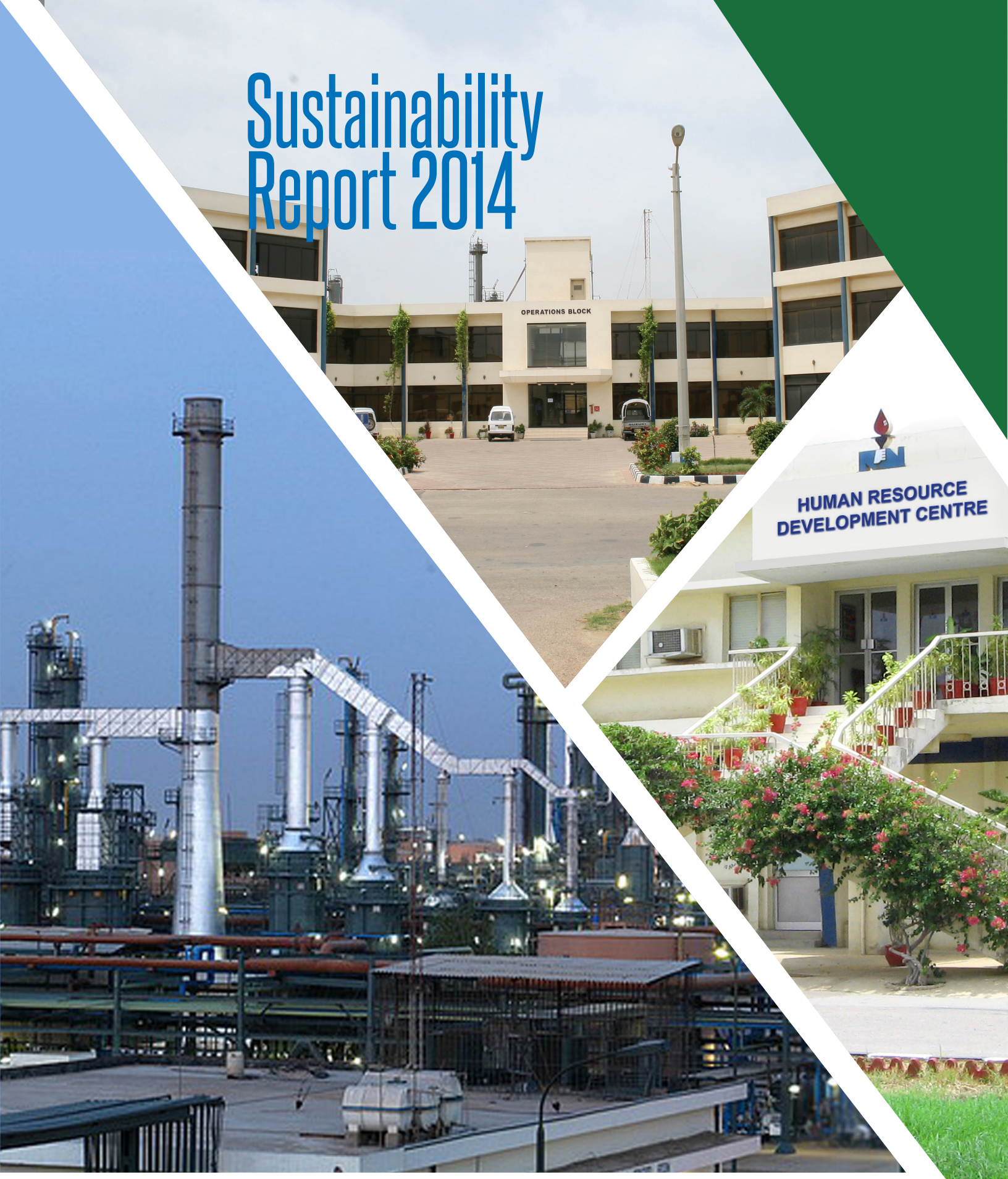
Sustainability Report 2014



National Refinery Limited

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Executive Summary

NRL Documents all its initiatives towards sustainable environmental performance for annual reporting. The scope of this reporting is to provide information about the Occupational Health, Safety, Environment and Quality within the sustainable operational performance of National Refinery Limited for the year 2014 for all its stakeholders for strengthening their trust and to promote better relationship. The benchmark and guidelines refer for the development of this report is from ACCA-WWF Environmental Reporting Assessment Criteria, Global reporting initiative guidelines for Sustainable reporting GRI:G3.1.

- This report describes the key elements of the updated sustainable approach towards continual improvement and reduction in negative environmental impacts of NRL operational activities and developing the sustainable business strategies.
- We ensure that our manufacturing activities are in line with the government environmental laws and Company's standard operating procedures & safe work practices to support toward environment protection through sustainable development.
- This report gives a brief over view of National Refinery Limited (NRL) operations, manufacturing processes and their associated direct / indirect impact on environment and sustainable initiative introduced.
- We closely monitor hazardous non hazardous wastes, energy and water consumption for best sustainable practices development.
- NRL sustainable environmental development action plan is focused on optimization of utilities & energy consumption, stack emissions & Effluent water monitoring.
- Response to the Global environmental initiatives, produce environment friendly clean High Speed Diesel De-Sulphurization (HSD) project to meet Euro-II /IV, project is in progress for completion.
- Emergency response plans (ERP) & procedures have been established & implemented, periodic drills are conducted in order to train the manpower and removed weaknesses in the system, accordingly for sustainable development.
- Corrective and preventive actions are taken for continual improvement as per commitment in NRL HSEQ policy statement. The whole mechanism is authenticated by the periodic review by the Management review meeting.
- For sustainable objectives achievement Monitoring & measurements are carried out at specified intervals for the key characteristics of NRL operations that can have a significant environmental impact.
- Periodic evaluation of legal, regulatory and others requirement is carried out for sustainable requirements compliance. Corrective actions are taken in case of any deviation based on root cause analysis. Results are recorded and reviewed for the effectiveness of corrective actions.
- NRL has achieved 21.12 million Safe ManHours without Lost Time Injury (LTI) as on December 31, 2014. Continuous efforts to ensure the effective application of sustainable operational controls for minimizing Occupational Health & Safety risks and its environmental impacts.
- On the sustainable environmental measure we have addressed critical environmental concerns such as NOx's / Sox's emissions, green house gases, waste and effluent disposal through friendly manner for continual improvement.
- Sustainable Environmental performance is reviewed at planned intervals to ensure its continuing suitability, adequacy and effectiveness. Opportunities of improvement and need for changes where required are discussed in Management Review, HSE Committees and Steering Committee meetings and operational meeting, Decisions are taken and strategies developed.
- Management un-deterred commitment towards acquiring excellence in overall performance specially for the conversation of environment.
- Implementation of IMS (Integrated Management System) based on ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007 standard Audited by M/s. TUV Austria Bureau of Inspection and Certification (Pvt.) Limited - Pakistan during April 2014.
- A well defined and implemented mechanism to evaluate the Contractors and Suppliers to ensure that their activities & performance in accordance with in sustainable requirement fulfillment.
- NRL is continuously expanding its diversified oil refining business, which ranges from crude oil refining, lube base oil production and some exports. As a market leader in petroleum refining sector, NRL carries out its environmental care activities to become an environment friendly energy enterprise in the country with an approach & guidelines for sustainability.

Our Environmental Mission and Guiding Environmental Principles

The members of the National Refinery limited are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy recourses and supplying high-quality products and services to consumers.

The members recognize the importance of efficiently meeting society's needs and our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public.

To meet these responsibilities, NRL members pledge to manage our businesses according to these principles.

- To recognize and to respond to community concerns about our raw materials, products, and Operations.
- To operate our plants and facilities and to handle our raw materials and products in a manner that protects the environment and the safety and health of our employees and the public.
- To make safety, health and environment consideration a priority in our planning and our development of new products and process.
- To advice promptly the appropriate officials employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To counsel customers, transporters, and others in the safe use, transportation, and disposal of our raw materials, products and waste materials.
- To economically develop and produce natural resources and to converse those resource by using energy efficiently.
- To extend knowledge by conducting or supporting research on the safely, health, and environmental effects of our raw materials, products processes and waste materials.
- To commit to reduce overall emissions and waste generation.
- To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- To participate with government and other creating responsible laws regulations, and standards to safeguard the community, workplace and environment.
- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport, or dispose of similar raw materials, petroleum products and wastes.

Strategies for Today's Environmental Partnership (STEP):

One of the most significant long –term trends affecting the future vitality of the petroleum industry is the public's concerns about the environment. Recognizing this trend, NRL have developed a positive, forward looking strategy called STEP.

This program aims to address public concerns by improving industry's environmental, health, and safety performance documenting performance improvements; and communicating them to the public.

The foundation of STEP is the API Environmental Mission and Guiding Environmental Principles.

API standards, by promoting the use of sound engineering and operational practices are an important means of implementing API's STEP program.

UNGlobal Compact

The Ten Principles of UNGlobal Compact's

The UN Global Compact's ten principles in the areas of human rights, labour, the environment and anti-corruption.

Human Rights

- Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2: Make sure that they are not complicit in human rights abuses.

Labour

- Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- Principle 4: The elimination of all forms of forced and compulsory labour;
- Principle 5: The effective abolition of child labour; and
- Principle 6: The elimination of discrimination in respect of employment and occupation.

Environment

- Principle 7: Businesses should support a precautionary approach to environmental challenges;
- Principle 8: Undertake initiatives to promote greater environmental responsibility; and
- Principle 9: Encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

- Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Message From Chairman

بسم الله الرحمن الرحيم

Sustainability and continual improvement of the environment are the key words in the science of environmental preservation as industrial sector is a major source for greenhouse gases. National Refinery Limited being an important contributor to the energy sector is fully committed to protect the environment and preserve it for the future generations.

Our Corporate social responsibility involves a variety of issues, including global warming. In the recent years it has become one of the key international environmental issues. Abnormal climatic changes and ecological disasters that are brought about by excessive emission of greenhouse gases gradually affect the entire world. Global warming is not the issue of developed countries only. No country or living being can be disassociated from its effects. Attempts are therefore required to control the industrial emissions so that adverse effects on global warming can be reduced. This is done not only to comply with the legal obligations but also as a responsible corporate entity which respects and acknowledges the right to safe and clean environment.

Our dedication towards protecting the Environment is evident through Operations. We strive to conserve resources, reduce waste generations and emphasize on energy efficiency. Efforts are being made at NRL for continual improvement in the field of Occupational Health, Safety, Environment and Quality. NRL has implemented ISO standards regarding Environment, Occupational Health & Safety and Quality since 2003. During the year 2009 NRL upgraded Quality Management System from ISO 9001: 2000 to ISO 9001:2008 version.

We believe that eco-efficient organizations are intrinsically more profitable than others and firmly believe that investment on environment has its dividends. National Refinery Limited will remain committed to protect and preserve environment by conducting its business activities in a socially and environmentally responsible manner.

We are confident that our sustained efforts in the process of improvement in the Environment will bear fruitful results and will provide a quality life to the coming generations.

Dr. Ghaith R. Pharaon
Chairman

Message From Deputy Chairman and Chief Executive Officer

بسم الله الرحمن الرحيم

With the blessing of Almighty Allah I am pleased to present the 12th Sustainable Environmental Report for the year 2014. As a part of our ongoing commitment to disseminate information to our stakeholders.

Sustainable development has been at the top of our agenda at all times and in the pursuit of this objective protection and preservation of the environment has remained an integral component of our operations. We have developed a comprehensive policy to address Environment, Safety and Occupational Health issues and ensure its effective implementations through a collaborative mechanism by involving employees, suppliers and customers while also encouraging the members of the society to contribute in the initiatives meant for the improvement of environment.

With our visionary commitment we realize that the nature of our activities inevitably impacts the environment in many ways and therefore we are acutely aware of the need to reduce our environmental footprint as much as possible. We acknowledge that we have a responsibility to ensure that future generations inherit a world that is developed in a sustainable way. We know that what we do today will affect tomorrow, and that we should take our responsibility now.

We have a comprehensive Integrated Management System in place in accordance with the requirements of ISO 14001, OHSAS 18001 and ISO 9001. It has helped us in strengthening environmental awareness and promoted culture of teamwork, empowerment and continuous improvement. We have achieved 21.12 million safe man-hours without Loss Time Injury (LTI) and believe that there is much more to do.

Sustainable Environmental development commitment is not an option but a duty towards ourselves and future generations.

We reaffirm our commitment to continue to undertaking sustainable initiatives to promote greater environmental responsibility both within and outside the Company in the best interests of all our stakeholders.

Shuaib A. Malik
Deputy Chairman & CEO

Our passion is to attain distinctive leadership amongst the corporate success stories of tomorrow.

We at NRL recognize that realization of this passion needs superior professional competencies, continuous value addition and improvising, development of human capital and complete commitment to safety, occupational health and environment.

- To remain the premium and preferred supply source for various petroleum products and petrochemicals.
- Offer products that are not only viable in terms of desirability and price but most importantly give value to our customers.
- Deliver strong returns on existing and projected investments of our stakeholders by use of specialised and high quality corporate capabilities.
- Business development by adoption of emerging technologies, growth in professional competence, support to innovation, enrichment of human resource and performance recognition.
- Be a responsible corporate citizen by serving the community through a variety of socio-economic acts and maintaining a high level of safety, occupational health and environmental care.

Core Values

Following concepts and ideas guide the Management and staff of National Refinery Limited in conducting its business practices in most ethical ways.

1. Ethical Conduct & Integrity

We value lifestyle in our organization where ethics like truth, honesty, integrity and fair play are basic ingredients while interacting within the organization or dealing with the outside world.

2. Teamwork and Responsibility

We share information and resources and step in to help out other team members. Conflicts are worked out in spite of obstacles and difficulties. We accept responsibility with “can do” attitude.

3. Customer Satisfaction

We endeavor to provide quality products to our customers at competitive prices. We value their satisfaction essential for continued growth of our business.

4. Continuous Improvement

We generate new ideas and creative approaches to upgrade and update our refinery to best available technology and processes so that our products are at the level of internationally accepted standards.

5. Profitability

We believe in enhancing our profitability to the maximum so that Employees, Shareholders and Government all benefits from it.

6. Corporate Citizenship

As a good Corporate Citizen, we are more than willing and happy to meet our social responsibilities towards the community around us. We are also committed to meet requirements of health, safety and environment.

Corporate Information

Board of Directors

Dr. Ghaith R. Pharaon - Chairman
Alternate Director: Abdus Sattar

Laith G. Pharaon
Alternate Director: Jamil. A. Khan

Wael G. Pharaon
Alternate Director: Babar Bashir Nawaz

Shuaib A. Malik
Musa Bojang
Bahauddin Khan
Tariq Iqbal Khan

Chief Executive Officer

Shuaib A. Malik

Chief Financial Officer

Anwar A. Shaikh

Company Secretary

Nouman Ahmed Usmani

Audit Committee

Tariq Iqbal Khan	Chairman
Abdus Sattar Alternate to Dr. Ghaith R. Pharoan	Member
Babar Bashir Nawaz Alternate to Wael G. Pharaon	Member
Bahaudddin Khan	Member
Shaikh Ather Ahmed	Secretary

Human Resource and Remuneration (HR&R) Committee

Mosa Bojang	Chairman
Bahauddin Khan	Member
Babar Bashir Nawaz Alternate to Wael G. Pharaon	Member
Shuaib A. Malik	Member
Nouman Ahmed Usmani	Secretary

Auditors

A. F. Ferguson & Co.
Chartered Accountants

Solicitors

Ali Sibtain Fazli & Associates

Bankers

MCB Bank Limited
Allied Bank Limited
Habib Bank Limited
Askari Bank Limited
United Bank Limited
Faysal Bank Limited
Samba Bank Limited
Bank Al-Habib Limited
National Bank of Pakistan
Habib Metropolitian Bank Limited

Registered Office

7-B, Korangi Industrial Area,
P.O. Box 8228, Karachi-74900
UAN: 111-675-675
PABX No. +92-21-35064981-86,
+92-21-35064977-79
Fax: +92-21-35054663
+92-21-35066705
Website: www.nrlpak.com
Email: info@nrlpak.com

Share Registrar

THK Associates (Pvt.) Ltd.,
2nd Floor, State Life Building-3,
Dr. Ziauddin Ahmed Road,
Karachi-75530 P.O. Box. No. 8533
UAN: +92-21-111-000-322
Direct: +92-21-35693094-95
Fax: (92-21) 35655595
Email: secretariat@thk.com.pk
Website: www.thk.com.pk

NRL at a Glance

First Lube Refinery

Design Capacity	539,700 Tons per year of Crude processing
Design Capacity	76,200 Tons per year of Lube Base Oils
Date Commissioned	June 1966
Project Cost	Rs. 103.9 million

Fuel Refinery
Before Re-Vamp

Design Capacity	1,500,800 Tons per year of Crude processing
Date Commissioned	April 1977
Project Cost	Rs. 607.5 million

After Re-Vamp

Design Capacity	2,170,800 Tons per year of Crude processing
Date Commissioned	February 1990
Project Cost of Revamping	Rs. 125.0 million

BTX Unit

Design Capacity	25,000 Tons per year of BTX
Date Commissioned	April 1979
Project Cost	Rs. 66.7 million

Second Lube Refinery
Before Re-Vamp

Design Capacity	100,000 Tons per year of Lube Base Oils
Date Commissioned	January 1985
Project Cost	Rs. 2,082.4 million

After Re-Vamp

Design Capacity	115,000 Tons per year of Lube Base Oils
Date Commissioned	June 2008
Project Cost of Revamping	Rs. 585.0 million

Shareholders' Equity

June 1966	Rs. 20.0 million
June 2014	Rs. 26,593.6 million

Directors' Profile

Dr. Ghaith R. Pharaon
Chairman and Director
(Non-Executive Director)

Chairman & Director
The Attock Oil Company Limited
Attock Petroleum Limited
Attock Cement Pakistan Limited

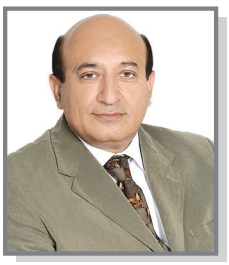
Director
Pakistan Oilfields Limited
Attock Gen Limited
Attock Leisure & Management Associates (Pvt.) Limited
Attock Refinery Limited

Mr. Laith G. Pharaon
(Non-Executive Director)

Director
Attock Petroleum Limited
Pakistan Oilfields Limited
The Attock Oil Company Limited
Attock Refinery Limited
Attock Cement Pakistan Limited
Attock Gen Limited
Attock Leisure & Management Associates (Pvt.) Limited

Mr. Wael G. Pharaon
(Non-Executive Director)

Director
Attock Petroleum Limited
Pakistan Oilfields Limited
The Attock Oil Company Limited
Attock Refinery Limited
Attock Cement Pakistan Limited
Attock Gen Limited
Angoori Heights Development (Pvt.) Limited
Margalla Farm Houses Development (Pvt.) Limited
Rawal Lodges Development (Pvt.) Limited



Mr. Shuaib A. Malik
Deputy Chairman &
Chief Executive Officer
(Executive Director)

Chairman, Chief Executive & Director
Pakistan Oilfields Limited

Chairman & Director
Attock Hospital (Pvt.) Limited
Attock Refinery Limited

Chief Executive & Director
Attock Petroleum Limited
The Attock Oil Company Limited
Attock Information Technology Services (Pvt.) Limited
Angoori Heights Development (Pvt.) Limited
Attock Leisure & Management Associates (Pvt.) Limited
Falcon Pakistan (Pvt.) Limited

Director
Attock Cement Pakistan Limited
Attock Gen Limited
Rawal Lodges Development (Pvt.) Limited
Margalla Farm Houses Development (Pvt.) Limited

Resident Director
Pharaon Investment Group Limited Holding SAL

Group Regional Chief Executive

Chairman
NRL Management Staff Pension Fund

Mr. Musa Bojang
(Independent Director)

Team Leader
Budget & Performance Management Department-
Islamic Development Bank

Mr. Tariq Iqbal Khan
(Independent Director)

Director
Pakistan Oilfields Limited
Gillette Pakistan Limited
International Steels Limited
Lucky Cement Limited
Packages Limited
Silk Bank Limited
FFC Energy Limited

Mr. Bahauddin Khan
(Independent Director)

Chief Operating Officer
Bank Alfalah Limited

Mr. Abdus Sattar
Alternate for
Dr. Ghaith R. Pharaon
(Non-Executive Director)

Director
Attock Refinery Limited
Attock Petroleum Limited
Pakistan Oilfields Limited
Attock Cement Pakistan Limited

Mr. Babar Bashir Nawaz
Alternate for
Mr. Wael G. Pharaon
(Non-Executive Director)

Director & Chief Executive
Attock Cement Pakistan Limited
Rawal Lodges Development (Pvt.) Limited

Director
Attock Petroleum Limited
Angoori Heights Development (Pvt.) Limited
Margalla Farm Houses Development (Pvt.) Limited
Falcon Pakistan (Pvt.) Limited

Alternate Director
Attock Refinery Limited
Attock Leisure & Management Associates (Pvt.) Limited
Pakistan Oilfields Limited

Mr. Jamil A. Khan
Deputy Managing Director
Alternate for
Mr. Laith G. Pharaon
(Executive Director)

Chairman
NRL Executive Staff Post Retirement Medical Benefit Fund
NRL Non - MPT Staff Gratuity Fund

Trustee
NRL Management Staff Pension Fund
NRL Officers Provident Fund
NRL Workmen Provident Fund

Corporate Objectives & Development Strategy

National Refinery Limited is a petroleum refining and petrochemical complex engaged in manufacturing and supplying a wide range of fuel products, lubes, BTX, asphalts and specialty products for domestic consumption and export.

NRL objectives and development strategy are aimed at achieving sustainable productivity and profitability and high standards of safety, occupational health and environmental care. This entails human resource re-engineering & development, enhancing value addition, implementing conservation measures and continuing growth through upgradation of existing as well as addition of new facilities. In the changing global environment, corporate objective and development strategy have been defined to meet the challenges of 21st Century.

Corporate Objectives

- Ensure that business policies and targets are in conformity with the national goals.
- Contribute in meeting the country's demand of petroleum and petrochemical products.
- Customer's satisfaction by providing best value and quality products.
- Optimization of the value of barrel of crude oil and cost reduction through conservation measures.
- Achieving and maintaining a high standard of Occupational Health, Safety and Environmental care.
- Ensure reasonable return on the shareholders' existing and projected investments.
- Maintain modern management systems conforming to international standards needed for an efficient organization.

Development Strategy

- Contribute in national efforts towards attaining sustainable self-efficiency in petroleum products.
- Human resource development by upgrading training facilities and exposure to modern technologies/ management techniques.
- Balancing and Modernization for energy conservation and enhanced yield of value added products as well as revamping for environment friendly products.
- Expansion of refining capacity by de-bottlenecking and adding new facilities.
- Acquire newer generation technologies for the efficient refinery operations as well as for attaining highest standards of Occupational Health, Safety and Environmental care.
- Acquiring self-sufficiency in re-engineering, design and fabrication of equipments.

Chairman's Review

It gives me immense pleasure to welcome you all, on behalf of the Board of Directors, in the 51st Annual General Meeting of your Company and to present annual review of results and audited financial statements for the financial year ended June 30, 2014.

The overall World Economy has started to show some signs of growth due to recovery in developed economies. However, it is expected that growth of developing countries will be even slower. Oil Production in the Middle East and Africa is vulnerable due to internal conflicts. This will continue to make the crude oil prices unpredictable. The overall economy in other regions of the world is likely to remain under pressure due to increasing costs of energy.

Pakistan's economy is continuously facing low growth in the last few years due to various social, economic, political and security challenges. In addition to these, power crises in the country has halted Government's efforts for increase in economic activity. As per the Economic survey of Pakistan, the country's GDP growth rate touched 4.14% in current year from 3.7% last year, showing some signs of improvement. The country's Foreign exchange reserves have also increased after a sharp decline witnessed during the year.

Overall crude oil and product prices remained unpredictable during the year. The movement in prices, pattern of sales and changes in exchange rates kept Company's profitability under pressure. Despite these challenges, your Company managed to post a profit after tax of Rs.962 million compared to Rs. 2,846 million in the last year.

Fuel Segment incurred loss after tax of Rs.2,835 million compared to loss after tax of Rs.211 million in the last year due to unfavorable increase in crude oil prices versus selling prices of products and exchange losses.

Lube segment earned profit after tax of Rs.3,797 million compared to Rs.3,057 million in the last year. Profit increased due to better selling prices of lube base oils, better margins and increase in sale of Asphalt. The sale of Asphalt showed increase in last few months of the current year due to start of road infrastructure development work in the country. As per the recent announcements of Government to start major road construction in the coming year, it is anticipated that sale of Asphalt will increase and inventory levels of Asphalt will decline, making room for higher production and profitability for lube segment.

In order to comply with the Government directives, the Company is in the process of award of contract for installation of HSD desulphurization unit and isomerization unit in Phase-I. The completion time is expected to be over two years. The installation of other plants have been deferred to Phase-II due to involvement of huge finances and prevailing economic situation in the country. Your company is determined to undertake all efforts to improve the product mix which in turn will yield better profitability in future.

I would like to acknowledge and commend the efforts of the management, employees and all other stakeholders for their efforts and continued support in improving the performance of the Company and expect that they will not only continue the same but will also put more focused efforts in meeting the new challenges ahead and deliver increasingly better results.

Dr. Ghaith R. Pharaon
Chairman
August 14, 2014
Beirut, Lebanon

Refinery Upgradation Projects

Following are the projects in progress:

- **Diesel De-sulphurization Unit**
- **Naphtha Isomerization Project**

The Board of Directors in its meeting held on August 14, 2014, has approved to award the Inside Battery Limit (ISBL) job relating to (i) Diesel De-sulphurization; and (ii) Naphtha Isomerization Projects of the Company to Engineering Procurement and Construction Contractor (EPCC) M/s. CNCEC/Hualu of China, at an estimated amount of US$ 242 million, which constitutes 80% of the project's cost while the company is in process of finalizing balance placements. The projects are to be funded through consortium of banks and internal sources. The company has already signed Term Sheet with the consortium of local banks for Rs.24.2 billion in respect of financing of these projects which are expected to be completed within twenty six months.

Diesel De-sulphurization Project will facilitate to comply with environment standards of Euro-II as directed by the Government besides entitling Company for deemed duty of 9% as against 7.5%; whereas, Isomerization Project will enable to convert Naphtha into Motor Spirit (MS), a higher margin product. Government directives are to complete the project by 31 December 2015, which looks to be difficult to achieve. However, keeping in view the ground realities and progress of refineries in this regard, it is expected that the timeline would be extended.

