

PARTICIPATIVE VIGILANCE

• INTERACTION
• DISCUSSION FORUMS

• VIGILANCE
AWARENESS
WEEK

• KIT PROGRAMME
KEEP IN TOUCH

Vigilance in OIL

**CATCH
THEM
YOUNG**

Justice does not help those who slumber but
helps only those who are vigilant."
- Mahatma Gandhi

"The condition upon which God hath
given liberty to man is eternal
vigilance."
- John Philpot Curran

**Intouch
Journal**



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COVER :

A collage of various initiatives undertaken by the Vigilance Department in OIL.

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STOP PRESS

SCOPE EXCELLENCE AWARD



Shri N M Borah, CMD, OIL has been awarded "SCOPE Award for excellence & outstanding contribution to the Public Sector Management-Individual Leader" 2009-10. The award was ceremoniously given away to Shri Borah on 31st January, 2012 by Prime Minister of India,

Dr. Manmohan Singh at a glittering ceremony at Vigyan Bhawan in New Delhi. The award is given to outstanding professionals who have demonstrated their leadership and their commitment to strengthen public sector management.

BUSINESS LEADERSHIP AWARD



Oil India Limited was awarded the prestigious 'BUSINESS LEADERSHIP AWARD in OIL & GAS SECTOR' by NDTV Profit on 7th January 2012 in Mumbai. Shri N. M. Borah, CMD, OIL, received the award from the Honourable Minister of Finance, Shri Pranab Mukherjee at a glittering

ceremony. OIL was selected for the award amongst Oil & Gas Sector companies in India for its sterling performance.

EDITORIAL

Dear Reader,

There can't be a better way to begin the New Year than basking in the glory of deserving recognition coming to one's organization, be it at the Individual, team or corporate level. As an Oilindian, the last few months have indeed been very rewarding as efforts of OIL and the leadership have been deservingly acknowledged by reputed agencies. OIL News takes pride in chronicling these proud moments which as always inspire all the members of the Company's extended family. Being a member of the OIL contingent to the 20th World Petroleum Congress at Doha for showcasing OIL's award winning CSR initiative - Project Rupantar (which was one of the 12 selected CSR projects in the global oil & gas industry and only one from the Asian region) and sharing OIL's response to the aspirations of the people of the operational area with the global audience was an overwhelming experience. It really felt very nice that OIL's efforts in the domain of Corporate Social Responsibility, which has become the industry buzz word in recent times, have been recognized and appreciated at the international arena. In many ways, the credit for this success goes to the firm determination of the Self Help Groups under Project Rupantar for self employment and the exemplary role and commitment of implementing agency State Institute of Rural Development, Assam.

Signing off, I would like to share a very apt and popular thought: "Business cannot succeed in societies that fail".

- Tridiv Hazarika

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From Resident Chief Executive

Dear Oilindian,

Time indeed flies fast. I distinctly remember the New Year celebrations last year and here we are already into a new set of 365 days. This, I believe is a common phenomenon of modern times, when we are all living life on the fast lane.

In this technology driven world of ours, it must be noted that the oil and gas industry continues to exert the biggest influence on global economy and the very aspiration for continuous development of people and governments world over. Oil availability and price affect the output capacity, rate of growth and level of inflation throughout the world. In the modern world, oil affects transportation, heating, production and the military.

It is a popular saying that there is a bit of oil and gas industry in every aspect of modern day life. Oil and natural gas touch our lives in countless ways every day. Together, they meet more than 60 percent of our nation's energy needs. They in addition to industrial and organisational use, fuel our cars, heat our homes and cook our food. From the fuels to various petroleum based products ranging from plastic bags to candles, from perfumes to fertilizers, the oil and gas industry impacts the human civilization in a manner is unique in character and incredibly far-reaching in scope. It is a singularly autonomous variable in the world economy.

At the same time, the oil & gas industry also is potentially hazardous to the environment if adequate care is not taken to arrest possible adverse impact water, air and soil. Therefore, while enhancing production of oil and gas continues to be the major focus world over, finding innovative ways to arrest the potential threat to the fragile environment is also the need of the hour and has become a priority agenda for government as well as oil companies. We at Oil India also have to take full care while we continue with our thrust for our growth.

At the same time, the concern on depleting hydrocarbon reserves and the growing demand for energy has continued to intrigue the common man as well as government and MNCs with the often repeated question: How long will the oil and gas reserves last? Well, while superior technologies and innovations continue to prolong the inevitable since oil and gas is a non renewable energy, the best way to address the issue is to make judicious use of fossil fuel. In this context, each of us can contribute immensely by efficient use and reducing consumption of energy by simple ways like car pooling, switching off electrical appliances when not needed etc.

As we welcome 2012, I would make a humble appeal to all Oilindians to take a special New Year resolution to contribute our share in energy conservation. It is time that we lend a helping hand to our Government which has initiated various steps to promote conservation of oil and gas in all walks of life including the transport, industrial, agricultural and domestic sectors. We must bring about an attitudinal change in this regard as mere observance of oil and gas conservation fortnight will not do.

While wishing you and your family a healthy and happy New Year, I would also appeal to each of you for adopting a life style where you can cut down on energy consumption in a significant way and help in national building by adopting simple habits like car pooling, switching off vehicles at red lights, turning out the lights when the room is not being used by anybody or the lights are not required, turning the television off when nobody is watching it, cooking food in broad base vessels covered with lid etc.



"We are living on the planet as if we have another one to go to."

- Terry Swearingen

(N K Agarwal)

Resident Chief Executive

Shri S C Chaturvedi, Secretary, MoP & NG visits Duliajan

Shri S Chaturvedi, Secretary, Ministry of Petroleum and Natural Gas (MoP & NG) visited OIL's fields' headquarter at Duliajan on 24th December, 2011. Shri Chaturvedi first attended a presentation at IT Conference room. During the presentation the visiting dignitary had a detailed interaction with OIL management led by Shri N. M. Borah, CMD, OIL followed by ceremonious launch of the coffee table book on CSR Project 'Rupantar'. The presentation followed by a courtesy meeting with members of OIEEA and IOWU. Thereafter the dignitaries visited Virtual Reality Centre (VRC) 'Kalpalok' the state-of-the-art centre an interactive environment where multi-disciplinary teams can visualise and interact with the subsurface data in a realistic 3D work frame.

Shri Chaturvedi was accompanied by his wife Smt R Chaturvedi who visited OIL Hospital and OIL-SIRD Growth Centre at Tipling. Thereafter at evening, a short cultural programme was organised at Zaloni Club in honour of Secretary's visit to the Field's Headquarter. On 25th December, Hon'ble Petroleum Secretary visited Eastern Producing Area, Digboi. They visited Digboi Well No. 1, Pumping Power No.2 and the Ridge Point at Digboi Oilfield.



