

Oil & Gas in India: The Milestones (1825-2012)



ONGC platform at Bombay High

Source: http://en.wikipedia.org/wiki/Bombay_High#mediaviewer/file:ONGCoilplatform.jpg (accessed on 17.06.2014)

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Upstream

1825: Lieutenant R. Wilcox of the 46th Regiment Native Infantry, who with his small survey party was on a military mission to maintain law and order, spotted oil seepages in the north-eastern corner of Assam in September.

1866: Hydrocarbon exploration began in India when Mr. Goodenough of the Calcutta-based McKillop Stewart Co. drilled a well near Jaypore in Upper Assam and struck oil. He, however, failed to establish satisfactory production.

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1867: H. B. Medicott of the Geological Survey of India (GSI) first started oil exploration in India in the Makum area of Assam.

The most astounding Indian oil history was made on 26 March by Mr. Goodenough when he struck oil at 35.97 metres at Makum (with a total production of 1135.62 litres). It was Asia's first mechanically drilled well. Before this discovery, three wells had been drilled in Jaypore which encountered some gas but little oil.

1889-1893: The first taste of commercial success came when a well was struck at Digboi in 1889 by the Assam Railways & Trading Company (AR&T). AR&T subsequently acquired a 77.7 square kilometre petroleum-rights concession in the Makum area of Assam, and by 1893 had drilled 10 wells at Digboi producing 757.08 litres/day.

(Today, Digboi boasts two energy wonders of the world—a hundred-year-old oil field that is still operational and the world's oldest operating oil refinery, which produces in excess of its capacity. Digboi Well No. 1 is preserved as a monument to the oil pioneers and their endeavours).

A sign on the way to Digboi oil refinery, Assam, India



Source: <http://shutterbugstories.blogspot.in/2011/02/digboi-to-pune-via-delhi-part-i.html>
(accessed on 17.06.2014)

1899: AR&T formed a new company, the Assam Oil Company (AOC), and set up a small refinery at Margharita (Upper Assam) with a capacity of 500 barrels of oil per day (bopd) to refine the oil from Digboi.

1911: The Burmah Oil Company (BOC) of UK arrived on the Indian scene in the Surma Valley (Upper Assam).

1915: BOC, after acquiring the oil interests of the Budderpore Oil Company Ltd (formed by a syndicate of Budderpore Tea Garden during 1911-13), started exploration/development of Badarpur structure in the Surma Valley (Upper Assam).

1917: The oil production in Assam, mainly from Digboi, at 43 bopd in 1901, trebled to 120 bopd in 1902. It further increased to 247 bopd in 1911, 435 bopd in 1917 and 5,500 to 7,000 bopd during the war years (i.e. the first half of the 1940s).

1921: BOC took over AOC in a phased manner.

1925: India first attempted to use geophysics in its search for oil with a torsion balance survey in the Bordubi area, Assam.

1930: Tata Engineering Co. drilled several wells at Jagatia, Gujarat and produced small amounts of gas during the 1930s.

1931: A well of BOC at Masimpur (near Badarpur) encountered high-pressure gas sand capable of yielding 84950.54 cubic metres of gas per day.

1937-39: Seismic surveys were initiated and a major 'High' located at Nahorkatiya in Upper Assam. The successful outcome of NHK-1 was a vindication of the geophysical methods of exploration.

(Nahorkatiya triggered a new wave of enthusiasm in the search for oil in the country and became the forerunner of discoveries not only in the Assam Basin but also in other basins.)

1948: The Geological Survey of India (GSI) started geophysical surveys of the Cambay area in Gujarat. By this time, BOC had abandoned the Badarpur field and AOC had abandoned the Makum field.

1950: BOC transferred its assets to Pakistan Petroleum Limited (PPL).

1952: Attock Oil Company (AOC) established a Rupee company, Pak Oilfields Ltd, in which Attock held a share of 70 percent. PPL discovered the largest gas field, Sui, in Baluchistan in Pakistan with estimated reserves of 226.53 billion cubic metres (bcm). AOC started test drilling at Nichuguard in the Naga Hills.

1953: AOC discovered oil in Nahorkatiya (Upper Assam) in 1953, the first oil discovery after independence.

1955: The Oil and Natural Gas Division was set up by the Government of India (GoI).

1955-1956: A delegation under the leadership of Mr. K.D. Malviya, Minister of Natural Resources, visited several European countries to study the status of the oil industry in those countries and to facilitate the training of Indian professionals for the purpose of exploring potential oil and gas reserves. Foreign experts from the USA, West Germany, Romania and the erstwhile U.S.S.R visited India to contribute their know-how. The visiting Soviet experts drew up a detailed plan for geological and

geophysical surveys and drilling operations to be carried out in the 2nd Five Year Plan (1956-57 to 1960-61).

In April 1956, the GoI adopted the Industrial Policy Resolution, which placed the mineral oil industry among the schedule 'A' industries, the future development of which was to be the sole and exclusive responsibility of the State.

1956: AOC discovered the Moran oil field (Southwest of Nahorkatiya, Upper Assam), the first deepest drilled well in Asia. The Oil and Natural Gas Division (within the Geological Survey of India) became the Oil and Natural Gas Commission (ONGC).

1957: The ONGC drilled two wells at Jawalamukhi in Punjab and found little gas. It suspended the exploration activities there because of the possibility of religious riots in the event of choking of the pathways of the Jawalamukhi temple flame.

1958: BOC and the GoI signed an agreement to take over Nahorkatiya and Moran, fields discovered by AOC, by forming Oil India Pvt Ltd (OIL), with the BOC holding a two-third share and the GoI one-third (this changed to equal shareholding in 1961). ONGC discovered a gas field (Lunej structure) in the Cambay Basin, Gujarat. Oil/gas was also discovered in Jawalamukhi (Punjab).

