

HUMAN RESOURCE  
DEVELOPMENT CENTRE

# Sustainability Report 2015



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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 2015 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 and 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 23.08 million Safe Man-Hours without Lost Time Injury (LTI) as on December 31, 2015. 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, 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 2015.
- 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.
- In order to make the report more realistic & reliable, statements from the reports of our third party assessors like ISO 14001:2004, OHSAS 18001:2007 and ISO 9001:2008 have been reproduced in the last chapter.
- The report is being assured externally from TUV Austria.



# Our Environmental Mission and Guiding Environmental Principles

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National Refinery limited 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.

As a corporate entity we 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 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):

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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.



## NRL Signatory **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

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



The preservation of environment is the integral component of our operations. We at NRL focus on a comprehensive policy to address Environment, Safety and Occupational Health issues and ensure its effective implementation through collaborative mechanism.

In order to produce environment friendly and Euro II compliant diesel, NRL has taken initiative for installation of Diesel Hydro Desulphurization project which is expected to be completed by June 2017. We are also focused to meet Country's growing demand of motor gasoline. These steps will eventually enable us to produce Motor Spirit and High Speed Diesel with lesser amount of unfriendly contents that will alleviate the damage to ozone layer. However, the cost being incurred in the project is substantial but NRL is comprehensively directed towards the target of generating healthy environment.

Our understanding towards the responsibility of keeping hazard free environment has been very clear as refinery operations always challenge the integrity of the environment. However, we aim our activities to be strict when it comes for the preservation of the world.

I am confident that our commitment towards our mission, goals and objectives will surely improve the environment around us and will contribute towards global cause.

**Dr. Ghaith R. Pharaon**  
Chairman

# Message From Deputy Chairman and Chief Executive Officer

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Global warming is one of today's most serious issues. The continuous emission of carbon dioxide is the leading cause for the surge in greenhouse gases. As a corporate citizen we are fully aware of our responsibilities towards conservation of natural resources and a pollution controlled environment so as to make this planet a better place for our communities.

We are committed towards the compliance of National Environmental Laws & Regulations. We are monitoring gaseous emissions and Liquid effluents through SMART (Self Monitoring and Reporting Tool) program. NRL effluent and stack emissions are not only being continuously monitored but also tested at EPA approved forum and all results are well within targets as mentioned in NEQs (National Environmental Quality Standards).

We are also committed to focus on Occupational Health and Safety and as a result of continuous efforts of NRL team we have successfully achieved 23.08 million Safe Man-Hours without LTI (Loss Time Injury). We are also focussed on the training and development of our employees in order to maintain a sustainable culture ensuring long term benefits.

We reaffirm our commitment to continue with our efforts for a green and clean environment.

**Shuaib A. Malik**  
Deputy Chairman & CEO





# Vision

**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.

# Mission

- 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

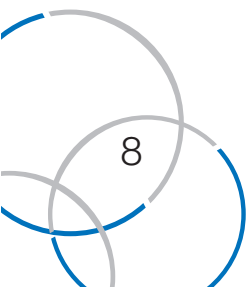
We generate new ideas and creative approaches to upgrade and update our refinery to best available technology and processes so that our products are at the level of internationally accepted standards.

## 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	Member
Alternate to Dr. Ghaith R. Pharoan	

Babar Bashir Nawaz	Member
Alternate to Wael G. Pharaon	

Bahauddin Khan	Member
Shaikh Ather Ahmed	Secretary

## Human Resource and Remuneration (HR&R) Committee

Mosa Bojang	Chairman
Bahauddin Khan	Member
Babar Bashir Nawaz	Member
Alternate to Wael G. Pharaon	

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 Metropolitan 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](http://www.nrlpak.com)  
Email: [info@nrlpak.com](mailto: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](mailto:secretariat@thk.com.pk)  
Website: [www.thk.com.pk](http://www.thk.com.pk)

# NRL at a Glance

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## 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 2015	Rs. 30,133.7 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  
Attock Solar (Pvt.) 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  
Attock Solar (Pvt.) Limited

**Director**

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

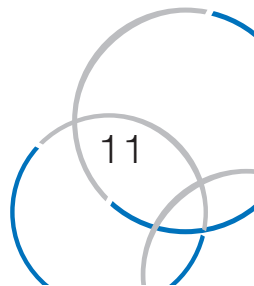
**Resident Director**

Pharaon Investment Group Limited Holding SAL

**Group Regional Chief Executive**

**Chairman**

NRL Management Staff Pension Fund  
NRL Management Staff Gratuity Fund





**Mr. Musa Bojang**  
(Independent Director)

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**Team Leader**

Budget & Performance Management Department-  
Islamic Development Bank



**Mr. Tariq Iqbal Khan**  
(Independent Director)

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**Director**

Pakistan Oilfields Limited  
Gillette Pakistan Limited  
International Steels Limited  
Lucky Cement Limited  
Packages Limited  
Silk Bank Limited  
FFC Energy Limited  
CAS School (Private) Limited



**Mr. Bahauddin Khan**  
(Independent Director)

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**Chief Operating Officer**

Bank Alfalah Limited



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

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**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)

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**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)

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**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  
NRL Management Staff Gratuity 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

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It gives me immense pleasure to welcome you all, on behalf of the Board of Directors, at the 52nd Annual General Meeting of your Company and to present annual review of results and audited financial statements for the year ended June 30, 2015.



Global economic growth during the outgoing year has witnessed some improvements in macroeconomic indicators of Pakistan. In addition, the Government has signed agreements with China, including agreements for power generation and Pakistan/China Economic Corridor, which are encouraging steps towards the future national economic growth. Government has further reduced mark-up rate to 7% to increase investment activity in the country.

As external factors indicate a favourable outlook, your Company's loss after tax in first six months has turned into profit after tax mainly due to better margins in the last two quarters. During the financial year crude oil prices in the international market took a nosedive from US\$ 109 to US\$ 44 and then stayed around US \$60 in the last quarter. Your Company achieved profit after tax of Rs. 3,709 million as compared to Rs. 962 million in the last year.

After improved margins, fuel segment marginally remained in loss after tax of Rs.81 million as compared to loss after tax of Rs.2,835 million in the last year whereas lube segment maintained its profitability by achieving a profit after tax of Rs.3,790 million compared to Rs.3,797 million.

Desulphurization project to reduce environmental hazard and Isomerization project for profitability are in progress. Chinese contractors are actively working while financial closure has been attained from a Syndicate of Banks. Your company is seriously putting all efforts to maintain the pace of the project and complete the same within the contractual period.

Looking at the financial results and ongoing projects, I would like to appreciate the efforts of the management, employees and all other stakeholders for their untiring efforts and anticipate that company will continue receiving support, confidence and trust of all. Your company will continue to strive through better management and improve efficiency to achieve even better results for the times to come.

Dr. Ghaith R. Pharaon  
Chairman  
August 12, 2015  
Rawalpindi





# Refinery Upgradation Projects

The Company is in process of upgradation of its plant to comply with the Government directives to produce environment friendly HSD and to meet Country's growing demand of motor gasoline in Phase-I. Phase-II shall be considered for implementation after the completion of Phase-I.

- **Diesel Desulphurization and Isomerization**

Chinese contractors have started the execution of contract for Diesel desulphurization (DHDS) and Isomerization (ISOM) projects. The company estimates that contract value plus other cost of the project would be US\$ 349 million. Initial mobilization advance has been paid by the company to the contractors for supply of plant and machinery and for construction and installation of the plant. The company has entered into syndicate agreement with consortium of banks for financing of these projects for an amount of Rs.24.2 billion at 1.7% above six months KIBOR. The loan is to be repaid in 10 years semi-annual payments with grace period of two years. Government directed to complete the project by 31 December 2015, however, due to various impediments the project would be completed by the mid of 2017, accordingly, your company has applied to government for the extension.

The Government has agreed to increase the deemed duty on HSD by 1.5% on completion of these projects, which will increase refinery margins. The improved margins due to conversion of Naphtha into Motor gasoline will also contribute favourably to improve company's margins.

- **Other Upgradation Projects**

These projects are planned in Phase-II of refinery upgradation projects and award of job to EPC Contractor shall be considered after finalization of Desulphurization and Isomerization projects.

- **Two Stage Unit at Lube-I 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.

- **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 and the project is expected to be awarded during the year 2015-16.

- **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 for installation is likely to be awarded during the year 2015-16.

- **Reverse Osmosis Plant**

Considering the scarcity of water and its requirement for refinery operations, Company has planned another 250,000 gallons per day Reverse Osmosis plant on which work is in progress.

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

The Company has successfully completed the upgradation of its ERP system from 4.6c to ECC-6 including additions of certain modules. The new version and modules of SAP has enhanced tool for streamlining the work and for improved management and financial reporting.

# Corporate Social Responsibility

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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 as a donation to Child Association to help deprived children.

During the year company has paid Rs.200,000 to Ziauddin University for advertisement / purchase of souvenirs for students. The company is making such

contribution for the betterment of institutions providing education to young generation.

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.

## Employees & Management Relations

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The cordial relationship between the management and union persisted unabatedly. The productivity achieved reflects the concerted and sincere collective endeavours. The Company lays emphasis on enhancing the sports activities and has provided the required facilities to achieve this objective which may go a long

way in maintaining good health of the employees, boosting up their morale and sense of belonging. The major events held during the year are Inter-Department Cricket Tournament, participation of NRL Cricket team in PARCO Cricket Tournament.

## Contribution to National Exchequer

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During the financial year, the Company contributed Rs. 40,231 million to the National exchequer in the shape of direct and indirect taxes and earned valuable foreign exchange of US\$ 157 million through the export of Naphtha and Lube Base Oils.

In addition to the above, the Company has paid to government Rs. 4,656 million as discount and windfall levy on account of local crude oil and condensates purchased from oil and gas exploration companies.

## Human Resource Development

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Human Resource of the Company is playing a very significant role in achieving the short and long-term corporate and strategic objectives of the Company. Therefore, your Company focuses special attention on their training and development. Various staff members were nominated for local courses and workshops in different technical and non-technical disciplines. In addition to hands on executive training programs, the

Company has also conducted apprenticeship program where theoretical and practical training in Refinery operations and maintenance was imparted which will not only meet the additional requirement of trained manpower for expansion projects of the Company but would extend a great help to the Petroleum Refining industry in the availability of trained manpower.



# Our Products

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## FUEL PRODUCTS

Motor Gasoline (MOGAS)  
Kerosene (SKO)  
Jet A-1  
JP-8  
High Speed diesel Oil (HSD)  
Light diesel oil (LDO)  
Furnace Oil (F.O)  
Liquefied Petroleum Gas (LPG)  
Naphtha (For Export)

## LUBE BASE OILS

65N-HVI  
100N-HVI  
150N-HVI  
400N-HVI  
500N-HVI  
BS-HVI  
650N-MVI  
BS MVI  
SPINDLE OIL

## ASPHALT

Paving Grade 40/50  
Paving Grade 60/70  
Paving Grade 70/80  
Paving Grade 80/100

## SPECIALITY PRODUCTS

Benzene  
Toluene  
Xylene  
Wax  
Slack Wax  
Rubber Process Oil  
Extract Oil

# Credit Rating

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The long term entity rating of the Company is “AA+” (Previous: “AA+”). The short-term entity rating has been maintained at “A1+”. These ratings denote a very low

expectation of credit risk emanating from a very strong capacity for timely payment of financial commitments.