Dignitaries at IT Conference room



Release of Coffee Table Book on CSR project 'Rupantar'



Dignitaries at Virtual Reality Centre



Dignitaries attending a presentation



Dignitaries at Digboi Well No. 1

Shri. T. K. Ananth Kumar, Director (Finance), OIL “Best CFO under PSU Category”

ICAI organised ICAI Awards 2011 to honor the Best CFO's amongst the Industry to demonstrate excellence in their professional life, personal life and to set a role model for others in the industry.

Shri. T. K. Ananth Kumar, Director (Finance) received Best CFO Award 2011 under PSU category from Hon'ble Deputy Chairman, Rajya Sabha, Govt. of India Shri K. Rahman Khan in a glittering ceremony of ICAI Awards function held at Bangalore palace, Bangalore on 9th December, 2011.



OIL at 20th World Petroleum Congress, Doha

The 20th World Petroleum Congress was hosted by Qatar Petroleum and took place at the Qatar National Convention Centre (QNCC) in Doha, Qatar from 4th to 8th December, 2011. Since its establishment in 1933, this was the first time that the World Petroleum Congress was being hosted in the Middle East. It is the largest and most reputable oil and gas industry gathering in the world, with over 5000 delegates, 600 media and 550 presenters. Known as the “Olympian Event of the Oil and Gas Industry”, the Theme of this 20th Congress was ‘Energy Solutions for all – Promoting Cooperation, Innovation and Investment’.



Shri N M Borah, CMD, OIL (2nd from right), Shri B C Tripathi, CMD, GAIL (in centre) along with members of the OIL contingent, Shri S Das, CM(ES), Shri S Baruah (Manager-Personnel), Shri T Hazarika (Manager - PR) at Doha during the inaugural function.

Oil India Limited made a strong presence at the most prestigious Oil and gas industry event in form of three presentations and two exhibitions. The five member OIL Contingent to Doha was led by Shri N M Borah (CMD, OIL), Shri Samir Das (CM-ES & Chief Coordinator of the OIL exhibition), Shri Shyamal Baruah (Manager-Personnel), Shri Tridiv Hazarika (Manager- Public Relations) and Shri Bhaskar Phukan (SE-Electrical Dept).

In this congress a special initiative ‘Social responsibility Global village’ was put up wherein the best CSR initiatives were showcased and presentations on successful case study were also made on the occasion. Between all the stands promoting the technology and services of the world’s major oil and gas players, the Social Responsibility Village at the World Petroleum Congress (WPC) exhibition highlighted some of the most sustainable and effective charity and development programmes currently being conducted by oil and gas companies around the world.

World petroleum Congress had called for case studies from across the world. ‘Project Rupantar’, an ongoing CSR Project of OIL, to develop and support Self Help Groups was selected as one of the 12 best case studies amongst corporate initiatives carried out in the global oil and gas industry. Shri T Hazarika (Manager- Public Relations & secretary of the Project) of OIL presented case study on success of the Project Rupantar. The case study was the

lone project selected from entire Asian subcontinent. Shri Hazarika in his presentation showcased how successfully Oil India Limited has been operating this community development programme in Assam in northeast India to help develop the local economy in a way that prevents dependence on the oil and gas business. He also underlined how the programme started as a self-help group for women taught marketable and useful skills to help people earn money and run their own businesses. Shri Hazarika highlighted the significance of the project as a result of which Assam’s female residents could now generate their own income by turning locally produced resources and materials into value added products.

It is a matter of great pride that out of several papers submitted, the papers of Shyamal Baruah and Bhaskar Phukan of Oil India Limited were selected for digital paper presentation.

Shri Bhaskar Phukan (Sr.Engineer Electrical) presented the paper on “Sustainability initiatives and reporting in E&P companies in India” co-authored by Mr. Arindam Bhattacharyya, Dy.CE Electrical . In his presentation at Doha, Shri Phukan discussed the growing phenomenon of corporate sustainability reporting (CSR) on environmental measures by E&P companies in India, and the use of CSR guidelines. The main issues addressed in the paper were the growth of Sustainability Reporting in Indian E&P companies, the major initiatives on sustainable development and the main principles adopted while reporting.

Shri Shyamal Baruah (Manager-Personnel) made a presentation on Recruiting and Retaining talent- call for newer approaches from Indian E&P players. In his paper, Shri Baruah brought forward the state of E&P industry with its greying workforce and demand for more energy worldwide that has complicated further the existing imbalance of demand and supply of E&P professional across the globe. The paper unveiled the various measures that can be adopted by the major E&P players in India to muddle through



India Pavillion



Shri Shyamal Baruah (Manager-Personnel), Shri Tridiv Hazarika (Manager- Public Relations) and Shri Bhaskar Phukan (SE-Electrical Dept) presenting their papers in the Congress

with the intrinsic problem. The paper emphasised in areas like awareness generation to E&P industry, value addition in the recruitment and retaining process, strategic alignment of the HR policies to the business needs with unambiguous prominence on the human angle.

The India Pavilion put up by Ministry of Petroleum and Natural Gas (MoP & NG) where OIL also participated drew appreciations from global audience, in the 20th World Petroleum Congress (WPC). Designed and erected on the theme 'Ahead with India: Partnership in Knowledge and Investment', the Pavilion showcased the strengths of the Indian petroleum industry to the global audience attending the triennial World Petroleum Congress and Exhibition.



Chairman of WPC Organising committee Abdulla Hussain Salatt felicitated during his visit to OIL's pavilion at WPC

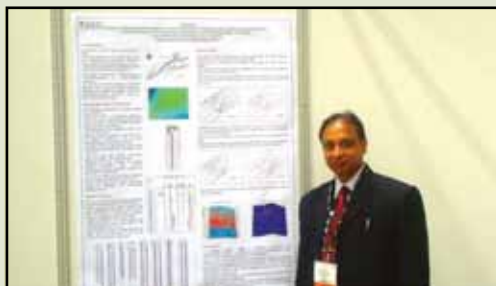
OIL Geo-scientific Works Presented in International Conference & Exhibition of American Association of Petroleum Geologist (AAPG) - Milan, Italy

The American Association of petroleum Geologists (AAPG) is a renowned Geoscientific body for promoting geoscientific knowledge in global hydrocarbon industry. Recently, the AAPG organized an International Conference & Exhibition in Milan, Italy from 23rd to 26th October, 2011. The conference was attended by thousands of geoscientists/petroleum professionals from all over the world. More than two hundred papers were presented both in the form of discourse and poster presentations covering a wide range of petroleum / energy related subjects.