- **Deep Conversion Units**
  These units shall be considered for implementation after completion of De-sulphurization and Isomerization projects.

- **Two Stage Unit at Lube–1 Refinery**
  The project has been planned to enhance the installed crude oil processing capacity from 12,050 Barrel per stream day (bpsd) to 17,000 bpsd and vacuum fractionation capacity from 5,200 bpsd to 6,600 bpsd. Design package and ITB documents for bidding are complete. Award of job to EPCC shall be considered after finalization of contract for De-sulphurization and isomerization.

- **101 Crude Distillation Unit at Fuel Refinery**
  The project has been envisioned, to enhance the installed crude oil processing capacity from 50,000 bpsd to 53,000 bpsd at crude distillation unit of fuel refinery. Design package and ITB documents for bidding are complete. Award of job to EPCC shall be considered after finalization of contract for Desulphurization and isomerization.

- **Nitrogen Gas Generator**
  For the purpose of financial economization it is planned to use Nitrogen Gas as inert media for MEK Units and for Tank Blanketing. Nitrogen Gas Generator with Technology of Pressure Swing Absorption is being planned having capacity of 400 Normal Cubic Meter/ Hour. The contract is expected to be awarded in near future.

- **Reverse Osmosis Plant**
  250,000 gallons per day Reverse Osmosis plant has been completed by Company during the year which is now commissioned. The Company has planned another identical plant which will be commenced shortly.

- **Up gradation of SAP ERP System from Version 4.6c to SAP ECC6**

  The Company is in the process of up-gradation of its ERP system for improved Management and Financial Reporting. In this context, Company has purchased the new version of SAP with additional modules and has appointed consultants for the implementation of the new version of SAP. The implementation is expected to be completed by first quarter of next year.

CORPORATE SOCIAL RESPONSIBILITY

The Company realizes its social responsibility towards the national economy apart from its customers, employees and shareholders. As a responsible corporate citizen, the Company has contributed to different social segments of the economy in various ways for improving quality of life in the country. Recently, Company contributed Rs. 100,000 to "Sindh Institute of Urology and Transplantation (SIUT)" as a donation to help medical treatment of poor people.

Company is ambitious to be recognized as social partner and not only as commercial entity. In this respect, the Company has kept five disabled persons on its manpower strength as prescribed in Employment and Rehabilitation Ordinance, 1981 and also made payments to National Council for the Rehabilitation of Disabled Persons in lieu of less number of such persons in the Company's employment.

Code of Conduct

National Refinery Limited (the Company) is engaged in the manufacturing of wide range of petroleum products with the objective to achieve sustainable productivity, profitability and high standards of safety, occupational health and environmental care. This entails human resource development, enhancing value addition, implementing conservation measures and growth by up-gradation and addition of newer generation technologies.

The Company requires all its Board Members and Employees to act within the authority conferred upon them and in the best interests of the Company and observe all the Company's policies and procedures as well as relevant laws and regulations, as are applicable in individual capacity or otherwise, including but not limited to the corporate values, business principles and the acceptable and unacceptable behaviour (hereinafter called the Company's Code of Conduct) embodied in this document.

The Company believes that the credibility, goodwill and repute earned over the years can be maintained through continued conviction in our corporate values of honesty, justice, integrity and respect for people. The Company strongly promotes trust, openness, teamwork and professionalism in its entire business activities.

- The business principles are derived from the above stated corporate values and are applied to all facets of business through well-established procedures. These procedures define behavior expected from each employee in the discharge of his/her responsibility.

- NRL recognizes following obligations, which need to be discharged with best efforts, commitment and efficiency:

  - Safeguarding of shareholders' interest and a suitable return on equity.

  - Service customers by providing products, which offer value in terms of price, quality, safety and environmental impact.

  - Respect human rights, provide congenial working environment, offer competitive terms of employment, develop human resource and be an equal opportunity employer.

  - Seek mutually beneficial business relationship with contractors, suppliers and investment partners.

- The Company believes that profit is essential for business survival. It is a measure of efficiency and the value that the customer places on products and services produced by the Company.

- The Company requires honesty and fairness in all aspect of its business and in its relationships with all those with whom it does business. The direct or indirect offer, payment, soliciting and accepting of bribe in any form is undesirable.

- The Company is fully committed to reliability and accuracy of financial statements and transparency of transactions in accordance with established procedures and practices.

- The Company does not support any political party or contributes funds to groups having political interests. The Company will however, promote its legitimate business interests through trade associations.

- The Company, consistent with its commitments to sustainable developments, has a systematic approach to the management of health, safety and environment.

- The Company is committed to observe laws of Pakistan and is fully aware of its social responsibility. It would assist the community in activities such as education, sports, environment preservation, training programs, skills development and employment within the parameters of its commercial objectives.

- The Company supports free market system. It seeks to compete fairly and ethically within the framework of applicable competition laws in the country. The Company will not stop others from competing freely with it.

- In view of the critical importance of its business and impact on national economy, the Company provides all relevant information about its activities to legitimate interested parties, subject to any overriding constraints of confidentiality and cost.

- The Company requires all its board members and employees to essentially avoid conflict of interest between private financial and/or other activities and their professional role in the conduct of Company business.

- No board member or employee shall in any manner disclose to any person or cause disclosure of any information or documents, official or otherwise, relating to the Company, except those published, and unless he/she is authorised by the management.

- All papers, books, drawings, sketches, photographs, documents and similar papers containing analysis, formulas, notes or information relating to the Company's business affairs or operations shall always be treated as the Company property, whether prepared by the employee or otherwise and no employee shall be permitted to carry any of these outside business premises unless specifically authorised to do so by the management.

- The Company's property, funds, facilities and services must be used only for authorised purposes.

- The board members or employees of the Company specifically those coming in direct contact with the vendors doing or seeking to do business with the Company shall not receive favours or incur obligations. In case any contractor/supplier to have business relations with the Company happen to be a relative of an official who is entrusted the responsibility of opening/evaluation/award of supply/contract job or with execution or certification of material/services, he/she shall immediately bring the fact to the notice of Managing Director who may entrust the responsibility to another.

- Each employee shall devote his/her full time and energy exclusively to the business and interests of the Company. In particular, no employee (including those on leave) unless otherwise permitted by the Company, shall directly or indirectly engage in any other profession or business or enter the services of or be employed in any capacity for any purpose whatsoever and for any part of his/her time by any other person, government department, firm or company and/or shall not have any private financial dealings with any other persons of firms having business relations with the company for sale or purchase of any materials or equipments or supply of labour or for any other purpose. Every employee shall hold himself in readiness to perform any duties required of him by his/her superiors to the best of his/her ability.

- No board member or employee of the Company shall, directly or indirectly, deal in the shares of the Company in any manner during the closed period, as determined and informed by the Company.

- No board member or employee of the Company shall practice insider trading.

Without prejudice to any penal action defined in any statute, as applicable, against any kind of non-compliances/violations, non-compliance with the Company's Code of Conduct may expose the person involved to disciplinary action as per Company's rules and/or as determined by the management or the Board of Directors of the Company, as the case may be, on case to case basis.

On behalf of the Board

SHUAIB A. MALIK
Deputy Chairman &
Chief Executive Officer
June 18, 2012

Statement of Compliance with The Code of Corporate Governance

This statement is being presented to comply with the Code of Corporate Governance (the Code) contained in listing regulations of Stock Exchanges where the shares of the Company are listed, for the purpose of establishing a framework of good governance, whereby a listed Company is managed in compliance with the best practices of corporate governance.

The Company has applied the principles contained in the Code in the following manner:

1. The Company encourages representation of independent non-executive directors and directors representing minority interests on its Board of Directors. At present the Board includes:

Category	Names
Independent Directors	Mr. Tariq Iqbal Khan Mr. Musa Bojang Mr. Bahauddin Khan
Executive Directors	Mr. Shuaib A. Malik Mr. Jamil A. Khan Alternate to Mr. Laith G. Pharaon, Director
Non-Executive Directors	Dr. Ghaith R. Pharaon Alternate Director: Mr. Abdus Sattar Mr. Laith G. Pharaon Mr. Wael G. Pharaon Alternate Director: Mr. Babar Bashir Nawaz

   The independent directors meet the criteria of independence under clause (i)(b) of the Code.

2. The Directors have confirmed that none of them is serving as a director in more than seven listed companies, including this Company.

3. All the resident directors of the Company are registered as taxpayers and none of them has defaulted in payment of any loan to a banking company, a DFI or an NBFI or, being a member of a stock exchange, has been declared as defaulter by that stock exchange.

4. No casual vacancy occurred in the Board of directors during the year ended June 30, 2014.

5. The Company has prepared a 'Code of Conduct' and has ensured that appropriate steps have been taken to disseminate it throughout the Company along with its supporting policies and procedures.

6. The Board has developed vision and mission statements, overall corporate strategy and significant policies of the Company. A complete record of particulars of significant policies along with the dates on which they were approved or amended has been maintained.

7. All the powers of the Board have been duly exercised and decisions on material transactions, including appointment and determination of remuneration and terms and conditions of employment of the CEO, other executive and non-executive directors, have been taken by the board.

8. The meetings of the Board were presided over by the Chairman or Deputy Chairman, and the Chief Financial Officer and Company Secretary attended all the meetings. The Board meets at least once in every quarter. Written notices of the Board meetings along with agenda and working papers were circulated at least seven days before the meetings. The minutes of the meetings were appropriately recorded, circulated and signed by the Chairman of the meeting of the Board of Directors.

9. The Directors were apprised of their duties and responsibilities from time to time.

10. The Board has approved terms of appointment and remunerations of Chief Financial Officer (CFO), Company Secretary and Head of Internal Audit.

11. The director's report for this year has been prepared in compliance with the requirements of the code and fully describes the salient matters required to be disclosed.

12. The CEO and CFO duly endorsed the financial statements of the Company before approval of the Board.

13. The directors, CEO and executives do not hold any interest in the shares of the Company other than that disclosed in the pattern of shareholding.

14. The Company has complied with all the corporate and financial reporting requirements of the Code.

15. The Board has formed an Audit Committee. It comprises of four members, of whom two are non-executive directors, one is independent director and the Chairman of the committee is also an independent director.

16. The meetings of the audit committee were held at least once every quarter prior to approval of interim and final results of the Company and as required by the Code. The terms of reference of the committee have been formed and advised to the committee for compliance.

17. The Board has formed an HR and Remuneration Committee. It comprises of four members, of whom one is non-executive director, one is independent director and the Chairman of the Committee is also an independent director.

18. The Board has set-up an effective internal audit function and that is involved in the Internal Audit on full time basis relating to the business and other affairs of the Company.

19. The statutory auditors of the Company have confirmed that they have been given a satisfactory rating under the quality control review program of the Institute of Chartered Accountants of Pakistan, that they or any of the partners of the firm, their spouses and minor children do not hold shares of the Company and that the firm and all its partners are in compliance with International Federation of Accountants (IFAC) guidelines on code of ethics as adopted by the Institute of Chartered Accountants of Pakistan.

20. The statutory auditors or the persons associated with them have not been appointed to provide other services except in accordance with the listing regulations and the auditors have confirmed that they have observed IFAC guidelines in this regard.

21. The related party transactions have been placed before the audit committee and approved by the Board of Directors along with pricing methods for transactions carried out on terms equivalent to those that prevail in the arm's length transactions.

22. The 'closed period', prior to the announcement of interim/final results, and business decisions, which may materially affect the market price of Company's securities, was determined and intimated to directors, employees and stock exchanges.

23. Material/price sensitive information has been disseminated among all market participants at once through stock exchanges.

We confirm that all other material principles contained in the Code have been complied with.

On behalf of the Board

SHUAIB A. MALIK
Deputy Chairman &
Chief Executive Officer

August 14, 2014

Statement of Value Added

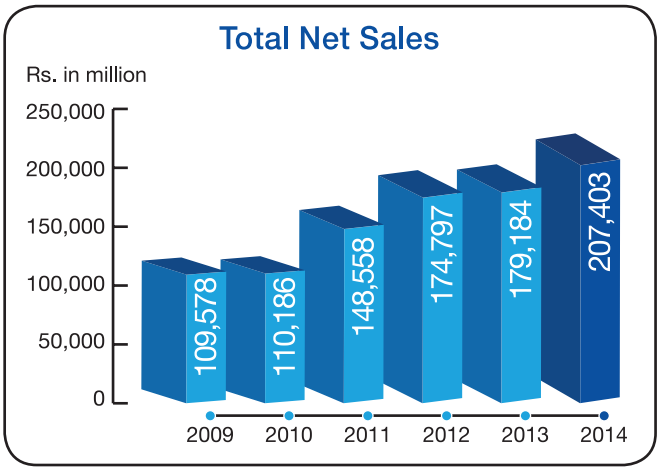
	2014		2013	
	Rupees in million	%	Rupees in million	%
Revenue Generated				
Gross sales revenue	249,769		216,123	
Less: Bought in material and services	205,968		175,702	
	43,801		40,421	
Add: Income from investment	797		706	
Other Income	639		1,474	
	1,436		2,180	
Total Revenue	45,237	100.0	42,601	100.0
Revenue Distributed				
To Employees remuneration as:				
Salaries, wages and benefits	1,603	3.6	1,579	3.7
To Government as:				
Levies	41,288	91.3	35,849	84.2
Company taxation	918	2.0	1,631	3.8
Worker's fund	139	0.3	348	0.8
	42,345	93.6	37,828	88.8
To Shareholders as:				
Cash Dividend	-	0.0	1,199	2.8
Retained in the business:				
Depreciation and amortization	327	0.7	310	0.7
Net earnings	962	2.1	1,685	4.0
	1,289	2.8	1,995	4.7
	45,237	100.0	42,601	100.0

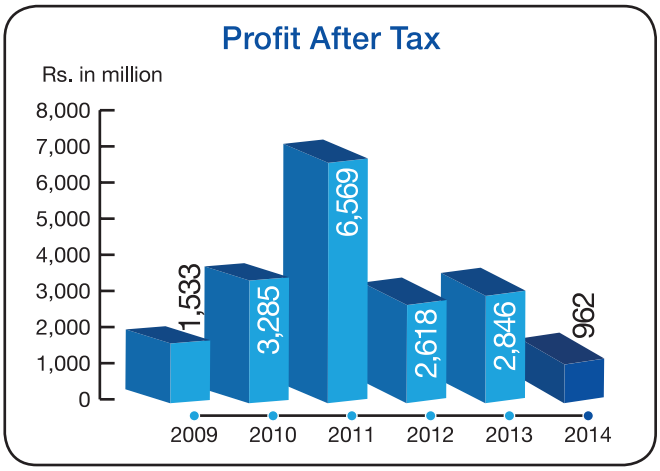
Six Years At A Glance

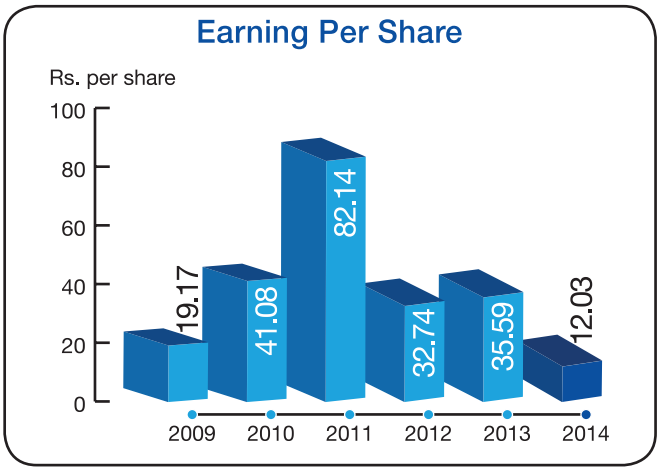
	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09
	Rupees in million					
Profit and Loss Account						
Net sales	207,403	179,184	174,797	148,558	110,186	109,578
Cost of sales	204,344	174,118	170,075	138,551	103,854	104,302
Purchases	200,565	166,130	171,149	141,383	98,964	99,503
Gross profit	3,060	5,067	4,722	10,007	6,333	5,277
Operating profit	2,732	5,347	5,795	10,179	5,831	5,208
Profit before tax	1,880	4,477	4,452	10,029	5,136	2,813
Profit after tax	962	2,846	2,618	6,569	3,285	1,533
Balance Sheet						
Share Capital	800	800	800	800	800	800
Reserves	25,794	25,994	24,491	23,808	18,838	16,553
Shareholder equity	26,594	26,794	25,290	24,607	19,638	17,353
Fixed Assets	5,061	4,363	3,696	3,235	3,248	3,025
Current Assets	47,465	51,232	53,323	53,366	47,868	39,156
Current Liabilities	25,802	28,440	31,492	31,858	31,862	24,856
Net current assets/ liabilities	21,664	22,792	21,831	21,508	16,006	14,299

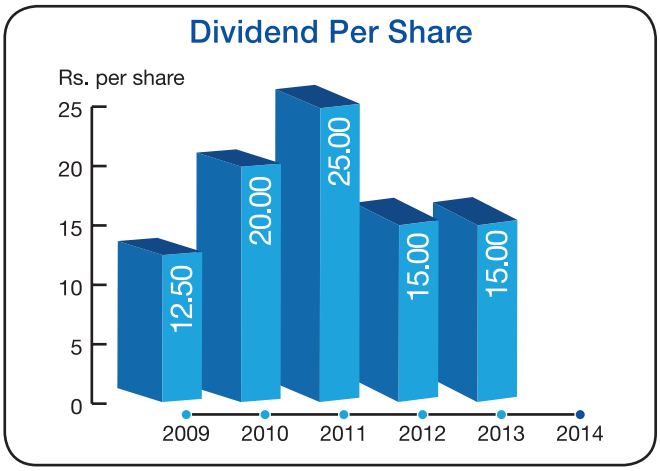
		2013-14	2012-13	2011-12	2010-11	2009-10	2008-09
Profitability Ratios							
Gross profit	%	1.48	2.83	2.70	6.74	5.75	4.81
Net profit to sales	%	0.46	1.59	1.50	4.42	2.98	1.40
EBITDA Margin to sales	%	1.06	2.68	2.72	7.02	5.20	2.79
Return on Equity	%	3.62	10.62	10.35	26.69	16.73	8.83
Return on Capital Employed	%	3.60	10.93	10.50	29.69	17.76	8.82
Liquidity Ratios							
Current Ratio	Times	1.84	1.80	1.69	1.68	1.50	1.58
Quick /Acid test ratio	Times	0.92	1.01	0.89	1.07	1.13	1.08
Cash to Current Liabilities	Times	0.34	0.56	0.32	0.28	0.51	0.31
Activity / Turnover Ratios							
Inventory turnover	Days	40.89	49.54	47.32	40.46	41.68	44.08
Debtors turnover	Days	18.39	24.35	28.18	36.82	50.86	41.09
Creditors turnover	Days	37.82	53.03	55.47	67.63	88.67	83.61
Total Assets turnover ratio	Times	3.93	3.22	3.06	2.62	2.13	2.59
Fixed assets turnover ratio	Times	40.98	41.07	47.30	45.93	33.92	36.22
Investment / Market Ratios							
Earnings per share (EPS) and diluted EPS	Rs.	12.03	35.57	32.74	82.14	41.08	19.17
Price earning ratio	Times	17.90	6.76	7.07	4.29	4.45	11.48
Dividend yield ratio	Times	-	6.23	6.48	7.10	10.94	5.68
Cash Dividend payout ratio	Times	-	42.17	45.82	30.44	48.69	65.21
Dividend cover ratio	Times	-	2.37	2.18	3.29	2.05	1.53
Cash Dividend per share	Rs.10/share	-	15.00	15.00	25.00	20.00	12.50
Market value per share at year end	Rs.10/share	215	241	231	352	183	220
Breakup value per share	Rs.10/share	333	336	316	308	246	217

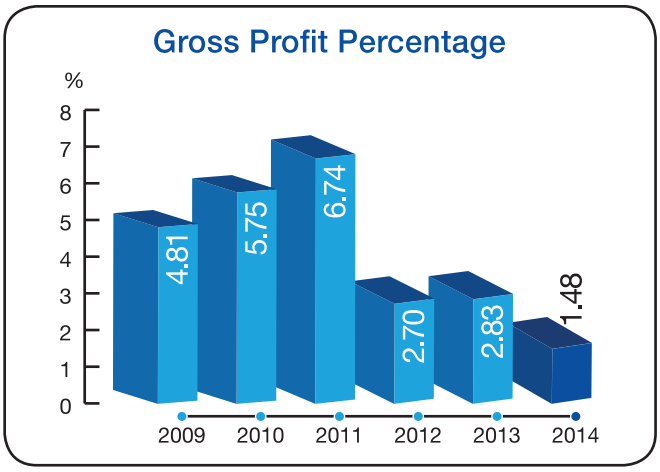
Financial Performance Graphic Presentation

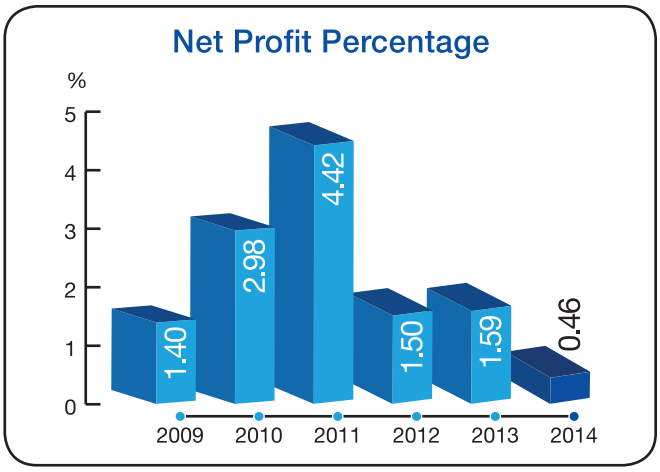






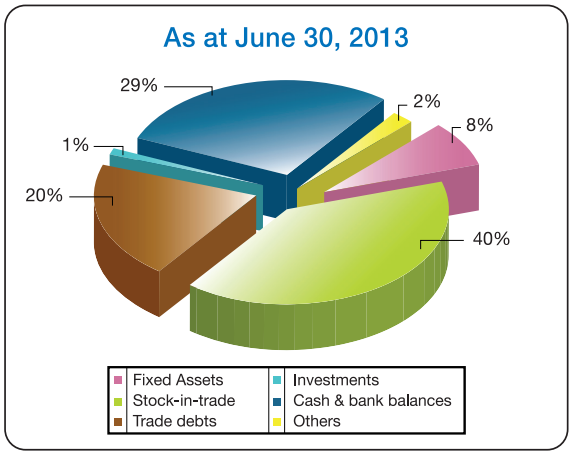


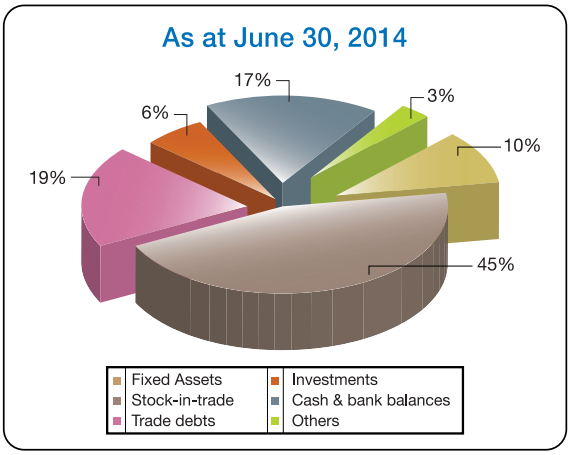




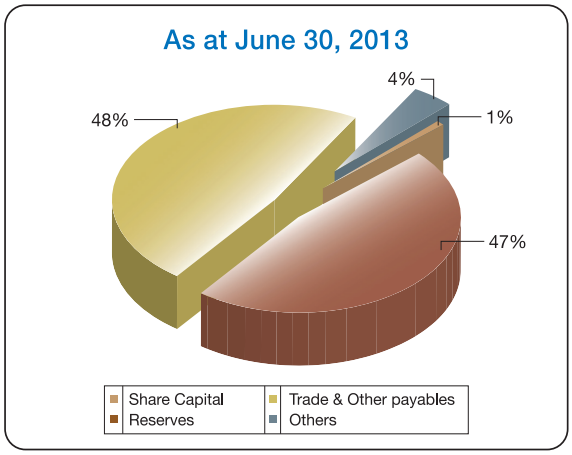
Balance Sheet Composition

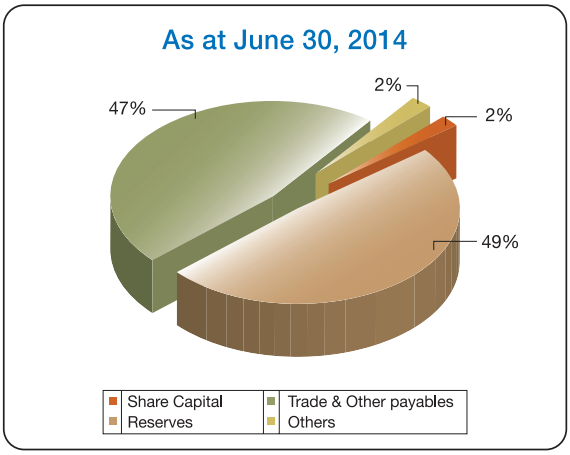
Assets



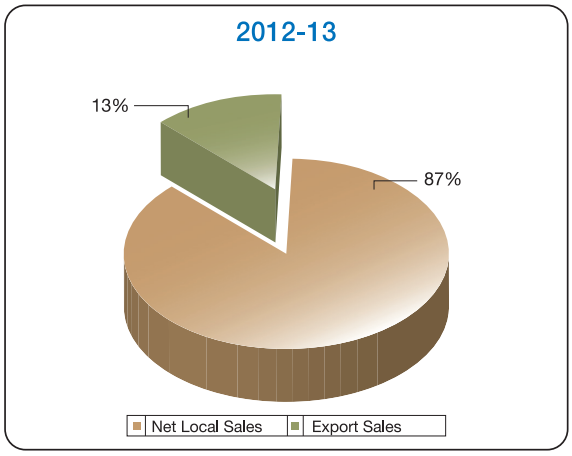


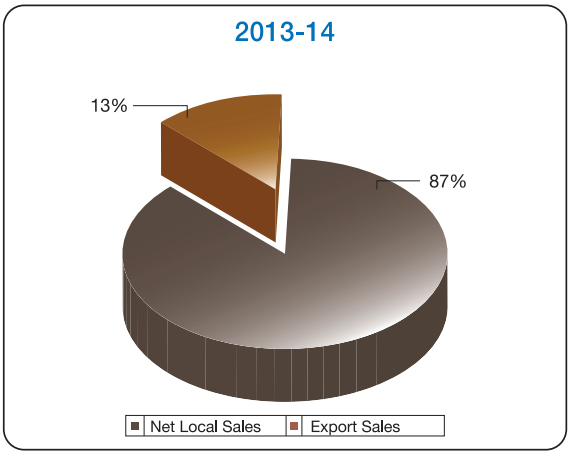
Share Capital, Reserves and Liabilities





Comparison of Local and Export Sales





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A. F. FERGUSON & CO.