# No. of Shareholders

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No. of Shareholders of the company as on June 30, 2015 is 4361

# 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 NBFIs 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, 2015.
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 12, 2015

# Statement of Value Added

	2015		2014	
	Rupees in million	%	Rupees in million	%
<b>Revenue Generated</b>				
Gross sales revenue	188,935		249,769	
Less: Bought in material and services	142,677		205,968	
	46,258		43,801	
Add: Income from Investment	1,107		797	
Other income	418		639	
	1,525		1,436	
<b>Total Revenue</b>	47,783	100.0 %	45,237	100.0 %
<b>Revenue Distributed</b>				
<b>To Employees remuneration as:</b>				
Salaries, wages and benefits	1,700	3.5 %	1,603	3.6 %
<b>To Government as:</b>				
Levies	39,762	83.2 %	41,288	91.3 %
Company taxation	1,851	3.9 %	918	2.0 %
Worker's fund	412	0.9 %	139	0.3 %
	42,025	88.0 %	42,345	93.6 %
<b>To Shareholders as:</b>				
Cash Dividend	800	1.8 %	-	0.0 %
<b>Retained in the business:</b>				
Depreciation and amortization	349	0.6 %	327	0.7 %
Net earnings	2,909	6.1 %	962	2.1 %
	3,258	6.7 %	1,289	2.8 %
	47,783	100.0 %	45,237	100.0 %



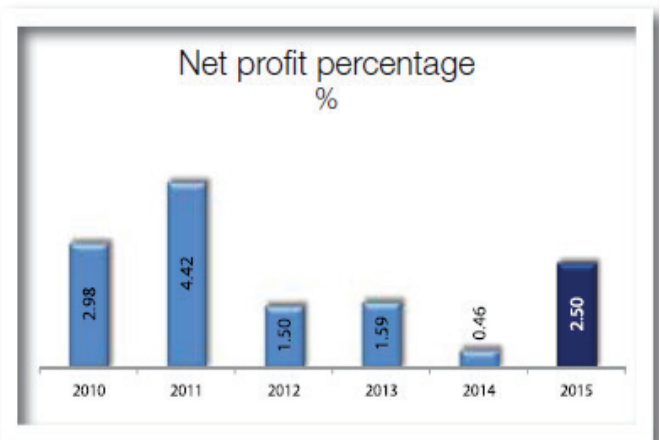
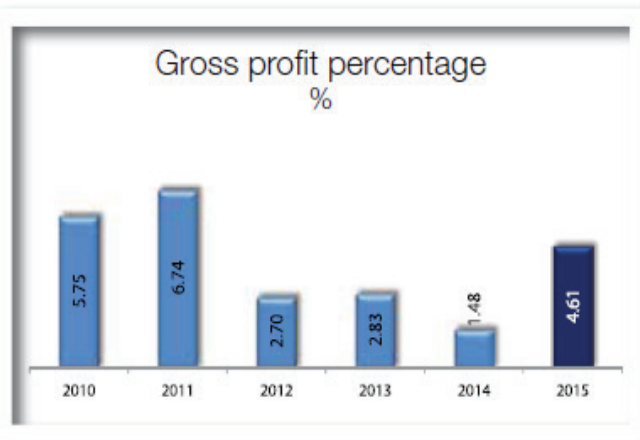
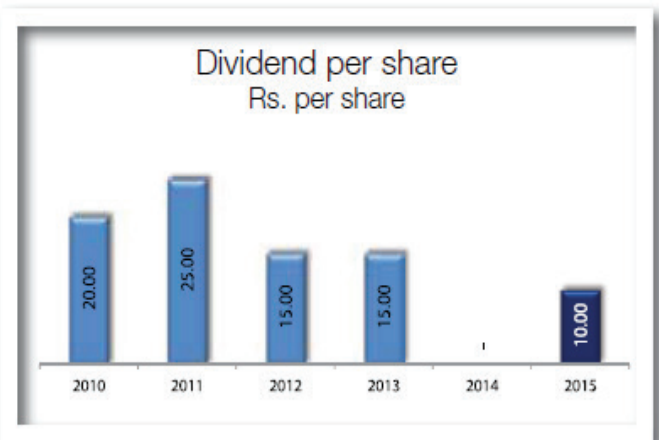
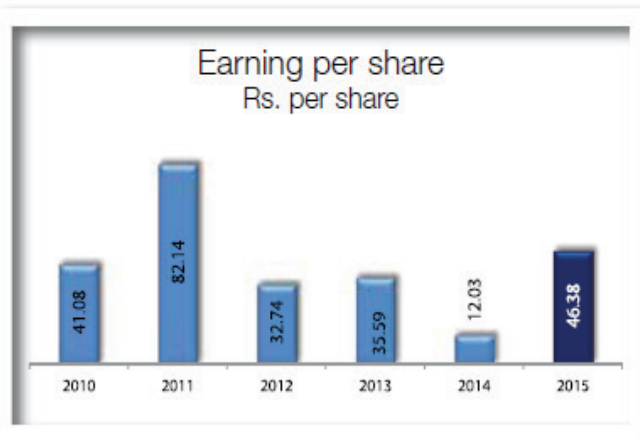
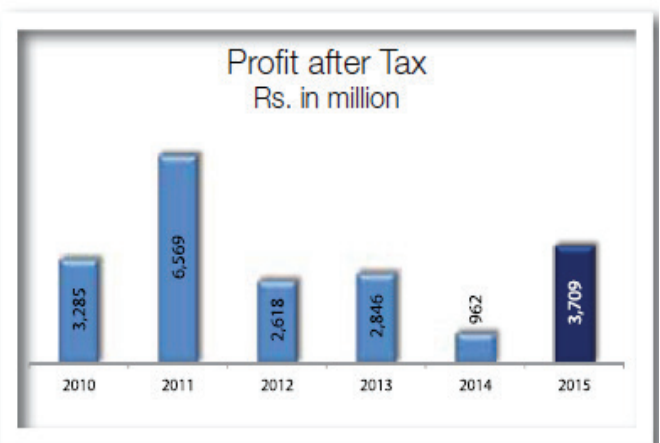
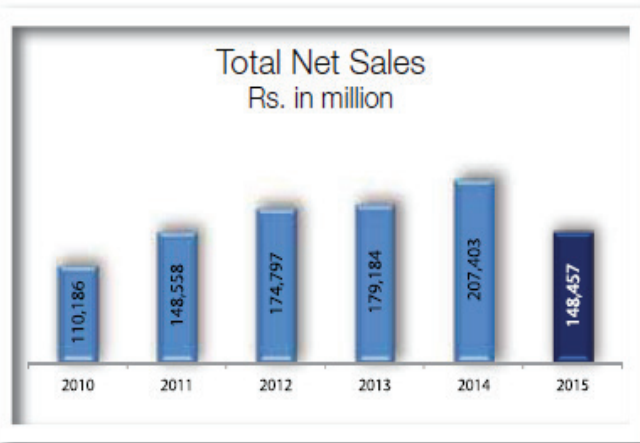


# Six Years At A Glance

	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
Rupees in Million						
<b>Profit and Loss Account</b>						
Net Sales	148,457	207,403	179,184	174,797	148,558	110,186
Cost of Sales	141,611	204,344	174,118	170,075	138,551	103,854
Purchases	126,374	200,565	166,130	171,149	141,383	98,964
Gross Profit	6,846	3,060	5,067	4,722	10,007	6,333
Operating Profit	6,413	2,732	5,347	5,795	10,179	5,831
Profit before tax	5,560	1,880	4,477	4,452	10,029	5,136
Profit after tax	3,709	962	2,846	2,618	6,569	3,285
<b>Balance Sheet</b>						
Share Capital	800	800	800	800	800	800
Reserves	29,334	25,794	25,994	24,491	23,808	18,838
Shareholder equity	30,134	26,594	26,794	25,290	24,607	19,638
Fixed Assets	8,066	5,061	4,363	3,696	3,235	3,248
Current Assets	39,901	47,465	51,232	53,323	53,366	47,868
Current Liabilities	17,163	25,802	28,440	31,492	31,858	31,862
Net current assets / liabilities	22,738	21,664	22,792	21,831	21,508	16,006

		2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
<b>Profitability Ratios</b>							
Gross profit	%	4.61	1.48	2.83	2.70	6.74	5.75
Net profit to sales	%	2.50	0.46	1.59	1.50	4.42	2.98
EBITDA Margin to sales	%	3.98	1.06	2.68	2.72	7.02	5.20
Return on Equity	%	12.31	3.62	10.62	10.35	26.69	16.73
Return on Capital Employed	%	13.08	3.60	10.93	10.50	29.69	17.76
<b>Liquidity Ratios</b>							
Current Ratio	Times	2.32	1.84	1.80	1.69	1.68	1.50
Quick / Acid test ratio	Times	1.53	0.92	1.01	0.89	1.07	1.13
Cash to Current Liabilities	Times	1.01	0.34	0.56	0.32	0.28	0.51
<b>Activity / Turnover Ratios</b>							
Inventory Turnover	Days	47.59	40.89	49.54	47.32	40.46	41.68
Debtors turnover	Days	21.17	18.39	24.35	28.18	36.82	50.86
Creditors turnover	Days	45.72	37.82	53.03	55.47	67.63	88.67
Total Assets turnover ratio	Times	3.09	3.93	3.22	3.06	2.62	2.13
Fixed assets turnover ratio	Times	18.40	40.98	41.07	47.30	45.93	33.92
<b>Investment / Market Ratios</b>							
Earnings per share basic and diluted	Rs.	46.38	12.03	35.57	32.74	82.14	41.08
Price earning ratio	Times	5.00	17.90	6.76	7.07	4.29	4.45
Dividend yield ratio	Times	4.31	-	6.23	6.48	7.10	10.94
Cash Dividend payout ratio	Times	21.56	-	42.17	45.82	30.44	48.69
Dividend cover ratio	Times	4.64	-	2.37	2.18	3.29	2.05
Cash Dividend per share	Rs. /share	10.00	-	15.00	15.00	25.00	20.00
Market value per share at year end	Rs. /share	232	215	241	231	352	183
Breakup value per share	Rs. /share	377	333	336	316	308	246

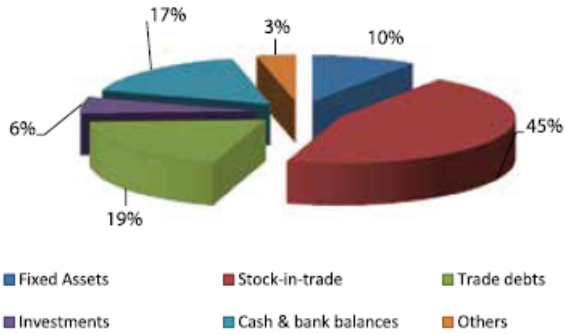
# Financial Performance **Graphic Presentation**



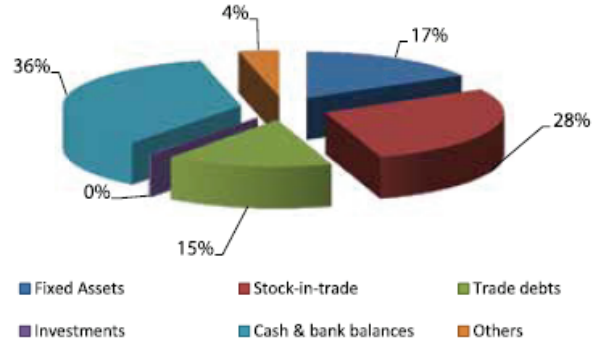
## Balance Sheet Composition

### Assets

As at June 30, 2014



As at June 30, 2015

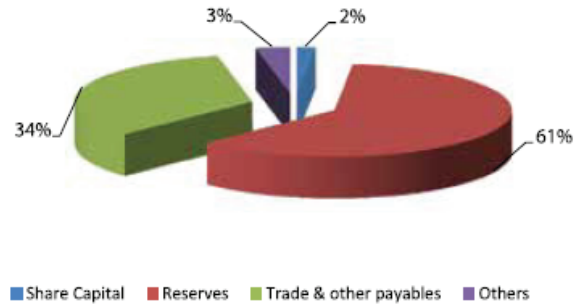


## Share Capital, Reserves and Liabilities

As at June 30, 2014

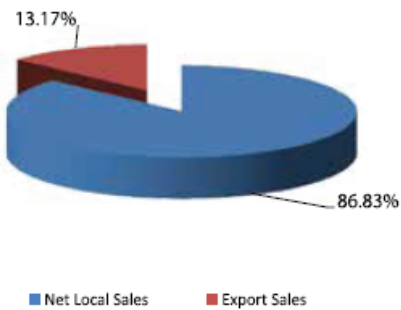


As at June 30, 2015

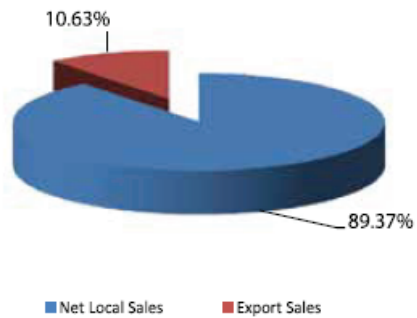


## Composition of Local and Export Sales

2013-14



2014-15





**AUDITORS' REPORT TO THE MEMBERS**

We have audited the annexed balance sheet of National Refinery Limited as at 30 June 2015 and the related profit and loss account, statement of comprehensive income, cash flow statement and statement of changes in equity together with the notes forming part thereof, for the year then ended and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit.