During this conference, three theme posters were presented by Indian representatives, one each from the country's Oil & Gas majors namely ONGCL and OIL, and one from Jammu University.



The OIL's geoscientific poster presentation titled "Correlation problem in Miocene sediments of Kumchai oil and gas field of Upper Assam Basin (India) and An Unique Method of Correlation Adopted in Field Development Study Based on Heavy Mineral Assemblage-A case study" by S.S.Deb, I.Barua & R.Borgohain was well received, discussed and keen interest was shown by several E&P professionals during presentation which continued beyond the conference. This was really a matter of pride for Oil Indians as OIL's scientific work was being recognized and appreciated by a leading International geoscientific body.



PREPARING FOR AN EFFECTIVE INTERNAL AUDIT IN OIL INDIA LIMITED



Internal Audit Department of Oil India Ltd has recently conducted a three days workshop for the auditors of Internal Audit and Technical Audit Departments from 3rd of Nov' to 5th of Nov'11 at Vedic Village, Kolkata. This is the first time such a workshop was organized by the Internal Audit Department of the Company in order to highlight the changed role of internal auditors from traditional auditing to Risk & System based auditing to assist the management and the Audit committee. The programme was designed to demonstrate the current development in internal audit and how ERP systems are effective in assessing the adequacy of risks and controls with appropriate audit tools.

The workshop was inaugurated by Shri N.M.Borah, CMD, OIL. Other eminent dignitaries, Shri T K Ananth Kumar, Director (Finance), Shri S.K. Jaipuriyar, Principal Director & Member of Audit Board (CAG) and Shri P.K. Sharma, Independent Director & Chairman of the Audit Committee were also present on the inaugural day.

In his inaugural speech, Shri N M Borah, Chairman & Managing Director emphasized the role and responsibility of the Internal Audit to provide objectives assurance, quality information and to become a management tool to ensure good Corporate Governance and to add value to the company. Shri T K Ananth Kumar, Director (Finance) delivered his valuable speech on Internal Audit perspective in Oil India Limited inviting attention on the changed role of internal Audit and advised the participants to gear up with latest tools and techniques of internal auditing to ensure adequacy and effectiveness of internal controls. He emphasized transparency and accountability of the management to adhere to rules of corporate governance vis-a vis responsibility of internal audit in the organization.

In the Key Note address, Shri S.K. Jaipuriyar, Principal Director and Member Audit Board (CAG) mentioned that the Internal Audit functions should seize on its current prominence to start auditing real strategic risks and the departments that are exposed to such risk and appropriate action taken to mitigate such risk. The internal audit should be far more agile and responsive to the current need of the corporate risk arising due to global exposures. The audit plan should be designed to provide assurance on the major risks and not just perform audit. He concluded by stating effective measures which management should consider making an effective Internal Audit department in the organization.

- (i) Providing appropriate authority to Internal Audit
- (ii) Independency to the department for audit planning
- (iii) Free from Line Authority excepting own function
- (iv) Providing infrastructure to function

The Chairman of Audit Committee Shri P.K. Sharma in his deliberation on Internal Audit in OIL stated that there is a paradigm shift in the Internal Audit functions and stated that the Internal Audit in OIL has been passing through a transformation phase to become more effective and vibrant. He expressed his happiness that the OIL management realized the need to upgrade the internal audit function and has been taking necessary steps to meet the challenges and the expectation of the management.

The workshop was organized in a very efficient manner by inviting eminent faculties / speakers of repute from renowned Industry Houses. The presence of luminaries, namely Shri P R Ramesh, Chairman, Deloitte Haskins & Sells, India; Shri J Ravichandran, CFO, Bharat Oman Refinery Ltd (BORL) and formerly, E.D (Internal Audit) of

Bharat Petroleum; Shri V Subramanian, Dy GM (F&A), System Surveillance Cell & Core Competent Centre ONGC, Chennai and Shri N Bhalla, former ED (CA & Audit), OIL added extra vigour to the workshop. All of them had delivered speeches / lectures out of their long experiences in their own fields and generated a very interactive session to make the participants knowledgeable in the subject of their deliberations, especially on Risks and controls and provisions in SAP systems and utility of applying audit tools for analysis.

In the absence of RCE, OIL, his valedictory address was read out by Shri A.K. Ghosh, GM (Technical Audit).

The entire programme was designed by Mr. Manish Pipalia of PSA, Mumbai who is an eminent internal audit practitioner in association with Musib & Associates, the consultant for revamping the Internal Audit of OIL. Shri T.K.Dasgupta, GM (Internal Audit) and his team took excellent initiative and strive for organizing this workshop with active support of Director (Finance) who is the prime mover of revamping the internal Audit Department. GM (Internal Audit) conducted the entire programme very efficiently with the touches of professionalism.

All the dignitaries, luminaries and participants appreciated the selection of the venue for such an important workshop and enjoyed their stay.

OIL funds major roads in Tinsukia District – Signs MoUs with APWD

Oil India Limited signed memorandum of understandings (MoU) with the Assam Public Works Department (APWD) on 26th November, 2011 for construction of a few major roads in Tinsukia District, which will be completed within a time frame of one year. The MoUs were signed by Shri N K Agarwal, Resident Chief Executive, OIL and Shri M C Boro, Commissioner & Special Secretary to the Government of Assam, PW Road Department at OIL's Field Headquarters in Duliajan in the presence of senior officials of OIL and APWD.

Fully funded by OIL, APWD shall be constructing the following roads: 12.60 Km Deohal Tiniali to Tinsukia Town with a budget of Rs 6.28 Crore; widening and revamping of 14.70 Km Daimukhia-Digulturrung road along with a 12.50 m RCC bridge in Baghjan area with a budget of Rs 4.64 Crores.

Moreover, APWD will also fully fund and construct a 5.00 Km road from Madhuban Tiniali to Borbudoi Petrol Pump. With a number of major Tea Gardens along side these roads and being major arteries connecting a lot of areas in the District, this major investment by OIL will benefit a large number of people and help in developing the infrastructure of the State.



Aqua Excellence Award 2011

Oil India Limited was conferred with the '**Aqua Excellence Award 2011**' in the category of '**Outstanding Contribution towards the cause of – WATER,- Public Sector**' under CSR initiatives. The award was received by Sri T.B.Chakraborty, GM(ENGG) and Sri A.K.Nandi Head-FE on behalf of OIL from Honorable Union Minister of State for Water Resources Shri Vincent H Pala in New Delhi on 17th November 2011 in presence of National & International dignitaries.