REVIEW REPORT TO THE MEMBERS ON STATEMENT OF COMPLIANCE WITH THE CODE OF CORPORATE GOVERNANCE

We have reviewed the enclosed Statement of Compliance with the best practices contained in the Code of Corporate Governance (the Code) prepared by the Board of Directors of National Refinery Limited for the year ended June 30, 2014 to comply with the requirements of Listing Regulation No. 35 of the Karachi, Lahore and Islamabad Stock Exchanges where the Company is listed.

The responsibility for compliance with the Code is that of the Board of Directors of the Company. Our responsibility is to review, to the extent where such compliance can be objectively verified, whether the Statement of Compliance reflects the status of the Company's compliance with the provisions of the Code and report if it does not and to highlight any non-compliance with the requirements of the Code. A review is limited primarily to inquiries of the Company's personnel and review of various documents prepared by the Company to comply with the Code.

As a part of our audit of the financial statements we are required to obtain an understanding of the accounting and internal control systems sufficient to plan the audit and develop an effective audit approach. We are not required to consider whether the Board of Directors' statement on internal control covers all risks and controls or to form an opinion on the effectiveness of such internal controls, the Company's corporate governance procedures and risks.

The Code requires the Company to place before the Audit Committee, and upon recommendation of the Audit Committee, place before the Board of Directors for their review and approval its related party transactions distinguishing between transactions carried out on terms equivalent to those that prevail in arm's length transactions and transactions which are not executed at arm's length price and recording proper justification for using such alternate pricing mechanism. We are only required and have ensured compliance of this requirement to the extent of the approval of the related party transactions by the Board of Directors upon recommendation of the Audit Committee. We have not carried out any procedures to determine whether the related party transactions were undertaken at arm's length price or not.

Based on our review, nothing has come to our attention which causes us to believe that the Statement of Compliance does not appropriately reflect the Company's compliance, in all material respects, with the best practices contained in the Code as applicable to the Company for the year ended June 30, 2014.

Chartered Accountants
Karachi

Dated: August 18, 2014

IMS (HSEQ) Policy

Attock Oil Group

National Refinery Limited

Occupational Health, Safety, Environment & Quality

Policy Statement

National Refinery Limited is committed to the **Occupational Health & Safety** of its employees, protection & continual improvement of the **Environment** and to produce **Quality** products to the satisfaction of customers.

It staunchly believes in the application of this commitment to its customers, contractors, suppliers and the community in which it operates to produce value added products. This guiding principle shall be used to demonstrate through the following:

- Carry out business in a manner to **prevent injury/ ill health** of entire workplace and community.
- Work on the principle that all **incidents can be prevented**. Therefore, vigorously promote a high standard of safety consciousness and permit to work system.
- Provide a safe working environment through **effective leadership** by supporting safety, fire protection & security programs and by protecting assets of the company.
- Develop contingency and **emergency preparedness plans** to minimize harm from any **incident.**
- Comply with **applicable laws and regulations.** Interact with government, industry and community on environmental issues.
- **Prevent pollution** by establishing programs to conserve energy, continually improve production processes, minimize wastes, harmful releases into the air, land and sea.
- **Continual Improvement** in Health, Safety, Environment & Quality Management and its performance by acquiring superior professional competencies, value addition & improvement in development of Human Capital.
- Periodically **evaluate performance** against established objectives.
- Provide **training** and create awareness to ensure that all employees, contractors and all stakeholders are fully informed about HSEQ policy.

Chief Executive Officer

NRL-POL-001 **Rev-03 / April 2008**

Description of Facilities Location & Layout

National Refinery Limited:

NRL is located in an industrial zone (at 24°50'46"N, 67°07'32"E), in the Korangi district, to the east of Karachi, Sindh Province, Pakistan. Its Storage and distribution Terminal is located at Keamari, the port district in the south of Karachi (at 24°48'58" North, 66°58'52" East) about 18km away from the Refinery, and is linked to the Refinery via 4 pipelines. Karachi is the largest city in Pakistan (population approximately 21.2 million) located on the Arabian Sea in the south of Pakistan.

NRL, is the largest petroleum-refining complex of Pakistan and comprises of three refineries & a BTX plant. The company was incorporated on August 19, 1963 as a public limited company. NRL was nationalized under economic reform order in January 1972 and its corporate matters were entrusted to State Petroleum Refining and Petrochemical Corporation Pvt. Limited (PERAC) under the Ministry of Production. In 1998 the corporate control of NRL was transferred to the Ministry of Petroleum & Natural Resources and in June 2005, NRL was privatized through Privatization Commission of Pakistan and Management control was transferred to Attock Oil Group of Companies through sale of 51% equity stake of the company.

History:

The first Lube Refinery was constructed by SNAM Progetti of Italy in May 1964 having a capacity to process 0.6 Millions Tons of crude oil per year. The refinery commenced its production in 1966 having design capacity 76,200 tons of lube base oil and 110,000 tons asphalt per year.

In 1974, a turnkey agreement was signed between National Refinery Ltd and Industrial Export Import (IEI) of Romania, to design and construct the Fuel Refinery with1.5 million tons per year of crude oil refining capacity. The Fuel Refinery was commissioned in April 1977.

Its processing capacity was further increased to 2.2 million tons per year of crude oil in the year 1990.

In January 1974, NRL entered into an agreement with Nordon et Cie of France for the design and erection of an Aromatics Extraction Unit for the production of Benzene, Toluene and Xylene (BTX). It was the country's first petrochemicals unit integrated with the unit of the Fuel Refinery. The Project was completed and commissioned in April 1979 in order to meet the country's requirements of feedstock for Aromatic solvents and explosives production.

The setting up of BTX plant downstream of the Fuel Refinery has been a valuable product portfolio expansion measure as it provides pure petrochemicals i.e. Benzene, Toluene and Xylene for the specialty chemicals market. Toluene was made available for usage at NRL's own Lube Dewaxing Units, and also the requirements of Toluene for Defence purposes are fulfilled by NRL.

Over the years, the demand for Lube Base Oils (LBO) increased and a need was felt to enhance production of LBO, the value added product from the Furnace Oil, which was exported till 1986. A second Lube Refinery was therefore planned, for which basic engineering and design was carried out by C.E. Lummus of U.K. A turnkey agreement was signed between IEI of Romania and NRL in 1981 to construct a second Lube Refinery to produce 100,000 tons of Lube Base Oils and 100,000 tons of Asphalts. The second Lube Refinery was commissioned in January 1985.

At present NRL is the sole producer of Lube Base Oils, with a combined achieved production capacity of 190,000 tons/year of its two Lube Refineries. Besides, it produces 225,000 tons/year of road Bitumen from its Lube Refineries.

NRL has grown and developed with the country and today possesses a key position in oil refining sector of the country. The refinery complex of NRL consists of four production entities:

1.	Lube -I Refinery	Crude Oil Processing 600,000 Tons Per Annum (TPA), Lube Base Oil 76,200 TPA (Designed)
2.	Fuel Refinery	Crude Oil Processing 2.2 Million TPA
3.	BTX Plant	BTX production 25,000 TPA
4.	Lube -II Refinery	Lube Base Oil 100,000 TPA

Recent Development / Future Projects:

Diesel Desulphurization:

NRL has taken initiatives towards production and marketing of environment friendly fuels in Pakistan. A study has already been completed to put up a Diesel Desulphurization unit to produce Ultra Low Sulphur Diesel (ULSD). Existing, Kerosene Hydro treating unit out of service will be utilized for this along with new auxiliary units. Preliminary study indicated that unit could be revamped to Diesel Desulphurization unit of capacity 12,000 Barrel Per Day for ULSD production. Contract for engineering design specifications was awarded to M/s UOP and has been completed.

Raw Material:

Crude oil is the raw material for any refinery. The crude oil processed at NRL includes Arabian Light,Iranian light and local crude. The approximate ratio of imported Crude and Local Crude is 85% and 15% respectively. The crude oil is stored in tanks.

Crude oil is a mixture of different hydrocarbons in liquid form, which is lighter than water. Crude oil of different origins has different compositions and quality. It also contains very small quantities of other elements like Sulphur, Nitrogen and some metals. Some quantity of water and salts are also present in the crude oil.

Chemicals Used:

Various types of chemicals are used in refining processes. Besides refining processes, various types of chemicals are also used in water treatment as well as in finished products. Some of the chemicals used in refining processes or as additives in finished products, with their specific functions are shown in Table I & II respectively.

Table-I
Chemicals Used in Various Processes

Chemical Name / Brand Name	Function
Caustic Soda	For neutralization & removal of Sulphur compounds.
Ammonia	For pH control.
PERC (Perchloroethylene)	Used at plat-forming unit and enhances the acid side reaction.
Sulpholane	At BTX unit Sulpholane is used in the extraction section.
Clay	In the fractionation section of BTX unit, clay is used to remove olefins.
Propane	Used in De-asphalting process. It acts as a solvent & separates the asphalt from the oil.
Furfural	To remove the non-praffinic hydrocarbons from lube oil distillate at Furfural Extraction Unit.
Platinum catalyst	Plat-forming catalyst
Cobalt Molybdenum Catalyst	Hydro treatment catalyst.
Methyl Ethyl Ketone	Used for de-waxing of lube oil.
De-emulsifiers	To break oil water emulsion in desalters.
Corrosion inhibitor	To combat overhead corrosion.
Hydrazine's	Anti oxidants in Boilers.
Anti scaling	To control scale formation
Hydrochloric Acid	Water Treatment Plant.

Table-II
Chemicals Used as Additive in Finished Products

Chemical Name / Brand Name	Function
Pour point depressant	To reduce the pour point
Antioxidants	Used for aviation fuel.

Production Process (Fuel Refinery):

Crude oil is processed at fuel refineries to produce products like LPG, Motor Spirit, Kerosene, Aviation Fuels, High Speed Diesel and Furnace oil. The atmospheric bottom is used as feedstock for producing lube base oil at Lube Refinery. Different processes carried out at refinery are discussed below:

Desalting:

The purpose of desalting is to remove brine, solids and other insoluble impurities from crude oil. To accomplish this, crude is first preheated in heat exchangers in order to have the required viscosity normally in the range of 5-15 centistokes. Salts and sediments are removed in desalter by washing the crude oil with water (typically 2-4% of the total crude feed). These are settled with wash water and tend to form emulsions. The wash water is separated by electrostatic precipitation using de-emulsifiers.

The salts thus removed are mainly chlorides and Carbonates of Magnesium, Sodium and Calcium. They cause corrosion downstream in the heat exchangers, furnaces and distillation units if not removed. The desalting process is an important upstream step to reduce the maintenance cost of the downstream equipments.

Distillation Process:

The desalted crude oil after preheating by heat exchangers and furnaces is fractionated in distillation tower. The distilled fractions of crude oil mainly consist of residue, gas oil and overhead (mixture of gases, light Naphtha, Heavy Naphtha, Kerosene and steam/condensate) products. The gas oil and kerosene are drawn off from side strippers where lighter ends are removed to maintain the flash point.

Naphtha Stabilizer and splitter:

Naphtha stabilizer is provided to remove light ends from full range naphtha. LPG separated during process is sent to storage. Stabilized naphtha is then charged to naphtha splitter where it is splitted into light naphtha and heavy naphtha fractions. Major part of heavy naphtha is upgraded at hydrobon and plat-forming units. Light naphtha is used for gasoline blending.

Merox Sweetening Units:

LPG, Light Naptha, Heavy Naptha and Kerosene are treated at Merox sweetening units in the presence of catalyst and thus Sulphur compounds are removed to make these products suitable for marketing.

Hydro-Treating Unit:

In the Hydro unit, Heavy Naphtha is treated with hydrogen rich gas stream at high pressure and elevated temperature in the presence of catalyst (Cobalt Molybdenum). The Sulphur present in Heavy Naphtha is converted to H2S, Nitrogen to ammonia (NH3), Halide to HCl and oxygen to H2O. In this process hydro treated Naphtha is produced which is feed stock for Plat-Forming Unit.

Plat-Forming Unit:

Plat-forming is a catalytic reforming process to up-grade the Octane Number of the low octane hydro-treated Naphtha to produce High Octane Blending Component (HOBC) for the production of motor gasoline or the feed stock for BTX Extraction Unit.

The treated Naphtha is the feed of plat-forming unit, which consists of a Bi-metallic catalyst (Platinum Rhenium and Aluminum oxide as a carrier). Basically, the plat-forming process is the re-arrangement of the molecules of Naphtha feed by changing the molecular structure of the

hydrocarbons. The by-products of plat-forming unit are LPG, hydrogen rich gas (part of which is recycled in the plat-forming process and remaining is used as a refinery fuel). LPG after sweetening goes to storage.

Propane Recovery Unit:

Liquefied Petroleum Gas (LPG) from plat-forming unit is further fractionated for production of high purity refrigeration grade propane. Propane is used In-house as solvent at Propane De-asphalting unit (PDA) and for refrigeration purpose at MEK units.

BTX Plant:

Based on Reformate as feedstock from the Fuel Refinery. The unit is designed to extract the aromatic by SHELL Sulfolane extraction process. This aromatic mixture is fractionated through multi stage distillation for the production of high purity Benzene, Toluene, and Xylene. The BTX unit has two sections:

- Extraction section
- Fractionation section.

In the Extraction Section Aromatics are extracted from the Reformat using the solvent “Sulfolane”. Non-aromatics are pumped to storage after washing with water. They are used to blend in motor gasoline.

In the Fractionation Section Aromatic extract is clay-

treated, to remove Olefins. Thereafter Benzene, Toluene, and Xylene are separated in fractionating columns.

Production Process (Lube Refinery):

NRL's two Lube Refineries were installed with a time gap of nearly 19 years with each other. The starting point of first Lube Refinery is a Crude Distillation Unit (CDU) and subsequent Vacuum Distillation Unit (VDU), whereas the Second Lube Refinery directly starts with a Vacuum Distillation as it takes feedstock from Fuel Refinery's Crude Distillation Unit (CDU). Whereas the downstream process units are same in basic technology, The second Lube Refinery designed in eighties has more sophisticated, advanced and energy efficient plants.

Atmospheric and Vacuum Distillation Process:

The Reduced Crude oil is usually heated to 395˚C and fed to the Vacuum Distillation Tower, which is kept under high vacuum (26-27 inches of Hg). The gases from the top of the vacuum Tower are sucked by means of steam ejectors and condensed along with steam. The oil and water are then separated.

The lubricating oil distillates obtained by vacuum distillation process are about 47% of the feedstock and the remaining 53% is called Vacuum Residue, which is a valuable material as it still contains about 38% lube oil in it, which cannot be

taken out by the above distillation process. It is therefore processed at the Propane Deasphalting Unit (PDA).

Propane De-Asphalting Process (PDA):

In this process the Vacuum Residue product i.e the heaviest residual portion of the vacuum distillation, is treated with propane for the production of heavy lubricating oils and asphalts. The process is carried out at a high-pressure approximately 480-525 psig and at a controlled temperature of 55˚C to 70˚C. Liquid propane acts as a solvent and dissolves higher fractions of oil and rejects the heavier asphalted material from the charge oil. The oil thus extracted from the feedstock is called de-asphalted oil and the material recovered from the bottom of the tower is termed as Asphalt. Propane is recovered from oil using Flash Towers, Stripping Towers.

Furfural Extraction Process:

In this process low viscosity index (LVI) non-paraffinic hydrocarbons of lube oil distillate are extracted from the lubricating oil distillates obtained from vacuum distillation unit & PDA units. In extraction process the charge oil is brought in contact with solvent (Furfural) counter-currently in a Rotating Disc Contractor (RDC) Tower. The RDC tower is operated and is full of oil and solvent. As the Furfural is heavier than oil, it travels to the bottom of the tower along with the extracted non-paraffins, which remain dissolved in it.

Finally the solvent and non-paraffin mix is drawn from the bottom of the RDC tower. The solvent has to be separated from the non-paraffin mix so that it can be reused. The oil available near the top portion of the RDC tower from which non-paraffinic hydrocarbons have been extracted in the RDC tower is termed as “Raffinate”. This Raffinate also contains about 10-30% of Furfural. This Furfural is separated under a vacuum of 66 cm of Hg at a temperature of 205℃. The Raffinate (Lube oil) is the product from which non-paraffinic hydrocarbons have been extracted and its viscosity index (VI) is raised.

Methyl Ethyl Ketone (MEK) De-Waxing Process:

The de-waxing process is employed to remove the waxes from the raffinate oil by dissolving the raffinate in a solvent mixture containing Methyl Ethyl Ketone (55%) and Toluene (45%). The mixture of oil and waxes is then cooled to crystallize the waxes. The wax is then separated from the oil in the rotary filter.

The wax and the filtrate oil are processed further in separate system in which the solvent is recovered by evaporation and steam stripping.

Hydro Finishing Process:

In this final processing stage, the lube base oils are stabilized and their colour is further improved by hydrogenation reaction in the presence of a catalyst.

The hydro finished lube oils are dispatched to refinery storage tanks for distribution to Oil Marketing and Lube Oil Blending Companies.

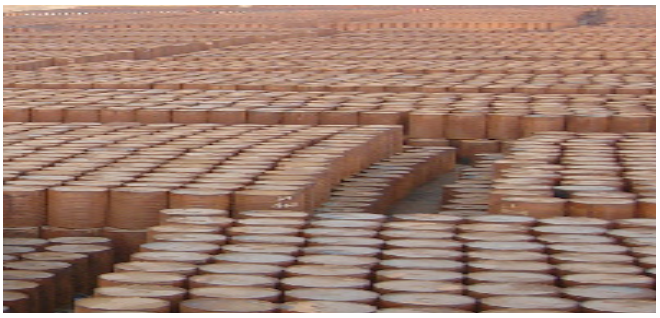
Oil Movement And Shipping:

Huge quantity and variety of crude oils i.e about 3 million tons per annum and about equal tonnage distributed in about thirty products are handled at NRL. For this, elaborate system of pumping stations, pipelines, tankage and loading gantries are maintained. The inventory of crude oil and products stored at refinery tankage has enormous monetary value. This operation involves receipt and transfer of crude oil from port terminal, inland domestic crude oil receipts, transfer to and receipts from processing units, product transfer to Oil Marketing Companies and product shipment through tank lorry filling gantries.

About 150 Nos. crude oil and product storage tanks are utilized for this purpose. Shipping, Marketing & Sales Departments work side-by-side with Oil Movement to facilitate documentation’s and coordination with Excise Authorities.

Asphalt Production:

The residual effluents from the two Propane De-Asphalting Units and Furfural Extraction Units are blended here for the production of paving grade asphalts. At asphalt filling unit it is filled in drums or filled in tank lorries for Marketing.



Keamari Terminal:

NRL maintains a port terminal installations located at Keamari Oil peers about 18 Km from the Refinery premises. The Keamari Terminal is connected with the main Refinery through Korangi-Keamari pipelines. Very large Crude Oil storage tanks at Keamari Terminal receive imported Crude from the oil tankers, which is then transferred to the Refinery through pipeline. Huge tankage is available for export of Naphtha, which is also handled at Keamari Terminal. Fuel products from the Refinery are pumped via Keamari Terminal manifolds to Oil Marketing Companies, located adjoining to Keamari Terminal.

Keamari Terminal has the facility to receive the products, to store into the tanks and to distribute the products to OMCs (Oil Marketing Companies).

Korangi-Keamari Pipeline:

Finished oil products are stored separately in premises at Korangi. The Lube base oil, Asphalt, and BTX are transported by road either in drums or in tankers. Fuel products are dispatched through Korangi-Keamari (KK) pipeline to Keamari Terminal and finally to OMCs (Oil Marketing Companies). Similarly imported crude oil received at Keamari terminal is pumped to crude storage tanks at Korangi site.

Utilities At Refineries:

The major utilities required for the operation of refineries are fuel oil / Natural gas, water, steam, and electricity.
The steam is used for the following purposes:

- To operate the turbine driven pumps and compressors.
- As process steam.
- As atomizing steam for oil fired burners of furnaces
- For heating purposes.
- To pull vacuum by steam ejectors.

Water before feeding into boiler is treated at water treatment units to remove salts like calcium sulphate, calcium nitrates, magnesium-sulphate, and magnesium nitrates. Ion-exchange method is used to remove these salts.

The cooling water is used for the following purpose:

- Cooling the products.
- Condensing the vapors.
- Cooling of the equipments.

Cooling water cycle is a closed circuit system in which hot water from different sections of plant is collected, cooled in cooling tower in which heat is transferred from the water to the air by direct contact and again utilized with the addition of make up water.

Reverse Osmosis Plant:

The shortfall in water supply from Karachi Water & Sewerage Board has been partially managed by installation of 100,000, 200,000 and 250,000 Gallons per day three R.O Plants. It is designed on underground brackish water source for which wells have been made

to supply raw water.

Power Generation:

Self-Power Generation plant has a 7.5 MW steam turbo-generator and a 4.0 MW Diesel-Fuel Oil Engine Power Generator.

The self-power generation is meant for continuous uninterrupted power supply and to avoid plant shutdown and production loss due to power breakdown.

Quality Control And R & D:

Each and every product leaving the refinery has to conform to stringent international specifications. In order to achieve this fine degree of control, extensive monitoring of crude oils, feed stocks, intermediates, finished products and utilities is carried out with the aid of modern sophisticated instruments.

The role of the laboratory is, however, not limited to this activity alone. Research and Development work is carried out to give a basis for innovations in processes and products.

NRL strives to satisfy the customer by providing best value products within specifications. Close monitoring of refinery operations is coupled with testing of samples of intermediates and finished products on round the clock basis. Strict quality controls are ensured through testing and certification of each petroleum product before pumping to marketing companies.

Safety And Fire Fighting:

Crude oil and petroleum products are highly inflammable and dangerous materials. Therefore adequate precautionary and preventive measures are mandatory for safe operation. Safety and Fire Fighting personnel are responsible to ensure implementation of safety procedures developed to maintain safe conditions at plant during operation and maintenance to avoid accidents. A fully equipped and well trained Fire fighting contingent is available round the clock with fleet of fire fighting trucks and adequate inventory of foam to handle emergencies.

Maintenance And Workshop:

Petroleum refining involves high temperature and high-pressure technologies utilizing high-pressure reactors, vessels, towers, heat exchangers, furnaces, pipelines, pumps and compressors along with sophisticated instrumentation and electrical installations.

Reliability of Refinery equipments running round the clock basis is ensured through regular monitoring,

preventive maintenance and repairs by the Maintenance Departments. Operational history of each equipment is maintained for diagnosis and to plan the future needs. Complete shutdowns of units are planned for preventive maintenance and replacements to avoid breakdowns and forced shutdowns.

The Workshop, a vital unit of Maintenance department provides support to the production by undertaking necessary repair in case of contingencies. The Workshop possesses sophisticated machinery for undertaking repair work and fabrication of parts to ensure continuous refinery operation.

Ware House:

National Refinery Limited maintains a large Warehouse for storing mechanical spares and supplies for the maintenance of refinery equipment. Warehouse is also responsible for storing and supply of chemicals used in refinery processes. A large number of different parts and supplies of high value are stored and maintained in NRL Warehouse. An elaborated re-ordering system is followed so that quality product supply is ensured at all points in time.

Fuel Gas:

Refinery fuel gas demand is met by supply of natural gas from the Sui Southern Gas Company.

Flare System:

The Fuel refinery and Lube I refinery have common flare and Lube II refinery each have their own dedicated flare and elevated flare header systems with knock out drums. All the process controlled and emergency pressure relief is routed to these flares through flare headers.

Drainage & Waste Treatment:

Process areas are paved and sloped with drainage channels in and around the process plants. The LPG bullets storage area is also paved and sloped. Liquid effluent from the refinery plants is routed to the waste treatment plant on site.

GRI:G3 Content Index

S.No	Sustainability Reporting Indicator's
1.	**Strategy and Analysis**
1.1	Statement from the most senior decision-maker of the organization (e.g. CEO, chair, or equivalent
1.2	Description of key impacts, risks, and opportunities
2.	**Organizational Profile**
2.1	Name of the organization
2.2	Primary brands, products, and / or services
2.3	Operational structure of the organization
2.4	Location of organization's headquarters
2.5	Number of countries where the organization operates
2.6	Name of ownership and legal form
2.7	Markets served (including sectors served, and types of customers / beneficiaries)
2.8	Scale of the reporting organization, including; • Number of employees, • Number of operations • Net sales • Total capitalization broken down in terms of debt and equity and • Quantity of products or services provided
2.9	Significant changes during the reporting period regarding size, structure, or ownership
2.10	Awards received in the reporting period
3.	**Report Parameters**
3.1	Reporting period (e.g. fiscal / calendar year)
3.2	Date of most recent previous report
3.3	Reporting cycle (annual, biennial, etc)
3.4	Contact point for questions regarding the report
3.5	Process for defining report content, including • Determining materiality • Prioritizing topics
3.6	Boundary of the report (e.g. countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers)
3.7	State any specific limitations on the scope or boundary of the report
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and / or between organizations
3.9	Data measurement techniques
3.10	Explanation of the effect of any re-statements of information provided
3.11	Significant changes from previous reporting periods
3.12	Table identifying the location of the Standard Disclosures in the report
3.13	Policy and current practice with regard to seeking external assurance for the report, explain the relationship between the reporting organization and the assurance provider(s)
4.	**Governance, Commitments and Engagement**
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight

S.No	Sustainability Reporting Indicator's
4.2	Indicate whether the Chair of the highest governance body is also an executive officer
4.3	For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members.
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.
4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives and the organisation's performance.
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.
4.7	Process for determining the qualifications & expertise of the members of the highest governance body for guiding the organisation's strategy on economic, environmental, and social topics.
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.
4.9	Procedures of the highest governance body for overseeing the organisation's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance.
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organisation.
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organisation subscribes or endorses.
4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organisations
4.14	List of stakeholder groups engaged by the organisation.
4.15	Basis for identification and selection of stakeholders with whom to engage.
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organisation has responded to those key topics and concerns, including through its reporting.
5.	**Management Approach and Performance Indicators Economic**
5.1	The economic dimension of sustainability concerns the organization's impacts on the economic conditions of its stakeholders and economic systems at local, national and global levels
5.2	Organization-wide goals regarding performance relevant to the Economic Aspects
5.3	Brief, organization-wide policy (or policies) that defines the organization's overall commitment relating to the Economic Aspects listed above, or state where this can be found in the public domain
Economic Performance	
5.4.1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.
5.4.2	Financial implications and other risks and opportunities for the organisation's activities due to climate change.
5.4.3	Coverage of the organisation's defined benefit plan obligations.