It is the responsibility of the Company's management to establish and maintain a system of internal control, and prepare and present the above said statements in conformity with the approved accounting standards and the requirements of the Companies Ordinance, 1984. Our responsibility is to express an opinion on these statements based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the above said statements are free of any material misstatement. An audit includes examining on a test basis, evidence supporting the amounts and disclosures in the above said statements. An audit also includes assessing the accounting policies and significant estimates made by management, as well as, evaluating the overall presentation of the above said statements. We believe that our audit provides a reasonable basis for our opinion and, after due verification, we report that:

- (a) in our opinion, proper books of accounts have been kept by the Company as required by the Companies Ordinance, 1984;
- (b) in our opinion:
  - (i) the balance sheet and profit and loss account together with the notes thereon have been drawn up in conformity with the Companies Ordinance, 1984, and are in agreement with the books of accounts and are further in accordance with accounting policies consistently applied;
  - (ii) the expenditure incurred during the year was for the purpose of the Company's business; and
  - (iii) the business conducted, investments made and the expenditure incurred during the year were in accordance with the objects of the Company;
- (c) in our opinion and to the best of our information and according to the explanations given to us, the balance sheet, profit and loss account, statement of comprehensive income, cash flow statement and statement of changes in equity together with the notes forming part thereof conform with approved accounting standards as applicable in Pakistan, and, give the information required by the Companies Ordinance, 1984, in the manner so required and respectively give a true and fair view of the state of the Company's affairs as at 30 June 2015 and of the profit, total comprehensive income, its cash flows and changes in equity for the year then ended; and
- (d) in our opinion no Zakat was deductible at source under the Zakat and Ushr Ordinance, 1980 (XVIII of 1980).

  
Chartered Accountants  
Karachi

Dated: 17 August 2015

Name of the engagement partner: Farrukh Rehman

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Kabul: Apartment No. 3, 3rd Floor, Dost Tower, Haji Yaqub Square, Sher-e-Nau, Kabul, Afghanistan; Tel: +93 (779) 315320, +93 (799) 315320



## 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

# Description of Facilities **Location & Layout**

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.

## **National Refinery Limited:**

NRL, is the largest petroleum-refining complex of Pakistan and comprises of three refineries & a BTX plant located in the industrial zone of Korangi in Karachi Metropolitan Area, 15 KM South East of the center of Karachi. 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 with 1.5 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  
Chemical Used in Various Processes**

Chemical Name / Brand Name	Function
Caustic Soda	For neutralization & removal of Sulphur compounds.
Ammonia	For pH control.
PERC (Perchloroethylene)	Uses 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 removed olefins.
Propane	Used in De-asphalting process. It acts as a solvent & separates the asphalt from the oil.
Furfural	To remove the non-paraffinic 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**  
**Chemical 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:



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.



### 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



### 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 Naphtha, Heavy Naphtha and Kerosene are treated at Mercox 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 H<sub>2</sub>S, Nitrogen to ammonia (NH<sub>3</sub>), Halide to HCl and oxygen to H<sub>2</sub>O. 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 De-asphalting 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°C. 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 and 200,000 300,000 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 Fuels refinery, Lube I refinery 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

<b>S.No</b>	<b>Sustainability Reporting Indicator's</b>
<b>1.</b>	<b>Strategy and Analysis</b>
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
<b>2.</b>	<b>Organizational Profile</b>
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; <ul style="list-style-type: none"> <li>• Number of employees, • Number of operations</li> <li>• Net sales • Total capitalization broken down in terms of debt and equity and</li> <li>• Quantity of products or services provided</li> </ul>
2.9	Significant changes during the reporting period regarding size, structure, or ownership
2.10	Awards received in the reporting period
<b>3.</b>	<b>Report Parameters</b>
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 <ul style="list-style-type: none"> <li>• Determining materiality</li> <li>• Prioritizing topics</li> </ul>
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)
<b>4.</b>	<b>Governance, Commitments and Engagement</b>
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

<b>S.No Sustainability Reporting Indicator's</b>	
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.
<b>5. Management Approach and Performance Indicators</b>	
<b>Economic</b>	
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
<b>Economic Performance</b>	
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.
5.4.4	Significant financial assistance received from government.





<b>S.No</b>	<b>Sustainability Reporting Indicator's</b>
	<b>Market Presence</b>
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
	<b>Indirect Economic Impacts</b>
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
	<b>Environmental</b>
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
	<b>Materials</b>
5.5.5	Materials used by weight or volume.
5.5.6	Percentage of materials used that are recycled input materials.
	<b>Energy</b>
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.
	<b>Water</b>
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.
	<b>Biodiversity</b>
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.
	<b>Emissions, Effluents, and Waste</b>
5.5.20	Total direct and indirect greenhouse gas emissions by weight.

<b>S.No</b>	<b>Sustainability Reporting Indicator's</b>
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 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.
	<b>Products and Services</b>
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.
	<b>Compliance</b>
5.5.32	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.
	<b>Transport</b>
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.
	<b>Overall</b>
5.5.34	Total environmental protection expenditures and investments by type.
	<b>Labor Practices and Decent Work</b>
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
	<b>Employment</b>
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.
	<b>Labor / Management Relations</b>
5.6.9	Percentage of employees covered by collective bargaining agreements.
5.6.10	Minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements.



<b>S.No</b>	<b>Sustainability Reporting Indicator's</b>
	<b>Occupational Health and Safety</b>
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.
	<b>Training And Education</b>
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.
	<b>Diversity and Equal Opportunity</b>
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.
	<b>Equal Remuneration for Women and Men</b>
5.6.19	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.
	<b>Human Rights</b>
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.
	<b>Investment and Procurement Practices</b>
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.
	<b>Non-Discrimination</b>
5.7.10	Total number of incidents of discrimination and corrective actions taken.
	<b>Freedom of Association and collective Bargaining</b>
5.7.11	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.

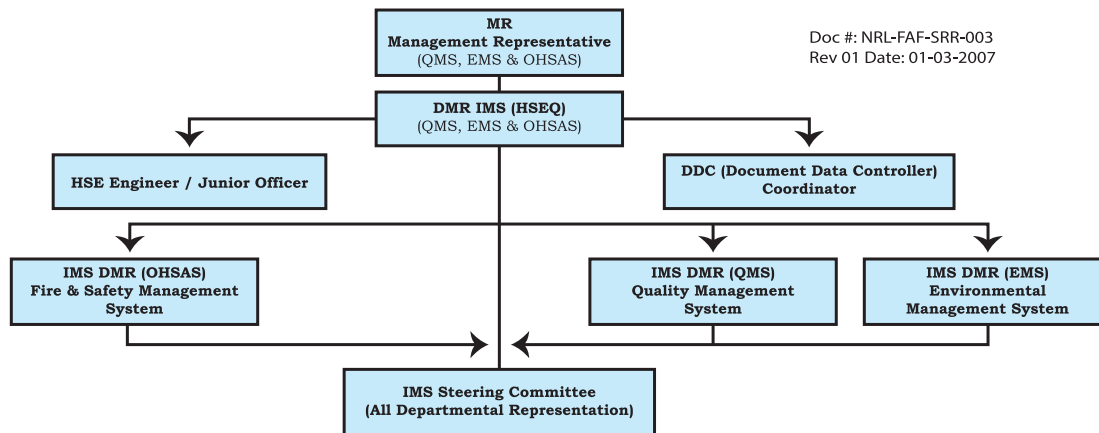
<b>S.No</b>	<b>Sustainability Reporting Indicator's</b>
	<b>Child Labor</b>
5.7.12	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.
	<b>Forced and Compulsory Labor</b>
5.7.13	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor
	<b>Security Practices</b>
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.
	<b>Indigenous Rights</b>
5.7.15	Total number of incidents of violations involving rights of indigenous people and actions taken.
	<b>Assessment</b>
5.7.16	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.
	<b>Remediation</b>
5.7.17	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms.
	<b>Society</b>
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
	<b>Local Communities</b>
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.
	<b>Corruption</b>
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.
	<b>Public Policy</b>
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.
	<b>Anti-Competitive Behavior</b>
5.8.13	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices and their outcomes.



<b>S.No Sustainability Reporting Indicator's</b>	
<b>Compliance</b>	
5.8.14	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.
<b>Product Responsibility</b>	
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.
<b>Customer Health and Safety</b>	
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
<b>Product and Service Labeling</b>	
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.
<b>Marketing Communication</b>	
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.
<b>Customer Privacy</b>	
5.9.12	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.
<b>Compliance</b>	
5.9.13	Monetary value of significant fines for noncompliance with laws and regulations concerning the provision and use of products and services.

# IMS (HSEQ) Management System

## IMS (HSEQ) Responsibilities Chart



## 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

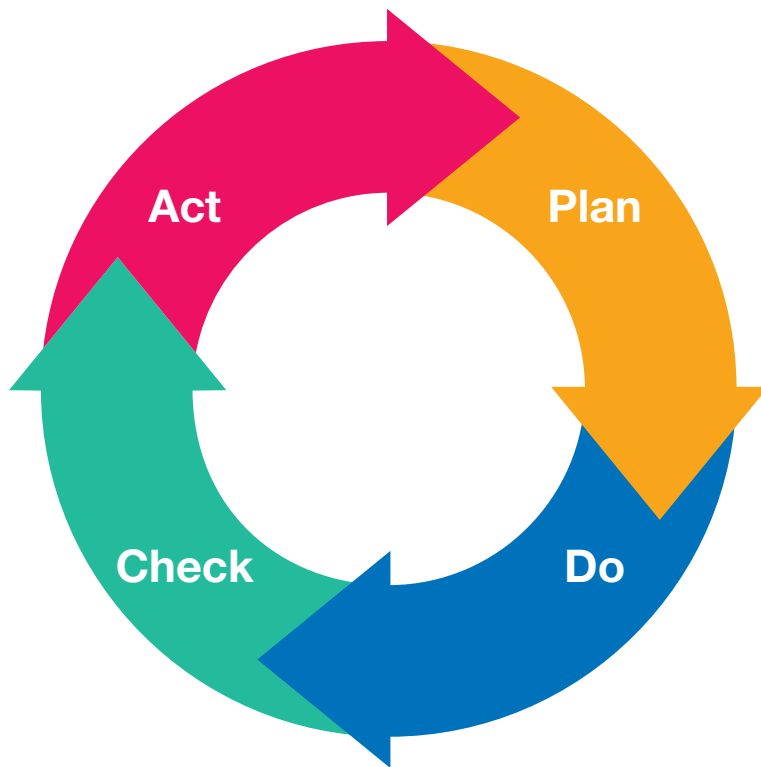


# Integrated Management System

## 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

<b>S.NO</b>	<b>Procedure No</b>	<b>Procedure Title / Situation Description</b>
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





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 ISO-9001, ISO-14001 and OHSAS 18001 accreditation. Re-certification by TUV took place in April 2015.