OIL has always shown its concern about the fate of fresh water. The Water Awareness Week organised every year by OIL to create awareness about the need to save water is a commitment shown by the Company and its responsiveness towards saving the environment. The Field Engineering Department is continuously guiding, monitoring and taking all necessary actions to preserve water and spread awareness about growing environmental issues. This ardent fervour and keenness has earned the Company laurels.



VIGILANCE AWARENESS WEEK '2011

Vigilance Awareness Week 2011 was observed at Fields' Head Quarter, Duliajan from 31st October to 05th November, 2011.

The observance of Vigilance Awareness Week, 2011 was commenced with the pledge by the employees and executives, taken all across the departments on 31st October, 2011. The Week was formally inaugurated by Sri N K Agarwal, Resident Chief Executive on 31st October, 2011.

The week-long awareness program began with a cycle rally, flagged off by Sri N K Agarwal, RCE in presence of Senior officials, Executives and Employees at Nehru Maidan, Duliajan. Nearly one hundred fifty participants, including CISF Personnel, OIL Security Personnel and members of Football Academy took part in the cycle rally. The rally covered the township area with the cyclists chanting slogans promoting the cause for a vigilant and honest society.

On the spot essay competition was held at MTDC, Duliajan amongst Executives and the Unionized employees on 1st November 2011. The topic was "Vigilance is the responsibility of everyone in the society". A Joint Seminar on the topic "Proactive and Participative Vigilance is the most effective means of combating corruption" was presided over by Sri N K Agarwal, Resident Chief Executive of OIL. The Chief Guest of the Seminar was Dr. Ananda Bormudoi,

Essayist and Critic and Professor of the Department English, Dibrugarh University. Nearly 120 participants including GMs and HoDs of various departments participated in the seminar.

As a part of the observance of Vigilance Awareness Week, a debate competition was also organized on 3rd of November, 2011 amongst the students of various schools of Duliajan on the topic "Transparency is an effective tool for combating corruption". The debate was able conducted by Shri A N Borthakur, Chief Geologist (NEF). The audience extolled the participants for expressing views on sensitive issue like corruption.

A training programme on "Excellence in Vigilance" was organized by Reforms Prayas where atleast 45 participants participated. The main focus of the programme was to sensitize people about self vigilance that can be used as a professional skill.

Around 200 students participated in the Spot Essay, Painting and Slogan Competition held at OIL Higher Secondary School, Duliajan.

To create awareness, award winning slogans, posters and banners were displayed in OIL Township and OIL's operational areas of Duliajan, Digboi, Moran and Arunachal Pradesh.



Cycle Rally, flagged off by Sri N K Agarwal, RCE, OIL



Spot Essay Writing Competition



Sri N K Agarwal, RCE, OIL addressing during the seminar



Painting Competition



Prize Distribution

REVERSE OSMOSIS FILTRATION SYSTEM

ULTIMATE SOLUTION TO POTABLE WATER



BIMAN SAHA
Dy. Chief Engineer (Drlg)

Water is the most abundant compound on Earth's surface, comprising about 70% and is undoubtedly the most precious natural resource that exists on our planet. Without the seemingly invaluable compound comprised of hydrogen and oxygen, life on Earth would be non-existent: it is essential for everything on our planet to grow and prosper.

There are many substances that dissolved in water and it is commonly referred to as the universal solvent. Because of this universal property, water in nature and in use is rarely pure and some of its properties may vary slightly from those of the pure substance. There are many compounds that are soluble in water whereas many compounds essentially, if not completely, are insoluble in water. These compounds in water sometime exceed its permissible limit thus causes water contamination & pollution that considered to be harmful for human health.

Water pollution is a major global problem. It has been suggested that it is the leading worldwide cause of deaths and diseases and that it accounts for the deaths of more than 14,000 people daily.

CAUSES

The specific contaminants leading to pollution in water include a wide spectrum of chemicals, pathogens etc. While many of the chemicals and substances that are regulated may be naturally occurring (calcium, sodium, iron, manganese etc) the concentration is often the key in determining what is a natural component of water and what is a contaminant. Contaminants may include organic and inorganic substances.

Organic water pollutants include:

- ⊙ Detergents
- ⊙ Food processing waste, which can include oxygen-demanding substances, fats and grease
- ⊙ Insecticides and herbicides.
- ⊙ Petroleum hydrocarbons, including fuels viz. gasoline, diesel fuel and lubricants.
- ⊙ Volatile organic compounds (VOCs), such as industrial solvents.
- ⊙ Inorganic water pollutants include:
- ⊙ Acidity caused by industrial discharges (especially sulfur dioxide from power plants)
- ⊙ Ammonia from food processing waste

- ⊙ Chemical waste as industrial by-products
- ⊙ Fertilizers containing nutrients- nitrates and phosphates
- ⊙ Heavy metals from motor vehicles.

Potable water must be free from all the inorganic / organic substances beyond acceptable limit as set by standard. But the big question is how and through what procedures we can treat the surface / underground water to get hygienically safe potable water for human consumption.

Among many existing ways of treating surface / underground water for making potable water, Reverse Osmosis phenomena proved to be one of the best methods for domestic and some industrial consumption purpose.

REVERSE OSMOSIS PROCESS

To understand 'Reverse Osmosis', it is probably best to start with normal Osmosis. Osmosis means the "movement of a solvent through a semipermeable membrane (as of a living cell) into a solution of higher solute concentration that tends to equalize the concentrations of solute on the two sides of the membrane". Osmosis is a special case of diffusion in which the molecules are water and the concentration gradient occurs across a semipermeable membrane. The semipermeable membrane allows the passage of water, but not ions (e.g., Na^+ , Ca^{2+} , Cl^-) or larger molecules (e.g., glucose, urea, bacteria).

The movement of a pure solvent to equalize solute concentrations on each side of a membrane generates a pressure and this is the "Osmotic Pressure". Applying an external pressure to reverse the natural flow of pure solvent, thus, is Reverse Osmosis.

The Osmosis process can actually be reversed if a pressure larger than the Osmotic Pressure be applied to the solution. This phenomenon has found uses in water purification, especially the desalination of sea water. An apparatus for this process is shown in the following figure.