S.No	Sustainability Reporting Indicator's
5.4.4	Significant financial assistance received from government.
	Market Presence
5.4.5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation
5.4.6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.
5.4.7	Procedures for local hiring and proportion of senior management hired from the local community at locations of significant operation
	Indirect Economic Impacts
5.4.8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in kind, or pro bono engagement.
5.4.9	Understanding and describing significant indirect economic impacts, including the extent of impacts
	Environmental
5.5.1	The environmental dimension of sustainability
5.5.2	Organization-wide goals regarding performance relevant to the Environment Aspects
5.5.3	Brief, organization-wide policy (or policies) that defines the organization's overall commitment related to the Environmental Aspects
5.5.4	Procedures related to training and raising awareness in relation to the Environmental Aspects
5.5.5	Procedures related to monitoring and corrective and preventive actions
	Materials
5.5.5	Materials used by weight or volume.
5.5.6	Percentage of materials used that are recycled input materials.
	Energy
5.5.7	Direct energy consumption by primary energy source.
5.5.8	Indirect energy consumption by primary source.
5.5.9	Energy saved due to conservation and efficiency improvements.
5.5.10	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.
5.5.11	Initiatives to reduce indirect energy consumption and reductions achieved.
	Water
5.5.12	Total water withdrawal by source.
5.5.13	Water sources significantly affected by withdrawal of water.
5.5.14	Percentage and total volume of water recycled and reused.
Biodiversity	
5.5.15	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.
5.5.16	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.
5.5.17	Habitats protected or restored.
5.5.18	Strategies, current actions, and future plans for managing impacts on biodiversity.
5.5.19	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.

S.No	Sustainability Reporting Indicator's
	Emissions, Effluents, and Waste
5.5.20	Total direct and indirect greenhouse gas emissions by weight.
5.5.21	Other relevant indirect greenhouse gas emissions by weight.
5.5.21	Initiatives to reduce greenhouse gas emissions and reductions achieved.
5.5.22	Emissions of ozone-depleting substances by weight.
5.5.23	NOx, SOx, and other significant air emissions by type and weight.
5.5.24	Total water discharge by quality and destination. NOx, SOx, and other significant air emissions by type
5.5.25	Total water discharge by quality and destination.
5.5.26	Total weight of waste by type and disposal method.
5.5.27	Total number and volume of significant spills.
5.5.28	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.
5.5.29	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.
	Products and Services
5.5.30	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.
5.5.31	Percentage of products sold and their packaging materials that are reclaimed by category.
	Compliance
5.5.32	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.
	Transport
5.5.33	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.
	Overall
5.5.34	Total environmental protection expenditures and investments by type.
	Labor Practices and Decent Work
5.6.1	Organization-wide goals regarding performance relevant to the labor Aspects, indicating their linkage to the internationally recognized universal standards
5.6.2	Brief, organization-wide policy that defines the organization's overall commitment related to the labor aspects
5.6.3	Procedures related to training and raising awareness in relation to the Labor Aspects.
5.6.4	Procedures related to monitoring and corrective and preventive actions. List of certifications for labor performance or certification systems
	Employment
5.6.5	Total workforce by employment type, employment contract, and region, broken down by gender.
5.6.6	Total number and rate of new employee hires and employee turnover by age group, gender, and region.
5.6.7	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.
5.6.8	Return to work and retention rates after parental leave, by gender.
	Labor / Management Relations
5.6.9	Percentage of employees covered by collective bargaining agreements.

S.No	Sustainability Reporting Indicator's
5.610	Minimum notice period(s) regarding operational changes, including whether it is specified incollective agreements.
	Occupational Health and Safety
5.6.11	Percentage of total workforce represented in formal joint management worker health and safety committees that help monitor and advise on occupational health and safety programs.
5.6.12	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work related fatalities by region and by gender.
5.6.13	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.
5.6.14	Health and safety topics covered in formal agreements with trade unions.
	Training And Education
5.6.15	Average hours of training per year per employee by gender, and by employee category.
5.6.16	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.
5.6.17	Percentage of employees receiving regular performance and career development reviews, by gender.
	Diversity and Equal Opportunity
5.6.18	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.
	Equal Remuneration for Women and Men
5.6.19	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.
	Human Rights
5.7.1	Organization-wide goals regarding performance relevant to the human rights Aspects
5.7.2	Brief, organization-wide policy (or policies) that defines the organization's overall commitment to the human rights Aspects
5.7.3	Describe risk assessment procedures that include human rights, including the use of industry guidance and practices
5.7.4	Processes and procedures for assessing, reviewing or tracking human rights impacts at the level of individual operations
5.7.5	Procedures related to training and raising awareness in relation to the human right Aspects
5.7.6	Procedures related to monitoring and corrective and preventive actions, including those related to the supply chain.
	Investment and Procurement Practices
5.7.7	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening.
5.7.8	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken.
5.7.9	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.
	Non-Discrimination
5.7.10	Total number of incidents of discrimination and corrective actions taken.
	Freedom of Association and collective Bargaining
5.7.11	Operations and significant suppliers identified in which the right to exercise freedom of

S.No	Sustainability Reporting Indicator's
	association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.
	Child Labor
5.7.12	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.
	Forced and Compulsory Labor
5.7.13	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor
	Security Practices
5.7.14	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.
	Indigenous Rights
5.7.15	Total number of incidents of violations involving rights of indigenous people and actions taken.
	Assessment
5.7.16	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.
	Remediation
5.7.17	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms.
	Society
5.8.1	Organization-wide goals regarding performance relevant to the Society Aspects
5.8.2	Brief, organization-wide policy (or policies) that defines the organization's overall commitment related to the society aspects, or state where this can be found in the public domain
5.8.3	Procedures related to training and raising awareness in relation to the Society Aspects
5.8.4	Procedures related to monitoring and corrective and preventive actions. List of certifications for performance or certification systems
	Local Communities
5.8.5	Percentage of operations with implemented local community engagement, impact assessments, and development programs.
5.8.6	Operations with significant potential or actual negative impacts on local communities.
5.8.7	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.
	Corruption
5.8.8	Percentage and total number of business units analyzed for risks related to corruption.
5.8.9	Percentage of employees trained in organization's anti-corruption policies and procedures.
5.8.10	Actions taken in response to incidents of corruption.
	Public Policy
5.8.11	Public policy positions and participation in public policy development and lobbying.
5.8.12	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.
	Anti-Competitive Behavior
5.8.13	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices

S.No	Sustainability Reporting Indicator's
	and their outcomes.
	Compliance
5.8.14	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations.
	Product Responsibility
5.9.1	Organization-wide goals regarding performance relevant to the Product Responsibility Aspects
5.9.2	Brief, organization-wide policy (or policies) that defines the organization's overall commitment related to the society aspects
5.9.3	Procedures related to training and raising awareness in relation to the Product Responsibility Aspects
5.9.4	Procedures related to monitoring and corrective and preventive actions, including those related to the supply chain.
	Customer Health and Safety
5.9.5	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures
5.9.6	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes
	Product and Service Labeling
5.9.7	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.
5.9.8	Total number of incidents of non-compliance with regulations and voluntary codes
	concerning product and service information and labeling, by type of outcomes.
5.9.9	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.
	Marketing Communication
5.9.10	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.
5.9.11	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.
	Customer Privacy
5.9.12	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.
	Compliance
5.9.13	Monetary value of significant fines for noncompliance with laws and regulations concerning the provision and use of products and services.

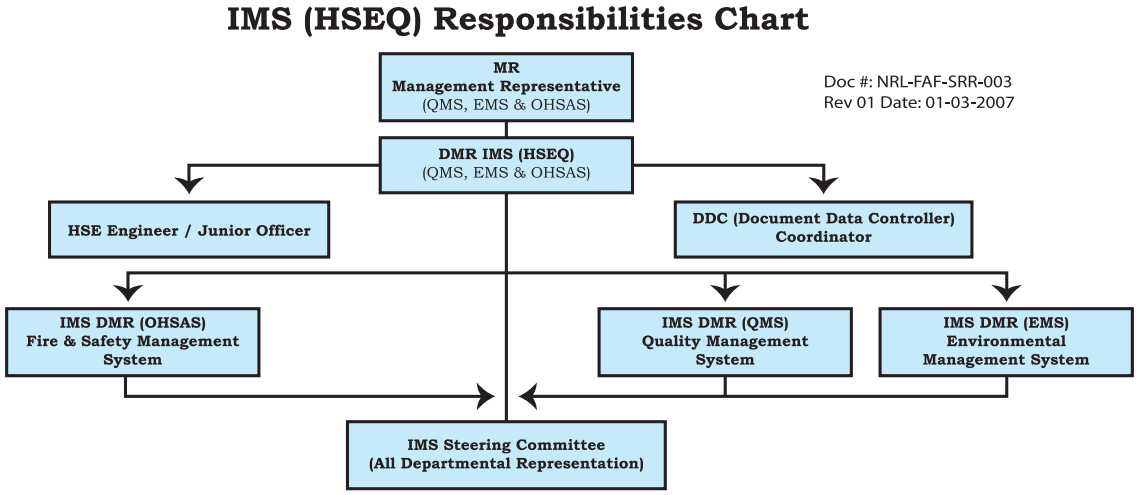
Risk Based Inspection Philoshphy

Vapor lines are the most critical part of any distillation unit. Any leakage or seepage in the vapor or overhead system may lead to un planned shut down even for many days that ultimately results in higher order production loss. The situation arises when there is no mean of effective monitoring and surveillance to ensure plant integrity management system.

NRL inspection department has adapted the same for many years in order to assure safe and environment friendly equipments by minimizing any leakages and failures specially to Vapor lines of main distillation columns. We implemented different advance Non Destructive Techniques to inspect and ensure the integrity and reliability of overhead lines. The entire job was performed by M/s. SGS Pakistan, one of the leading and famous third party inspection agencies of world known for their reliable and accuracy workings in oil and gas sector. By keeping the same objective and following Risk Based Inspection criteria for the remaining life assessment we have implemented LRUT (Long Range Ultrasonic Thickness Testing) and API-580 inspections in Lube-I Turnaround 2014-15. These vapors lines include 16-inch main Crude Distillation unit, 18-inch main Vacuum Distillation unit, 10 & 12-inch main FEU-I columns. Under these advanced inspection techniques we had carried out detailed thickness gauging, Welding inspection, metal losses, localized and scattered pitting and any flaw detection to assess the remaining life of 600 Rft. of different mentioned vapor lines. The results show great accuracy with the locations markings that were scanned and had some indications in lieu of thickness and other mechanical faults. Remidial actions were taken and repair work was carried out at FEU-I overhead line to have safe hazard free and continuous production in future.

Written by
Manager Inspection

IMS (HSEQ) Management System

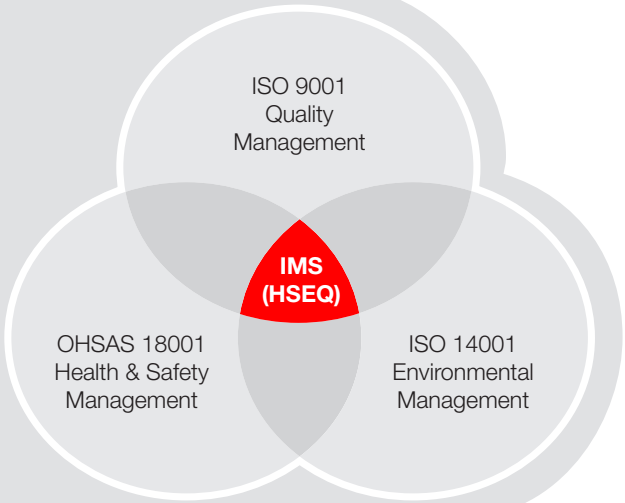


IMS (HSEQ) Mandatory Requirements Compliance Mechanism:

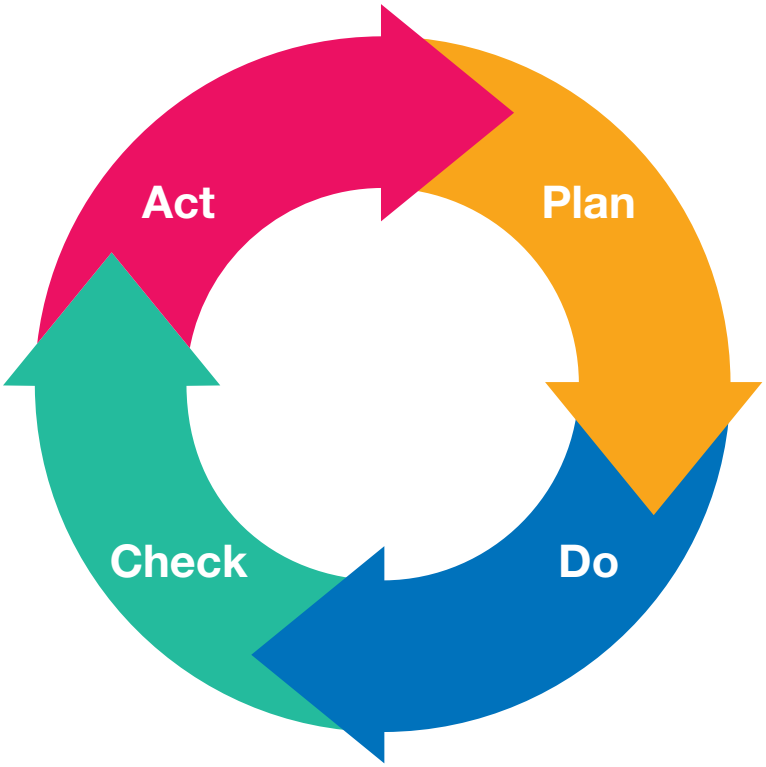
S.NO	System Procedure No	System Procedure Title
01	NRL-SPR-DDC-001	Document Data Control And Record Management
02	NRL-SPR-MRM-002	Management Review Meeting
03	NRL-SPR-SRR-003	Structure, Roles, Responsibilities and Accountabilities
04	NRL-SPR-CPA-004	Corrective and Preventive Action
05	NRL-SPR-AWT-005	Awareness, Training and Competence
06	NRL-SPR-CAC-006	Communications, Consultation and Participation
07	NRL-SPR-MAM-007	Calibration, Monitoring and Measurement
08	NRL-SPR-EVC-008	Evaluation of Compliance
09	NRL-SPR-AUD-009	Internal Audit
10	NRL-SPR-EPR-010	Emergency Preparedness and Response
11	NRL-SPR-TRR-011	Tracking of Regulations and other Requirements
12	NRL-SPR-AAP-012	Agency Approvals for EMS & OHSAS
13	NRL-SPR-OCP-013	Operational Control
14	NRL-SPR-CCP-014	Contractor Control
15	NRL-SPR-AIA-015	Environmental Aspects & Impacts Analysis
16	NRL-SPR-EOT-016	Environmental Objectives, Targets and Management Programs
17	NRL-SPR-HRA-017	Occupational Health & Safety Hazards Identification and Risks Assessment
18	NRL-SPR-OTM-018	Occupational Health & Safety Objectives and Management Programs
19	NRL-SPR-RIP-019	Review of (HSEQ) Identified Projects
20	NRL-SPR-NCR-020	Control of Non-Conforming Product
21	NRL-SPR-QOB-021	Quality Objectives, Targets and Analysis of Data

Integrated Management System

Integrated Management System



IMS (HSEQ) Management System



Plan

1. HSEQ Policy
2. Aspects, Hazards & Risks
3. Roles and Responsibilities
4. Objectives & Targets
5. Operational Plan
6. Maintenance Plan
7. Legal and other Requirement

Do

8. HSE improvement program(s)
9. Operational Control / Product realization
10. Emergency Preparedness & Response
11. Training
12. Communication , Consultation and Participation
13. Documentation

Check

14. Performance Measurement & monitoring
15. Record keeping
16. HSEQ Audit
17. Accident, Incident
18. Data Analysis
19. Non-Conformance , Corrective and Preventive Action

Act

20. HSE Main / Sub committee
21. Management Review

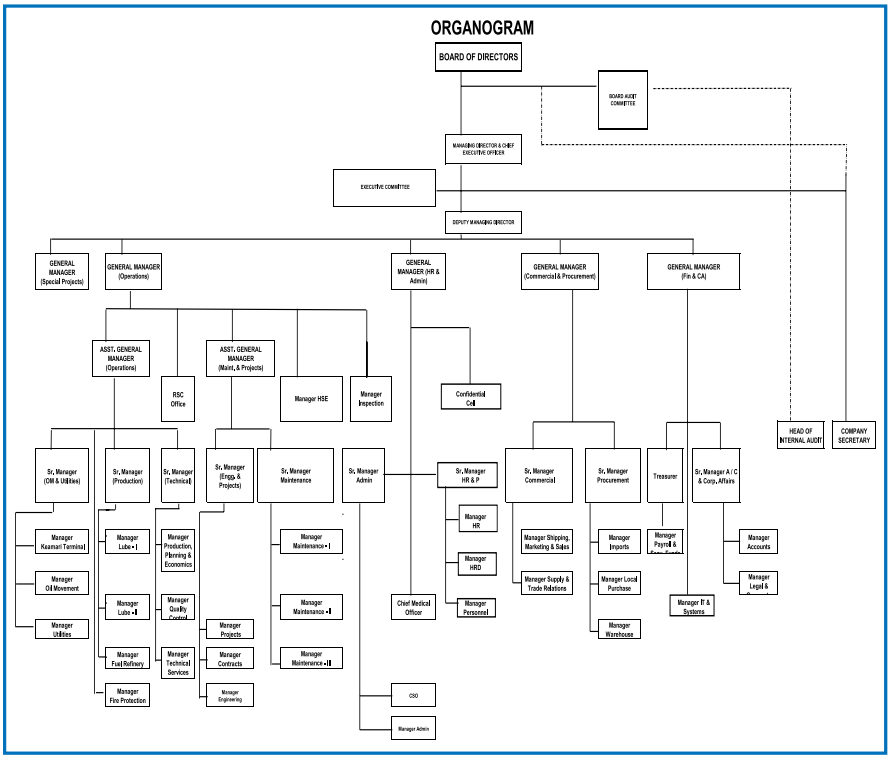
Emergency Preparedness and Response

S.NO	Procedure No	Procedure Title / Situation Description
1.	NRL-SPR-EPR-010	Emergency Preparedness and Response
2.	NRL-SPR-OCP-013	Operational Control
3.	NRL-SOP-ADM-005	Emergency Response Plan for Telecommunication failure external
4.	NRL-SOP-ADM-009	Rain Emergency Management
5.	NRL-SOP-PGR-006	Procedure for Power Supply arrangement during failure of TG/DG
6.	NRL-SOP-PGR-018	Load / Supply arrangement during failure of any source or all sources
7.	NRL-SOP-HSE-006	Emergency Response Plan for Oil Spillage from a storage tanks
8.	NRL-SOP-HSE-007	Emergency Response Plan for Chemical Spillage
9.	NRL-SOP-HSE-008	Emergency Response Plan for K-K pipeline leakages
10.	NRL-SOP-HSE-009	Contingency Plan for Terrorist Attack (Bomb Threat)
11.	NRL-SOP-HSE-010	Emergency Response Plan for Flood Control
12.	NRL-SOP-HSE-011	Emergency Response Plan for propane / LPG Handling / Mass release of flammable gases
13.	NRL-SOP-HSE-017	Evacuation Procedure for Lube-I
14.	NRL-SOP-HSE-018	Evacuation Procedure for Lube-II
15.	NRL-SOP-HSE-019	Evacuation procedure for Fuel Refinery
16.	NRL-SOP-HSE-020	Evacuation Procedure for Old Boiler House Utilities
17.	NRL-SOP-HSE-021	Evacuation procedure for Boiler-V / Power Generation
18.	NRL-SOP-HSE-022	Emergency Response Plan for Earthquakes
19.	NRL-SOP-HSE-024	Procedure for Management Block evacuation in case of Fire, Bomb Threat, or other emergencies like earthquake
20.	NRL-SOP-HSE-025	Procedure for Mock Drill (Fire) Korangi and Keamari Terminal
21.	NRL-SOP-HSE-026	Emergency Response Plan for handling spillage of oil due to leakage of pipelines in pipe alley, all tank lorries, including JP-I / JP-8 Bowzers
22.	NRL-SOP-HSE-027	Evacuation procedure for Shipping & Excise Building
23.	NRL-SOP-HSE-028	Procedure for Operation Block evacuation in case of Fire, Bomb Threat or other emergencies like earthquake
24.	NRL-SOP-HSE-029	Evacuation procedure for O.M-I office
25.	NRL-SOP-FPR-002	Fire Watch Coverage Procedure
26.	NRL-SOP-FPR-005	Safety requirements for Excavation
27.	NRL-SOP-FPR-006	Live Fire Drills / Exercise at Korangi Refinery
28.	NRL-SOP-FPR-007	Emergency Response Plan of Handling or Establishing Fire Fighting arrangement for combating fire like situation at K-K Pipelines
29.	NRL-SOP-FPR-008	Fire Fighting Plan for Korangi refinery
30.	NRL-SOP-FPR-009	Fire Fighting Plan for NRL Keamari Terminal
31.	NRL-SOP-FPR-010	Fire Drill / Exercise at Keamari Terminal

S.NO	Procedure No	Procedure Title / Situation Description
32.	NRL-SOP-FPR-016	Hose Handling practice
33.	NRL-SOP-FPR-012	Ensuring the fire water network operability and reliability testing to ensure the integrity & sustainability to meet emergencies
34.	NRL-SOP-OKR-024	Emergency Response plan for oil spills from carrying crude oil (Having heavy leakage from its body)
35.	NRL-SOP-OKR-025	Emergency Response Plan to control the leakage from Bottom / Shell of a storage tank to recover spilled oil from the area
36.	NRL-SOP-OKR-026	Emergency Response plan increase of overflow of a storage tank
37.	NRL-SOP-OKR-032	Emergency Response Plan for un-loading of asphalt tank lorry having leakage from its body
38.	NRL-SOP-OKR-036	Handling of field & empty chemical drums / container, contingency plan of chemical drums / container
39.	NRL-SOP-OKR-046	Emergency Response Plan for handling spillage of JP-8 tank lorry having leakage from its body
40.	NRL-SOP-LR1-001	Emergency Shutdown Procedure for PDA-I Unit
41.	NRL-SOP-LR1-008	Emergency shutdown procedure for Two-Stage / Bender Unit
42.	NRL-SOP-LR1-012	Emergency Shutdown Procedure for FEU-I Unit
43.	NRL-SOP-LR1-017	Emergency shutdown procedure for BTX unit
44.	NRL-SOP-LR1-026	Emergency shutdown procedure for MEK/HFU Unit
45.	NRL-SOP-LR1-031	Handing of filled chemical drums contingency plan.
46.	NRL-SOP-LR2-001	Emergency shutdown of Vacuum Distillation unit incase of power failure
47.	NRL-SOP-LR2-008	Emergency shutdown procedure of Propane De-Asphalting unit
48.	NRL-SOP-LR2-016	Emergency shutdown operating procedure for FEU unit of Lube-II Refinery
49.	NRL-SOP-LR2-025	Emergency shutdown operating procedure for MEK unit of Lube-II Refinery
50.	NRL-SOP-LR2-036	Mitigation plan / Procedure for Heat Exchanger leakage from flanges
51.	NRL-SOP-LR2-042	Emergency Shutdown procedure for MEK Dilchill Dewaxing unit
52.	NRL-SOP-FRE-007	Emergency shutdown procedure of 101-Crude Distillation Unit
53.	NRL-SOP-FRE-034	Mitigation plan / Procedure for heat Exchanger leakage from flanges
54.	NRL-SOP-FRE-041	Emergency shutdown procedure of naphtha Hydrobon and Platforming unit in case of power failure, steam failure, cooling water failure, charge oil pump failure, instrument air failure, 102-F1/F2 Tube Rupture
55.	NRL-SOP-FRE-046	Emergency shutdown procedure of Propane Recovery unit in case of steam failure, cooling water failure, instrument air failure
56.	NRL-SOP-TLW-009	Evacuation procedure for Workshop
57.	NRL-SOP-TLW-015	Emergency Response Plan for malfunctioning of workshop machine
58.	NRL-SOP-OKT-014	Procedure for Evacuation of Keamari Terminal
59.	NRL-SOP-OKT-022	Emergency Preparedness and Response Plan for Keamari Terminal
60.	NRL-SOP-OKT-024	Procedure for Mutual Aid Emergency Response (MAERP) & Communication Management System for Oil Installation area at Keamari
61.	NRLSOP-WHS-010	Procedure for Contingency plan for Chemical spillage
62.	NRL-SOP-WHS-011	Evacuation procedure for HR training center / Ware House / LMC

Risk Control - Management Systems

The refinery management system, procedures and documentation is well-managed and has received ISO9001-, ISO14001- and OHSAS 18001 accreditation.



Training

The Operator training program is well established. The training programme includes training in standard operating procedures, emergency operating procedures and skills based training. New Operators with a Technical Diploma receive 4 months class room and 18 months on the job training, with formal assessment every 3 months. The class room training is conducted in the dedicated Human Resource Development Centre (HRDC). School leavers have a 3 year Apprentice training programme which includes an additional 12 months on the job training.

Graduate Production Engineers undergo a 2 year training programme. It includes training on Standard Operating Procedures and technical training from HRDC. In addition, Engineers are sent abroad for specific technical training as required.

There is on-going HSE and technical training programme for all.