1959: ONGC became an autonomous body on October 15. ONGC first started exploration in the north-western parts of the country (Punjab, Rajasthan, Gujarat and Kutch) between 1956 and 1959.

1960: ONGC struck oil at Anklesvar (which turned out to be the largest field of the Cambay Basin south of the Narmada River, Gujarat) and Rudrasagar (Southwest of Moran, Assam).

A joint venture (JV) between the Government of West Bengal and Standard Vacuum Oil Co. conducted extensive surveys and drilled many wells during 1954-60 in the State. As all the wells were dry, the project was terminated in this year.

1961: Oil was struck by ONGC in the Kalol field in the basin north of the Narmada River, Gujarat.

1963: ONGC started offshore seismic surveys in the Gulf of Cambay. In the same year, ONGC struck oil in Sanand and Nawagam in Gujarat.

1964: ONGC discovered oil in Lakwa (Southwest of Moran, Upper Assam).

1968: ONGC discovered an oil field in Geleki in Assam.

1969: ONGC discovered the gas field, Manhar Tibba, in Jaisalmer. This was the first gas discovery in Rajasthan. OIL discovered oil in Kusijan (between Duliajan and Digboi) in Assam. Several oil/gas fields

were found by ONGC in the basin north of the Narmada of which the major ones were Kalol, Nawagam, Sanand, North and South Kadi.

1970: ONGC spudded India's first offshore well in Aliabet Island in the Gulf of Cambay although oil was not found in commercial quantities.

1972: OIL discovered oil in Jorajan field in Assam.

1973: OIL discovered gas at Eocene in Tengakhat (between Dibrugarh and Duliajan) in Assam.

1974: ONGC discovered oil in the Bombay Offshore Basin (southern part of Bombay High) and started commercial production two years later. This was the first commercial oil discovery of carbonates in the country. At the end of the decade, Bombay High production was almost 90,000 barrels per day (bpd). Between 1969 and 1979, ONGC discovered the major oilfields Heera, Panna, Mukta and the smaller fields Ratna, R-series and D1 structure in the Bombay Offshore Basin.

1976: OIL struck oil in Kharsang (on the south bank of the Noa-Dihing River) in Arunachal Pradesh. In the same year, ONGC discovered India's biggest gas find of 283.17 BCM in the Bassein fields, off Mumbai's coast. Other gas fields discovered by ONGC were mid-Tapti, south-Tapti and B-55.

1978: OIL ventured from Assam into Orissa, onshore and offshore. During 1979-89, it also went into offshore off the Andamans (1st well drilled in 1985-86 and pulled out in 1987-88 temporarily) and onshore Rajasthan (started surveys there in 1984-85).

1979: The first strategic initiative for inviting foreign companies for foreign technologies, expertise and above all capital to deal with the future challenges and commitments of the Indian oil economy was taken by offering 32 exploration blocks (17 offshore and 15 onshore) covering eight basins for global bidding. In the second half of the 1980s, nine contracts were signed for offshore exploration.

1980: ONGC discovered oil in offshore Ratnagiri structures (Ratnagiri 9, 12) of the Bombay Offshore Basin and gas at Dahej, Cambay Basin, Gujarat. By the end of this year, OIL & ONGC had together drilled over 3,100 wells totalling about 4.9 million metres, and the inventory of geological reserves of oil reached over 2.3 billion tonnes, of which 478 million tonnes were considered recoverable.

From 1980, the government started to offer sedimentary basins in a systematic way through bidding rounds to foreign oil companies for exploration and production. The two rounds between 1980 and 1986 were not very successful. In the first round, 32 fields and in the second round, 8 medium and 33 small fields were offered.

1981-82: The government took over Oil India Ltd. and it become a full-fledged public sector company on October 14, 1981. During 1981-82, OIL delivered 3.501 million tonnes of crude oil.

1982: ONGC made its biggest onshore gas discovery of 96.29 BCM in the Gandhar field, Cambay Basin, Gujarat.

1983-84: ONGC struck gas at Razole (onshore) in the Krishna-Godavari (KG) Basin, Andhra Pradesh and in Ghotaru extension in the Jaisalmer Basin, Rajasthan in this period. It also discovered oil in Changmaigon in Assam in 1984.

1985: ONGC struck oil in Kaovikalappal, Narimanam and Nannilam in Cauvery Basin (Tamil Nadu, Karnataka and Kerala) in the period from 1985-1989. The Krishna-Godavari and Cauvery Basins, both onshore and offshore, were put on the Indian and global maps with several substantial discoveries being made during 1985-88.

1986: The third round of international bidding for exploration blocks containing more attractive terms such as exemption from royalty payments and minimum expenditure commitments was organised. ONGC and OIL were given the option to take 40 percent stake in the joint venture if the fields were found viable. Some foreign companies participated in this round but there was no committed exploration or breakthrough discovery. IOC's new Foreshore Terminal was commissioned at Madras.

1986-87: ONGC struck oil in the Tapti offshore area and Namti structure (Assam).

1989: OIL discovered commercially exploitable gas in the Tanot (Mata Temple) Structure in Rajasthan. During 1989-90, oil production reached a peak of 692,000 bpd and India's oil dependency was reduced to 32 percent.

1989-90: ONGC western offshore production reached a peak of 21.72 Million Metric Tonnes (MMT). South Heera field was discovered offshore Mumbai.

1990: By this time, the government had invited four rounds of bidding for blocks. One noticeable feature of the fourth round was that Indian private companies were allowed to participate along with foreign partners for the first time. However, no major field was discovered by these partnerships.

1991-1994: The liberalised economic policy adopted by the GoI in July 1991 sought to deregulate and de-license the core sectors (including the petroleum sector) with partial disinvestments of government equity in Public Sector Undertakings along with other measures. As a consequence, ONGC was re-organised as a limited company under the Companies Act, 1956 in February 1994.