## Training

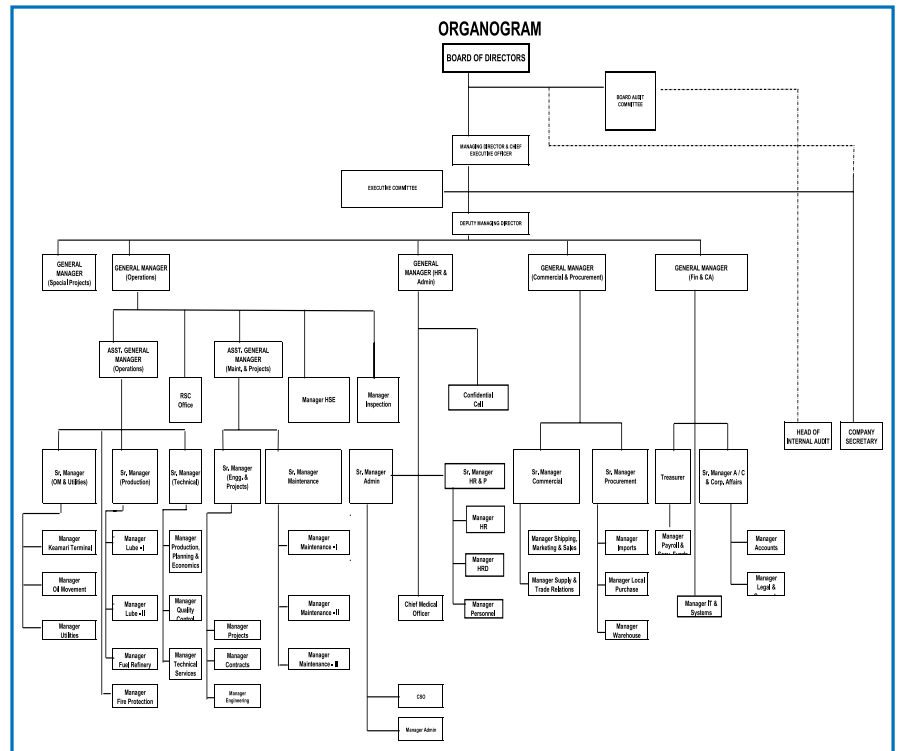
The Operator training program is well established. The training programme includes training in standard operating procedures, emergency operating procedures and skills based training. New Operators with a Technical Diploma receive 4 months classroom and 18 months on the job training, with formal assessment every 3 months. The classroom 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 by HRDC experts. 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 switchgear 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. The permit to work system also controls any work activity around the pipeline corridor from the refinery to the terminal.

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 logbook, and a separate register is maintained containing instructions regarding the on-going work.



Safety officers also make daily safety walk about with Operational staff and carry out audits of all work permits using a detailed checklist.

## 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

logbook in which they record all important plant issues. The Panel Operator log sheet, Field Operator checklist and Foreman logbook 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 visited during the survey was found to be to 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. Pipework drain plugs and blinds were also in place.

## Maintenance

The Maintenance Division / Section has three departments as follows –

- i) Maintenance I - responsible for the maintenance and repair of process area equipment.
- ii) Maintenance II - responsible for the 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. Corrective Maintenance Work Orders are raised in a Job Order book by Operations and are then entered into the SAP Corrective Maintenance module by the Maintenance Planners.

## Rotating Equipment

The Maintenance team plans to carry out a full Preventative Maintenance (PM) survey on all critical rotating equipment the completion of PM as a KPI and have a target of 80%, achieving 69% in the 12 months.

The PM survey is done using a checklist generated from SAP which includes checking alignment, greasing, lube oil quality and lube oil levels.

The Inspection Department carries out manual vibration checks more critical pumps and compressors every month. Daily checks are carried out on any machines. The vibration monitoring data is recorded and trended in a spreadsheet database.

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 checked.

The refinery carries out PM checks on pump motors every month including the use of an infrared 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 equipment inspections are done using API codes, and procedures are documented. 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.

### Fixed Static Equipment

All static equipment including pressure vessels and pipes within the refinery and storage terminal are inspected internally during the turnarounds.

External inspection of tanks, including tank wall thickness measurements, is carried out. Paint thickness on all tanks is also checked.

LPG storage vessels are inspected externally, and internally which meets API 510 guidelines.

Furnaces are monitored continuously with skin temperature probes and daily visual checks for flame impingement.

### 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 draughts men, 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. Modified drawings must be signed off by Operations Engineers as well as functional Engineers, the HSE Manager, the Engineering Manager, the Plant Manager and Operations Management.

## HAZOP

The Management of change MOC process includes the requirement for a HAZOP to be done on all plant changes. This is managed by the HAZOP Committee which is chaired by the HSE Manager. The HSE Manager is an experienced HAZOP chairman, a number of Engineers on site to participate in HAZOPs.

## 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 conducted 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.

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, 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 a clear Occupational Health, Safety, Environment and Quality Policy which covers all HSE aspects. In addition, the Refinery achieved OHSAS 18001:2007, ISO 9001:2008 and ISO 14001:2004 certification. External audit and re-certification by TUV Austria took place in April 2015.

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 meet regularly to 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 and they 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.

NRL had achieved 22.72 million man-hours without a Lost Time Injury as on December 31, 2015. 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.

## IMS (HSEQ) Auditing

To maintain the site ISO 9001:2008 (Quality Management System), ISO 14001:2004 (Environmental Management System) and OSHAS 18001:2007 (Occupational Safety & Health Management System) 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, EPA and Federal Authority also conduct audits once a year.

## Incident Investigation

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

## 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 watchtowers around the boundary wall. In addition, there are sentry posts around the process area which is regarded as the fall-back area for defence. The administration buildings and main entrance to the refinery are within this walled area. The main entrance comprises a double fixed gate. 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.



Similar to the refinery, the terminal is also surrounded by a wall topped by barbed wire with watch towers and CCTV cameras.

Security vehicles patrol the pipeline corridor between the refinery and the terminal. There are two vehicles traveling in opposite directions continuously along this corridor.

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, but there is no full plant make-safe system. 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.

### **Active Fire Protection**

There are electric and diesel firewater pumps and jockey pumps, maintaining a main pressure at the Refinery site. They are located in a common, below ground level pump house adjacent to the fire station.

The reservoirs are filled with fresh water supplied by pipeline by the Karachi Water Board.

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

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

The refinery and terminal firewater system is pressure tested. Fire hydrants are tested and section valves are checked. Firewater pumps are run and tested.

### **Deluge Systems**

All storage tanks at the Refinery and the Keamari Terminal (except some of the heavy lube oil and lube extract tanks)

have water cooling rings at the top and half-way down the tank. The tanks also have fixed and semi-fixed foam pourers onto the floating roof seals and foam injection systems into the roof space. The LPG and four 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 the fire tenders have an annual third party fitness for service certification.

There is a FP-70 foam concentrate and DCP stock at the refinery in drums and storage tanks. The quality of the foam stock is checked annually.

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

### **Fireproofing**

In the process areas, there is concrete fireproofing of structural steel pipe rack and equipment supports.

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 Lube I, Lube II and Fuels refinery 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

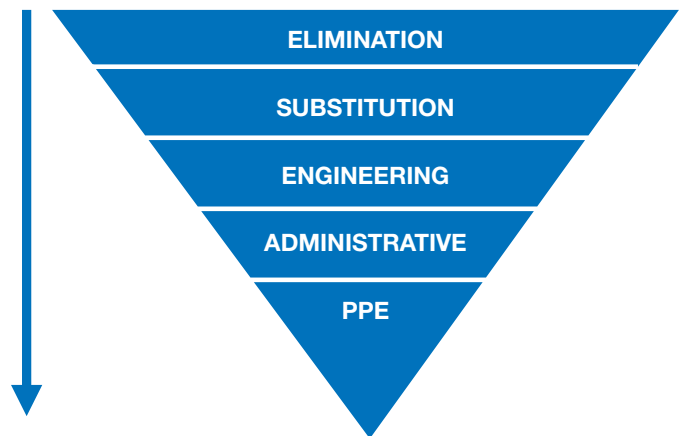
## Evaluation of Risks Assessment for identified hazard

- 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
<ul style="list-style-type: none"> <li>➤ To receive imported crude oil from crude oil ship tanker through 30" dia pipeline.</li> <li>➤ To load export Naphtha through 16" dia pipeline from storage tanks to ship tanker.</li> <li>➤ Crude oil pumping through 14" dia pipeline from Keamari Terminal to NRL Korangi</li> <li>➤ Operation of high-tension motors / pumps</li> <li>➤ Product, pumping operation through pipelines from NRL to KT and then Oil Marketing Companies</li> <li>➤ Pumping of effluent water to sea and recovery of oil</li> </ul>	VOC's emission	<ul style="list-style-type: none"> <li>➤ Ill Health due to vapors inhalation</li> <li>➤ Air Pollution</li> <li>➤ Degradation of air quality</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; documented SOP's for each activity along with record management</li> <li>✓ Emergency Response Plan</li> <li>✓ House keeping properly maintained.</li> <li>✓ Auto tank gauging system and bob-gauge system monitoring.</li> <li>✓ API sewer system properly cleared.</li> <li>✓ Dyke wall properly sealed.</li> <li>✓ Routine Maintenance regularly done.</li> <li>✓ Training is being given to all concerned</li> <li>✓ Preventive maintenance / inspection schedule is being properly followed.</li> <li>✓ Earthing of tanks properly maintained.</li> <li>✓ Provided security to safeguard pipeline in KPT trench.</li> <li>✓ KPT maintains chikson arms, pipelines and valves in side BOP-I, II, III</li> <li>✓ Sufficient lighting has been provided</li> <li>✓ MSDS being followed</li> <li>✓ Communication system walki / talkies &amp; telephones are maintained in working order.</li> <li>✓ Low and high level alarms are being provided on API to avoid backflow</li> <li>✓ Preventive maintenance / inspection schedule implementation</li> <li>✓ Electrical wiring is regularly inspected &amp; maintained</li> <li>✓ PPE's being used</li> </ul>
	Overflow of tank	<ul style="list-style-type: none"> <li>➤ Water Contamination.</li> <li>➤ Soil contamination.</li> </ul>	
	Fire	<ul style="list-style-type: none"> <li>➤ Human Injuries.</li> <li>➤ Asset loss.</li> </ul>	
	Pipeline leakage	<ul style="list-style-type: none"> <li>➤ Water Contamination.</li> <li>➤ Soil contamination.</li> </ul>	
	Falling hazard / Slippery hazard	<ul style="list-style-type: none"> <li>➤ Human Injuries.</li> </ul>	
	Spillage	<ul style="list-style-type: none"> <li>➤ Human Injuries / asset loss.</li> <li>➤ Soil contamination.</li> <li>➤ Water Contamination.</li> </ul>	
	Overflow of collecting tray	<ul style="list-style-type: none"> <li>➤ Soil contamination.</li> <li>➤ Water Contamination.</li> </ul>	
	High temperature Product	<ul style="list-style-type: none"> <li>➤ Human Injuries.</li> <li>➤ Asset loss.</li> </ul>	
<ul style="list-style-type: none"> <li>➤ Loading and Unloading of chemical drums / material through Fork lifter.</li> <li>➤ Disposal of empty Drums</li> </ul>	Ergonomic Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Fork lifter load capacity being followed</li> <li>✓ Designated area marking</li> <li>✓ Display of sign boards</li> <li>✓ Proper Illumination of area</li> <li>✓ MSDS being followed</li> <li>✓ Proper preventive maintenance of Fork lifter</li> <li>✓ Emergency Response Plan</li> <li>✓ PPEs being used</li> </ul>
	Mechanical Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury</li> </ul>	
	Falling Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury</li> </ul>	
	Oil / chemicals spillage from empty Drums	<ul style="list-style-type: none"> <li>➤ Human Injury</li> </ul>	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential	Current Risk Control
		Impact Towards Ill Health / Injury	
<ul style="list-style-type: none"> <li>Gauging of petroleum products stored in fixed and floating roof tanks.</li> </ul>	VOC's Emission	<ul style="list-style-type: none"> <li>Ill Health due to inhalation</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; documented SOP's for each activity along with record management</li> <li>Emergency Response Plan</li> <li>Proper house keeping being maintained.</li> <li>Maintenance of Auto tank gauging system is being regularly done</li> <li>Training is being given to all concerned</li> <li>Preventive maintenance / inspection schedule implementation.</li> <li>PPEs being used.</li> </ul>
	Falling hazard	<ul style="list-style-type: none"> <li>Minor / Major Human injuries</li> </ul>	
	Minor spillage from pump seal / pipeline fittings	<ul style="list-style-type: none"> <li>Soil / Water contamination.</li> <li>Human Injuries / asset loss.</li> </ul>	
<ul style="list-style-type: none"> <li>Chemical Handling and testing e.g. Acid, caustic, Ammonia etc.</li> </ul>	Chemical hazard (Irritant and Toxic)	<ul style="list-style-type: none"> <li>Injuries</li> <li>Burns</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>Testing is carried out.</li> <li>MSDS being followed</li> <li>Emergency Response Plan</li> <li>PPEs being used</li> </ul>
	Spillage / Leakage	<ul style="list-style-type: none"> <li>Human Injuries / asset loss.</li> <li>Soil contamination.</li> <li>Water Contamination.</li> </ul>	
<ul style="list-style-type: none"> <li>Fire Tender / Vehicle Movement inside NRL</li> </ul>	Traffic Hazard	<ul style="list-style-type: none"> <li>Minor / Major Human injuries.</li> <li>Asset loss.</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>Trained and HTV / LTV licensed holder drivers</li> <li>Safe speed limit being followed</li> <li>Designated area marking</li> <li>Display of sign boards</li> <li>Proper preventive maintenance of vehicle</li> <li>3rd party fitness certification.</li> <li>Authorized driving by security department inside refinery</li> <li>Spark Arrestors are installed</li> <li>Emergency Response Plan</li> </ul>
	Fire hazard	<ul style="list-style-type: none"> <li>Minor / Major Human injuries.</li> <li>Asset loss.</li> </ul>	
<ul style="list-style-type: none"> <li>Vehicles Entry (In / Out)</li> </ul>	Fire hazard	<ul style="list-style-type: none"> <li>Human injuries</li> <li>Asset loss</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>Vehicle speed limit 25 km / hr being followed</li> <li>Display of notice board/warning sign</li> <li>Designated area marking</li> <li>Spark Arrestors are installed</li> <li>Emergency Response Plan</li> </ul>
	Bomb Threat	<ul style="list-style-type: none"> <li>Human injuries.</li> <li>Asset loss.</li> </ul>	
	Traffic Hazard	<ul style="list-style-type: none"> <li>Human injuries.</li> <li>Asset loss.</li> </ul>	