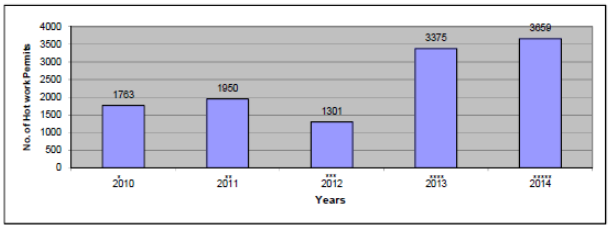
Permit to Work System

All maintenance and project work on the process plants are controlled through the Permit to Work system. The Maintenance or contract staff planning the work must prepare a job method. There is a lock out/tag out system for electrical and mechanical isolations. For electrical isolation this requires a lock and tag on the switch gear in the sub station. Entry to electrical rooms is only by authorised personnel i.e. Electrical Technicians and Supervisors. For process and pipe isolations, double isolation including blinds at pipe ends is required. Valves are locked closed and tagged with relevant information.

The work permit includes work risk assessment, precautions and formal handover sections for Maintenance/contractors and Operations. A copy of the completed work permit is retained by Operations. In addition to Cold Work and Hot Work there are permits for excavation, confined space entry, crane operations, radiography, scaffolding and vehicle entry in restricted process areas. Any work activity around the pipeline corridor from the refinery to the terminal is also controlled by the permit to work system. Each permit is valid for one shift and all jobs in the field are overseen by Field Operators. For critical hot work, fire watch is provided at the work site and portable continuous gas detectors are placed near the work area. Atmospheric flammable gas readings are also taken and recorded.

All active maintenance jobs on the plants are entered in the relevant plant control room log book, and a separate register is maintained containing instructions regarding the on-going work.

Safety Officers also make daily safety walkabouts with operational staff, and carry out audits of all work permits using a detailed checklist.



* No Turnaround in 2010
** Lube-I Refinery Turn Around March 2011
*** Lube-II Refinery Turn Around November 2012 / Fuel Refinery Turnaround December 2012
**** No Turnaround in 2013
***** Lube-I Refinery Turn Around December 2014

Control of Ignition Sources

Smoking or use of mobile phones is not allowed in the process and storage areas. Matches and lighters must be left at the site entrance gate, and there are designated smoking shelters on site. Use of electrical equipment by contractors is strictly controlled. The equipment has to go through an authorisation procedure, requiring assessment of the equipment according to the relevant area electrical classification. Vehicle access to restricted process areas requires a vehicle entry permit. All staff or contractor vehicles which have to be used in the process or storage areas must be fitted with flame arrestors.

Emergency Shutdown (ESD) System By-Pass

If an ESD has to be bypassed, there is a form which must be completed and authorised by Area Operations and Maintenance management, and retained in a file in the local control room. A Hazard Analysis is required for any ESD bypass needed for longer than a shift. The forms retained in the local control room were reviewed and it was confirmed that all ESD bypasses were properly authorised and completed within a shift.

Bypass of other critical equipment, for example essential for fire response is strictly controlled through appropriate authorisations and every activity is logged.

Operating Procedures

Manuals of controlled process operating procedures are kept in the control rooms.
The refinery is IMS (HSEQ) certified, and as part of certification the procedures are reviewed annually. A copy of emergency procedures is also kept in each control room.

Handover / Shift change

Because the instrumentation in the control rooms is panel-mounted digital and analogue controllers, the Panel Operators complete detailed log sheets with critical process data several times per shift. The Field Operators have a checklist which they complete every four hours, logging critical plant data. The Shift Foremen have a log book in which they record all important plant issues. The Panel Operator log sheet, Field Operator checklist and Foreman log book are all handed over formally at each shift change.

Likewise, in the Oil Movements area, manual level readings for all tanks are recorded every four hours on a log sheet and handed over to the next shift.

House Keeping

Housekeeping in the plants, storage areas and buildings in a very good standard. Safety labels are displayed and equipment and pipe labels applied. Pipe trenches were clear of grass. Paintwork and fireproofing was generally in good condition.

Maintenance

The Maintenance Section has three teams as follows –

i) Maintenance-I responsible for the maintenance and repair of process area equipment.

ii) Maintenance-II responsible for the power generation, maintenance and repair of Electrical / Instrument system for the entire refinery.

iii) Maintenance-III responsible for the maintenance and repair of the Boilers, Utilities equipment, Tank farm, Korangi to Keamari pipelines and Keamari Terminal.

The maintenance philosophy is largely preventive and is scheduled using the SAP Planned Maintenance module. Breakdown maintenance Work Orders are raise in a Job Order book by Operations and planned in a manual system by Maintenance.

Rotating Equipment

The Maintenance team plans to carry out a full Preventative Maintenance (PM) survey on all rotating equipment. The completion of PM as a KPI and have a target of 80%, achieving 78% in the 12 months. The PM survey includes checking vibration, temperature, lube oil quality and lube oil levels. Vibration measurements are recorded manually, with action taken to repair any pump showing vibration readings above a critical level.

In addition to the above, the Production Operators also have a hand held vibration probe which they use to carry out checks on pumps which they are concerned about, and the Inspection Department carry out vibration checks.

Manual Vibration checks are carried out on more critical rotating equipment such as compressors every week. The diesel engine and steam turbine are maintained according to the OEM run hour guidelines.

Lube oil quality checks on all rotating machines are carried out quarterly. The oils

are tested for gums, water and foam and the oil is changed if the quality is found to have deteriorated.

Fixed Fire Equipment

All fire water/foam monitors are inspected and maintained.

Electrical

The refinery is currently going through a programme of changing oil filled 11kV switchgear and circuit breakers to dry vacuum type equipment. The switchgear is tested every turnaround (TAR) with the trip testing carried out by current injection. Equipment grounding and earthing checks are carried out at least every turnaround or whenever work is done on any equipment. Tanks earthing/ bonding is also checked.

The refinery carries out PM checks on pump motors every quarter when the pump is being checked. This includes vibration testing on the motors and the use of an infra-red thermometer to check the temperature of the motor and switchgear in the MCC.

Instruments

All instrument loops and relays are tested every turnaround. Trip loops e.g. for furnaces and levels on distillation columns, are tested once a month, without shutting the isolation valves (XVs). However, the full action of the valves is checked as part of trip tests during the start up procedure following each turnaround. Propane compressors, hydrogen compressors and refrigeration compressors have their own PLCs which allow on-line testing (Siemens machines). The ESD PLCs are manufactured by Allen Bradley, ABB and Siemens. All the smoke detectors are tested and repaired as necessary each quarter by a third party contractor.

Spare Parts

The criticality of all spares has been identified from the criticality of the equipment and lead time for delivery of the part (many parts and materials have to be imported). This information is in SAP so that spares ordering is automated. Critical equipment includes mechanical seals; heater tubes; exchanger bundles; and diesel engine and reformer compressor cylinder rings and liners.

All pump services have a standby spare, and a single pump has the capacity to operate in all services, meaning that plant operation has minimal exposure to pump failure.

Inspection

All static equipment including pressure vessels and pipes within the refinery and storage terminal are inspected during the turnarounds every three years. On the basis of observations made, major repair or replacement is planned in the next turnaround. In some cases immediate repair or replacement is also carried out if required.

External inspection of tanks, including tank wall thickness measurements, is carried out Paint thickness on all tanks is also checked and Tanks are inspected internally.

LPG storage vessels are inspected externally annually, and internally, which meets AP510 guidelines. The internal inspections include radiography checks on the welds.

The four pipelines connecting the refinery and the terminal are buried and have cathodic protection. The voltages are checked at test poles along the length of the lines once per month. If an issue is suspected the lines are excavated and thickness checks are carried out.

The thickness of all cold pipes on the units is checked prior to each turnaround with the thickness of the hot pipes checked during the Turnaround. If any thinning is identified a repair is planned for the next turnaround or sooner if necessary. The thickness of the pipe is not necessarily checked in the same spot each time and the results are recorded.

Inspection and maintenance of Boilers is carried out annually by Government Inspectors.

Cranes and chains are tested by third parties.

Pressure Safety Valves (PSVs)

All safety relief valves (there are 530 on site) are inspected in every Turnaround and undergo pre-pop test. The pre-pop test results are kept for reference.

Engineering Design Standards

International design codes were used for the construction of the different process plants. The standards followed vary depending on the EPC contractor and licensor and include Oil & Gas Authority Pakistan, API, ASME, NFPA, BS, ANSI; and those of Licensors such as UOP, Snamprogetti and ABB.

The Engineering section uses International standards for the smaller projects developed on site, principally ASME, API, ANSI and TEMA.

Management of Change (MOC)

The refinery uses a formal management of change procedure which has the following steps – Proposal & justification, Risk Review, Technical evaluation, Concept Approval, Detailed Engineering, Funding Approval , Document Control, Job Completion and Plant Change Closure.
Hazard Analysis is covered using a checklist to assist in the identification of risks. A HAZOP will also be carried out if deemed necessary.

The Engineering section has its own drawing office and draughtsmen, which manages updates to P+IDs and other engineering documentation. The MOC process also required Operating Procedures to be updated and Operators to be trained as required.

Small modifications are handled in-house, but larger projects are handled through Third Party Contract Engineering companies in coordination with the in-house Engineering team.

Document Control

The drawing office uses an AutoCAD system. All existing P+IDs have been converted to CAD format. Only the draughtsmen currently have access to the system and will print off copies of drawings and engineering documents on request. Modified drawings must be signed off by Operations Engineers, Engg. Manager, HSE Manager, Tech Manager and Operation Management as well as functional Engineers.

HAZOP

The Management of change process includes Hazard Analysis and review by the HAZOP Team. The HAZOP Team will decide if a HAZOP is required for a given project and will chair the HAZOP. The Safety Manager is experienced in the use of HAZOP, as are many of the Engineers on site.

Emergency Response Organisation

The Refinery and Keamari Terminal each have their own dedicated full time fire brigades.

The fire teams are part of the HSE Department, with the Superintendents reporting to the HSE

Manager. In addition, there are auxiliary Fire Fighters per shift in the refinery from Operations, the Laboratory and Security.

Fire & Safety Training

Full time firemen are trained on-site and by the Civil Defence Authority and National Institute of Fire and Technology.

On site fire training drills are conducted weekly for the fire crews and auxiliaries. The drills include pool fire, pump seal failure fire and breathing apparatus training. HSE Engineers observe the fire drills and record response times. This includes time for the fire tender to reach the location of the fire; laying water / foam hoses; and water on. In addition, there are weekly hose handling drills for the fire crews. The site also has its own fire training ground where live fire training is conducted.

Flood response and evacuation drills are also conducted. Evacuation drill with the exercise observed, and response time for all personnel to evacuate the designated area measured by HSE Engineers.

Emergency Planning

The refinery has an emergency response plan which is controlled by the Health, Safety, Environment and Quality Management System. The plan details the organisation and response to an emergency. It includes major emergencies such as flood, terrorist attack and major fire.

The Refinery Shift Controller (RSC) acts as the Emergency Coordinator and will call in a designated list of Managers in case of a major incident. The RSC's office will be used as the incident control room. There are also emergency response pre-plans for specific, high risk incidents. As discussed above, the emergency pre-plans are practiced regularly by the fire crews and there are regular site evacuation drills.

Mutual Aid

The refinery has a mutual aid Emergency Response Plan with the Pakistan Refinery Ltd and Parco oil refineries (each approximately 4 km distant), and the three local Oil marketing companies at Keamari Terminal.

The Terminal has participated in Government organised major oil spill exercises to test the National Marine Disaster Plan. These exercises include the Civil Defence Authority and other companies local to the Terminal.

Safety Organisation

The site has three management level committees for the governance of HSE –

- The Management committee which includes all the site General Managers
- The Technical sub-committee which includes Managers from Operations, Maintenance Projects and Engineering
- The Non-technical sub-committee which includes all other non-technical Managers

These committees review audit reports, inspection reports and KPIs and agree actions and resources to address relevant HSE issues.

All the Safety & IMS Officers are experienced engineers. The IMS Officers cover all the process safety aspects, auditing and regular reporting. Process safety KPIs are defined and are formally reported to the management in monthly meetings and to the IMS (HSEQ) Council Meeting every 6 months. In these meetings all the audits / compliance issues are discussed, actions reviewed and actions follow up and completion queried by the management.

There is a monthly HSE NewsLetter where key safety issues are highlighted and achievements publicised.

Safety, health and environment are part of the permanent topics of all the site management key meetings and included in the weekly operations meeting. The Safety Department is involved in refinery and terminal staff and contractor safety training, and maintains all safety training records. They also, along with maintenance, check the suitability of contractor equipment, including site area classification requirements and equipment condition.

Key Performance Indicators (KPIs)

The plant has a comprehensive set of HSE KPIs. This includes injury statistics, emergency exercise and safety training, environmental testing, incident investigation and reporting, near miss reporting, training, toolbox talks, audits, safety communication and SOP reviews. There are also a number of Process Safety KPIs reported by separate Departments.

Security

The refinery is surrounded by high boundary walls topped with high barbed wire. There are manned watch towers around the boundary wall. In addition, there are sentry posts around the process area which is regarded as the fall-back area for defence. All vehicles are searched upon entering the refinery. Personnel on foot pass through a metal detector. All matches and lighters must be left at the gate. There are a number of CCTV cameras around the boundary wall and within the refinery.

The pipeline corridor between the refinery and the terminal is patrolled by security vehicles.

The refinery has good relations with the local police and Rangers for support in local stations.

Active Process Protection

All process units have panel mounted analogue and digital control systems. The plants also have PLC-based Emergency Shut Down (ESD) systems which protect the furnaces and major vessels from high or low levels. The compressors all have local automatic shutdown systems which will trip the machine on high vibrations and high temperatures.

There are regular off-line vibration checks on all pumps using hand-held measuring devices.

Fire Protection

There are electric firewater pumps and jockey pumps (maintaining a main pressure of 7 bar) at the Refinery site, distributed amongst three pumping stations drawing water from open basin reservoirs.

The fire pump capacity is sufficient to meet the worst case scenario fire.

At the Keamari Storage Terminal there are electric firewater pumps, diesel pumps taking suction from fire water reservoir. There is also diesel pump taking suction from the sea. In addition there are diesel foam pumps. The pumping capacity has been checked as sufficient to meet the firewater demand in the worst case scenario at the Terminal.

In Addition

There are fixed firewater hydrants and water/ foam monitors in the refinery process areas.

The refinery firewater system is pressure tested Fire hydrants are tested and suction valves are checked. Firewater pumps are run & also tested.

Deluge Systems

All storage tanks at the Refinery and the Keamari Terminal have water cooling rings at the top and half-way down the tank. The tanks also have fixed and semi fixed foam pouring and foam injection systems. The LPG and Propane storage bullets have a water deluge system. There are fixed water and foam suppression systems on the API separators; and fixed water suppression systems on each floor in the Admin and Operations Building.

Mobile Systems

At the Refinery there are Fire Tenders

The fire tenders have an third party fitness for service certification.

There are FP70- foam concentrate and DCP stock at the refinery in drums and storage tanks. The quality of the foam stock is checked annually.

There are mobile fire extinguishers also.

In addition there are DCP and CO2 stanchion-mounted fire extinguishers located around the site.

All of the fire protection equipment is checked.

Fireproofing

In the process areas, there is concrete fireproofing of structural steel pipe rack and equipment supports. The height of the fireproofing is according to the hazard perceived.

Most equipment support tables/columns and column skirts are also fire proofed.

All the critical buildings are constructed with concrete and non-combustible materials.

Fire, Gas and Smoke Detection

Smoke detectors are installed in most of the electrical sub stations Smoke detectors have also been installed in the control room rack rooms.

Hazards, Evaluation and Risk Assessment

Frame Work

- OH&S hazards of Normal Operation
- OH&S Turnaround / Shutdown Operation
- Routine activities
- Non Routine activities
- Access to the work place
- Facilities at work place
- Absence of control measures

Hazards Categories

- Ergonomics Hazards
- Mechanical hazards
- Electrical hazards
- Pressure hazards
- Pneumatic hazards
- Falling hazards
- Biological hazards
- Noise hazards
- Vibration hazards
- Toxic hazards
- Radiation hazards
- Explosion hazards
- Chemical hazards
- Fire hazards
- Psychological hazards
- Traffic hazards
- Others

OH&S Hazards Impacts Categories

- Injury / Illness
- Disability / Death
- Production delays and interruption
- Asset Loss
- Property damage
- Tools and equipment damage
- Product and material damage

Evaluation of Risks Assessment for identified hazard

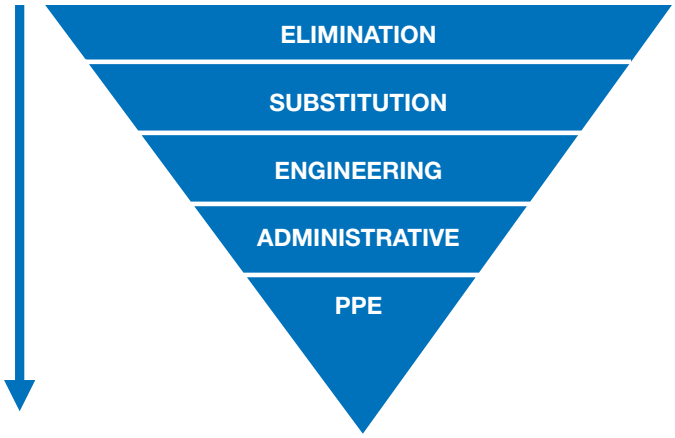
- Legislative and regulatory requirements
- Identification of the OH&S Risks face by NRL
- Review OH&S practices, process and procedures
- Evaluation of feed back from the investigation
- Audit results & Recommendations
- Direct inspection and measurement

Risks Control

- Residential hazard identified, even after current control measures, will be assessed for risk and classified under tolerable risks and un-tolerable risks.

- Measure taken with the principal of
  Eliminate,
  Substitute,
  Engineering Control,
  Administrative Control,
  Personal Protective Equipment

If risk can not be converted into tolerable risk than PPE's used to reduce the impact