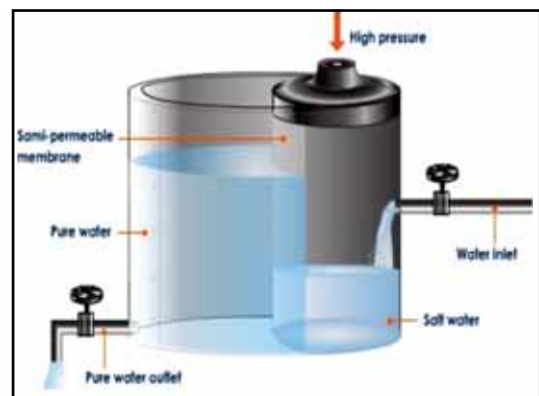


Fig 1.0 - Desalination by reverse osmosis

If no pressure were applied to the salt water solution, osmosis would transfer water into the solution and gradually dilute it, but when a pressure greater than the osmotic pressure is applied on the solution, the osmosis is driven in the opposite direction and pure water is squeezed out of the salt water. Hence Reverse Osmosis process is one of the most effective filtration method that removes many types of large molecules and ions from solutions by applying pressure to the solution when it is on one side of a selective membrane. The result is that the solute is retained on the pressurized side of the membrane and the pure solvent (water) is allowed to pass to the other side. But the pressure required for this is quite high (30–250 psi for fresh and brackish water, and 600–1000 psi for seawater) and one type of membrane which have a dense barrier layer in the polymer matrix able to withstand the stress is a film of cellulose acetate placed over a suitable supporting structure.

HISTORY

The process of osmosis through semipermeable membranes was first observed in 1748 by Jean Antoine Nollet. For the following 200 years, osmosis was only a phenomenon observed in the laboratory. In 1949, the University of California at Los Angeles (UCLA) first investigated desalination of seawater using semipermeable membranes. Researchers from both UCLA and the University of Florida successfully produced fresh water from seawater in the mid-1950s, but the flux was too low to be commercially viable. By the end of 2001, about 15,200 desalination plants were in operation or in the planning stages worldwide.

DRINKING WATER PURIFICATION

Around the world, Reverse Osmosis phenomenon is commonly used nowadays for improving water for drinking and cooking in household drinking water purification systems.

Such systems typically include a number of steps:

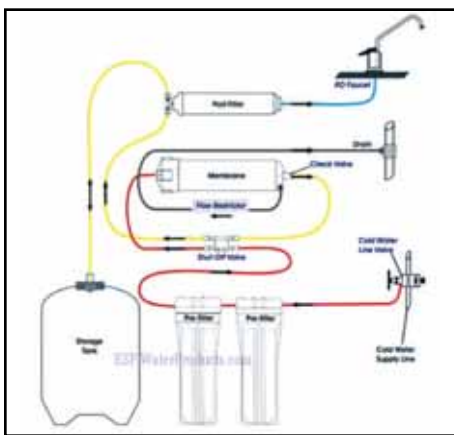


Fig 2.0 – Typical arrangement of various filters of a Reverse Osmosis filter

- ⊙ a sediment filter to trap particles, including rust and calcium carbonate.
- ⊙ optionally, a second sediment filter with smaller pores.
- ⊙ an activated carbon filter to trap organic chemicals and chlorine & also to prevent TFC reverse osmosis membranes from degradation.
- ⊙ a reverse osmosis (RO) filter, which is a thin film composite membrane (TFM or TFC).
- ⊙ optionally, a second carbon filter to capture those chemicals not removed by the RO membrane.
- ⊙ optionally a ultra-violet lamp for disinfecting any microbes that may escape filtering by the reverse osmosis membrane.

In some systems, the carbon prefilter is omitted and cellulose triacetate membrane (CTA) is used. The CTA membrane is prone to rotting unless protected by chlorinated water, while the TFC membrane is prone to breaking down under the influence of chlorine. In CTA systems, a carbon postfilter is needed to remove chlorine from the final product water.

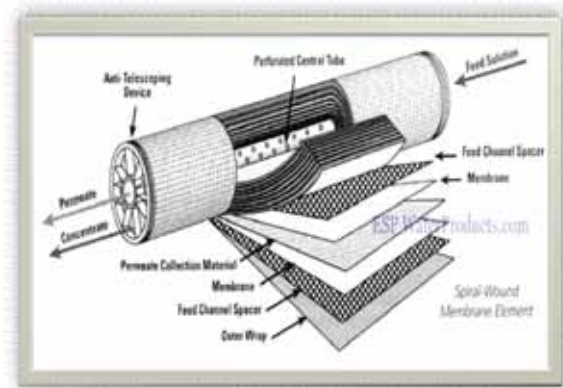


Fig 3.0 – Construction of a R.O. Membrane filter

Membrane pore sizes can vary from 0.1 nanometers (3.9×10^{-9} in) to 5,000 nanometers (0.00020 in) depending on filter type.

“Particle filtration” removes particles of 1 micrometer (3.9×10^{-5} in) or larger.

Microfiltration removes particles of 50 nm or larger.

“Ultrafiltration” removes particles of roughly 3 nm or larger.

“Nanofiltration” removes particles of 1 nm or larger. Reverse osmosis is in the final category of membrane filtration, “hyperfiltration”, and removes particles larger than 0.1 nm.

INTRODUCTION OF R.O FILTER IN DRILLING WELLS

Few years back it was observed from the laboratory test of ground water samples collected from different drilling wells that the content of iron was just above the permissible limit

[0.3ppm]. To mitigate this problem Iron Removal Filters were introduced in all the drilling wells of Oil India Limited and result was found quite satisfactory. It has become mandatory to test all the parameters of potable water for both the ground water as well as filtered (I.R.Filter) water of every well site to take measures for supply of quality water.

The system was functioning satisfactorily till it has been observed the higher trend of other parameters available in potable water of drilling wells. Iron content was observed as high as 7ppm in water samples collected from various well sites.

We have studied various options suitable for industrial use and ultimately decided to have a water filtration system based on Reverse Osmosis principle.



Fig 4.0 – Positions of various Filters

FUNCTION OF R.O.FILTRATION SYSTEM

The present water filtration system is a complete package that consists of Iron Removal Filter (IRF) & Reverse Osmosis Filtration system. The raw water from bore well is collected in a SS tank. The water flows through the IRF where iron in the water is absorbed by the IRF media. Iron free water then passes through the Sediment & Carbon filters where suspended particles & odor of the water is eliminated.

The high pressure R.O feed pumps deliver the clean water into the R.O. membranes and ultimately we get clean & bacteria free potable water.

But the quantity of water we get after filtration through R.O membranes is not the quantity supplied into the R.O membrane because of the principle of Reverse Osmosis, only water molecules passes through the membrane and other soluble impurities are eliminated as waste water.

