)	300,000 MTPA	Basell, Germany
Polypropylene Unit (PP)	2 x 300,000 MTPA	Basell, Italy
Mono Ethylene Glycol Unit (MEG)	300,000 MTPA	Scientific Design, USA

The Captive Power Plant has 3*37 MW TGs, 5*25 MW GTs totalling 236 MW. The average Power demand of the Petrochemical complex is 120 MW

Feedback Certificate from the Units for the Audit Reports:

Feedback on study report submitted along with the application was conducted at different locations with the assistance from Energy Manager/Energy Auditors of that location.

The gap identified in the report for improvement of energy performance has been implemented by the concerned unit. Improvement of Energy Performance is a continuous process, which is evident from the yearly reduction of Fuel & Loss and reduction of MBN (Thousand British Thermal Unit per Barrel of Crude T' put per Energy Factor) of the Refineries. As such there is no feedback system of study reports submitted by Technical Audit Group.

Number of Resource Persons:

All the Refineries have independent set up of Technical Audit and sufficient number of Energy Managers & Energy Auditors. List of Energy Managers & Auditors of Panipat Refinery & Petrochemical Complex is attached as Annexure-1.

Subject wise Expertise (Sl.no.22 Annex. 2):

Every year Indian Oil has to sign MOU with Ministry where in stiff target has been fixed by Ministry for the Parameters like Crude T' put, Fuel & Loss reduction, MBN etc. The Technical

Audit has to be conducted by EA & EMs in all of the Process Unit including Captive Power Plant (CPP) and Utilities to reduce the Fuel consumption and MBN (Thousand Btu per Barrel of Crude T' put per Energy Factor). This is applicable for all the eight refineries of Indian Oil.

To achieve the stiff target set by Ministry, the Refineries regularly conduct EA of their Process Plant, CPP, Utilities and Offsite. We have conducted several Energy Audits in Electrical system, Process Plant, Buildings, out of which five reports are, attached as Annexure-3.

Instruments available:

Similarly all Refineries have adequate number of Testing Instruments (Both electrical & Thermal). The Testing Instruments list of Panipat Refinery & Petrochemical Complex is attached as Annexure-4.

Details of Training Programme:

Training Programme conducted at Panipat refinery & Petrochemical Complex is attached in Annexure-5. Similar Programme are being conducted in other refineries also. The Energy Auditors & Energy Managers extend the faculty support for that Programmes.

Study Reports

Sl.No	Name of the Project	Unit	Period of Audit Conducted
1	Comprehensive Energy Audit	Digboi Refinery	February, 2012
2	Energy Management System Manual	Bongaigaon Refinery	September, 2013
3	Energy Audit for identification of opportunities in improving energy and operational efficiencies in Fuel Oil, OHCU, Lube-Oil & DHDS Block	Haldia Refinery	December, 2013
4	Energy Audit of Buildings at Bongaigaon Refinery	Bongaigaon Refinery	December, 2013 to February, 2014
5	Joint Energy Audit of Panipat & Mathura Refinery and Electrical Audit of Guwahati Refinery	Panipat, Mathura & Guwahati Refinery	February, 2014 to March, 2014
6	Energy Audit on Panipat Refinery Administrative Building	Panipat Refinery	May, 2014