Hazard Risk Management

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ To receive imported crude oil from crude oil ship tanker through 30" dia pipeline. ➢ To load export Naphtha through 16" dia pipeline from storage tanks to ship tanker. ➢ Crude oil pumping through 14" dia pipeline from Keamari Terminal to NRL Korangi ➢ Operation of high-tension motors / pumps ➢ Product, pumping operation through pipelines from NRL to KT and then Oil Marketing Companies ➢ Pumping of effluent water to sea and recovery of oil	VOC's emission	➢ Ill Health due to vapors inhalation ➢ Air Pollution ➢ Degradation of air quality	✓ Define & documented SOP's for each activity along with record management ✓ Emergency Response Plan ✓ House keeping properly maintained. ✓ Auto tank gauging system and bob-gauge system monitoring. ✓ API sewer system properly cleared. ✓ Dyke wall properly sealed. ✓ Routine Maintenance regularly done. ✓ Training is being given to all concerned ✓ Preventive maintenance / inspection schedule is being properly followed. ✓ Earthling of tanks properly maintained. ✓ Provided security to safeguard pipeline in KPT trench. ✓ KPT maintains chikson arms, pipelines and valves in side BOP-I, II, III ✓ Sufficient lighting has been provided ✓ MSDS being followed ✓ Communication system walki / talkies & telephones are maintained in working order. ✓ Low and high level alarms are being provided on API to avoid backflow Preventive maintenance / inspection schedule implementation ✓ Electrical wiring is regularly inspected & maintained ✓ PPE's being used
	Overflow of tank	➢ Water Contamination. ➢ Soil contamination.	
	Fire	➢ Human Injuries. ➢ Asset loss.	
	Pipeline leakage	➢ Water Contamination. ➢ Soil contamination.	
	Falling hazard / Slippery hazard	➢ Human Injuries.	
	Spillage	➢ Human Injuries / asset loss. ➢ Soil contamination. ➢ Water Contamination.	
	Overflow of collecting tray	➢ Soil contamination. ➢ Water Contamination.	
	High temperature Product	➢ Human Injuries. ➢ Asset loss.	
➢ Loading and Unloading of chemical drums / material through Fork lifter. ➢ Disposal of empty Drums	Ergonomic Hazard	➢ Human Injury	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Fork lifter load capacity being followed ✓ Designated area marking ✓ Display of sign boards ✓ Proper Illumination of area ✓ MSDS being followed ✓ Proper preventive maintenance of Fork lifter ✓ Emergency Response Plan ✓ PPEs being used
	Mechanical Hazard	➢ Human Injury	
	Falling Hazard	➢ Human Injury	
	Oil / chemicals spillage from empty Drums	➢ Human Injury	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Gauging of petroleum products stored in fixed and floating roof tanks.	VOC's Emission	➢ Ill Health due to inhalation	✓ Define & documented SOP's for each activity along with record management ✓ Emergency Response Plan ✓ Proper house keeping being maintained. ✓ Maintenance of Auto tank gauging system is being regularly done ✓ Training is being given to all concerned ✓ Preventive maintenance / inspection schedule implementation. ✓ PPEs being used.
	Falling hazard	➢ Minor / Major Human injuries	
	Minor spillage from pump seal / pipeline fittings	➢ Soil / Water contamination. ➢ Human Injuries / asset loss.	
➢ Chemical Handling and testing e.g. Acid, caustic, Ammonia etc.	Chemical hazard (Irritant and Toxic)	➢ Injuries ➢ Burns	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Testing is carried out. ✓ MSDS being followed ✓ Emergency Response Plan ✓ PPEs being used
	Spillage / Leakage	➢ Human Injuries / asset loss. ➢ Soil contamination. ➢ Water Contamination.	
➢ Fire Tender / Vehicle Movement inside NRL	Traffic Hazard	➢ Minor / Major Human injuries. ➢ Asset loss.	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Trained and HTV / LTV licensed holder drivers ✓ Safe speed limit being followed ✓ Designated area marking ✓ Display of sign boards ✓ Proper preventive maintenance of vehicle ✓ 3rd party fitness certification. ✓ Authorized driving by security department inside refinery ✓ Spark Arrestors are installed ✓ Emergency Response Plan
	Fire hazard	➢ Minor / Major Human injuries. ➢ Asset loss.	
➢ Vehicles Entry (In / Out)	Fire hazard	➢ Human injuries ➢ Asset loss	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Vehicle speed limit 25 km / hr being followed ✓ Display of notice board/warning sign ✓ Designated area marking ✓ Spark Arrestors are installed ✓ Emergency Response Plan
	Bomb Threat	➢ Human injuries. ➢ Asset loss.	
	Traffic Hazard	➢ Human injuries. ➢ Asset loss.	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Visitors / Labor Force (In / Out)	Terrorist Threat	➢ Human loss. ➢ Human injuries. ➢ Asset loss.	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Visitors checking at gate ✓ Visitor passes issued ✓ Mobile phones are retain at gate office and issue token ✓ All types of fire material like lighter / matchbox are taken at gate ✓ Display of notice board / warning sign ✓ Communication with concerned department ✓ Emergency Response Plan
	Bomb Threat	➢ Human loss. ➢ Human injuries. ➢ Asset loss.	
➢ Sanitation Management	Biological Hazard (Microbial / Cross contamination, Transmission disease, etc)	➢ Illness ➢ Infection	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Designated area marking ✓ Emergency Response Plan
	Insect Bits	➢ Illness ➢ Infection	
	Suffocation	➢ Illness ➢ Infection	
	Underground gasses	➢ Human injuries ➢ Illness	
➢ Solid Waste management	Mechanical Hazards	➢ Illness ➢ Bleeding ➢ Headache ➢ Sinus	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Emergency Response Plan
	Chemical hazard (Irritant and Toxic)	➢ Injuries ➢ Burns	
	Biological Hazard (Microbial / Cross contamination, Transmission disease, etc)	➢ Illness ➢ Infection	
➢ Excavation using excavator ➢ Concrete mixer machine operation ➢ Operation for area dressing by hand shawl / tractor ➢ Asphalt mixing machine operation	Mechanical Hazard.	➢ Injury / Illness ➢ Skin burn ➢ Back Ache problem	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Proper barrication. ✓ Follow Permit to Work System ✓ Flame arrestor is to be installed at exhaust ✓ Emergency Response plan ✓ Proper display board provided during activity ✓ Providing PPE's including dust mask.
	Electrical Hazard.	➢ Injury / Illness ➢ Electrocution ➢ Skin burn	
	Hazard of Collapse	➢ Human loss. ➢ Human injuries. ➢ Asset loss.	
	Noise Hazard	➢ Hearing loss	
	Heat & Temperature Hazard	➢ Injury / Illness ➢ Skin burn	
	Ergonomic Hazards	➢ Injury / Illness ➢ Back Ache problem	
	Fire Hazard	➢ Human injury ➢ Property loss	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Canteen Food and Burner Operation	Biological Hazard	➢ Ill health ➢ Food poisoning	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Emergency Response Plan
	Fire Hazard	➢ Human injury ➢ Property loss	
➢ Maintenance checking and on / off L.T motor breaker, Power cables, electrical equipments	Fire / Flash Hazard	➢ Ill health ➢ Minor and Major Human injury ➢ Asset loss	✓ Define & implemented SOP's for each activity properly implement along with record management. ✓ Inspection of breakers and monitor the current on ampere meter. ✓ Area barrication. ✓ Energizing / De-energizing. ✓ Completely check all the internally installed components before switching or starting the motor. ✓ Preventive maintenance schedule. ✓ Emergency Response plan. ✓ Ensure the proper insulation of cables. ✓ Ensure the proper earthing. ✓ PPE's being used.
	Electrical Hazard	➢ Injury / Illness ➢ Electrocution ➢ Skin burn ➢ Electrical Shock	
	Heat & Temperature Hazard	➢ Injury / Illness ➢ Skin burn	
➢ Loading / Unloading & stacking of materials, general items, pipes, fitting sheets and spares through Carne / Lifter	Falling Hazard (Falling Object from height, Falling object on a moving machine, etc)	➢ Minor / Major Human injuries. ➢ Asset loss.	✓ Define & implemented SOP's for each activity properly implement along with record management Load chart to be checked. ✓ Certified crane to be used. ✓ Certified shilling wire to be checked. ✓ Area Marking. ✓ Follow the load chart. ✓ Emergency Response Plan. ✓ PPE's being used.
	Traffic Hazard (Movement of Crane / heavy vehicles)	➢ Minor / Major Human injuries. ➢ Asset loss.	
	Ergonomic Hazard	➢ Minor / Major Human injuries.	
➢ Handling of Gas Cylinders	Chemical Hazard (Leakage of Gas or Leakage of oxygen diluting gases)	➢ Minor / Major Human injuries.	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ While receiving the cylinders checking of valves for any leakage ✓ Training is being given to all concerned ✓ Emergency Response Plan ✓ Use of PPE's
	Ergonomic hazard	➢ Minor / Major Human injuries.	
	Fire Hazard	➢ Minor / Major Human injuries. ➢ Asset loss	
➢ Catalyst Regeneration	Chemical Hazard	➢ Minor / Major Human injuries.	✓ Define & implemented SOP's for each activity properly implement along with record management Designated area for drums ✓ Follow MSDS ✓ Emergency Response Plan ✓ Use of PPE's
	Health Hazard	➢ Human injury ➢ Ill health	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Sulfur Determination by X-Ray Sulphur Meter	Radiation hazard (X-Ray)	➢ Ill Health ➢ Chronic effects	✓ Procedure is followed (ASTM # 4294) / equipments manufacturer precaution ✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Use TLD badges ✓ Equipment to be checked before operating for proper covering ✓ Emergency Response Plan
➢ **Maintenance Related Activities during Normal / Turnaround / Shutdown** ▪ Furnace ▪ Scrapping / Cleaning ▪ Refractory Works ▪ Column Tray ▪ Vessels ▪ Tanks ▪ Compressor ▪ Pumps ▪ Welding at Plant ▪ Liqua Blaster Operation ▪ Sand Blasting ▪ Painting ▪ Insulation installation / replacement ▪ Valve ▪ Hydrocarbon pipeline ▪ Welding / cutting / grinding ▪ Erection of scaffolding ▪ Mechanical work at height ▪ Electric / Gas welding ▪ Heat Exchanger ▪ Air Cooler ▪ Storage tanks ▪ Work-Shop machine operation (Radial drill, lathe, milling, shaper, lapping machine) ▪ Metalizing (Thermo spray gun operation) ▪ Air Compressor, Welding generator ▪ Hydraulic Press Operation ▪ Fork Lifter ▪ Gasket Fabrication ▪ Overhead Crane ▪ Chain blocks pulley testing ▪ Radiography	Mechanical Hazard	➢ Human Injury / Illness.	✓ Define & documented (Shutdown / Startup / Turnaround) SOP's for each activity properly implement along with record management ✓ Cold work permit ✓ Isolation complete ✓ Proper Blinding ✓ Training for procedure ✓ Isolation valve checked. ✓ Complete flushing ✓ Oxygen test ✓ Proper steaming ✓ Proper ventilation oxygen test ✓ De-energize permit ✓ Good house keeping ✓ Proper isolation of the place of job ✓ Inspection of welding machine ✓ Certified welder ✓ Certified hoses & nipples ✓ Skilled manpower ✓ Safe handling of insulation debris in bags ✓ Proper dust mask / safety goggles used. ✓ Proper bath after handling insulation material. ✓ Area barrication ✓ Identification of area ✓ Emergency Response Plan ✓ Use of PPE's
	Fire Hazard	➢ Human Injury / Illness. ➢ Skin Burn. ➢ Asset loss.	
	Ergonomic Hazard	➢ Human Injury from hitting with heavy object	
	Chemical Hazard	➢ Human Illness. ➢ Acute & Chronic effect on health.	
	Noise Hazard	➢ Hearing loss ➢ Human injury / illness.	
	Radiation Hazard	➢ Ill Health ➢ Chronic effects	
	Heat & Temperature Hazard	➢ Human Injury / Illness. ➢ Skin Burn.	
	Electrical Hazard	➢ Electrocution. ➢ Skin Burn. ➢ Human Injury.	
	Traffic Hazard	➢ Human Injury. ➢ Asset loss.	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Repair & Maintenance of Field mounted instruments, Electronic instruments & laboratory analyzer, controllers, transmitters, recorders, alarm systems, pneumatic instruments, instruments & control system	Pressure Hazard	➢ Human Injury ➢ Asset damage / loss.	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Proper isolation drain ✓ Be vigilant ✓ Use of proper insulation ✓ Use of proper fittings ✓ Use of standard material ✓ Use of cold work permit ✓ Emergency Response plan ✓ Use of PPE's
	Falling Hazard	➢ Minor / Major Human Injury	
	Heat & Temperature Hazard	➢ Minor / Major Human Injury ➢ Skin Burn	
	Electrical Hazard	➢ Electrocution ➢ Skin Burn ➢ Human Injury	
	Fire Hazard	➢ Asset Damage / loss. ➢ Human Injury	
➢ Start-up, shutdown and running of Turbo Generator and Diesel Generator ➢ Air compressor operation and maintenance	Pressure / Temperature Hazard	➢ Minor / Major Human Injury ➢ Skin Burn ➢ Asset Damage / loss.	✓ Define & implemented (Start up and Shutdown) SOP's for each activity properly implement along with record management ✓ Implementation / monitoring for usage of PPE's ✓ Routing checking through shift Engineers ✓ Display boards ✓ Sign boards ✓ Emergency Response Plan
	Noise Hazard	➢ Hearing loss. ➢ Human Illness.	
	Falling / Tripping Hazard	➢ Minor / Major Human Injury	
	Fire Hazard	➢ Asset Damage / loss. ➢ Human Injury	
➢ LPG sampling from vessel and units ➢ Lube Base Oil sampling from tank ➢ Light hydrocarbons Solvents (Benzene, Toluene, Xylene) sampling and testing	Pressure / Temperature Hazard	➢ Cold Burning ➢ Human Injury / Illness. ➢ Asset loss.	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Procedure of sampling (ASTM) to be followed ✓ Before sampling check the valve carefully for rust pitting, leakage ✓ Emergency Response Plan ✓ Follow MSDS ✓ Use PPE's
	Chemical Hazard	➢ Impact on Human Illness. ➢ Degradation of air quality	
	Falling / Tripping Hazard	➢ Minor / Major Human Injury	
➢ Noise Level Monitoring. ➢ H_2S & Volatile Organic Compounds (VOCs) Monitoring ➢ Illumination Monitoring ➢ Stack Emission Monitoring ➢ Rain Water Channel Monitoring ➢ Collection of drinking water and effluent water for 3rd Party Testing	Chemical Hazard	➢ Human Illness ➢ Respiratory problems	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Proper use of PPEs specially earplugs / muff during reading ✓ Effective coordination ✓ Use of sign boards ✓ Emergency Response Plan
	Noise Hazard	➢ Hearing loss ➢ Ill Health	
	Ergonomic Hazard	➢ Human illness ➢ Eye sight loss	
	Mechanical Hazard	➢ Human Injury / Illness.	
	Heat & Temperature Hazard	➢ Human Injury / Illness.	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
➢ Filling of Fire Extinguishers ➢ Carbon dioxide cartridge refilling	Chemical Hazard	➢ Human illness ➢ Mild irritation to the eyes, skin, respiratory track	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Follow MSDS ✓ Proper Training ✓ Filling instruction ✓ Adequate supervision ✓ Ensure proper ventilation ✓ Emergency Response Plan ✓ Use of PPEs
	Temperature Hazard	➢ Frost bite ➢ Cold burning	
➢ Fire Fighting at Fire Drills / Process Area	Fire Hazard	➢ Human Injury / illness. ➢ Skin burn ➢ Asset loss	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Safe escape root ✓ Water should be applied through spray nozzle. ✓ Use of SCBA against any toxic fumes, vapor & gas. ✓ Proper Communication ✓ Emergency Response Plan ✓ Use of PPE's
	Heat & Temperature Hazard	➢ Illness ➢ Injuries ➢ Burning	
➢ Biological waste disposable (Drugs antibiotics)	Biological hazard	➢ Human illness	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Disposal to municipal waste. ✓ Biological or contaminated waste for treatment in incineration ✓ Training ✓ Area Identification ✓ Emergency Response Plan
➢ Treatment by Injection	Chemical Hazard (Hypersensitivity Reaction)	➢ Human illness ➢ Infection	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Used of packed sterilized disposable syringes. ✓ Checking of Date of expiry before use. ✓ Wearing of gloves ✓ Identification of shelves ✓ Verification of date by label over the injectable ✓ Proper storage of injectable / medicines ✓ Emergency Response Plan
➢ Under Ground Sewer Network	Chemical Hazard	➢ Human illness ➢ Infection ➢ Headaches	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Emergency Response Plan
	Biological Hazard	➢ Sinus ➢ Infection	
➢ Horticulture Management	Heat & Temperature Hazard	➢ Human illness (Sunstroke, dehydration, sweating, headache, etc.)	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Emergency Response Plan
➢ ITS management (Computer, Servers, Printers, Plotters, UPS, Scanners, Network bridges, Switches, Towers, Fiber optic cable)	Electrical Hazard	➢ Electrocution ➢ Human Injury / illness ➢ Skin burn	✓ Define & implemented SOP's for each activity properly implement along with record management ✓ Monitoring, inspection and maintenance of IT related equipments as specified by the manufacturers and suppliers of the IT equipments. ✓ Emergency Response Plan

Environmental Aspect, Impact Risk Assessment

Activity / Area	Aspect	Impact	Control / Mitigation
Crude Oil / Lube / Fuel Product receipt, handling and storage ➢ Pumping Operation ➢ Transportations through pipeline and tank lorries ➢ Breather valves ➢ Sampling ➢ Dipping ➢ Chemical injunction ➢ API separators ➢ Bowzer decantation ➢ Loading / un-loading	Hydrocarbon sludge from tanks and drains channels	➢ Soil contamination ➢ Water contamination	NRL-SOP-HSE-002 NRL-SOP-HSE-006 NRL-SOP-HSE-007 NRL-SOP-HSE-008 NRL-SOP-HSE-011 NRL-SOP-HSE-012 NRL-SOP-HSE-014 NRL-SOP-HSE-016 NRL-SOP-HSE-026 NRL-SOP-HSE-029 NRL-SOP-HSE-031 NRL-SOP-HSE-032 NRL-SOP-HSE-033 NRL-SOP-HSE-034 NRL-SOP-HSE-035 NRL-SOP-HSE-036 NRL-SOP-QCL-001 NRL-SOP-ISP-001 NRL-SOP-ISP-002 NRL-SOP-ISP-004 NRL-SOP-ISP-005 NRL-SOP-FPR-001 NRL-SOP-FPR-007 NRL-SOP-FPR-008 NRL-SOP-FPR-009 NRL-SOP-FPR-012 NRL-SOP-SCY-001 NRL-SOP-ENG-007 SOP's KT SOP's OM SOP's Maintenance
	Leakages / Spillages	➢ Soil contamination ➢ Oil slippage to sea	
	Volatile Organic Compounds emission	➢ Air pollution ➢ Health impact	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact	
	Effluent Water	➢ Contamination of sea / water ➢ Marine Destroy	
Utility Operations ➢ Furnace for heating ➢ Cooling Towers ➢ Chemical injection ➢ Vessels pump ➢ Fuel Oil Storage Tanks ➢ Regeneration and un-loading ➢ ETP plant ➢ RO Plants	Cooling water blow down water	➢ Soil contamination ➢ Water contamination	NRL-SOP-HSE-002 NRL-SOP-HSE-005 NRL-SOP-HSE-007 NRL-SOP-HSE-014 NRL-SOP-HSE-016 NRL-SOP-HSE-020 NRL-SOP-HSE-021 NRL-SOP-HSE-031 NRL-SOP-HSE-032 NRL-SOP-HSE-033 NRL-SOP-HSE-034 NRL-SOP-HSE-035 NRL-SOP-HSE-036 NRL-SOP-FPR-008 NRL-SOP-FPR-012 NRL-SOP-QCL-002 NRL-SOP-QCL-003 NRL-SOP-TSR-009 NRL-SOP-TSR-010 NRL-SOP-TSR-011 NRL-SOP-TSR-012 SOP's Utilities
	Boiler blow down water	➢ Soil contamination ➢ Water contamination	
	Noise	➢ Noise Pollution	
	Water Consumption	➢ Natural resource depletion	
	Fuel Oil & Natural gas Consumption	➢ Natural resource depletion	
	Steam leakages	➢ Energy wastage	
	Sludge from brine and blow down pits	➢ Soil contamination ➢ Water contamination	
	Chemical spillage	➢ Soil / land contamination ➢ Damage to asset / loss of life	
	Flue gases	➢ Air pollution ➢ Degradation of Air Quality	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact	

Activity / Area	Aspect	Impact	Control / Mitigation
Chemical Storage and handling ➢ Drums handling ➢ Handling of Gas Cylinder	Leakages / Spillage	➢ Soil contamination ➢ Water contamination	NRL-SOP-HSE-001 NRL-SOP-HSE-007 NRL-SOP-HSE-011 NRL-SOP-HSE-014 NRL-SOP-WHS-007 NRL-SOP-WHS-008 NRL-SOP-WHS-011 NRL-SOP-WHS-013 NRL-SOP-SCY-001 NRL-SOP-FPR-008
	Empty plastic and metal drums	➢ Solid Waste Pollution	
	Release of toxic gases	➢ Air emissions	
	Leakages	➢ Soil contamination ➢ Water contamination	
Plant Operations (Production Lube – I + Lube – II + Fuel Refinery) ➢ Desalting ➢ Heating ➢ Distillation ➢ Naphtha Stabilizer and Splitter ➢ Merox Sweetening ➢ Hydro treating ➢ Platforming ➢ Propane Recovery ➢ BTX ➢ Atmospheric and Vacuum Distillation ➢ Propane de-asphalting ➢ Furfural Extraction ➢ De-waxing ➢ Hydro-finishing ➢ Pumping transportation ➢ Furnaces ➢ Heat exchangers ➢ Air cooler ➢ Valves ➢ Chemical Solvent charging ➢ Compressor ➢ Chillers ➢ Rotary Filter	Oily waste water	➢ Soil contamination ➢ Water contamination	NRL-SOP-HSE-002 NRL-SOP-HSE-006 NRL-SOP-HSE-007 NRL-SOP-HSE-008 NRL-SOP-HSE-011 NRL-SOP-HSE-012 NRL-SOP-HSE-014 NRL-SOP-HSE-016 NRL-SOP-HSE-026 NRL-SOP-HSE-029 NRL-SOP-HSE-031 NRL-SOP-HSE-032 NRL-SOP-HSE-033 NRL-SOP-HSE-034 NRL-SOP-HSE-035 NRL-SOP-HSE-036 NRL-SOP-QCL-001 NRL-SOP-ISP-001 NRL-SOP-ISP-002 NRL-SOP-ISP-004 NRL-SOP-ISP-005 NRL-SOP-FPR-001 NRL-SOP-FPR-007 NRL-SOP-FPR-008 NRL-SOP-FPR-009 NRL-SOP-FPR-012 NRL-SOP-SCY-001 NRL-SOP-ENG-007 SOP's Lube – I Refinery SOP's Lube – II Refinery SOP's Fuel Refinery SOP's Maintenance
	Noise	➢ Noise Pollution	
	Hazardous solid waste e.g. oily rags	➢ Soil quality degradation	
	Leakages	➢ Soil Contamination	
	Steam leakages	➢ Energy wastage	
	Hydrocarbon sludge from cleaning and routine operations	➢ Soil contamination ➢ Water contamination	
	Heat	➢ Occupational Health	
	Spent caustic, amines & Sulphuric acid	➢ Soil contamination ➢ Water contamination	
	Release of CO_2 during regeneration	➢ Degradation of air quality ➢ Air Pollution	
	Volatile Organic Compounds from pressure relief valves and leakages	➢ Degradation of air quality ➢ Occupational Health ➢ Air Pollution	
	Furnace oil / Refinery gases / natural gas Consumption	➢ Depletion of natural resource	
	Release of LPG, H_2S and other gases	➢ Health hazard ➢ Air Pollution	
	Stack emission	➢ Degradation of ambient air quality ➢ Air Pollution	
	Ash and particulate matters during regeneration / off-loading of catalyst	➢ Air Pollution ➢ Health hazard	
	Spent catalyst	➢ Solid Waste Pollution	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact	
Laboratory (Quality Control) ➢ Sampling ➢ Storage ➢ Disposal ➢ Crude oil ➢ Feed stock ➢ Intermediates ➢ Finished Products ➢ Utilities	Unused samples	➢ Soil contamination ➢ Water contamination	NRL-SOP-QCL-001 NRL-SOP-QCL-002 NRL-SOP-QCl-003 NRL-SOP-QCL-004 NRL-SOP-HSE-031 NRL-SOP-HSE-032 NRL-SOP-HSE-033 NRL-SOP-HSE-034 NRL-SOP-ADM-003 NRL-SOP-TLW-009
	Spillage / leakage / emissions / toxic fumes / Loss of products / Waste generation	➢ Water contamination ➢ Air pollution ➢ Health hazard ➢ Solid waste ➢ Odor	
	Used Chemicals	➢ Soil contamination ➢ Water contamination	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact	

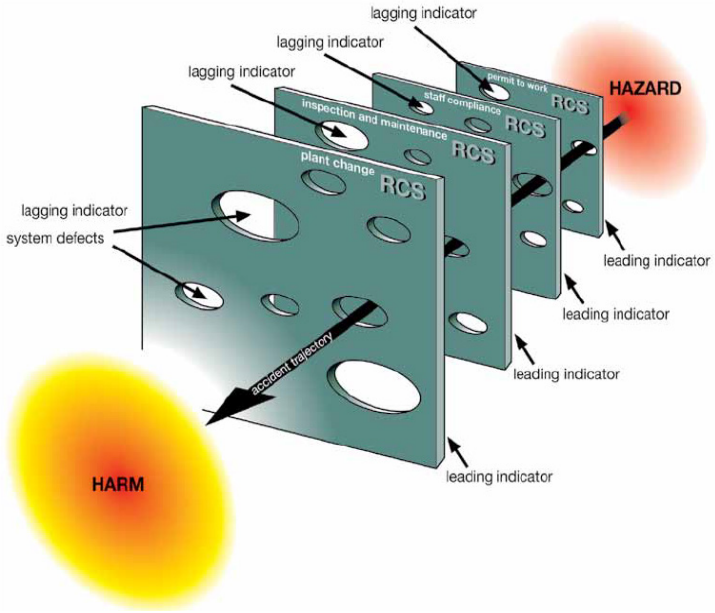
Activity / Area	Aspect	Impact	Control / Mitigation
Power Plant Operations ➢ 7.5 MW Steam turbine, 4.0 MW Diesel Power Generator	Stack emission	➢ Ambient air quality degradation ➢ Air Pollution	NRL-SOP-HSE-031 NRL-SOP-HSE-032 NRL-SOP-HSE-033 NRL-SOP-HSE-034 SOP's Power Generation SOP's Maintenance
	Noise	➢ Noise Pollution	
	Oil drained from the air cleaner	➢ Soil contamination	
	Spillage of diesel from the diesel storage tank	➢ Soil contamination	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact ➢ Waste generation due to maintenance activities	
Routine Maintenance ➢ Crude oil / intermediate & finish Product storage tanks ➢ Production Plant area ➢ Utility Area ➢ Power Generation ➢ Korangi – Keamari (K - K) Pipeline ➢ Kemari Terminal (K.T)	Oil used for washings, etc	➢ Soil contamination	SOP's Maintenance SOP's Inspection SOP's Instrumentation NRL-SOP-HSE-001 NRL-SOP-HSE-002 NRL-SOP-HSE-031 NRL-SOP-FPR-001
	Discarded insulation material	➢ Health impacts	
	Miscellaneous scrap	➢ Soil quality degradation	
	During Maintenance activities, Possibility of fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact ➢ Waste generation due to maintenance activities	
Turnaround / Shutdown / Emergency Shutdown activities ➢ Reactor, Vessels, columns, Steam lines, Towers, heat exchanger, furnaces, pipelines, pumps compressors, along with sophisticated instrumentation and electrical installation. ➢ Liqua Blaster for tube cleaning ➢ Diesel Engine ➢ Oxygen / Acetylene cylinders for welding & cutting ➢ Mobile air compressor engine running ➢ Fork lifter for lifting ➢ Welding rectifier ➢ X-Ray machine ➢ Sand Blasting	Scale / hydrocarbon sludge	➢ Soil contamination ➢ Water contamination	NRL-SOP-HSE-001 NRL-SOP-HSE-002 NRL-SOP-HSE-003 NRL-SOP-HSE-004 NRL-SOP-HSE-005 NRL-SOP-HSE-006 NRL-SOP-HSE-031 NRL-SOP-HSE-036 NRL-SOP-HSE-040 NRL-SOP-FPR-001 NRL-SOP-FPR-008 SOP's Turnaround Planning / Local Manufacturing / Workshop SOP's Turnaround Monitoring SOP's Maintenance SOP's Inspection SOP's Instrumentation
	Solid Waste e.g. oily rags, damaged insulation etc.	➢ Soil degradation	
	Oily waste water	➢ Water Contamination	
	Volatile Organic Compounds (VOCs) from opened vessel	➢ Degradation of air quality ➢ Health Impact	
	Fugitive emissions	➢ Degradation of air quality ➢ Health Impact	
	Flushing steam	➢ Resource depletion	

Activity / Area	Aspect	Impact	Control / Mitigation
Dispensary Management ➢ 1st Aid ➢ Medicine Storage	Clinical & Biological waste generation	➢ Odor effects ➢ Diseases transmission ➢ Bacterial contamination ➢ Land contamination	NRL-SOP-DIS-002 NRL-SOP-DIS-003 NRL-SOP-DIS-004 NRL-SOP-ADM-003 NRL-SOP-ADM-004
Canteen Management ➢ Storage ➢ Food preparation ➢ Food serving ➢ Washing	Natural gas consumption Water consumption	➢ Natural resource depletion	NRL-SOP-PER-005 NRL-SOP-PER-010 NRL-SOP-TSR-009 NRL-SOP-TSR-011 NRL-SOP-TSR-012 NRL-SOP-HSE-031
	Food Waste	➢ Solid Waste Pollution	
	Domestic liquid waste	➢ Effluent ➢ Water contamination	
Workshop	Solid waste (Metal chips, Waste cotton rags, Packing materials, Unserviceable parts)	➢ Waste generation ➢ Land quality degradation	NRL-SOP-TLW-001 NRL-SOP-TLW-002 NRL-SOP-TLW-003 NRL-SOP-TLW-006 NRL-SOP-TLW-009 NRL-SOP-TLW-010 NRL-SOP-TLW-015 NRL-SOP-INS-022 NRL-SOP-MT3-014 NRL-SOP-MT2-006 NRL-SOP-MT2-011
	Noise	➢ Noise Pollution	
	Exhaust Emissions	➢ Air Pollution ➢ Degradation of air quality	
	Electricity usage	➢ Consumption of resource	
	Used oil	➢ Soil contamination ➢ Water Contamination	
Offices	Solid waste (Paper, Packaging, etc)	➢ Waste generation	NRL-SOP-ADM-003 NRL-SOP-CON-001 NRL-SOP-SCY-001 NRL-SOP-HSE-023 NRL-SOP-HSE-030
	Electricity usage	➢ Consumption of resource	
	Domestic Waste Water	➢ Consumption of resource ➢ Water pollution	
Motor Vehicles	Spark generation from exhaust causes fire	➢ Loss of property / life ➢ Air pollution ➢ Health impact	NRL-SOP-ADM-001 NRL-SOP-SCY-001 NRL-SOP-HSE-015 NRL-SOP-HSE-033 NRL-SOP-HSE-034
	Use of Fuel	➢ Consumption of resource	
	Exhaust Emission	➢ Air pollution ➢ Degradation of air quality	
	Noise	➢ Noise pollution	
Natural Disaster	Heavy Rain	➢ Water Contamination ➢ Soil contamination	NRL-SOP-HSE-006 NRL-SOP-HSE-007 NRL-SOP-HSE-008 NRL-SOP-HSE-009 NRL-SOP-HSE-010 NRL-SOP-HSE-016 NRL-SOP-HSE-023 NRL-SOP-HSE-024 NRL-SOP-FPR-007 NRL-SOP-FPR-008 NRL-SOP-FPR-009
	Thunder Storm	➢ Soil contamination	
	Lightening	➢ Fire	
	Earthquake	➢ Fire	

IMS (HSEQ) Objectives and Management Program

S.#	Department	Description	L.C	F.C	Total Rs. (000'0)
01	Projects	Additional amount for Reverse Osmosis Plant-IV (capacity 250,000 Imperial Gallons Per Day)	-	122,400	122,400
02	Technical Services	New API pump for Condensate Recovery System at OM-1	3,000	-	3,000
03	Technical Services	Procurement of Portable Excess Air Tester for Instant Monitoring of excess air from stack or Furnaces of the units & Boilers	600	-	600
04	IT&S	Procurement of Servers (3 Nos.) for SAP BI deployment, BI Production module and DR site KT (for backup purposes)	4,500	-	4,500
05	Inspection	Procurement of Niton Gun Analyzer (Metal Analyzer) to check the composition of plant related materials made Alloy.	-	5,100	5,100
06	Inspection	Digital Infrared Thermometer (Pyrometer) for measuring high temperatures on Furnaces, Pumps & other critical equipments	-	1,027	1,027
07	Utilities	Provision of Natural Gas Flow Totalizer at Boiler-4 to ascertain the quantity of Natural Gas consumption	30	150	180
08	Utilities	Procurement of Portable Desk Type conductivity meters (02 Nos.)	100	-	100
09	Lube-II Refinery	Replacement of paper / ink based recorders with Paperless Recorders (20 Nos.)	389	3,251	3,640
10	Lube-1 Refinery	Procurement and installation of Flow Totalizers for MEK-1 (02 Nos.)	800	-	800
11	Quality Control	Automatic Distillation Units ASTM D-86 for testing of Jet Fuel samples	475	2,310	2,785
12	Quality Control	Apparatus for performance Grade Asphalt	5,000	15,000	20,000
13	Keamari Terminal	Procurement & Installation of explosion proof lights on Stairs & Roof of Tank S-83	170	-	170
14	Fuel Refinery	Replacement of Temperature indicating boards for various units of Fuel refinery	320	3,060	3,380
15	Fire Protection	Replacement of Fire Water Network lines and associated infrastructure	10,000	-	10,000
16	Oil Movement	Replacement of 14” dia discharge line of 292-P-4A/B pump at API-II to Sea Water	1,600	-	1,600
17	Maintenance-II	Repair and Maintenance of DG & TG and other auxiliary equipments of Power Generation	1,500	-	1,500

Continual Improvement Process Safety Management Key Performance Indicators Monitoring