As IRF media absorbs the suspended iron of water, back wash after every 8 R/Hrs of the plant is necessary for effective use of the same media. Moreover for gaining the original effectiveness of the media, regeneration is carried out after certain interval depending on the condition of the media.

Like other water filtration system, R.O. water filtration system is also needs periodic checkup & replacement of membranes periodically for uninterrupted supply of good quality water.

CONCLUSION

Reverse Osmosis principle is extensively used worldwide nowadays for various applications, viz. a) water filtration, b) desalination of sea water, c) production of deionized water, d) concentrating food liquids economically and many more.

With the global pollution increasing day by day, Reverse Osmosis principle may be the only solution till now for purification of water for safe human consumption.

The project "safe water at drilling wells" was conceptualized by Sri P.N.Sarma [Head-Drlg(TS)] a couple of years back and the concept has been materialized successfully by the author of this article.

Today the employees of drilling rigs are more than happy with the quality of potable water available in every well.

But we are not complacent with our success, rather working harder for its further improvement.

VENDORS MEET, 2011



Materials Department, OIL had successfully organised Vendor's Meet on 22nd December, 2011 at MTDC auditorium for the first time in North East. Suppliers from Dibrugarh, Tinsukia, Sibsagar & Jorhat participated in this Meet.

AWARENESS ABOUT ENERGY CONSUMPTION



Jasbir Dhillon

Recognizing the energy requirement by each person, may be the first step to reduced energy consumption. Alternative Energy is the that which is produced without the undesirable consequences of the burning of the fossil fuels such as high carbon dioxide emission, which is considered to be the major contributing factor of global warming according to the International Panel on Climate Change. Sometimes, this excludes the Nuclear energy, a less comprehensive of "alternative energy".

The fossil-fuel economy is the standard gasoline-burning world we are used to know at present, fossil fuels account 80% of the world's primary energy mix. This will not be changed even in the year of 2030. As the energy-hog of many energy related organizations and peoples are varied, the green house gas control is an urgent task for meeting the challenge of global climate change, which further led us to climate confusion. We all know it has some serious downsides to it as Carbon monoxide, nitrogen oxide and unburned hydrocarbons generated by the internal combustion engine, are bad air pollutants. So the ethical and good behavior of the governance are the key factors for sustainability of energy sector. Industrial transparency, Global impact, Security and human Rights, will strengthen this sector further. So, now, the million dollar question is, how do we meet the growing demand for energy in a responsible, equitable and sustainable way? Billions hope for a better life depend on the plentiful and accessible of energy. But, with world's fast approaching seven billion, it seems the nuclear power, Carbon Capture Sequestration, Bio fuels particular ethanol biodiesel and biomass is the most popular of the alternative power source, and, is already contribute a significant proportion. Industrialized countries are focusing on various sources of organic matter. The abundance of water, gave thought to Hydrogen economy; a carbon-free energy, delayed due to high costs and performance challenges of fuel cells, which further included due to high costs and storage of it.

There is Wind and solar energy, where we can invest-in and create more functional way to use it properly for our future endeavor. A suitable area for the large wind power station on the Scottish island of Islay has been providing electricity since 2001.

A wind turbine compare to a nuclear power plant will be a better choice for the future need. We are using five and half earth's energy on our planet itself. The consumption of energy starts from our home itself. In a snap of a finger we populate our earth and the counting, further increasing our energy requirement on each increasing day. We can not rely on fossil fuel as in the past. The need to consume energy less would be a positive way to reduced energy consumption. Energy is the ability to do work. While energy

surrounds us in all aspects of life, the ability to harness it and use it for constructive ends as economically as possible is challenge before mankind. If we our children and grand children to enjoy the planet the way we did, a better and more efficient way to use our energy requirement, would be a smart choice. By 2025, our need for the consumption will be more then ten times. The desire to own more than one car and affordability can strain the problem further. Each gallon of gas your car burns emits 5 pounds (2.3 kilograms) of carbon, which contributes to the rising temperature of the atmosphere. American consumes more energy than the other, India and China too is catching up with the consumption need, which further demand to have an immediate or alternate source of energy for these emerging economies. The Energy Information Administration predicts continued dependency on fossil fuels thorough the next two decades. This grim condition requires more involvement of each individual on not only conserving it but innovating more functional solutions towards restoring it. An average persons energy consumption in his or her house is two televisions, two laptops, three mobiles, air conditioner and a car is minimum.

Lets have a look at our other alternative sources of energy; Solar, though a fine way to have it conversion in to electricity is experienced a real boom and, finally has become affordable for private households. Wind turbines convert the kinetic energy in the wind into mechanical power. Its free, renewable resources, so no matter how much is used today there will be the same supply in the future. Even though the cost of wind power has increased dramatically in the past 10 years, the technology requires a higher initial investment then fossil-fuel.

Helium-3, a light, non-radioactive isotope of helium with two protons and one neutron, is rare on Earth, is proposed as a second-generation fusion fuel power uses, but ; such systems are still in very early experiment development phases.

So, the less in supply of fossil fuel may give birth to another alternative fuel which will be affordable to the masses and fuel consuming industries because every time we get-a-kick, as the price of the gasoline increases and to think, how fast we are reaching the end of gasoline burning world.

With Masters' Diploma in Journalism and Communication from Symbiosis, Pune and Post Graduate in M.A.(Eng) Nowrojee Wadias Collage, Pune, Jasbir Dhillon is a promising freelance writer and a regular contributor to Eclectic Times, Guwahati. She did her schooling from Oil India Higher Secondary School, Duliajan.

Disaster Management Mock Drill

Oil India Ltd. Conducted a Disaster Management Mock Drill in their LPG process plant and central tank farm (Considering two major fire Scenarios) at Duliajan on 28.12.2011 from 3.00 pm onwards. Fire tenders from neighboring industries like AGCL, BVFCL, APL, NEEPCO along with OIL's own fleet of fire tenders were pressed into service in this OFF-SITE Exercise. Representatives of District Administration like Civil Defence, Police beside CISF took active part in the said Emergency Response practice exercise.

Considering 6/7 injury cases, the Civil Defence volunteers demonstrated the rescue technique from high rise building, First Aid and Evacuation procedures to be followed during Emergency. Ambulances were deployed at site for Evacuation. A large number of CISF personnel of OIL took active part during the mock drill.

The Chief Co-ordinator of O.I.L. Sri N. K. Agarwal, Resident Chief Executive personally supervised all the activities

and witnessed Fire Fighting and rescue techniques. Other GMs and senior officials of OIL responsible for various Co-ordination jobs physically participated to ensure emergency provisions like water supply, power provision, communication, food & drinking water, establishment of Security coverage control room and ensured that all are in place at the quickest possible time. The entire mock drill which took around three (03) hrs. was co-ordinated by Head – Safety & Environment Sri C. Bose.