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	<ul style="list-style-type: none"> <li>➤ Human loss.</li> <li>➤ Human injuries.</li> <li>➤ Asset loss.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Visitors checking at gate</li> <li>✓ Visitor passes issued</li> <li>✓ Mobile phones are retain at gate office and issue token</li> <li>✓ All types of fire material like lighter / matchbox are taken at gate</li> <li>✓ Display of notice board / warning sign</li> <li>✓ Communication with concerned department</li> <li>✓ Emergency Response Plan</li> </ul>
	Bomb Threat	<ul style="list-style-type: none"> <li>➤ Human loss.</li> <li>➤ Human injuries.</li> <li>➤ Asset loss.</li> </ul>	
➤ Sanitation Management	Biological Hazard (Microbial / Cross contamination, Transmission disease, etc)	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Infection</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Designated area marking</li> <li>✓ Emergency Response Plan</li> </ul>
	Insect Bits	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Infection</li> </ul>	
	Suffocation	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Infection</li> </ul>	
	Underground gasses	<ul style="list-style-type: none"> <li>➤ Human injuries</li> <li>➤ Illness</li> </ul>	
➤ Solid Waste management	Mechanical Hazards	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Bleeding</li> <li>➤ Headache</li> <li>➤ Sinus</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Emergency Response Plan</li> </ul>
	Chemical hazard (Irritant and Toxic)	<ul style="list-style-type: none"> <li>➤ Injuries</li> <li>➤ Burns</li> </ul>	
	Biological Hazard (Microbial / Cross contamination, Transmission disease, etc)	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Infection</li> </ul>	
➤ Excavation using excavator ➤ Concrete mixer machine operation ➤ Operation for area dressing by hand shawl / tractor ➤ Asphalt mixing machine operation	Mechanical Hazard.	<ul style="list-style-type: none"> <li>➤ Injury / Illness</li> <li>➤ Skin burn</li> <li>➤ Back Ache problem</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Proper barrication.</li> <li>✓ Follow Permit to Work System</li> <li>✓ Flame arrestor is to be installed at exhaust</li> <li>✓ Emergency Response plan</li> <li>✓ Proper display board provided during activity</li> <li>✓ Providing PPE's including dust mask.</li> </ul>
	Electrical Hazard.	<ul style="list-style-type: none"> <li>➤ Injury / Illness</li> <li>➤ Electrocutation</li> <li>➤ Skin burn</li> </ul>	
	Hazard of Collapse	<ul style="list-style-type: none"> <li>➤ Human loss.</li> <li>➤ Human injuries.</li> <li>➤ Asset loss.</li> </ul>	
	Noise Hazard	<ul style="list-style-type: none"> <li>➤ Hearing loss</li> </ul>	
	Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Injury / Illness</li> <li>➤ Skin burn</li> </ul>	
	Ergonomic Hazards	<ul style="list-style-type: none"> <li>➤ Injury / Illness</li> <li>➤ Back Ache problem</li> </ul>	
	Fire Hazard	<ul style="list-style-type: none"> <li>➤ Human injury</li> <li>➤ Property loss</li> </ul>	

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	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Emergency Response Plan</li> </ul>
	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	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management.</li> <li>✓ Inspection of breakers and monitor the current on ampere meter.</li> <li>✓ Area barrication.</li> <li>✓ Energizing / De-energizing.</li> <li>✓ Completely check all the internally installed components before switching or starting the motor.</li> <li>✓ Preventive maintenance schedule.</li> <li>✓ Emergency Response plan.</li> <li>✓ Ensure the proper insulation of cables.</li> <li>✓ Ensure the proper earthing.</li> <li>✓ PPE's being used.</li> </ul>
	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 Crane / Lifter	Falling Hazard (Falling Object from height, Falling object on a moving machine, etc)	➤ Minor / Major Human injuries. ➤ Asset loss.	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management Load chart to be checked.</li> <li>✓ Certified crane to be used.</li> <li>✓ Certified shilling wire to be checked.</li> <li>✓ Area Marking.</li> <li>✓ Follow the load chart.</li> <li>✓ Emergency Response Plan.</li> <li>✓ PPE's being used.</li> </ul>
	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.	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ While receiving the cylinders checking of valves for any leakage</li> <li>✓ Training is being given to all concerned</li> <li>✓ Emergency Response Plan</li> <li>✓ Use of PPE's</li> </ul>
	Ergonomic hazard	➤ Minor / Major Human injuries.	
	Fire Hazard	➤ Minor / Major Human injuries. ➤ Asset loss	
➤ Catalyst Regeneration	Chemical Hazard	➤ Minor / Major Human injuries.	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management Designated area for drums</li> <li>✓ Follow MSDS</li> <li>✓ Emergency Response Plan</li> <li>✓ Use of PPE's</li> </ul>
	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
<ul style="list-style-type: none"> <li>➤ Sulfur Determination by X-Ray Sulphur Meter</li> </ul>	Radiation hazard (X-Ray)	<ul style="list-style-type: none"> <li>➤ Ill Health</li> <li>➤ Chronic effects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Procedure is followed (ASTM # 4294) / equipments manufacturer precaution</li> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Use TLD badges</li> <li>✓ Equipment to be checked before operating for proper covering</li> <li>✓ Emergency Response Plan</li> </ul>
<ul style="list-style-type: none"> <li>➤ <b>Maintenance Related Activities during Normal / Turnaround / Shutdown</b></li> <li>▪ Furnace</li> <li>▪ Scrapping / Cleaning</li> <li>▪ Refractory Works</li> <li>▪ Column Tray</li> <li>▪ Vessels</li> <li>▪ Tanks</li> <li>▪ Compressor</li> <li>▪ Pumps</li> <li>▪ Welding at Plant</li> <li>▪ Liqua Blaster Operation</li> <li>▪ Sand Blasting</li> <li>▪ Painting</li> <li>▪ Insulation installation / replacement</li> <li>▪ Valve</li> <li>▪ Hydrocarbon pipeline</li> <li>▪ Welding / cutting / grinding</li> <li>▪ Erection of scaffolding</li> <li>▪ Mechanical work at height</li> <li>▪ Electric / Gas welding</li> <li>▪ Heat Exchanger</li> <li>▪ Air Cooler</li> <li>▪ Storage tanks</li> <li>▪ Work-Shop machine operation (Radial drill, lathe, milling, shaper, lapping machine)</li> <li>▪ Metalizing (Thermo spray gun operation)</li> <li>▪ Air Compressor, Welding generator</li> <li>▪ Hydraulic Press Operation</li> <li>▪ Fork Lifter</li> <li>▪ Gasket Fabrication</li> <li>▪ Overhead Crane</li> <li>▪ Chain blocks pulley testing</li> <li>▪ Radiography</li> </ul>	Mechanical Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / Illness.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; documented (Shutdown / Startup / Turnaround) SOP's for each activity properly implement along with record management</li> <li>✓ Cold work permit</li> <li>✓ Isolation complete</li> <li>✓ Proper Blinding</li> <li>✓ Training for procedure</li> <li>✓ Isolation valve checked.</li> <li>✓ Complete flushing</li> <li>✓ Oxygen test</li> <li>✓ Proper steaming</li> <li>✓ Proper ventilation oxygen test</li> <li>✓ De-energize permit</li> <li>✓ Good house keeping</li> <li>✓ Proper isolation of the place of job</li> <li>✓ Inspection of welding machine</li> <li>✓ Certified welder</li> <li>✓ Certified hoses &amp; nipples</li> <li>✓ Skilled manpower</li> <li>✓ Safe handling of insulation debris in bags</li> <li>✓ Proper dust mask / safety goggles used.</li> <li>✓ Proper bath after handling insulation material.</li> <li>✓ Area barrication</li> <li>✓ Identification of area</li> <li>✓ Emergency Response Plan</li> <li>✓ Use of PPE's</li> </ul>
Fire Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / Illness.</li> <li>➤ Skin Burn.</li> <li>➤ Asset loss.</li> </ul>		
Ergonomic Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury from hitting with heavy object</li> </ul>		
Chemical Hazard	<ul style="list-style-type: none"> <li>➤ Human Illness.</li> <li>➤ Acute &amp; Chronic effect on health.</li> </ul>		
Noise Hazard	<ul style="list-style-type: none"> <li>➤ Hearing loss</li> <li>➤ Human injury / illness.</li> </ul>		
Radiation Hazard	<ul style="list-style-type: none"> <li>➤ Ill Health</li> <li>➤ Chronic effects</li> </ul>		
Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / Illness.</li> <li>➤ Skin Burn.</li> </ul>		
Electrical Hazard	<ul style="list-style-type: none"> <li>➤ Electrocutation.</li> <li>➤ Skin Burn.</li> <li>➤ Human Injury.</li> </ul>		
Traffic Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury.</li> <li>➤ Asset loss.</li> </ul>		