1993: After the conversion of the erstwhile Oil & Natural Gas Commission to that of the Oil & Natural Gas Corporation Limited in this year, the government disinvested 2 percent of its shares through competitive bidding. Subsequently, ONGC expanded its equity by another 2 percent by offering shares to its employees.

1994: The government offered a more attractive option to foreign and private companies. However, this culminated in controversy concerning the Production Sharing Agreements (PSAs) offered during this year. ONGC undertook exploitation of Coal Bed Methane (CBM) potential in the Damodar Valley.

1996: ONGC's major projects included installing an HX-HY platform for the development of Heera Phase III, completion of Hazira terminal phase IIIA, and the two EOR projects in the heavy oil belt in North Gujarat. In addition, ONGC submitted four new projects for government approval.

From 1991 to 1996, the government held five rounds of bidding for exploration acreages offering as many as 126 blocks, ranging in size from a few hundred square kilometres to over 50,000 square kilometres. 11 contracts were awarded. Some of the important companies which were either awarded contracts or participated in the exploration round were: Shell, Occidental, Amoco and Enron. In this period, the process of opening up the oil and gas sector gathered momentum and was more streamlined in approach.

1997: ONGC took up joint venture projects in the fields of exploration, development and production in seven countries: the USA, Russia, Vietnam, Yemen, Tunisia, Egypt and Kazakhstan. The Institute of Oil and Gas Production Technology (IOGPT), a premier research and development institute of ONGC was awarded the prestigious certificate of ISO 9001 for design development and consultancy, including lab study and training for hydrocarbon production, processing and refining. The Royal Dutch Shell group, the world's largest oil company, joined hands with ONGC to help revive production at the Neelam oil field. For the first time in India, ONGC installed a 24-hour video conferencing facility from its control room at Bandra to offshore platforms in the Mumbai Offshore Basin.

1997-98: The Indian government formulated the New Exploration Licensing Policy (NELP) to provide a level playing field to both public and private sector companies in exploration and production of hydrocarbons with the Directorate General of Hydrocarbons (DGH) as the nodal agency for its implementation. This brought major liberalisation in the sector and opened up the exploration and production (E&P) sector for private and foreign investment, where 100 percent Foreign Direct Investment (FDI) was allowed. Under NELP, which became effective in February 1999, acreages were offered to participating companies through the process of open competitive bidding. The terms and conditions of this open and transparent policy ranked amongst the most attractive in the world.

1998: ONGC launched a major oil hunt for the first time in the deep waters off the KG Basin when its refurbished offshore rig, Sagar Vijay, commenced drilling operations at a 530-metre depth in a structure off the Amalapuram coast in south Andhra Pradesh.

1999: NELP-I: Under the first round of New Exploration Licensing Policy, the GoI invited bids on 8 January 1999 for 48 blocks for exploration of oil and natural gas. Of these, 12 blocks were deepwater (beyond 400m isobath), 26 shallow offshore and 10 on land. Production Sharing Contracts (PSCs) were signed for 24 exploration blocks (7 deepwater, 16 shallow offshore and 1 on land).

1999: In March, ONGC, the Indian Oil Corporation (IOC)—a downstream giant—and the Gas Authority of India Limited (GAIL), the country's only gas marketing company, agreed to have cross holdings in each other's stocks. This paved the way for long-term strategic alliances both for domestic and overseas business opportunities in the energy value chain. Consequently, the government sold off 10 percent of its shares in ONGC to IOC and 2.5 percent to GAIL. With this, the government holding in ONGC came down to 84.11 percent. ONGC mooted the idea of setting up a separate subsidiary in information technology to develop operational and distribution expertise for the oil and petroleum industry.

2000: GoI shares in Lubrizol India Ltd were acquired, and the company became a 50:50 joint venture between Indian Oil and the Lubrizol Corporation of the USA. They entered oil exploration and production as consortium partners with an award of two blocks under NELP-I.

ONGC and IOC proposed a strategic partnership by way of setting up an independent corporate entity for exploration and production of hydrocarbons and refining and marketing abroad. ONGC signed a Memorandum of Understanding (MoU) with Venezuelan oil major Petroles for joint efforts in upstream activities. ONGC and Reliance joined hands with Algeria's Sonatrach to secure an oil field in Iraq for crude oil production. ONGC and Bombay Suburban Electric Supply (BSES) signed an MoU wherein natural gas from an oil well—75 km north of Bombay High—was to be supplied exclusively to BSES.

2000-01: NELP-II: Under the second round of the New Exploration Licensing Policy, the GoI invited bids on 15 December 2000 for 25 blocks for exploration of oil and natural gas. Of these, 8 blocks were deepwater, 8 shallow offshore and 9 onland. In March 2001, PSCs were signed for 23 exploration blocks (8 deepwater, 8 shallow offshore and 7 onland).

2001: Eight exploration blocks and two CBM blocks were awarded to an Indian Oil-led consortium under NELP-II and CBM-I respectively. Indian Oil Mauritius Ltd (IOML) was incorporated as the first overseas subsidiary. ONGC tied up with IOC for undertaking oil exploration for eight deepwater blocks under NELP-II. The tie-up aimed at reducing financial risks involved in deepwater exploration. ONGC also entered the refining sector with the commissioning of the Tatipaka mini-refinery in East Godavari district.

2002: NELP-III: Under the third round of the New Exploration Licensing Policy, the GoI invited bids for 27 blocks for exploration of oil and natural gas. Of these, 9 blocks were deepwater, 7 shallow offshore and 11 onland. PSCs were signed for 23 exploration blocks (9 deepwater, 6 shallow offshore and 8 onland). ONGC decided to offer equity to international oil majors following which the company would enter into agreements for deepwater exploration. ONGC Videsh tied up with Talisman Energy Inc of Canada for the purchase of 25 percent interest in the Greater Nile project in Sudan with oil reserves of 150 MMT. Reliance announced India's biggest gas discovery (in the Krishna-Godavari Basin in Andhra Pradesh) in nearly three decades and one of the largest gas discoveries in the world during this year. The in-place volume of natural gas was in excess of 198.22 BCM, equivalent to about 1.2 billion barrels of crude oil. This was the first ever discovery by an Indian private sector company. Reliance acquired control of Indian Petrochemicals Corporation Limited (IPCL)—India's second largest

petrochemicals company. The merger of Reliance Petroleum Limited with Reliance Industries Limited (RIL) was announced. Reliance Industries became the largest private sector company in India on all major financial parameters including sales, profits, net worth, assets, and exports.