Fire Protection Infrastructure

Continual Monitoring Towards Applicable Legal Regulatory and Other Requirements

Legal Requirement	Applicable Mechanism
Working Environment • The Factories Act 1934 • Sindh Rules 1975	Monitoring of Labor Laws (NRL-SOP-CON-002) Solid Waste Disposal (NRL-SOP-ADM-003) Sanitation Management (NRL-SOP-ADM-004) EOBI Scheme (NRL-SOP-HUR-006) Leave Policy (NRL-SOP-HUR-007) Working Hours (NRL-SOP-HUR-008) Social Security Scheme (NRL-SOP-HUR-010) Labor Laws (NRL-SOP-HUR-011) Monitoring of Labor Canteen (NRL-SOP-HUR-019) Solid Waste management (NRL-SOP-HSE-031)
Air Emissions / Air Pollution • The Pakistan Panel Code 1860 • The Factories Act 1934 • Pakistan Environmental Act • NEQS	Monitoring Effluent water (NRL-SOP-HSE-032) Monitoring Gaseous Emission (NRL-SOP-HSE-033) Storm water channel (NRL-SOP-HSE-035) Evaluation of Compliance (NRL-SPR-EVC-008)
Medical Waste • The Pakistan Environmental Protection Act 1997	Solid Waste Disposal (NRL-SOP-ADM-003) Dispensary waste (NRL-SOP-DIS-002) Incinerator (NRL-SOP-OKR-033) Solid Waste management (NRL-SOP-HSE-031)
Soil & Effluent Waste • The Factories Act 1934 section 14 • The Pakistan Environmental Protection Act 1997	Compliance of NEQS (NRL-SOP-HSE-032) Storm water drain (NRL-SOP-ENG-006) API Sewer Network (NRL-SOP-ENG-007) Solid Waste Disposal (NRL-SOP-ADM-003) Sanitation management (NRL-SOP-ADM-004)
Marine Pollution • The Pakistan Environmental Protection Act 1997 • Pakistan Territorial Waters 1976 • Maritime Security Act 1994 • Environment 1973 constitution • Port Act 1908 Section 21	Compliance of NEQS (NRL-SOP-HSE-032) Effluent water from API (NRL-SOP-OKT-008) Procedure for pumping of liquid effluent from effluent treatment plant to sea (NRL-SOP-OKR-030)
Noise Pollution • Environment, 1973 constitution Environmental Protection Act • Motor Vehicle Ordinance 1965 • Motor Vehicles Rules 1969	Procedure for monitoring of noise level (NRL-SOP-HSE-034) Transport Management for company maintained vehicle (NRL-SOP-ADM-001)

Legal Requirement	Applicable Mechanism
Water Pollution • The Factories Act 1934 • Sindh Fisheries Ordinance 1980 • The Pakistan Environmental Protection Act 1997 • Environment and the 1973 constitution • NEQs	Compliance of NEQS (NRL-SOP-HSE-032) Sanitation management (NRL-SOP-ADM-004) Effluent water from API (NRL-SOP-OKT-008) Liquid effluent (NRL-SOP-OKR-030) Laboratory waste procedure (NRL-SOP-QCL-001) Evaluation of compliance (NRL-SPR-EVC-008)
Hazardous Substance and Waste • The Explosive Act 1884 • The Factories Act 1934 • The Pakistan Environmental Protection Act 1997 • The Factory Act 1934 • The Hazardous Substance Rules 1999	Handling / storage of materials (NRL-SOP-HSE-014) Empty chemical container (NRL-SOP-HSE-036) Solid Waste Disposal (NRL-SOP-ADM-003) Sanitation management (NRL-SOP-ADM-004) Dispensary waste (NRL-SOP-DIS-002) Laboratory waste (NRL-SOP-QCL-001) De-sludging of storage tank (NRL-SOP-OKR-021) De-sludging of asphalt tank (NRL-SOP-OKR-035) Contingency plan, chemical drums (NRL-SOP-OKR-036) Contingency plan (NRL-SOP-LR1-031) Contingency plan (NRL-SOP-LR2-037) Disposal of solid waste (NRL-SOP-MT3-011) Storage of HSD / Lube oil drums (NRL-SOP-OKT-015) Monitoring of chemical drums (NRL-SOP-WHS-008) Storage of filled gas cylinder (NRL-SOP-WHS-013)
Energy • The Electricity Act 1910 • KESC Control Order 1978 • Electricity Rules 1937 • Electricity Rules 1978 (Sindh) • Electricity Duty Rules 1964 • Electricity Ordinance 1965 • Electricity Control Act 1952 • Regulation of Generation, Transmission and Distribution of Electric Power Act 1997	License
Sand Blasting • The West Pakistan Hazardous Occupations (Sand Blasting) Rules, 1963	Sand blasting Procedure (NRL-SOP-HSE-004)
License to establish, maintain and work wireless telegraph in Pakistan Telegraph Act1885- and telegraph (Amendment) Act 1914.	License Maintenance of Wireless Communication System (NRL-SOP-INS-018)

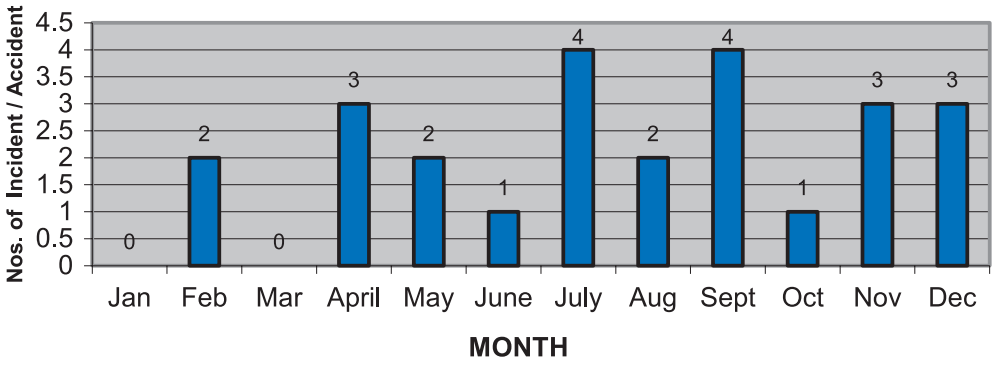
Legal Requirement	Applicable Mechanism
Emergency Response Plan • Spill Prevention • Containment and Clean-up (SPCC) Plans • The Pakistan Environmental Protection Ordinance, 1997; and Article VI, Section 6.9 (g)	(SPR-EPR-010), (SPR-OCP-013), (SOP-HSE-006), (SOP-HSE-007), (SOP-HSE-008), (SOP-HSE-009), (SOP-HSE-010), (SOP-HSE-017), (SOP-HSE-018), (SOP-HSE-019), (SOP-HSE-020), (SOP-HSE-021), (SOP-HSE-022), (SOP-HSE-024), (SOP-HSE-025), (SOP-HSE-026), (SOP-HSE-027), (SOP-HSE-028), (SOP-FPR-007), (SOP-FPR-008), (SOP-OKR-024), (SOP-OKR-025), (SOP-OKR-026), (SOP-OKR-032) (SOP-OKR-046), (SOP-OKT-014), (SOP-WHS-010), (SOP-WHS-011), (SOP-LR1-001), (SOP-LR1-008), (SOP-LR1-012), (SOP-LR1-017), (SOP-LR1-026), (SOP-LR1-031), (SOP-LR2-001), (SOP-LR2-008), (SOP-LR2-025), (SOP-LR2-016), (SOP-LR2-036), (SOP-LR2-042), (SOP-FRE-007), (SOP-FRE-034), (SOP-FRE-041), (SOP-FRE-046), (SOP-TLW-009)
Petroleum Storage / Refining / Transportation, • The Petroleum Act 1934 • Pakistan Petroleum Rules 1971 • The Petroleum Rules 1985 • LPG (Production and Distribution) Rules 1971	Plot plan from explosive department SOP's Oil Movement SOP's K.T SOP's STR SOP's Shipping
Boiler and Pressure Vessel • The Boilers and Pressure Vessels Ordinance 2002	Boiler Certificate
Gaseous Emissions • The Pakistan Environmental Protection Act 1997 • NEQs • The Pakistan Environmental Protection Ordinance 1983	Compliance of NEQS, (NRL-SOP-HSE-032) Procedure for Monitoring Gaseous Emission for compliance of NEQS (NRL-SOP-HSE-033) Procedure for Cleaning and maintenance of Storm water channel (NRL-SOP-HSE-035) Evaluation of Compliance (NRL-SPR-EVC-008)
New Projects • Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations 2000	EIA Reports IEE Reports Review identified projects (NRL-SPR-RIP-019) Agency approvals (NRL-SPR-AAP-012)
The Sindh Standard Weight and measures enforcement Rules, 1976	Lube Base Oil Shipment Procedure (NRL-SOP-SHG-002) Maintenance of Weigh Bridge System (NRL-SOP-INS-019)

Incident Investigation & Reporting System

The refinery has a procedure for the investigation of incidents, accidents and near misses, including root cause failure analysis. Incidents are summarised and reported to the HSE committees every year. The refinery also has a system for reporting Near Misses identification.

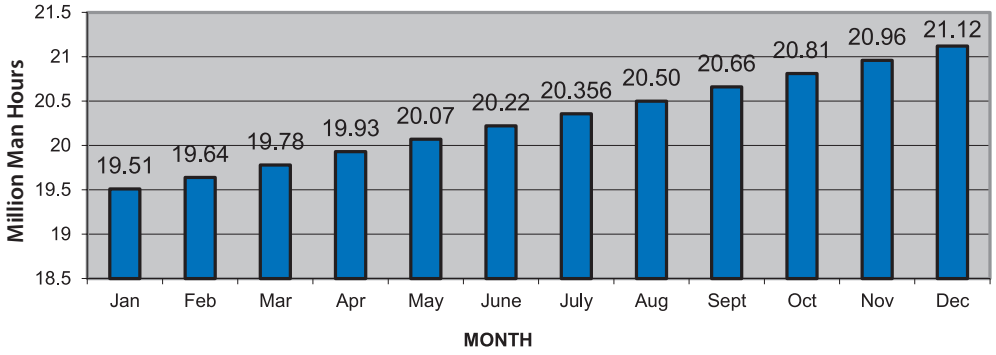
Any employee can raise one of these if they observe an unsafe situation and may recommend actions to be taken.

Incident & Accident Monitoring 2014



Safe Manhours

SAFE MAN HOURS 2014



Contractor M/S. Descon Safe Manhours During Turnaround of Lube-1 Refinery:

During Production Lube-1 Refinery Turnaround Contractor (M/s. Descon) 337516 safe manhours without Loss time Injury from 05-12-2014 to 07-01-2015.

Communication:

CORPORATE ENVIRONMENTAL REPORT
http://www.nrlpak.com/corp_env_report.html

Annual Report

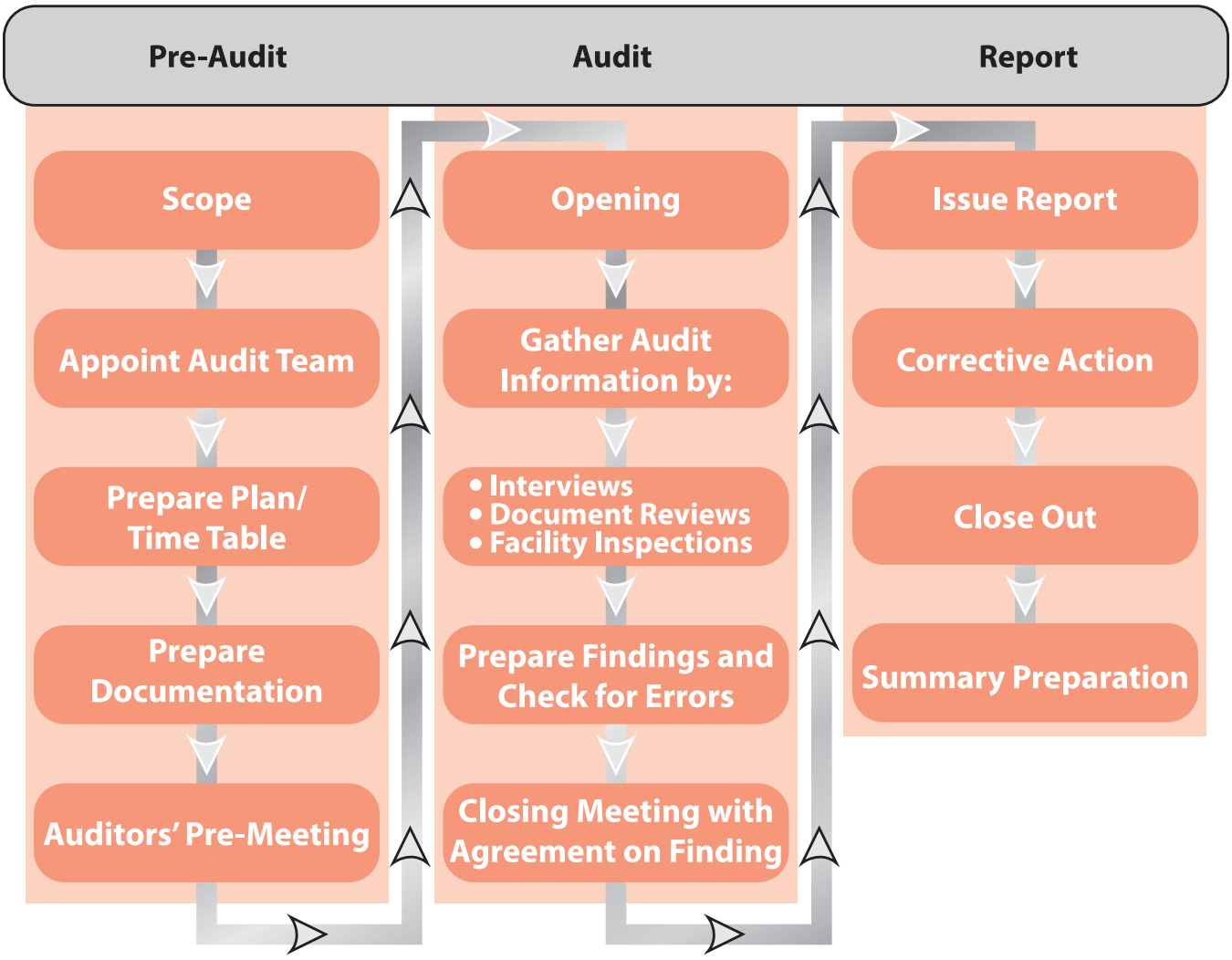
Annual Report are available to all the stake holders through NRL website at following link.
http://www.nrlpak.com/annual_reports.html

HSEQ Audit Reporting

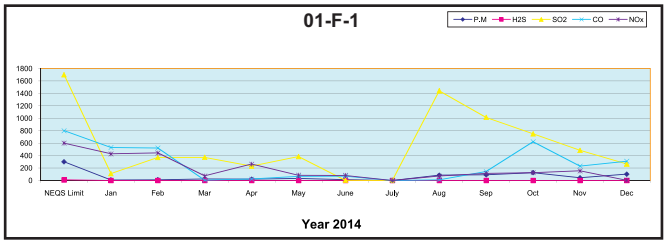
To maintain the site ISO, EMS and OSHAS accreditations, there are internal and external audits carried out every year. In addition to this, internal audits of individual department of the Health, Safety, Environment and Quality Management Systems are carried out every year.

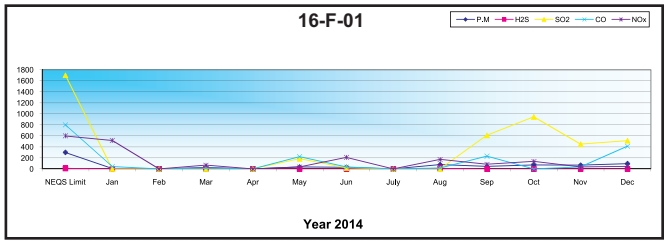
To achieve this there are a number of trained internal auditors in each refinery Department.

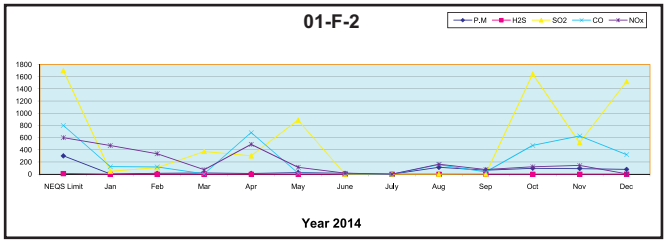
The Civil Defence Local Authority and Federal Authority also conduct audits once a year.

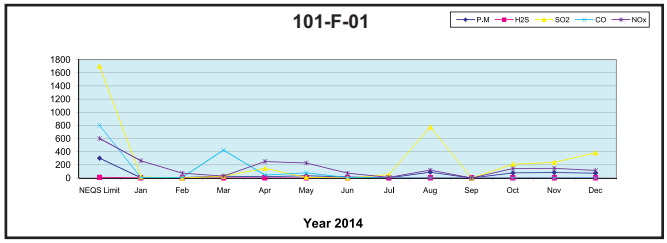


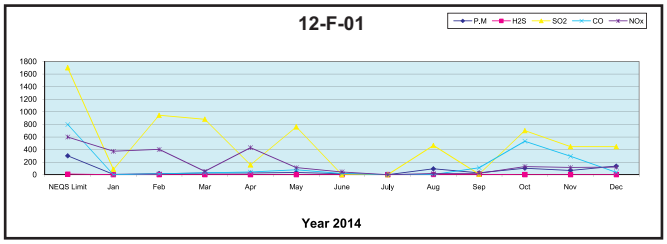
Emission Monitoring

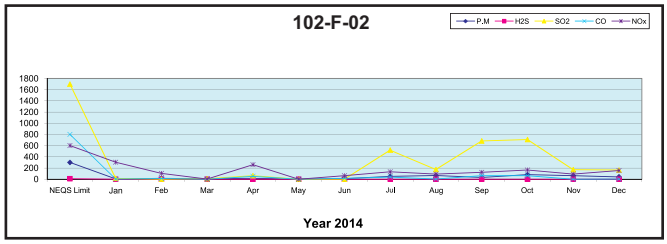


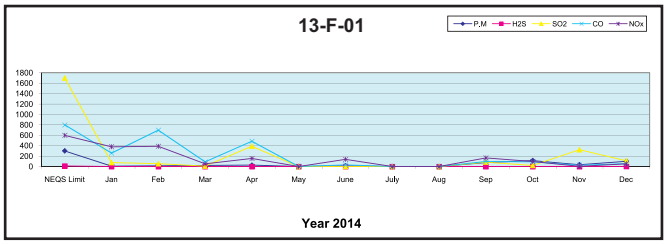


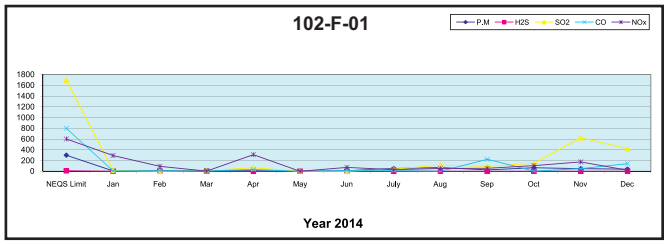


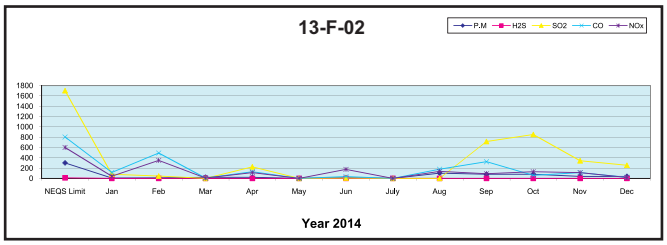


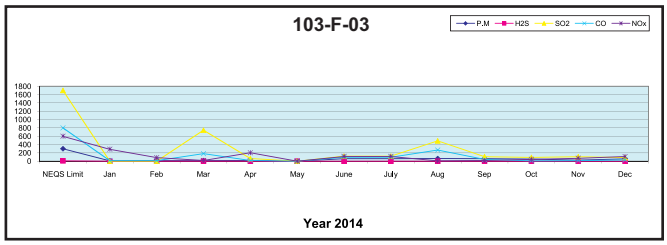


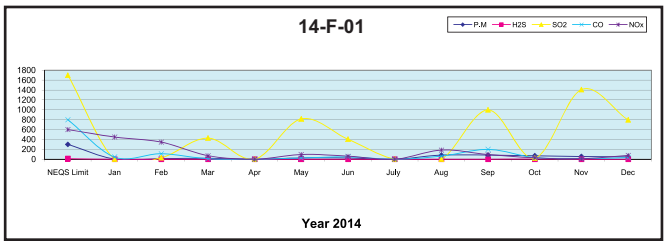


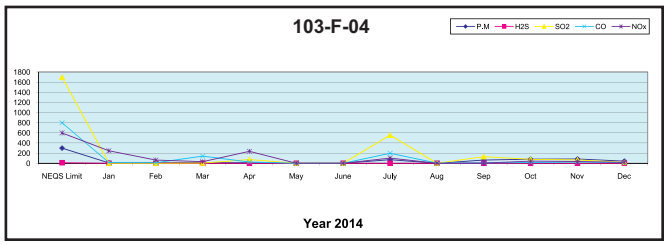


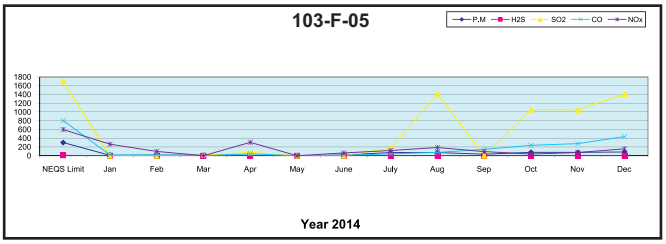








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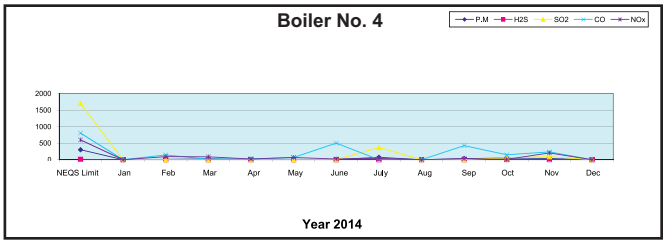
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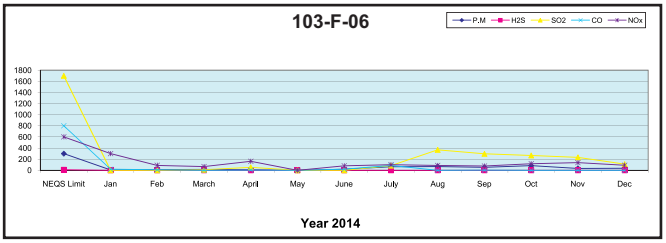
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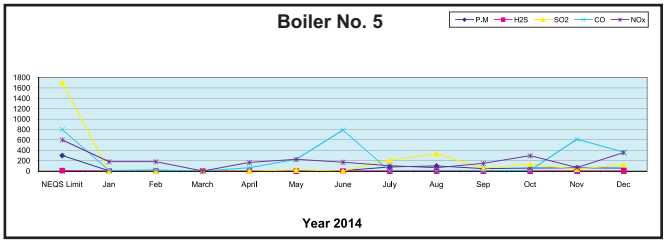
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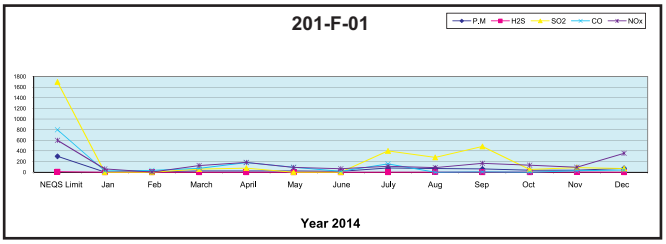
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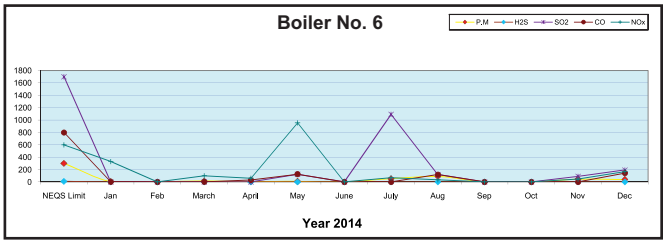
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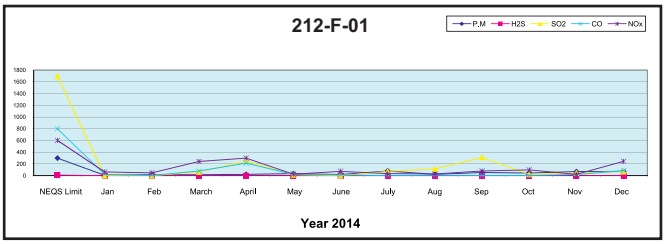
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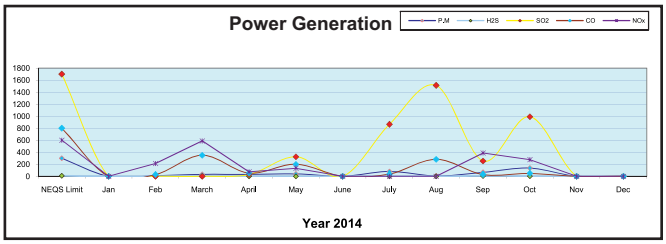
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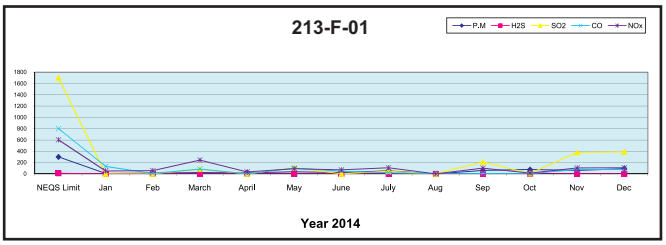
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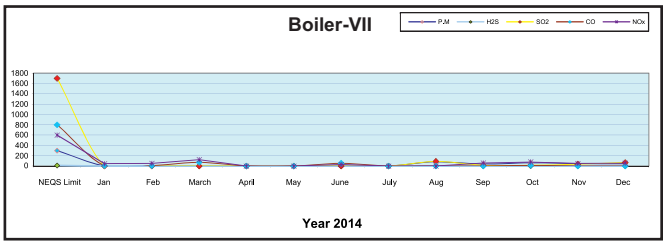
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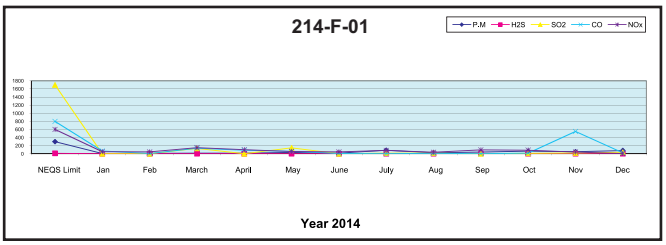
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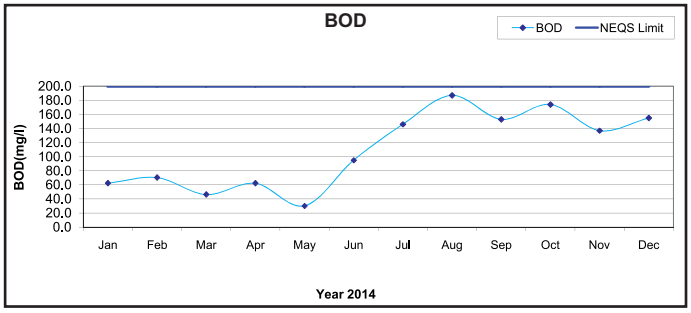
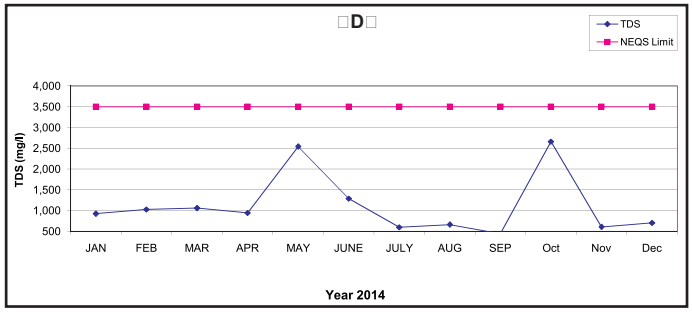
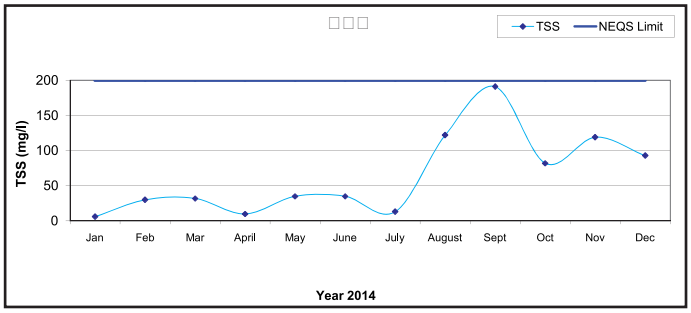
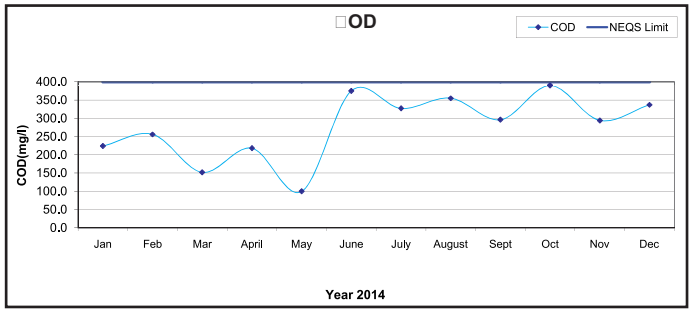
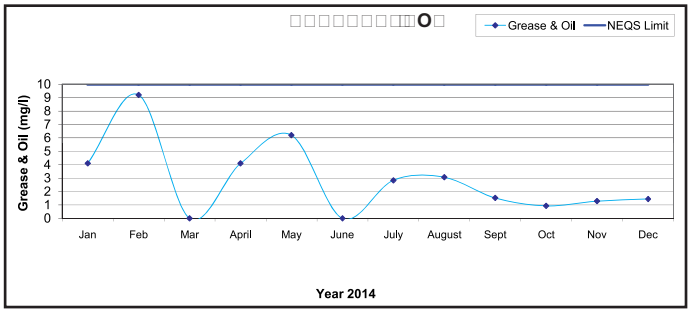
Effluent Monitoring