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential	Current Risk Control
		Impact Towards Ill Health / Injury	
<ul style="list-style-type: none"> <li>➤ Repair &amp; Maintenance of Field mounted instruments, Electronic instruments &amp; laboratory analyzer, controllers, transmitters, recorders, alarm systems, pneumatic instruments, instruments &amp; control system</li> </ul>	Pressure Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury</li> <li>➤ Asset damage / loss.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Proper isolation drain</li> <li>✓ Be vigilant</li> <li>✓ Use of proper insulation</li> <li>✓ Use of proper fittings</li> <li>✓ Use of standard material</li> <li>✓ Use of cold work permit</li> <li>✓ Emergency Response plan</li> <li>✓ Use of PPE's</li> </ul>
	Falling Hazard	<ul style="list-style-type: none"> <li>➤ Minor / Major Human Injury</li> </ul>	
	Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Minor / Major Human Injury</li> <li>➤ Skin Burn</li> </ul>	
	Electrical Hazard	<ul style="list-style-type: none"> <li>➤ Electrocution</li> <li>➤ Skin Burn</li> <li>➤ Human Injury</li> </ul>	
	Fire Hazard	<ul style="list-style-type: none"> <li>➤ Asset Damage / loss.</li> <li>➤ Human Injury</li> </ul>	
<ul style="list-style-type: none"> <li>➤ Start-up, shutdown and running of Turbo Generator and Diesel Generator</li> <li>➤ Air compressor operation and maintenance</li> </ul>	Pressure / Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Minor / Major Human Injury</li> <li>➤ Skin Burn</li> <li>➤ Asset Damage / loss.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented (Start up and Shutdown) SOP's for each activity properly implement along with record management</li> <li>✓ Implementation / monitoring for usage of PPE's</li> <li>✓ Routing checking through shift Engineers</li> <li>✓ Display boards</li> <li>✓ Sign boards</li> <li>✓ Emergency Response Plan</li> </ul>
	Noise Hazard	<ul style="list-style-type: none"> <li>➤ Hearing loss.</li> <li>➤ Human Illness.</li> </ul>	
	Falling / Tripping Hazard	<ul style="list-style-type: none"> <li>➤ Minor / Major Human Injury</li> </ul>	
	Fire Hazard	<ul style="list-style-type: none"> <li>➤ Asset Damage / loss.</li> <li>➤ Human Injury</li> </ul>	
<ul style="list-style-type: none"> <li>➤ LPG sampling from vessel and units</li> <li>➤ Lube Base Oil sampling from tank</li> <li>➤ Light hydrocarbons Solvents (Benzene, Toluene, Xylene) sampling and testing</li> </ul>	Pressure / Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Cold Burning</li> <li>➤ Human Injury / Illness.</li> <li>➤ Asset loss.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Procedure of sampling (ASTM) to be followed</li> <li>✓ Before sampling check the valve carefully for rust pitting, leakage</li> <li>✓ Emergency Response Plan</li> <li>✓ Follow MSDS</li> <li>✓ Use PPE's</li> </ul>
	Chemical Hazard	<ul style="list-style-type: none"> <li>➤ Impact on Human Illness.</li> <li>➤ Degradation of air quality</li> </ul>	
	Falling / Tripping Hazard	<ul style="list-style-type: none"> <li>➤ Minor / Major Human Injury</li> </ul>	
<ul style="list-style-type: none"> <li>➤ Noise Level Monitoring.</li> <li>➤ H<sub>2</sub>S &amp; Volatile Organic Compounds (VOCs) Monitoring</li> <li>➤ Illumination Monitoring</li> <li>➤ Stack Emission Monitoring</li> <li>➤ Rain Water Channel Monitoring</li> <li>➤ Collection of drinking water and effluent water for 3rd Party Testing</li> </ul>	Chemical Hazard	<ul style="list-style-type: none"> <li>➤ Human Illness</li> <li>➤ Respiratory problems</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Proper use of PPEs specially earplugs / muff during reading</li> <li>✓ Effective coordination</li> <li>✓ Use of sign boards</li> <li>✓ Emergency Response Plan</li> </ul>
	Noise Hazard	<ul style="list-style-type: none"> <li>➤ Hearing loss</li> <li>➤ Ill Health</li> </ul>	
	Ergonomic Hazard	<ul style="list-style-type: none"> <li>➤ Human illness</li> <li>➤ Eye sight loss</li> </ul>	
	Mechanical Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / Illness.</li> </ul>	
	Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / Illness.</li> </ul>	



Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential	Current Risk Control
		Impact Towards Ill Health / Injury	
<ul style="list-style-type: none"> <li>➤ Filling of Fire Extinguishers</li> <li>➤ Carbon dioxide cartridge refilling</li> </ul>	Chemical Hazard	<ul style="list-style-type: none"> <li>➤ Human illness</li> <li>➤ Mild irritation to the eyes, skin, respiratory track</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Follow MSDS</li> <li>✓ Proper Training</li> <li>✓ Filling instruction</li> <li>✓ Adequate supervision</li> <li>✓ Ensure proper ventilation</li> <li>✓ Emergency Response Plan</li> <li>✓ Use of PPEs</li> </ul>
	Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Frost bite</li> <li>➤ Cold burning</li> </ul>	
<ul style="list-style-type: none"> <li>➤ Fire Fighting at Fire Drills / Process Area</li> </ul>	Fire Hazard	<ul style="list-style-type: none"> <li>➤ Human Injury / illness.</li> <li>➤ Skin burn</li> <li>➤ Asset loss</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Safe escape root</li> <li>✓ Water should be applied through spray nozzle.</li> <li>✓ Use of SCBA against any toxic fumes, vapor &amp; gas.</li> <li>✓ Proper Communication</li> <li>✓ Emergency Response Plan</li> <li>✓ Use of PPE's</li> </ul>
	Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>➤ Illness</li> <li>➤ Injuries</li> <li>➤ Burning</li> </ul>	
<ul style="list-style-type: none"> <li>➤ Biological waste disposable (Drugs antibiotics)</li> </ul>	Biological hazard	<ul style="list-style-type: none"> <li>➤ Human illness</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Disposal to municipal waste.</li> <li>✓ Biological or contaminated waste for treatment in incineration</li> <li>✓ Training</li> <li>✓ Area Identification</li> <li>✓ Emergency Response Plan</li> </ul>
<ul style="list-style-type: none"> <li>➤ Treatment by Injection</li> </ul>	Chemical Hazard (Hypersensitivity Reaction)	<ul style="list-style-type: none"> <li>➤ Human illness</li> <li>➤ Infection</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Used of packed sterilized disposable syringes.</li> <li>✓ Checking of Date of expiry before use.</li> <li>✓ Wearing of gloves</li> <li>✓ Identification of shelves</li> <li>✓ Verification of date by label over the injectable</li> <li>✓ Proper storage of injectable / medicines</li> <li>✓ Emergency Response Plan</li> </ul>
<ul style="list-style-type: none"> <li>➤ Under Ground Sewer Network</li> </ul>	Chemical Hazard	<ul style="list-style-type: none"> <li>➤ Human illness</li> <li>➤ Infection</li> <li>➤ Headaches</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>✓ Emergency Response Plan</li> </ul>
	Biological Hazard	<ul style="list-style-type: none"> <li>➤ Sinus</li> <li>➤ Infection</li> </ul>	

Facility / Operation / Activities / Process / Equipment	Ill Health Injury hazard	Hazard Potential Impact Towards Ill Health / Injury	Current Risk Control
<ul style="list-style-type: none"> <li>Horticulture Management</li> </ul>	Heat & Temperature Hazard	<ul style="list-style-type: none"> <li>Human illness (Sunstroke, dehydration, sweating, headache, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>Emergency Response Plan</li> </ul>
<ul style="list-style-type: none"> <li>ITS management (Computer, Servers, Printers, Plotters, UPS, Scanners, Network bridges, Switches, Towers, Fiber optic cable)</li> </ul>	Electrical Hazard	<ul style="list-style-type: none"> <li>Electrocution</li> <li>Human Injury / illness</li> <li>Skin burn</li> </ul>	<ul style="list-style-type: none"> <li>Define &amp; implemented SOP's for each activity properly implement along with record management</li> <li>Monitoring, inspection and maintenance of IT related equipments as specified by the manufacturers and suppliers of the IT equipments.</li> <li>Emergency Response Plan</li> </ul>

## Identification and Traceability



## Fire Protection Infrastructure





# Environmental Aspect, Impact Risk Assessment

Activity / Area	Aspect	Impact	Control / Mitigation
<b>Crude Oil / Lube / Fuel Product receipt, handling and storage</b> <ul style="list-style-type: none"> <li>➤ Pumping Operation</li> <li>➤ Transportations through pipeline and tank lorries</li> <li>➤ Breather valves</li> <li>➤ Sampling</li> <li>➤ Dipping</li> <li>➤ Chemical injunction</li> <li>➤ API separators</li> <li>➤ Bowzer decantation</li> <li>➤ Loading / un-loading</li> </ul>	Hydrocarbon sludge from tanks and drains channels	<ul style="list-style-type: none"> <li>➤ Soil contamination</li> <li>➤ Water contamination</li> </ul>	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	<ul style="list-style-type: none"> <li>➤ Soil contamination</li> <li>➤ Oil slippage to sea</li> </ul>	
	Volatile Organic Compounds emission	<ul style="list-style-type: none"> <li>➤ Air pollution</li> <li>➤ Health impact</li> </ul>	
	During Maintenance activities, Possibility of fire	<ul style="list-style-type: none"> <li>➤ Loss of property / life</li> <li>➤ Air pollution</li> <li>➤ Health impact</li> </ul>	
	Effluent Water	<ul style="list-style-type: none"> <li>➤ Contamination of sea / water</li> <li>➤ Marine Destroy</li> </ul>	
<b>Utility Operations</b> <ul style="list-style-type: none"> <li>➤ Furnace for heating</li> <li>➤ Cooling Towers</li> <li>➤ Chemical injection</li> <li>➤ Vessels pump</li> <li>➤ Fuel Oil Storage Tanks</li> <li>➤ Regeneration and un-loading</li> <li>➤ ETP plant</li> <li>➤ RO Plants</li> </ul>	Cooling water blow down water	<ul style="list-style-type: none"> <li>➤ Soil contamination</li> <li>➤ Water contamination</li> </ul>	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	<ul style="list-style-type: none"> <li>➤ Soil contamination</li> <li>➤ Water contamination</li> </ul>	
	Noise	<ul style="list-style-type: none"> <li>➤ Noise Pollution</li> </ul>	
	Water Consumption	<ul style="list-style-type: none"> <li>➤ Natural resource depletion</li> </ul>	
	Fuel Oil & Natural gas Consumption	<ul style="list-style-type: none"> <li>➤ Natural resource depletion</li> </ul>	
	Steam leakages	<ul style="list-style-type: none"> <li>➤ Energy wastage</li> </ul>	
	Sludge from brine and blow down pits	<ul style="list-style-type: none"> <li>➤ Soil contamination</li> <li>➤ Water contamination</li> </ul>	
	Chemical spillage	<ul style="list-style-type: none"> <li>➤ Soil / land contamination</li> <li>➤ Damage to asset / loss of life</li> </ul>	
	Flue gases	<ul style="list-style-type: none"> <li>➤ Air pollution</li> <li>➤ Degradation of Air Quality</li> </ul>	
	During Maintenance activities, Possibility of fire	<ul style="list-style-type: none"> <li>➤ Loss of property / life</li> <li>➤ Air pollution</li> <li>➤ Health impact</li> </ul>	