2002-03: ONGC entered the global field through its subsidiary, ONGC Videsh Ltd (OVL). ONGC made major investments in Vietnam, Sakhalin and Sudan. It earned its first hydrocarbon revenue from its investment in Vietnam.

2003: NELP-IV: Under the fourth round of the New Exploration Licensing Policy, the GoI invited bids on 8 May for 24 blocks for exploration of oil and natural gas. Of these, 12 blocks were deepwater, 1 shallow offshore and 11 onland. PSCs were signed for 20 exploration blocks.

ONGC discovered major oil and gas fields at five new locations (Laiplingoan in the Upper Assam basin and Kavitam in the KG basin—onland; B-22-5 in the Mumbai Offshore Basin and GS-KW in the KG Basin—offshore). ONGC received the first consignment of its equity oil from the Greater Nile project in Sudan, the first ever shipment of Indian crude from a foreign field. GAIL had initial success in the form of a significant gas find in the A-1 block in Myanmar and with the discovery of oil and gas in the Cambay Block. The Vizag- Secunderabad LPG pipeline, a 580-km pipeline with a maximum throughput of 1.16 Million Metric Tonnes Per Annum (MMTPA) was completed.

2004: ONGC launched a deepwater campaign named "Sagar Sammriddhi". It struck oil in the Bassein offshore field. It decided to float a special economic zone (SEZ) at Dahej, Gujarat in joint collaboration with the Gujarat Industrial Development Corporation (GIDC). ONGC also discovered gas reserves at Khedabari village in Sonamura sub-division of West Tripura district with a production capacity of over 0.2 million cubic metres per day.

Reliance Industries Limited (RIL) emerged as the 'Petrochemicals Company of the Year' at the prestigious sixth annual Platts Global Energy Awards ceremony in New York, USA. Reliance announced it had struck gas off the Orissa coast in the Bay of Bengal. In January, Cairn added the Mangala oil field in Rajasthan to its assets and this, along with the other discoveries in Rajasthan, are expected to form the core of future developments in India.

2005: NELP-V: Under the fifth round of the New Exploration Licensing Policy, the GoI invited bids for 20 blocks for exploration of oil and natural gas. Of these, 6 blocks were deepwater, 2 shallow offshore and 12 onland. PSCs were signed for all 20 exploration blocks. IOC signed an exploration and production sharing agreement with the National Oil Corporation of Libya for a block in the Sirte Basin of Libya.

2006: NELP-VI: A total of 55 blocks were offered during the NELP-VI round for exploration of oil and natural gas in 16 prospective sedimentary basins which consisted of 25 onland, 6 shallow water and 24 deepwater blocks. 165 bids were received from 68 E&P companies (36 foreign and 32 Indian) participating in the bidding process as consortiums/individually. PSCs were signed for 52 exploration blocks (21 deepwater, 6 shallow water and 25 onland).

2007: NELP-VII: A total of 57 blocks were offered during the NELP-VII round for exploration of oil and natural gas in 18 prospective sedimentary basins consisting of 29 onland, 9 shallow water and 19 deepwater blocks. Contracts were signed for 41 blocks out of which 11 were deepwater blocks, 7 shallow water blocks and 23 onland blocks. ONGC signed an MoU with a global oil major, BP, to collaborate in the E&P business in India and abroad.

2008: ONGC started drilling in the Cauvery deepwater block. ONGC and Rocksource signed an Agreement for Partnership in Deepwater Block.

2009: ONGC reported a gas discovery in the west Tripura block in the Assam Arakan Basin. ONGC achieved all-time record in oil and gas production. It awarded a contract worth over Rs 7.53 billion to a UAE-based company. RIL joined the league of global deepwater oil and gas operators after it started producing sweet crude of 420 API in its KG-D6 block. The production of oil in KG-D6 was commissioned in just over two years of its discovery, making it the world's fastest green-field deepwater oil development project.

2010: NELP-VIII: Under the eighth round of the New Exploration Licensing Policy (NELP-VIII), the Indian government signed 31 PSCs on 30 June. It included 8 deepwater blocks, 11 shallow water blocks and 12 onland blocks; these last are in the states of Assam (2), Gujarat (8), Madhya Pradesh (1) and Manipur (1).

GAIL was ranked the No.1 company among gas utilities in Asia in the Platts Global Ranking. During the year, RIL and BP announced a strategic partnership in the oil and gas business. This partnership consisted of BP taking a 30 percent stake in 23 oil and gas PSCs that Reliance operated in India, including the KG-D6 block, and the formation of a joint venture (50:50) for sourcing and marketing gas in India.

2011: GAIL acquired a 20 percent stake in the Houston-based Carrizo Oil and Gas's Eagle Ford shale acreage, the first instance of a PSU acquiring shale assets in the USA. A wholly-owned subsidiary company, GAIL Global (USA) Inc., was formed in Houston, and an office was opened. The office of GAIL Global (Singapore) Pte Ltd opened in Singapore.

2012: NELP-IX: Under the ninth round of the New Exploration Licensing Policy (NELP-IX), the Indian government signed 13 Production Sharing Contracts on 28 March for 2 shallow water blocks and 11 onland blocks, in the states of Assam (2), Gujarat (6), Madhya Pradesh (2) and Rajasthan (1) and in the basins of Gujarat-Kutch (2), Assam-Arakan (2), Cambay (6), Rajasthan (1) and Vindhyan (2).