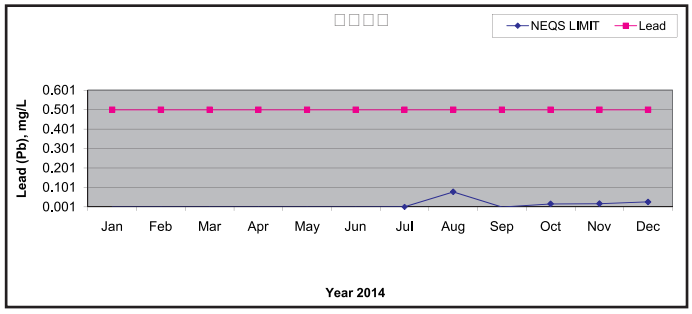


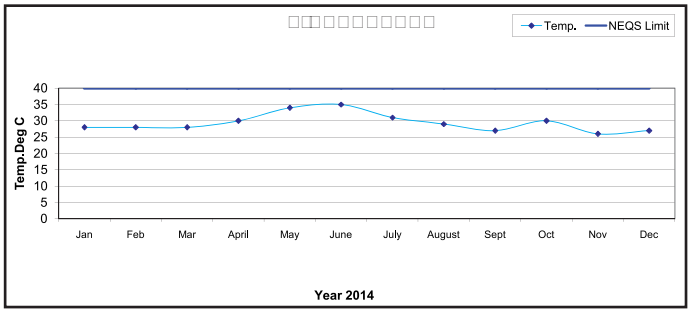




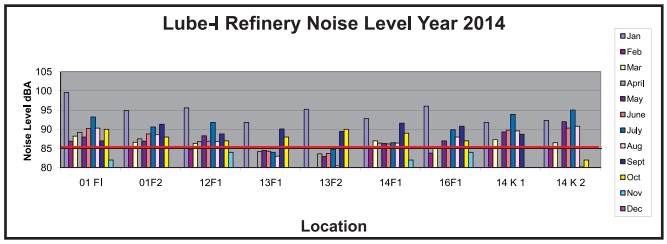


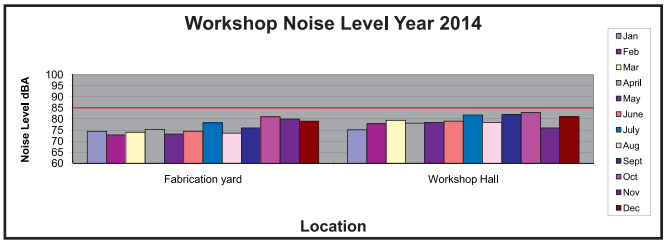


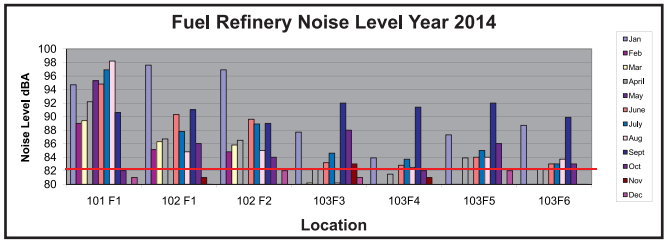


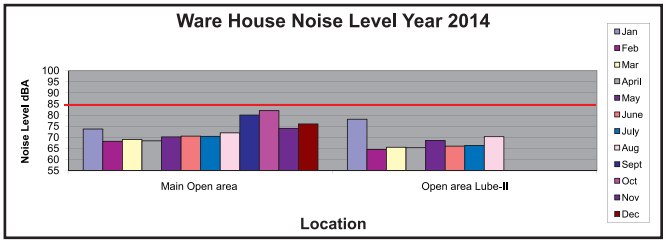


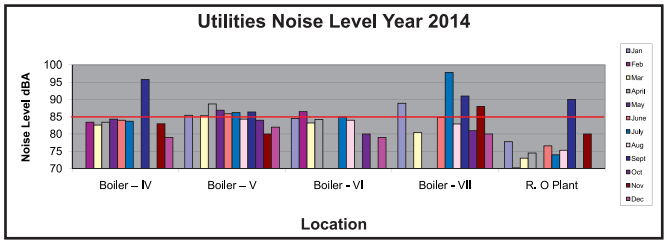
Noise Level Monitoring

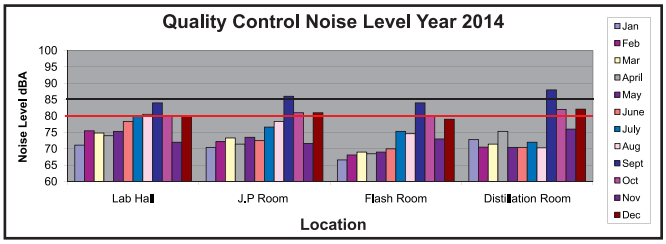


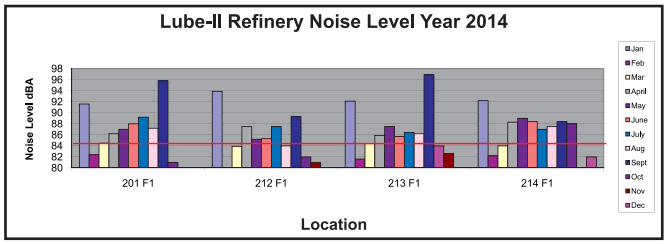


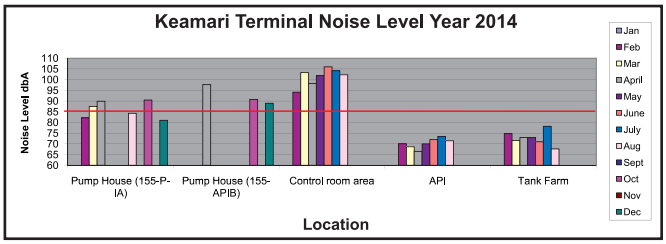


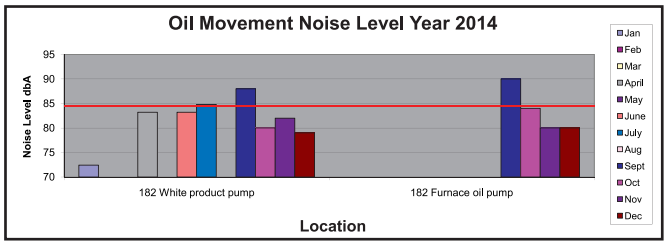


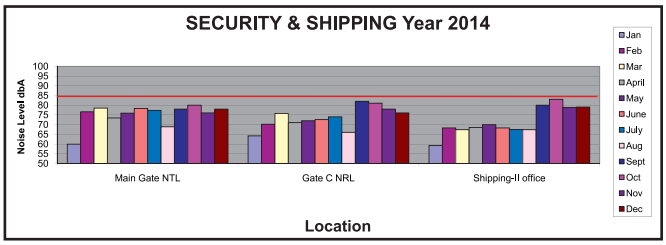


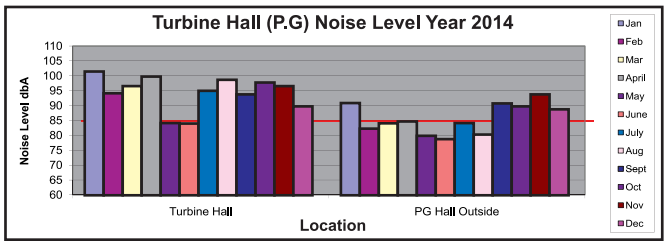


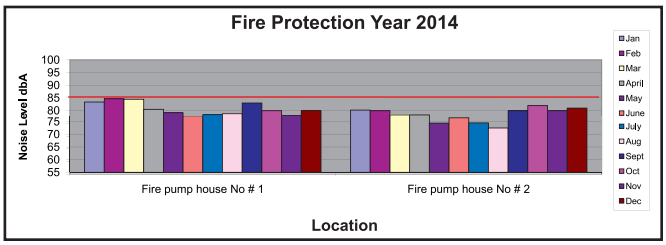












Identification and Traceability

Contractor's Meeting

Contractor Coordination Meeting

Tool Box Talk

Management Review Meeting


Operational Meeting


Safety Communication

United Insurance Broker Visit


IMS (HSEQ) Steering Committee Meeting


National Highway Authority Visit


ENAR Petrotech Visit


Civil Defence Team Visit


Sindh Environmental Protection Agency Visit


IMS (HSEQ) External Audit


Contractor's Safety Meeting


Live Fire Drills


Hose Handling Practice


Contractor Training


HAZOP Meeting


Fire Tender Operational Performance


Fire Extinguisher Hands On Training


Emergency Preparedness and Response

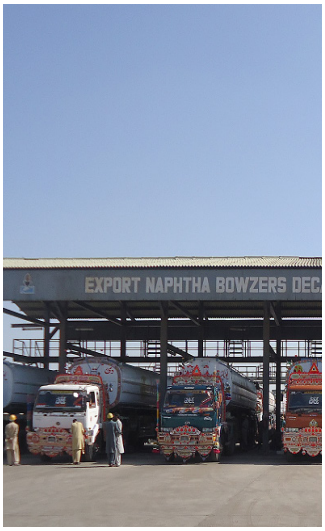



Plantation In Refinery


Tank Fire Suppression


Library Picture


Decanting Bowzer



Core Working Committee Meeting


Cricket Tournament


Laboratory Picture

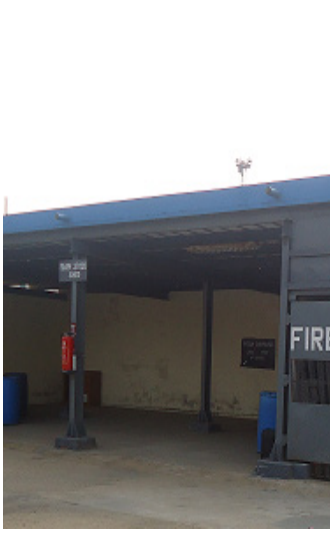

Dispensary Photograph

Ware House Shifting for Tee Planks

Canteen Picture

Lube-1 Refinery Turnaround

Preservation of Product



Award


11th Annual
Excellence Awards 2014


Excellence Awards 2013


TRANSPARENCY


BUSINESS EARTH TALK
www.accaglobal.com
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OFFICIAL
PHOTOGRAPHER
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Excellence Awards 2

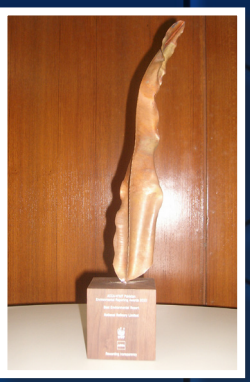

ORGANIZED BY
NFEH
National Forum for Environment & Health
www.nfeh.org
Certificate of Appreciation
11th Annual Environment Excellence Awards 2014
After careful consideration of track record, services and performance of
NATIONAL REFINERY LTD
This certificate is being awarded in 2014
M. Naeem Qureshi, President, NFEH


ORGANIZED BY
NFEH
National Forum for Environment & Health
www.nfeh.org
Certificate of Appreciation
Celebrating 10 years
10th Annual Environment Excellence Awards 2013
After careful consideration of track record, services and performance of
NATIONAL REFINERY LTD
this certificate is being awarded on July 05, 2013
MANAGED BY
MEDIA PARTNER
UNEP
M. Naeem Qureshi


Intertek
Presented to
National Refinery Limited


8TH ANNUAL ENVIRONMENT EXCELLENCE AWARDS 2012
National Forum for Environment & Health
www.nfeh.org
Awarded to
NATIONAL REFINERY LTD


NFEH
National Forum for Environment & Health
8th Annual Environment Excellence Awards 2011
PRESENTED TO

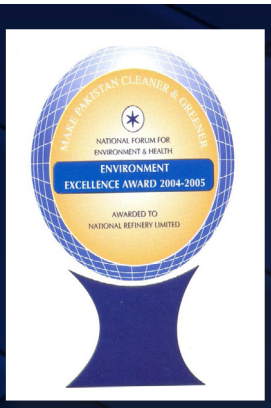



NFEH
National Forum
6th Annual Environment Excellence Award 2009
National Refinery Ltd


3rd Health & Environment National Excellence Award 2007
CERTIFICATE
NATIONAL REFINERY LIMITED
HELP
S. Arif Ali
Khadeja Balkhi


2nd Health & Environment National Excellence Award 2006
HELP
M/s. National Refinery Limited
KARACHI GREEN CLUB
S. Arif Ali
J.Pereira
Zakiullah Khan


Annual Environmental Excellence Award 2007
National Refinery Ltd.



Honors

S. No.	Certification / Award	Period
1	Certification of BS-OHSAS 18001: 2007 Occupational Health and Safety Management System	12th Consecutive year 2003 - 2014
2	Certification of ISO 14001: 2004 Environmental Management System	12th Consecutive year 2003 - 2014
3	Certification of ISO 9001: 2008 Quality Management System	8th Consecutive year 2007 - 2014
4	Annual Environment Excellence Award National Forum for Environment & Health (NFEH)	11th Consecutive year 2004 - 2014
5	ACCA-WWF Pakistan Environmental Reporting Award	2003, 2009 and 2010

Membership:

National Refinery Limited is member of the following industry association(s) or trade body(ies):

1 Oil Companies Advisory Committee (OCAC)
2 Petroleum Institute of Pakistan (PIP)
3 Lubricants Business Society of Pakistan (LBSP)
4 Employers Federation of Pakistan (EFP)
5 Karachi Chamber of Commerce and Industries (KCCI)
6 Korangi Association of Trade and Industry Karachi (KATI)

Statement of Compliance

TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan being an independent assessor carried out a 3rd party assessment of NRL for IMS(HSEQ) Management System requirements compliance. After a thorough audit, the auditor of TUV Austria recommended for confirmation of 03 mentioned standards certification in April 2014.

The scope covered during surveillance audit for NRL includes manufacturing, supply, marketing, sales and export of wide range of petroleum & petrochemical products. This statement is being presented to comply with the requirement contained Environmental Management System ISO 14001:2004, Occupational Health and Safety Management System OH&SMS 18001:2007 and Quality Management System, ISO 9001:2008 respectively for the purpose establishing a frame work of continual improvement, where by National Refinery Limited managed in compliance with the IMS (HSEQ) Management System requirement.

During the surveillance audit of the company conducted a competent team of TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan, it has been found that NRL has established, implemented and maintained requirement contained in the standard through the following manner.

- The ultimate responsibility of ensuring the implementation of IMS (HSEQ) Management System lies with the IMS (HSEQ) Management Council.
- NRL establish, document, implement, maintain and continually improve its IMS (HSEQ) Management System in accordance with the international standard and determine how it will full fill these requirements.
- NRL define and document the scope of IMS (HSEQ) Management System that covers manufacturing, supply, marketing, sales and export of wide range of petroleum & petrochemical products at refinery, Korangi-Keamari pipeline and Keamari Terminal.
- NRL IMS (HSEQ) Policy statement within the defined scope it is well appropriate, documented, updated, maintained, communicated, publicly available, provide a frame work for setting and reviewing objectives and targets included a commitment to continual improvement, to comply with applicable legal and other requirement.
- NRL establish, implement and maintained procedures to identify environmental aspects, impact assessment, hazard risk assessment for all it routine and non-routines activities.
- NRL establish and maintain the procedure for identifying and accessing the legal and other requirement that are applicable.
- NRL establish and maintain IMS (HSEQ) objectives at relevant function and levels these objectives and targets are measurable, consistent with IMS (HSEQ) policy including the commitment to continual improvement. The defined roles and responsibilities, meantime frame by which these objectives are to be achieved addressed in the Management program.
- The roles, responsibilities, authorities and accountabilities of personnel who manage, perform and verify activities are well defined, documented and communicated in order to facilitate IMS (HSEQ) Management System. The availability of resources ensure by the Management for the effective implementation IMS (HSEQ) Management System.
- A well structured training mechanism has been implemented for the effective implementation of IMS (HSEQ) Management System.
- IMS (HSEQ) Management System information for internal and external communication with stakeholders in relation to, environmental aspect, pertinent OH&S, product, inquiries, contract, customer feed back, including customer complaints, NRL has proper implemented through effective procedural mechanism.
- The level of detail of the documentation sufficient to describe the IMS (HSEQ) management System and its parts works together, and to provide direction on where to obtain more detailed information on the operation of specific parts.
- NRL create and maintain documents in a manner sufficient to implement the IMS (HSEQ) Management System. Document and data control, traceability, identification, availability and disposal of obsolete version well managed.

- NRL evaluate those of its operations processes and activities that are associated with its identified significant environmental aspects, risks where control measure need to applied in order to fulfill the requirement of IMS (HSEQ) policy. NRL establishing and maintaining documented procedures and Quality plan to cover situations where there absence could lead to deviation from IMS (HSEQ) Policy and objective.

- The developed emergency preparedness and response procedures suits its own particular need, include consideration of nature of on site hazards, scale of an emergency situation / accident, appropriate methods for responding an accident, internal and external communication plans, corrective and preventive action, testing drills, evacuation routes, evacuation maps, assembly area, mock drills.

- The defined monitoring and measurement procedures are well maintain to monitor and measure IMS (HSEQ) Management System performance, data collected from monitoring and measurement analyzed to identify the patterns and obtain information used to implement corrective and preventive action. The procedure provide both qualitative and quantitative measure, monitoring of the extent to met IMS (HSEQ) objective, proactive measure of performance that monitor compliance with the IMS (HSEQ) Management System, operational criteria and applicable legislation and regulatory requirement.

- NRL demonstrate that it has evaluated compliance with legal requirements including permits or licenses.

- A well defined procedure has been implemented in NRL with responsibility & authority for handling and investigation non conformance / accident / incident. Taking action to mitigate any consequences arising from non conformance / incident / accident. The initiation and completion of corrective and preventive action. Confirmation of the effectiveness of corrective & preventive action taken.

- Internal audit procedure has been proper implemented and maintained and is effective in meeting the IMS (HSEQ) policy and objectives, review the results of previous audits, provide information results of audits to management. This procedure covers the scope, frequency, methodologies and competences, as well as the responsibilities and requirements for conducting audits and reporting results.

- Management review conducted at planned internals, to ensure its continuing suitability, adequacy and effectiveness, including assessing opportunities for improvement has been carried out by NRL management, output include any decisions and action related to possible changes to IMS (HSEQ) policy, objectives and other element consistent will the commitment to continual improvement.

This has been verified through audit that NRL has a proper and effective IMS (HSEQ) Management performance reporting system to ensure its adequacy, reliability and accuracy and recommended for continuation. This system is well incorporated in the business processes with a high level of commitment observed during audit process. In addition we have gone through Corporate Environmental Report 2014 and found it appropriate to the above IMS (HSEQ) Management system.

Rizwan Tanveer
Manager Planning & Coordination
TUV Austria Bureau of Inspection
and Certification (Pvt.) Limited- Pakistan

Glossary

LR1	Lube-I Refinery
FRE	Fuel Refinery
LR2	Lube-II Refinery
OKR	Oil Movement
OKT	Keamari Terminal
UT1	Utilities
FPR	Fire Protection
MT1	Maintenance-I
TLW	Turnaround Planning / Local
	Manufacturing / Workshop / Auto shop
PGR	Power Generation
MEL	Maintenance (Electrical)
MT3	Maintenance-III
INS	Instrumentation
HSE	Health Safety & Environment
TSR	Technical Services
QCL	Quality Control
PPE	Production Planning & Economics
PRJ	Project
CON	Contract
ENG	Engineering
MBL	Management Block
DIS	Dispensary
ISP	Inspection
SMS	Shipping, marketing & Sales
STR	Supply & Trade Relation
WHS	Ware House
IMP	Import
LRU	Local Purchase
ITS	Information Technology & System
LCA	Legal & Corporate Affairs
HUR	Human Resource
PER	Personnel
SCY	Security
SPR	System procedures
DDC	Document Data Control
MRM	Management Review Meetings
SRR	Structure, Roles, Responsibilities and
	Accountabilities
CPA	Corrective and Preventive Action

AWT	Awareness, Training and Competence
CAC	Communications, Consultation and
	Participation
MAM	Calibration, Monitoring and
	Measurement
EVC	Evaluation of Compliance
AUD	Internal Audit
EPR	Emergency Preparedness and Response
TRR	Tracking of Regulations and other
	Requirements
AAP	Agency Approvals for EMS & OHSAS
OCP	Operational Control
CCP	Contractor Control
AIA	Environmental Aspects & Impacts Analysis
EOT	Environmental Objectives, Targets and
	Management Programs
HRA	Occupational Health & Safety Hazards
	Identification and Risks Assessment
OTM	Occupational Health & Safety
	Objectives and management Program
RIP	Review of (HSEQ) Identified Projects
NCR	Control of Non-Conforming Product
QOB	Quality Objectives, Targets and
	Analysis of Data
CO2	Carbon Dioxide
Db	Decibel-unit for measuring noise level
EPA	Environmental Protection Agency-
	Govt. of Pakistan
IGPD	Imperial Gallons Per Day
LTI	Lost Time Injury
MR	Management Representative
MSDS	Material Safety Data Sheet
NEQS	National Environment Quality Standards
Nox	Oxides Nitrogen
Sox	Oxides Sulphur
OH&SMS	Occupational Health Safety
	Management System
OHSAS	Occupational Health and Safety
	Assessment Series

Feedback Form

The performance evaluation data sheet assist us for further improvement regarding any aspect for this report.

You are requested to fill the questionnaire for each statement, please indicate your response with the respective rating given below and add your valuable comments / suggestions where appropriate.

SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

S. #		SA	A	N	D	SD
01	Reporting mechanism and presentation					
02	Understandability, readability, accessibility					
03	Completeness					
04	Credibility & communication					
05	Comprehensive navigation					
06	Integration with financial statements					
07	Environmental performance					
08	Compliance & no-compliance record					
09	Management commitment including environmental occupational health & safety vision, strategy and related policies.					
10	Application of guidance or standard					

Comments / Suggestions

Many many thanks for your time in answering these questions. Your answers / input will play a significant link for the improvement of this report.

Please Forward to

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National Refinery Limited
P.O.Box # 8228
Korangi Industrial Zone,
Korangi-Karachi
E-mail: mgrhse@nrlpak.com
Phone No. 92-21-5064981-87
Ext: 2559

Your Name: _____

Your Designation: _____

Organization: _____

Email: _____

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