At the end of the mock drill, a debriefing session was conducted in which independent observers gave their views on the positive aspects of the drill as well as pointed out the scope of improvement. Sri N. K. Agarwal in his concluding remarks emphasized the need of such mock exercise to improve the level of awareness so that prompt response is shown by everyone in case of real emergency. He also stressed on the need of resources mobilization at the Quick possible time.



Shri N. K. Agarwal, RCE, OIL felicitates
Dr. Udayan Barua, ED (MS)

Fond Memories
Oil India Limited
bids farewell



RCE felicitates
Shri DD Khaund, GM (CC&PR)



RCE felicitates
Shri Girija Sankar Baishya Saud, GM (Technical)



RCE felicitates
Shri Arpon Barbora, GM (Drilling)



RCE felicitates
Shri RK Duggal, GM (Electrical)



ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

Executive Development Programme



Executive Development Programme (EDP), an important component of Executive Trainees(ET) year long training program was conducted for a batch of 79 newly joined ETs from 14th November to 6th December, 2011 at T&D Department. EDP is a multidiscipline training program designed to acquaint the trainees with the culture, business and activities of different departments of the organisation.

The programme was inaugurated on 14th November 2011 by Shri K.K.Nath RCE(i/c) in presence of Shri. R.K Saikia GM (HR), Shri.B.Khound Head (Personnel), Shri. Dipayan Barua Head (T&D) at MTDC auditorium. In his inaugural speech, Shri B. Deka, GGM (Production) gave an overview of current scenario of petroleum industry. Shri S K Jena, Head (G&R-Ops) deliberated about the business of Oil India Ltd and highlighted the current figures of oil and gas production.

The nineteen days long Executive Development Program was classified into two parts. In the first fourteen days, representatives from various departments delivered presentation underlining their departmental structure and core activities. The young officers took active part in the interactive sessions and asked queries to the presenters. In the rest five days, the Trainees attended Management Orientation Program (MOP) conducted by a Guwahati based organisation 'Reform Prayas'. MOP covered the behavioural and motivational aspects. Case studies and group activities were part of MOP that was aimed to help

the Trainees understand the complex situations that they might face and possible solutions for them. The Trainees were also sent to fields to understand the various functioning and operational activities at Drilling sites and Oil Collecting Stations. They also made visits to CSR activities project sites like 'Merbil Eco Tourism Project' at Sasoni and 'Project Rupantar' at Tipling.

During the Development Programme, the senior officials of OIL shared their wide knowledge and vast experience in the organisation and emphasised on the challenges that the new officers might face in their professional and personal life. The senior officials congratulated the ETs for joining OIL and wished them successful times ahead. Shri. R.K. Saikia, GM (HR) shared his experience and encouraged the new officers to learn etiquettes and conduct from seniors.

On the concluding day, Special Guest Shri. S.Rath, Director (Operations) in presence of Shri. Dipayan Barua, Head (T&D) and T&D officials, presented a brief overview of company's core business activities followed by interactive session with the ETs. Shri Rath also emphasised on necessity for acquiring new technology and processes for exploration that would inherently facilitate growth of the company.

An informal get together was hosted by Shri.N.K.Agarwal (RCE) where all the ETs along with senior officers of the organisation were invited. During the session, the ETs had a lively & personal interaction with RCE and other officers of OIL.

TRAINING Snapshots



A Training program on "Mines Vocational Training" by Oil India Limited at Pipeline Headquarters, Noonmati from 21st to 26th Nov 2011



A two days HSE Training for Executives conducted by Assam Productivity Council, Tinsukia at MTDC from 17th to 18th Nov, 2011.



Training on "Oil & Gas Production Reservoir Engineering" Organised by M/s i - Point Oil, USA, at MTDC from 19th to 23rd Dec, 2011.



42nd AGM organised by The Institution of Engineers (India) Upper Assam Local Centre, sponsored by OIL on 23rd Dec 2011 at MTDC



Training on "Oil & Gas Reserves Evolution" Organised by OGCI Petroskills Ltd. at MTDC from 28th Nov, 2011 to 2nd Dec 2012



5th OIL Moran Football Tournament, 2011

The 5th OIL Moran Invitation Football Tournament 2011 was organised by Oil India Limited at OIL's Sports Ground, Moran from 3rd to 12th December 2011. Oil India Limited organises this tournament to promote football in this region and to enable talent to be spotted. The Opening Ceremony was inaugurated on 3rd of December 2011 by Chief Guest, Sri Jatindra Lahkar, Deputy Commissioner, Sivasagar District, Govt. of Assam, in the presence of the Guest of Honour Sri K.K. Nath, Executive Director (E&D), OIL and other dignitaries.



Chief Guest, Sri. A.N. Baruah, GGM (Tech.), OIL addresses the gathering

In his welcome speech Sri S Phukan, Head Moran, welcomed the Chief Guest, Guest of Honour and all other dignitaries to the football tournament. A cultural program was organised wherein the students of Star Family Musical Unit Moran and Nalini Dance Academy, Botamora performed.

This time a total of ten teams participated in the tournament. The Ten teams that participated were ASEB Sports Club (Guwahati), Oil India Football Club (Duliajan), Bareikuri Sports Association (Makum), Trinoyon Jyoti Football Coaching Centre (Chabua), Duliajan Football Academy, Moran Town Club (Moran), Gargaon Football Coaching Centre (Nazira), Nepathya Club (Jorhat), Tidim Road United Gamey Sports Club (Manipur) and Assam Police Blues (Guwahati).

The inaugural match was played between Bareikuri Sports Association and Gargaon Football Coaching Centre. Bareikuri Sports Association won the match by a solitary goal 1-0. The football fans were entertained watching some of the top Soccer stars in action during the ten days tournament.

The final match was played between ASEB Sports Club, Guwahati and Oil India Football Club, Duliajan. It was a well fought and keenly contested match and finally, the match was decided by a tie-breaker (4-1), wherein Oil India Football Club won and lifted the Champion Trophy

along with a Cash Prize of ` 30,000/-. ASEB Sports Club, received the Runners-Up Trophy along with the cash prize of ` 25,000/-. An overwhelming crowd of eight thousand people including senior executives of OIL witnessed the final match.