2012-13: Cairn India became one of the largest independent oil and gas exploration and production companies in India with a market capitalisation of US\$ 10 billion. Cairn India was rated as the fastest-growing energy company in the world, as per the 2012 & 2013 Platts Top 250 Global Energy Company Rankings.

Downstream

1901: A small oil refinery was set up in Margherita in 1893 to process Digboi crude but it closed in 1902. In the meantime, the Assam Oil Company (formed by AR&TC to take over the petroleum interests including the Digboi and Makum concessions) commissioned India's first oil refinery (0.5 MMTPA) at Digboi in December 1901. It is the world's oldest operating refinery, producing in excess of its original capacity (present capacity 0.65 mt). It was taken over by IOC in 1981 and upgraded in July 1996.

1923: The Digboi refinery was entirely rebuilt and its capacity increased. By 1926, two product pipelines were laid from Digboi to Tinsukia in Assam.

1928: Asiatic Petroleum (India) joined hands with the Burmah Oil Company—an active producer, refiner and distributor of petroleum products, particularly in the Indian and Burmese markets. This alliance led to the formation of the Burmah-Shell Oil Storage and Distributing Company of India Limited. A pioneer in more ways than one, Burmah Shell began its operations with the import and marketing of kerosene. This was imported in bulk and transported in 4-gallon and 1-gallon tins through rail, road and country craft all over India. With motor cars came canned petrol, followed by service stations.

1930: In the 1930s, retail sales points were built along roadside driveways and service stations began to appear and became accepted as a part of road development. After the war, Burmah Shell established efficient and up-to-date service and filling stations to give its customers the highest possible standard of service.

1947: The Digboi refinery, with a capacity of less than half a million tonne capacity, also wholly owned by a subsidiary of the Burma Oil Co—a British concern which held 50 percent partnership in Burma-Shell—covered only a small part of the consumption but met only 9 percent of national requirement of kerosene, 11 percent of petrol and 5 percent of fuel oil.

1954: A second refinery was set up at Trombay by the Standard Vacuum Oil Company.

1955: A third refinery was set up at Bombay by Burmah-Shell Refineries Ltd.

1957: Catlex Oil Refinery set up a fourth refinery at Visakhapatnam.

1958: Indian Refinery Ltd came into being.

1959: Oil India Limited was formed on 18 February. It had oil assets of 40 Million Metric Tonnes (MMT) of which 30 MMT were proved oil reserves. The Indian Oil Company Ltd (IOCL) was established on 30 June 1959 for marketing petroleum products. Oil India Private Ltd (OIL) incorporated and registered as a Rupee Company.

1960: IOC's first kerosene agency was commissioned at Mangalagiri in the Guntur district of Andhra Pradesh—M/s. Star Enterprises. An agreement was signed with Soyuznefteexport of the USSR for supply of kerosene and diesel. The first import parcel of 11,390 tonnes of diesel from Russia was received at Pir Pau Jetty in Bombay on 17 August from aboard MV Uzhgorod and stored at Antop Hill installation, taken over from the Defence Services. Indian Refineries Ltd was merged with IOC. The capital after amalgamation was Rs 34,97,25,000. Later 92,897 shares were subscribed for by government.

1961: IOC's first major coastal terminal was commissioned at Kandla. GoI and BOC become equal partners in OIL.

1962: Oil India set up a 1,157-km long fully automated telemetric pipeline with 212 km of looping with a total capacity to transport over 6 MMTPA in 1962. The double skinned crude oil pipeline traversed 78 river crossings including the Brahmaputra River, meandering through paddy fields, forests and swamps. There were 9 pumping stations, 17 repeater stations and a terminal at Barauni.

IOC's first petrol/diesel station (retail outlet) was commissioned at Anjar near Kandla in Gujrat—M/s. Rasiklal Ashokkumar & Co. The first public sector refinery came into being at Guwahati. In the same year, the 401 km Nahorkatiya-Guwahati pipeline was also commissioned. In November, IOC signed an agreement with Mobil Petroleum Co. Ltd. of, New York, to set up two blending plants in Calcutta and Mumbai.

1963: The world's first crude oil conditioning plant was commissioned at Nahorkatiya. The Cochin Refinery was established with a capacity of 2.5 MMTPA. Pandit Nehru laid the foundation stone for the Gujarat Refinery (IOC). On 25 March, a new company was floated under the name Indian Oil Blending Ltd to undertake construction. It was floated as a joint venture of Mobil and IOC on a 50:50 basis.

1964: Indian Refineries Ltd merged with the Indian Oil Company with effect from 1st September, 1964, and the Indian Oil Company was renamed the Indian Oil Corporation Ltd. IOCL entered the aviation fuelling business, supplying the Defence Services. The first airfield refuelling station was inaugurated at Palam, Delhi. OIL commissioned the 757 km Guwahati-Barauni (Bihar) crude oil pipeline. In the same year India's first long-distance product pipeline was commissioned from the Guwahati Refinery to Siliguri (GSPL).

1965: 'Indane' brand LPG was launched at Kolkata by IOCL. IOC's Koyali refinery with an initial capacity of 2 mtpa in Gujarat came into being in 1965. ONGC commissioned a pipeline from Anklesvar to the Koyali Refinery in the same year. The Barauni Refinery was inaugurated by Prof. Humayun Kabir, Minister of Petroleum & Chemicals.

1966: The Koyali Refinery was dedicated to the nation by Dr. S. Radhakrishnan, President of India. The Barauni-Kanpur Pipeline (BKPL) and the Koyali-Ahmedabad Product Pipeline (KAPL) were commissioned.

1967: IOC's Haldia Barauni product pipeline was commissioned for maiden export of petroleum products to the Far East.