Activity / Area	Aspect	Impact	Control / Mitigation
<b>Chemical Storage and handling</b>  ➤ 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	
<b>Plant Operations (Production Lube – I + Lube – II + Fuel Refinery)</b>  ➤ 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 charging ➤ Compressor ➤ Chillers ➤ Rotary Filter  Solvent	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 <sub>2</sub> 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 <sub>2</sub> S 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	
<b>Laboratory (Quality Control)</b>  ➤ 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-QCI-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
<b>Power Plant Operations</b>  > 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	
<b>Routine Maintenance</b>  > 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	
<b>Turnaround / Shutdown / Emergency Shutdown activities</b>  > 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
<b>Dispensary Management</b>  ➤ 1 <sup>st</sup> 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
	<b>Canteen Management</b>  ➤ Storage ➤ Food preparation ➤ Food serving ➤ Washing	Natural gas consumption  Water consumption  Food Waste  Domestic liquid waste	➤ Natural resource depletion   ➤ Solid Waste Pollution  ➤ Effluent ➤ Water contamination
<b>Workshop</b>	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	
<b>Offices</b>	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	
<b>Motor Vehicles</b>	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	
<b>Natural Disaster</b>	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	F.C	L.C	Total (000'0)
			Rupees in `000		
01	Projects	Additional amount for Reverse Osmosis Plant – IV required for payment of duties and execution of related civil and electric jobs	20,400	-	20,400
02	Quality Control	Procurement of Gas Chromatograph for testing of Benzene, Total Aromatics and Oxygenates in Gasoline and Naphtha (1 no.)	6,426	1,260	7,686
03	Quality Control	Procurement of Water Separability Tester conforming to ASTM D1401 standard (1 no.).	4,182	850	5,032
04	Fuel Refinery	Installation of Demin Water line for Naphtha Hydrobon Unit.	-	35,000	35,000
05	Maintenance – II	Procurement of Digital Insulation Testers 1 KV & 10 KV	714	86	800
06	IT & S	Procurement & installation of high sensitivity smoke Detection System. The system will overcome shortfalls of the currently installed conventional detection system.	-	600	600
07	Technical Services	New spill back control valve system is proposed at the discharge of crude feed pump 01 PIC at Two Stage unit	-	800	800
08	Technical Services	Teledyne portable oxygen analyzer for plat former regeneration.	-	1,250	1,250
09	Projects	Replacement of Heat Exchangers of Crude Distillation Unit Fuel Refinery (9 nos.).	-	25,000	25,000
10	Maintenance – II	Overhauling of 4MW Wartsila Diesel Generator at Power Generation intended for execution 2015-16	-	30,000	30,000
11	Technical Services	Procurement of Reverse Osmosis – I Brackish Water Membranes (25nos.). Currently there is nil stock of these in warehouse and are required incase of emergency arises.	-	1,800	1,800
12	Technical Services	Replacement of Draeger Accuro Gas Detector Hand Pump.	-	140	140
13	Oil Movement	Repair / replacement of Korangi-Keamari Pipelines (4 nos.).	-	21,600	21,600
14	Lube – I Refinery	Replacement of Pneumatic Indicator Controllers 16-PIC-02 & 14-PIC-01 (2 nos.).	714	120	834
15	Utilities	Replacement of Vessel 291-V-4C		5,000	5,000
16	Utilities	Replacement of Flame scanners of Boiler – IV.	1,836	136	1,972
17	Engineering	Replacement of 16-F-1 (HK Modified) Reformer Tubes at Lube – I Refinery HGU Unit (3 nos.).	-	5,400	5,400
18	Keamari Terminal	Repair / Renevoation of Crude Oil Storage Tank 55-S-1	-	27,000	27,000

# Continual Monitoring Towards Applicable Legal Regulatory and Other Requirements

Legal Requirement	Applicable Mechanism
<b>Working Environment</b> <ul style="list-style-type: none"> <li>The Factories Act 1934</li> <li>Sindh Rules 1975</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of Labor Laws (NRL-SOP-CON-002)</li> <li>Solid Waste Disposal (NRL-SOP-ADM-003)</li> <li>Sanitation Management (NRL-SOP-ADM-004)</li> <li>EOBI Scheme (NRL-SOP-HUR-006)</li> <li>Leave Policy (NRL-SOP-HUR-007)</li> <li>Working Hours (NRL-SOP-HUR-008)</li> <li>Social Security Scheme (NRL-SOP-HUR-010)</li> <li>Labor Laws (NRL-SOP-HUR-011)</li> <li>Monitoring of Labor Canteen (NRL-SOP-HUR-019)</li> <li>Solid Waste management (NRL-SOP-HSE-031)</li> </ul>
<b>Air Emissions / Air Pollution</b> <ul style="list-style-type: none"> <li>The Pakistan Panel Code 1860</li> <li>The Factories Act 1934</li> <li>Pakistan Environmental Act</li> <li>NEQS</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring Effluent water (NRL-SOP-HSE-032)</li> <li>Monitoring Gaseous Emission (NRL-SOP-HSE-033)</li> <li>Storm water channel (NRL-SOP-HSE-035)</li> <li>Evaluation of Compliance (NRL-SPR-EVC-008)</li> </ul>
<b>Medical Waste</b> <ul style="list-style-type: none"> <li>The Pakistan Environmental Protection Act 1997</li> </ul>	<ul style="list-style-type: none"> <li>Solid Waste Disposal (NRL-SOP-ADM-003)</li> <li>Dispensary waste (NRL-SOP-DIS-002)</li> <li>Incinerator (NRL-SOP-OKR-033)</li> <li>Solid Waste management (NRL-SOP-HSE-031)</li> </ul>
<b>Soil &amp; Effluent Waste</b> <ul style="list-style-type: none"> <li>The Factories Act 1934 section 14</li> <li>The Pakistan Environmental Protection Act 1997</li> </ul>	<ul style="list-style-type: none"> <li>Compliance of NEQS (NRL-SOP-HSE-032)</li> <li>Storm water drain (NRL-SOP-ENG-006)</li> <li>API Sewer Network (NRL-SOP-ENG-007)</li> <li>Solid Waste Disposal (NRL-SOP-ADM-003)</li> <li>Sanitation management (NRL-SOP-ADM-004)</li> </ul>
<b>Marine Pollution</b> <ul style="list-style-type: none"> <li>The Pakistan Environmental Protection Act 1997</li> <li>Pakistan Territorial Waters 1976</li> <li>Maritime Security Act 1994</li> <li>Environment 1973 constitution</li> <li>Port Act 1908 Section 21</li> </ul>	<ul style="list-style-type: none"> <li>Compliance of NEQS (NRL-SOP-HSE-032)</li> <li>Effluent water from API (NRL-SOP-OKT-008)</li> <li>Procedure for pumping of liquid effluent from effluent treatment plant to sea (NRL-SOP-OKR-030)</li> </ul>
<b>Noise Pollution</b> <ul style="list-style-type: none"> <li>Environment, 1973 constitution Environmental Protection Act</li> <li>Motor Vehicle Ordinance 1965</li> <li>Motor Vehicles Rules 1969</li> </ul>	<ul style="list-style-type: none"> <li>Procedure for monitoring of noise level (NRL-SOP-HSE-034)</li> <li>Transport Management for company maintained vehicle (NRL-SOP-ADM-001)</li> </ul>



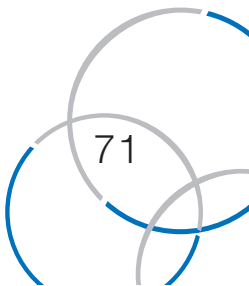
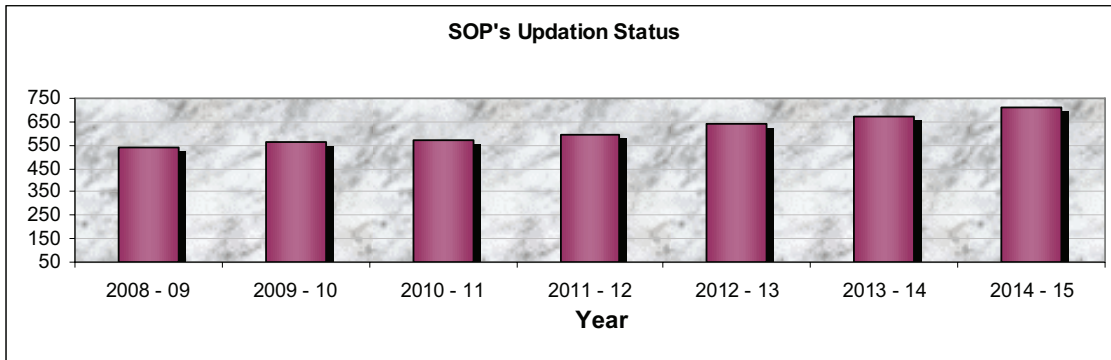
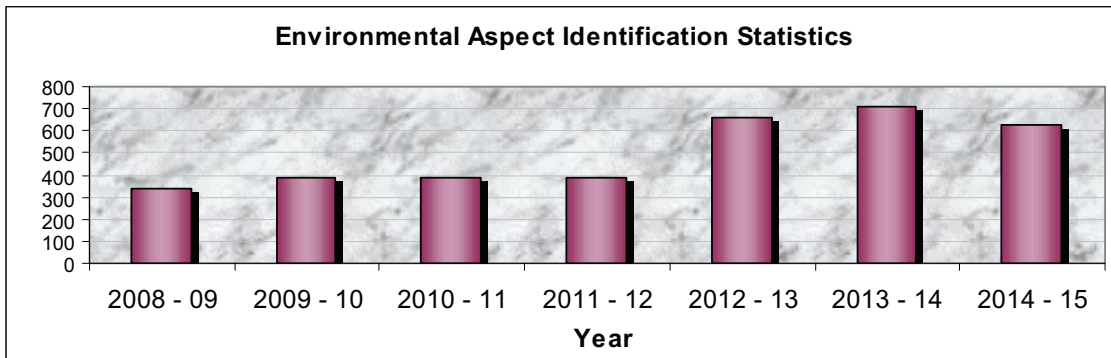
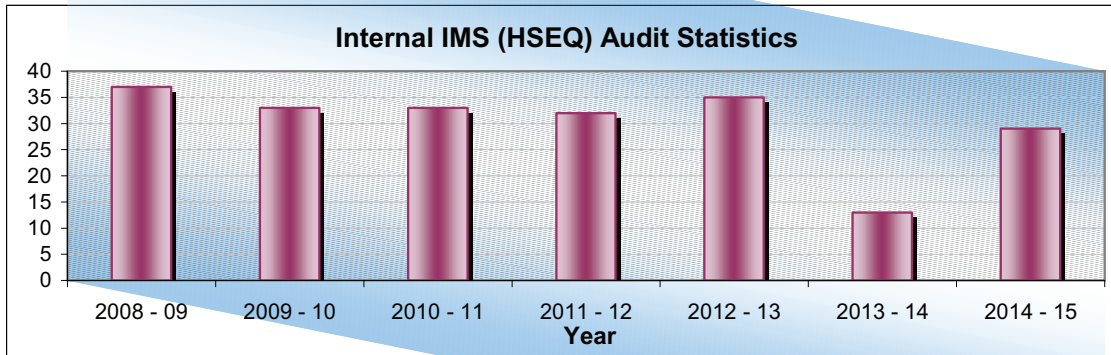
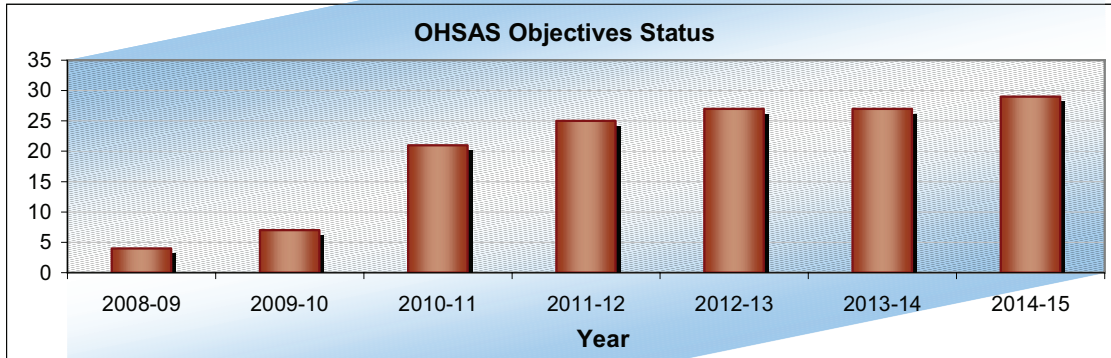
Legal Requirement	Applicable Mechanism																														
<p><b>Water Pollution</b></p> <ul style="list-style-type: none"> <li>• The Factories Act 1934</li> <li>• Sindh Fisheries Ordinance 1980</li> <li>• The Pakistan Environmental Protection Act 1997</li> <li>• Environment and the 1973 constitution</li> <li>• NEQs</li> </ul>	<table> <tr> <td>Compliance of NEQS</td> <td>(NRL-SOP-HSE-032)</td> </tr> <tr> <td>Sanitation management</td> <td>(NRL-SOP-ADM-004)</td> </tr> <tr> <td>Effluent water from API</td> <td>(NRL-SOP-OKT-008)</td> </tr> <tr> <td>Liquid effluent</td> <td>(NRL-SOP-OKR-030)</td> </tr> <tr> <td>Laboratory waste procedure</td> <td>(NRL-SOP-QCL-001)</td> </tr> <tr> <td>Evaluation of compliance</td> <td>(NRL-SPR-EVC-008)</td> </tr> </table>	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)																		
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<p><b>Sand Blasting</b></p> <ul style="list-style-type: none"> <li>• The West Pakistan Hazardous Occupations (Sand Blasting) Rules, 1963</li> </ul>	<table> <tr> <td>Sand blasting Procedure</td> <td>(NRL-SOP-HSE-004)</td> </tr> </table>	Sand blasting Procedure	(NRL-SOP-HSE-004)																												
Sand blasting Procedure	(NRL-SOP-HSE-004)																														
<p><b>Hazardous Substance and Waste</b></p> <ul style="list-style-type: none"> <li>• The Explosive Act 1884</li> <li>• The Factories Act 1934</li> <li>• The Pakistan Environmental Protection Act 1997</li> <li>• The Factory Act 1934</li> <li>• The Hazardous Substance Rules 1999</li> </ul>	<table> <tr> <td>Handling / storage of materials</td> <td>(NRL-SOP-HSE-014)</td> </tr> <tr> <td>Empty chemical container</td> <td>(NRL-SOP-HSE-036)</td> </tr> <tr> <td>Solid Waste Disposal</td> <td>(NRL-SOP-ADM-003)</td> </tr> <tr> <td>Sanitation management</td> <td>(NRL-SOP-ADM-004)</td> </tr> <tr> <td>Dispensary waste</td> <td>(NRL-SOP-DIS-002)</td> </tr> <tr> <td>Laboratory waste</td> <td>(NRL-SOP-QCL-001)</td> </tr> <tr> <td>De-sludging of storage tank</td> <td>(NRL-SOP-OKR-021)</td> </tr> <tr> <td>De-sludging of asphalt tank</td> <td>(NRL-SOP-OKR-035)</td> </tr> <tr> <td>Contingency plan, chemical drums</td> <td>(NRL-SOP-OKR-036)</td> </tr> <tr> <td>Contingency plan</td> <td>(NRL-SOP-LR1-031)</td> </tr> <tr> <td>Contingency plan</td> <td>(NRL-SOP-LR2-037)</td> </tr> <tr> <td>Disposal of solid waste</td> <td>(NRL-SOP-MT3-011)</td> </tr> <tr> <td>Storage of HSD / Lube oil drums</td> <td>(NRL-SOP-OKT-015)</td> </tr> <tr> <td>Monitoring of chemical drums</td> <td>(NRL-SOP-WHS-008)</td> </tr> <tr> <td>Storage of filled gas cylinder</td> <td>(NRL-SOP-WHS-013)</td> </tr> </table>	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)
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<p><b>Energy</b></p> <ul style="list-style-type: none"> <li>• The Electricity Act 1910</li> <li>• KESC Control Order 1978</li> <li>• Electricity Rules 1937</li> <li>• Electricity Rules 1978 (Sindh)</li> <li>• Electricity Duty Rules 1964</li> <li>• Electricity Ordinance 1965</li> <li>• Electricity Control Act 1952</li> <li>• Regulation of Generation, Transmission and Distribution of Electric Power Act 1997</li> </ul>	<p>License</p>																														