Players in action during the final match

The Best Player of the Tournament was clinched by Sri Sayaram Basumatary of ASEB Sports Club and received the Cash Prize of ` 3000, while the Best Player of the Final Match was Mr. Mathew Thongjam of Oil India Football Club and received cash Prize of ` 2,000. Fair Play Trophy was awarded to Trinoyonjyoti Football Coaching Centre, Chabua and received a Cash Prize of ` 2,500/-.

In the closing ceremony, Chief Guest Sri A.N Baruah, GGM (Tech), OIL gave away the prizes to the players. Guest of Honour, Sri R K Saikia, GM (HR, CC& PR, Admin), OIL and Guest of Honour, Sri Ramesh Phukan, Jt. Secretary, Assam Football Association graced the occasion.



Oil India Football Club lifted the Champion Trophy and received cash prize of ` 30,000 from Sri A.N.Baruah, GGM (Technical)

87th Hastings International Chess Tournament, England



International Chess Player, **Shri Laishram Imocha** of Pipeline Fields Department, OIL Duliajan represented India as the Coach of the Indian Youth Chess Team in the 87th Hastings International Chess Tournament, England. Shri Imocha is the first sportsperson from OIL who has been appointed as a Coach of any Indian Sports Team. He was also the Coach of the Indian Youth Chess Team in the Asian Youth Chess Championship held in Delhi in 2007.



Kumar Satyam Das, son of Shri S K Das (Inspector/Min) CISF, pursuing M. Sc in Applied Geology at IIT Mumbai received Prime Minister Scholarship and Dr. J Coggin Brown Memorial Cash Award for Geology. The award was given away by 'The Mining, Geological and Metallurgical Institute of India' (MGMI) for Satyam's outstanding contribution to Geological Science.



Bibhuti Baruah, JE of Prod. (Oil) Department completed MBA (HR) from Sikkim Manipal University through Distance Education.



32nd PSPB Inter Unit Tennis Championship, 2011

Hakim Ali of OIL (R) and **Debajyoti Borpujari** (I) seen with winner trophies of men's doubles (+35 years) of recently held NRL-ITF Seniors Tennis Championship sanctioned by International Tennis Federation (ITF) and organised by Jorhat Tennis Club under the auspices of all India Tennis Association (AITA) from November 7-12, 2011.



Members of OIL Veterans Tennis Team (Atanu Bhagavati, Kalyan K Das, Hakim Ali, Jayanta Mulkar) seen receiving the 2nd Runners Up Trophy of 32nd Inter Unit PSPB Tennis Tournament 2011, held recently at Dehradun under the auspices ONGCL, from the Chief Guest.

32nd PSPB Athletic Meet, 2011

Mr. WATINUNGSANG AO, working in Production Gas department (Standing in middle) represented OIL in 32nd PSPB Athletic Meet held at Lukhnow from 17-19th Nov., 2011. He won gold medal in 200 meters and long jump event.



Members of OIL Men's 'A' Tennis Team (Pradeep Kr Rajbangshi, Hakim Ali, Anshuman Dutta, Chandrasekhar Mohanty) who clinch the 2nd Runners Up Trophy of 32nd Inter Unit PSPB Tennis Tournament 2011, held recently at Dehradun under the auspices ONGCL.



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43T0 [çbEõ yÔQñ a] cã»cc; 2011



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A photograph of three men standing together. The man on the right, wearing a red sweater and white trousers, is handing a small, square-framed picture to the man in the center. The man in the center is wearing a light-colored sweater and a patterned shawl. The man on the left is wearing a brown jacket and glasses. They are all smiling. In the foreground, there is a small table with some items on it, including what looks like a box or a bag. The background is slightly blurred, showing an outdoor setting with trees and a building.

A photograph showing three men at a table. The man in the center, wearing a green shirt and a dark vest, is leaning over and signing a document. To his left, a man in a blue blazer and glasses stands watching. To his right, an older man in a white shirt is also looking at the document. The document is held in a yellow folder. There are some pink flowers on the table to the right.

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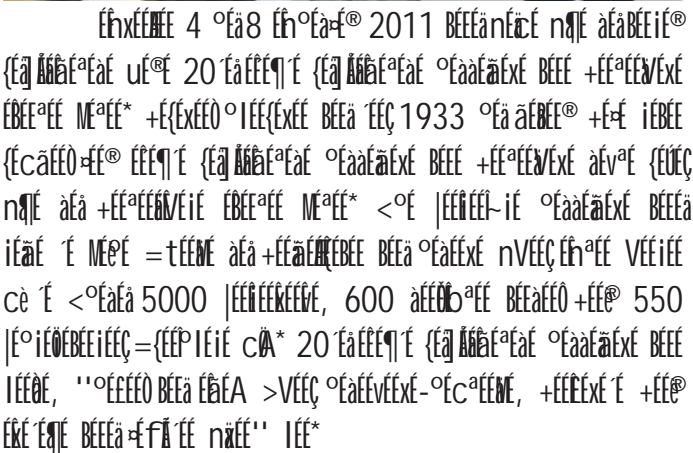
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ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)


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ENERGY SAVING CLIMATE CHANGE TIPS

CONSIDER GOING SOLAR FOR WATER HEATING SYSTEMS



PUT TIMERS ON URNS OR USE A KETTLE



SOLAR PROGRAM



LOOK FOR A GOOD ENERGY STAR RATING



TURN OFF COMPUTER OFF AT POWERPOINT WHEN NOT IN USE



NOTE: SCREENSAVERS DO NOT SAVE ENERGY

CHOOSE FRIDGE WITH A GOOD ENERGY STAR RATING



USE LOCALLY GROWN PRODUCE



MEATLESS MONDAY! HAVE ONE DAY A WEEK THAT IS VEGETARIAN DAY



WATER HEATING




CHOOSING EQUIPMENT

TURN OFF

TURN OFF

TURN OFF AT POWERPOINT PHOTOCOPIERS, COMPUTER PRINTERS OUTSIDE HOURS



CANTEEN

TRANSPORT

WASTE

REDUCE LUNCH TIME RUBBISH



TAKE THE BUS



WALK




RIDE A BIKE



LIGHTING

AT RECESS/ LUNCH

USE ENERGY EFFICIENT LIGHTS



TURN OFF LIGHTS

AIR HEATING CONDITIONING

INSULATE BUILDINGS



SET THERMOSTAT TO 18°C - 20°C IN WINTER AND 26°C IN SUMMER



ONLY USE HEATERS WHEN THE SPACE IS OCCUPIED

KEEP DOORS AND WINDOWS CLOSED WHEN HEATING OR USING REFRIGERATIVE AIRCONDITIONING

THEN FOOD BILL \$110 NOW FOOD BILL \$40