1968: The first link of ONGC with OIL was established with the commissioning of a pipeline between the Lakwa field and the OIL trunk pipeline at Moran. OIL commissioned the 1,158 km oil pipeline to the Guwahati and Barauni refineries.

1969: A wholly owned subsidiary of IOC was registered on 24 October, under the name Indian Oil International Ltd for the sale of the Corporation's POL (Petroleum, Oil, and Lubricants) products within the territory of Nepal. The Madras Refinery came on stream with an initial capacity of 2.5 MMTPA.

1972: SERVO, the first indigenous lubricant, was launched by IOC. IOC's Haldia-Maurigram product pipeline was also commissioned.

1973: Mrs. Indira Gandhi, Prime Minister of India, laid the foundation stone for the Mathura Refinery.

1974: IOC's Haldia Refinery was commissioned. The Haldia-Maurigram product pipeline was extended to Rajbandh.

1975: The world's highest altitude retail outlet was commissioned at Leh in Ladakh by IOCL.

1976: On 24 January 1976, the Burmah Shell Group of Companies was taken over by the Indian government to form Bharat Refineries Limited. It was also the first refinery in the country to process the newly found indigenous crude in Bombay High. Today, Bharat Petroleum Corporation Limited has four refineries at Kochi (Kerala), Numaligarh (Assam) and at Mumbai and Bina (Madhya Pradesh).

1977: Bharat Refineries Limited was renamed Bharat Petroleum Corporation Ltd. The Fuel-efficient Nutan kerosene wick stove was launched by IOC's R&D Centre. Today Bharat Petroleum Corporation Limited has four refineries at Kochi (Kerala), Numaligarh (Assam), Mumbai (Maharashtra) and Bina (Madhya Pradesh).

1978: IOC's phase-wise commissioning of India's first cross-country crude oil pipeline from Salaya to Mathura began; single-point mooring (SPM) was set up at Salaya.

1979: IOC undertook to set up facilities to produce 15,000 tonnes per year of bright stock (LVI) to substitute for the import of cylinder oil. The project was completed during 1983-84.

1981: The Digboi Refinery and Assam Oil Company's (AOC) marketing operations were vested in Indian Oil and became the Assam Oil Division (AOD). The government took over Oil India Ltd and it

became a full-fledged public sector company on October 14. During 1981-82, OIL delivered 3.501 million tonnes of crude oil.

1982: IOC's project for conversion of MSHE/residue into more valuable products like LPG, motor spirit, HSD and LDO was completed.

1983: The Mathura Refinery was inaugurated, and massive augmentation of LPG storage and distribution facilities was undertaken by IOC.

1984: IOC's Taluka kerosene depots were commissioned to improve the availability of kerosene in rural and hilly areas in addition to Multipurpose Distribution Centres, and Foreshore Terminal commissioned at Kandla Port. GAIL (India) Ltd. was incorporated in August 1984 as a Central Public Sector Undertaking (PSU) under the Ministry of Petroleum & Natural Gas.

1986: IOC's new Foreshore Terminal was commissioned at Madras.

1986-87: IOC's two new Aviation Fuel Stations (AFS) were commissioned at Indira Gandhi International Airport, New Delhi and Imphal (Manipur).

1987: IOC began test marketing compact 5 kg LPG cylinders in the Garo Hills and Kumaon regions. GAIL's HVJ (Hazira-Vijaipur-Jagdishpur) Natural Gas pipeline was commissioned. IOC commissioned 2 new aviation fuel stations at Jaisalmer and Utterlai in Rajasthan. It was proposed to extend the hydrant refuelling system at Sahar International Airport, Mumbai (Sahar Phase III) and put up a modern hydrant refuelling system at Goa and Arkonam.

1988: Gas from Bombay High started flowing through the HBJ (Haldia-Bijapur-Jagdishpur) pipeline. IOC added 8 new bottling plants at Delhi (Tikrikalan), Karnal, Haldwani, Ajmer, Bhopal, Jamshedpur, Balasore and Parwanoo (Baddi). With this, the bottling capacity of the Corporation at its 25 plants went up by 2,49,000 tonnes per annum, representing a 36 percent increase over the previous year's capacity of 6,98,500 tonnes.

1989: IOC's Salaya-Mathura crude oil pipeline was suitably modified for handling Bombay High Crude during winter.

1990: IOC's 1st LPG bottling plant of the Assam Oil Division was commissioned at Silchar and the Kandla-Bhatinda product pipeline project was approved.

1991: IOC's Digboi Refinery modernisation project was initiated. A bunkering facility at Paradip was commissioned.

1992: Punj Llyod became a Public Limited company and won its first overseas pipeline contract in Indonesia.

1993: A new concept of Computer Remote Operational Automatic LPG Filling System (RALFS) was developed and commissioned by IOC at the Calcutta bottling plant resulting in a substantial increase in productivity. 6 new bottling plants were commissioned at Delhi, Amhedabad, Belgaum, Trichy, Farrukhadia and Guwahati.

1994: India's first hydrocracker was commissioned at the Gujarat Refinery (IOC). GAIL's 1st JV Mahanagar Gas Limited was formed with British Gas, incorporated to implement the Mumbai City Gas Distribution project.

1995: IOC entered into collaboration with Tata Chemicals Ltd. to setting up a grassroots refinery of 6 MMT at village Baholl in the Karnal district of Haryana. The ultimate equity participation in the joint venture company was: IOC–26 percent, Tata Chemicals Ltd-16 percent; and the balance 48 percent was issued to the public, including NRIs. The joint venture company was incorporated as Tata Indian Oil Refineries Limited.

Punj Llyod got its first Engineering, Procurement and Construction (EPC) contract in the oil and gas sector in India. The Indian Oil Institute of Petroleum Management was inaugurated at Gurgaon.

1996 Indian Oiltanking Ltd was incorporated as a JV company with M/s Oiltanking GmbH, Germany and IBP Co. Ltd. The Kandla-Bhatinda product pipeline was inaugurated. A state-of-the-art LPG import terminal was commissioned at Kandla, and the modernisation of the vintage Digboi Refinery was completed.

1996-97: Reliance became the first private sector company to be rated by international credit rating agencies. S&P rated it BB+ with a stable outlook but constrained by the Sovereign Ceiling. Moody's rated it Baa3, Investment grade, constrained by the Sovereign Ceilings. Reliance was the 1st corporate in Asia to issue 50-and 100-year bonds in the US debt market.

1997: The GoI granted Navratna status to GAIL. Petronet India Ltd was incorporated as a JV company with BPC, HPC and others.

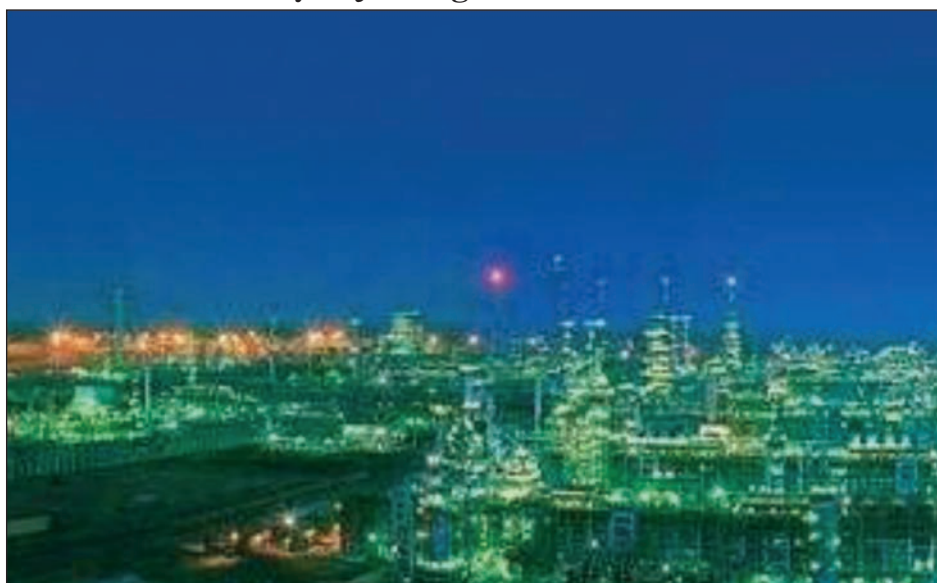
1998: IOC entered into an MoU with Reliance Petroleum for marketing and distribution of petroleum products of the latter. With this agreement, IOC had the sole rights to market Reliance's products manufactured at its 15 MMT refinery at Jamnagar, Gujarat. Today, Indian Oil is the largest commercial organisation in India, the only Indian company to feature in the Fortune Global 500 list, is ranked 30th in terms of sales and profits among the world's petroleum companies. Reliance completed the phase-II expansion of the Hazira Petrochemicals Complex including the world's largest multifeed cracker, PET plant, MEG plant, PTA plant, and PE plant.

Punjab Llyod was awarded a project for the construction of India's first LNG and regasification terminal at Dabhol, India. It got its first refinery project, the de-sulphurisation unit of IOCL's Mathura refinery. The Indian Oil Board was reconstituted under the Navaratna concept, with the induction of five part-time non-official independent directors. IOC's Panipat Refinery and Haldia-Barauni crude oil pipeline were commissioned. Indraprastha Gas Limited (IGL) was incorporated to supply gas to the household sector, transport sector and commercial consumers in Delhi.

1999: Indian Oil's Mathura and Gujarat refineries were presented the Golden Peacock Environment Management Award by Union Minister of Environment and Forests, Suresh Prabhu. IOC commissioned a crude pipeline from Haldia to its Barauni refinery enabling the latter to achieve total capacity utilisation, and eventually meet the crude deficit in the Bongaigaon Refinery and Petrochemicals Ltd (BRPL) and the Numaligarh Refinery Ltd (NRL).

1999-2000: Reliance started commercial production at a 27 million tpa refinery, the 5th largest in the world. It also started the world's largest PP plant of 0.6 million tpa, the world's largest PX Plant of 1.4 million tpa, India's largest port with capacity of 50 million tpa, and the world's largest grassroots refinery.

Reliance Oil refinery in Jamnagar



Source: http://en.wikipedia.org/wiki/Jamnagar_Refinery#mediaviewer/file:Jamnagar_Refinery.jpg
(accessed on 17.06.2014)

2000: Reliance Petroleum and Indian Oil presented a proposal to the Ministry of Petroleum and Natural Gas involving the formation of a new joint venture company to execute the Rs 44 billion Central Indian pipeline. IOC introduced an interactive voice recording system for its Indane LPG customers. This facilitated round-the-clock service to customers.

2001: ONGC also entered the refining sector with the commissioning of the Tatipaka mini-refinery in the East Godavari district. GAIL's Jamnagar-Loni LPG Pipeline Project, the world's longest and India's first cross-country (1269-km long) LPG pipeline was commissioned. The Digboi Refinery completed 100 years of operation.

A stamp commemorating the Digboi Refinery



Source: <http://www.indiapost.gov.in/stamps2001.aspx> (accessed on 17.06.2014)

2002: Lanka IOC Pvt Ltd (LIOC) was incorporated as a wholly-owned subsidiary. A branchline on Barauni-Kanpur product pipeline to Lucknow was commissioned. The Haldia-Barauni crude oil pipeline was augmented from 4.2 to 7.5 MMTPA.

Reliance acquired control of Indian Petrochemicals Corporation Limited (IPCL)—India's second largest petrochemicals company.

2002-03: After taking over MRPL from the A V Birla Group, ONGC diversified into the downstream sector and ONGC entered the retailing business.

2003: IOC's LIOC commenced retail operations in Sri Lanka and became the first Indian petroleum company to begin downstream marketing operations overseas. Gasohol, 5 percent ethanol-blended petrol, was introduced in select states.

Reliance's refinery at Jamnagar was ranked best in the Shell Benchmarking for the third consecutive year in 'Energy and Loss' performance from amongst 50 refineries worldwide. Reliance struck oil in an onshore block in Yemen, where it had an equity oil position.

2004: LIOC created history on the Colombo Stock Exchange as the biggest ever equity issue in Sri Lanka. The IPO offered a 25 percent stake and was oversubscribed 11.6 times on the first day. The world's largest single train kerosene-to-LAB (Linear Alkyl Benzene) plant was commissioned in Gujarat, signalling Indian Oil's entry into petrochemicals. Indian Oil paid the highest-ever dividend of 200 percent (for the fiscal year 2003), amounting to Rs 24.53 billion, to shareholders. The concept of branded retail outlets and customer service under an umbrella brand, “XTRA”, was launched. The Panipat-Rewari product pipeline was commissioned.

GAIL's Dahej-Vijaipur natural gas pipeline was commissioned. A wholly-owned subsidiary company GAIL Global (Singapore) Pte Ltd was formed in Singapore. Platts declared GAIL the first among Global Gas Utilities based on Return on Invested Capital (ROIC) in its worldwide survey of the Top 250 Energy Companies in this year. Tripura Natural Gas Co. Ltd., a JV for city gas projects in Tripura, and UP Central Gas Ltd., a JV for city gas projects with BPCL in Kanpur, were incorporated. GAIL acquired a 15 percent equity stake in NatGas, Egypt.

2005: The Mathura Refinery became the first Indian refinery to produce Euro-III compliant diesel with the commissioning of a diesel hydrotreater.

2006: Indian Oil Blending Ltd (IOBL) merged with its parent company. Indian Oil Panipat Refinery capacity was enhanced from 9 to 12 MMTPA. The Chennai-Trichy-Madurai product pipeline was dedicated to the nation. The Kandla-Bhatinda product pipeline was converted to crude oil service and renamed the Mundra-Panipat pipeline. Koyali-Dahej pipeline was commissioned for product exports. Indian Oil Sky Tanking Ltd was incorporated as a JV company with Indian Oil Tanking and Sky Tanking, Germany. IOC Middle East FZE incorporated in the UAE as an overseas subsidiary. Suntera Nigeria 205 Ltd incorporated as a JV Company with Oil India and Suntera Resources, Cyprus. GAIL brought India's first spot LNG cargo at Dahej.

2007: IOC's Panipat Refinery capacity doubled from 6 to 12 MMTPA. Facilities for handling heavy crude oil were commissioned at Mundra; a branch pipeline was laid from Lasariya to Chittaurgarh on the Sidhpur-Sanganer product pipeline. The concept of 'LNG at the doorstep' was launched for customers located away from gas pipelines. In 2006-07, IOC's turnover crossed the Rs. 2,000 billion mark—the only corporate in India to do so. Brahmaputra Cracker and Polymer Limited, a JV company led by GAIL, was formed for implementing the Assam Gas Cracker Project.

2008: The Indian Oil Chairman was elected President of the World LP Gas Association. IOC's First LPG pipeline was commissioned from Panipat to Jalandhar. GAIL incorporated for CGD, and the Dahej-Panvel-Dabhol pipeline was commissioned. GAIL won the rights for rolling out city gas distribution projects in Meerut, Sonapat, Dewas and Kota.

Reliance signed an MoU with GAIL to explore opportunities to set up petrochemical plants in feedstock-rich countries. In the Refining & Marketing business, Reliance took over majority control of the Gulf Africa Petroleum Corporation (GAPCO) and started shipping products to the East African markets.

2009: With the commissioning of the new refinery in its Special Economic Zone (SEZ), RIL's Jamnagar refinery became the petroleum hub of the world. With 1.24 million barrels per day of nominal crude processing capacity, it is the single largest refining complex in the world.

The 'historic amalgamation' of Bongaigaon Refinery & Petrochemicals Ltd (BRPL) with the parent company, IndianOil, became effective from 25 March of this year. BRPL was inducted as an IndianOil

Group Company on 29 March 2001. The Paradip-Haldia crude oil pipeline was commissioned, with SPM (Single-Point Mooring).

The Mundra-Panipat crude oil pipeline capacity was augmented from 6 to 9 MMTPA. IndianOil-CREDA Bio-fuels Ltd was incorporated as a JV company with Chattisgarh Renewable Energy Development Agency.

2011: GAIL won the rights to lay a 1550-km, \$1bn natural gas pipeline from Surat in Gujarat to Paradip in Orissa, connecting the west and east coast.

2012: GAIL was ranked the World's No. 1 in Downstream Operations by Platts Global Energy Awards. GAIL signed a 20-year agreement with Sabine Pass Liquefaction LLC, a unit of Cheniere Energy Partners, to supply 3.5 MMPTA of LNG. GAIL became the only company from the Oil and Gas sector to be included in BSE's Greenex, India's first energy-efficient index. GAIL's 2200-km Dahej-Vijaipur-Dadri-Bawana-Nangal-Bhatinda cross-country pipeline was inaugurated by the Prime Minister. A GSPA was signed between GAIL and Türkmengaz for the Turkmenistan-Afghanistan-Pakistan-India (TAPI) Gas Pipeline Project.

Some Conversions:

1 US gallon (liquid) = 3.7854 liters
1 mile = 1.6093km, 1 mile² = 2.5900km²
1 Metre = 3.2808 feet, 1m² = 10.764ft², 1m³ = 35.315ft³
1 Million Cubic Feet = 28316.8 Cubic Metre
1000000 Cubic Feet = 28316.8 Cubic Metre
100 thousands = 1 lakh
10 lakhs = 1 million
100 lakhs = 1 crore
100 crores = 1 billion
1000 billions = 1 trillion
1000 trillions = 1 zillion

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