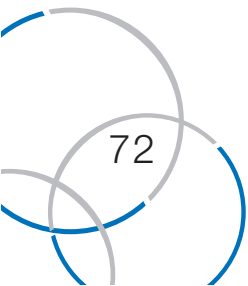
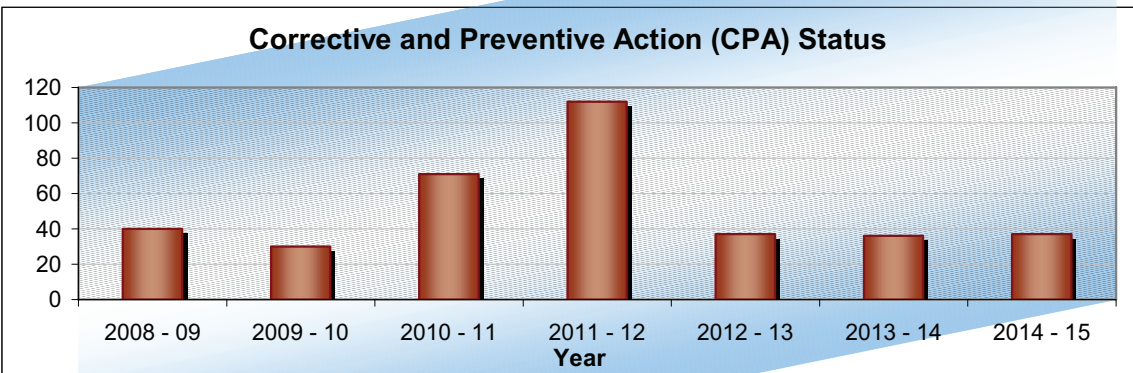
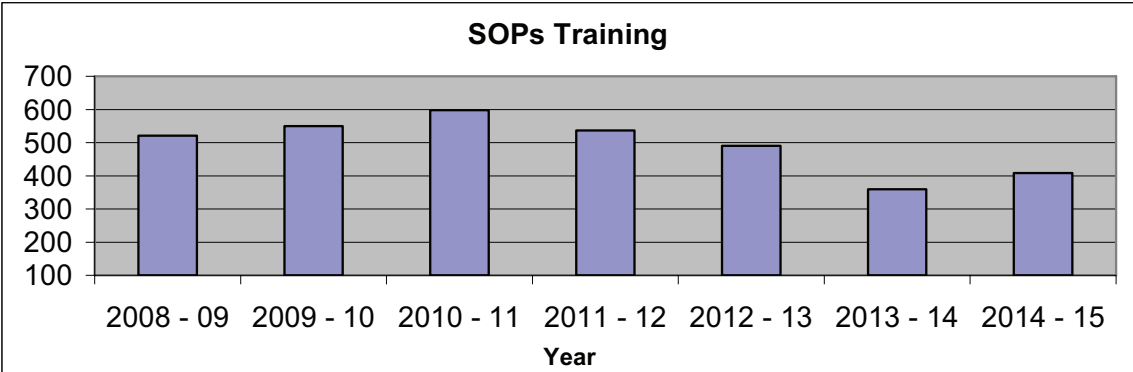
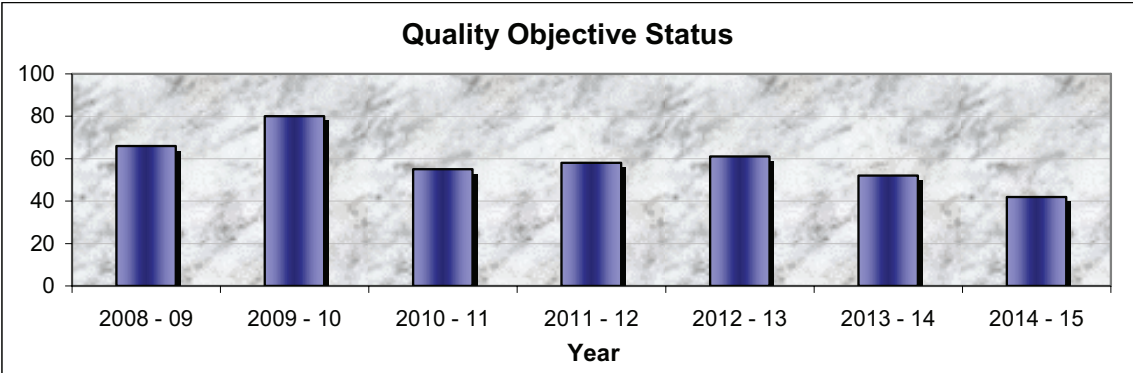
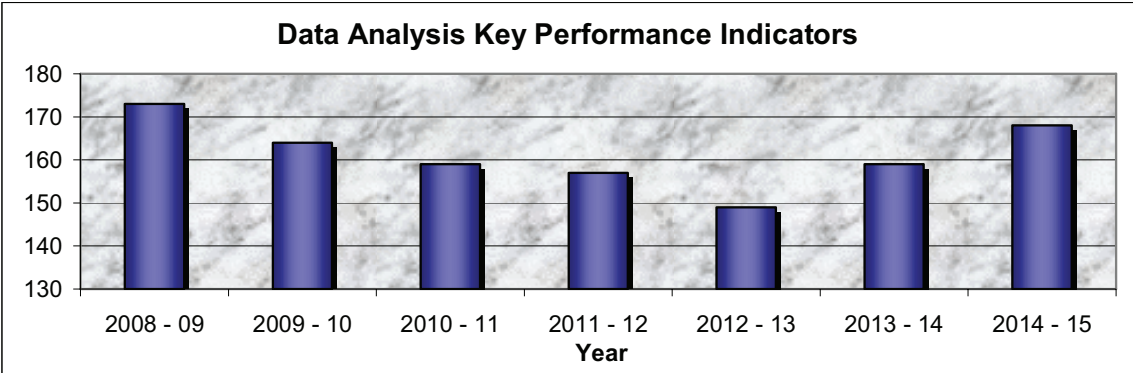
Legal Requirement	Applicable Mechanism
<p><b>Emergency Response Plan</b></p> <ul style="list-style-type: none"> <li>Spill Prevention</li> <li>Containment and Clean-up (SPCC) Plans</li> <li>The Pakistan Environmental Protection Ordinance, 1997; and Article VI, Section 6.9 (g)</li> </ul>	<p>(SPR-EPR-010), (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)</p>
<p><b>Petroleum Storage / Refining / Transportation,</b></p> <ul style="list-style-type: none"> <li>The Petroleum Act 1934</li> <li>Pakistan Petroleum Rules 1971</li> <li>The Petroleum Rules 1985</li> <li>LPG (Production and Distribution) Rules 1971</li> </ul>	<p>Plot plan from explosive department SOP's Oil Movement SOP's K.T SOP's STR SOP's Shipping</p>
<p><b>Boiler and Pressure Vessel</b></p> <ul style="list-style-type: none"> <li>The Boilers and Pressure Vessels Ordinance 2002</li> </ul>	<p>Boiler Certificate</p>
<p><b>Gaseous Emissions</b></p> <ul style="list-style-type: none"> <li>The Pakistan Environmental Protection Act 1997</li> <li>NEQs</li> <li>The Pakistan Environmental Protection Ordinance 1983</li> </ul>	<p>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)</p>
<p><b>New Projects</b></p> <ul style="list-style-type: none"> <li>Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations 2000</li> </ul>	<p>EIA Reports IEE Reports Review identified projects (NRL-SPR-RIP-019) Agency approvals (NRL-SPR-AAP-012)</p>
<p>The Sindh Standard Weight and measures enforcement Rules, 1976</p>	<p>Lube Base Oil Shipment Procedure (NRL-SOP-SHG-002) Maintenance of Weigh Bridge System (NRL-SOP-INS-019)</p>
<p>License to establish, maintain and work wireless telegraph in Pakistan</p> <p>Telegraph Act 1885- and telegraph (Amendment) Act 1914.</p>	<p>License Maintenance of Wireless Communication System (NRL-SOP-INS-018)</p>





# Continual Improvement Through Effective Monitoring

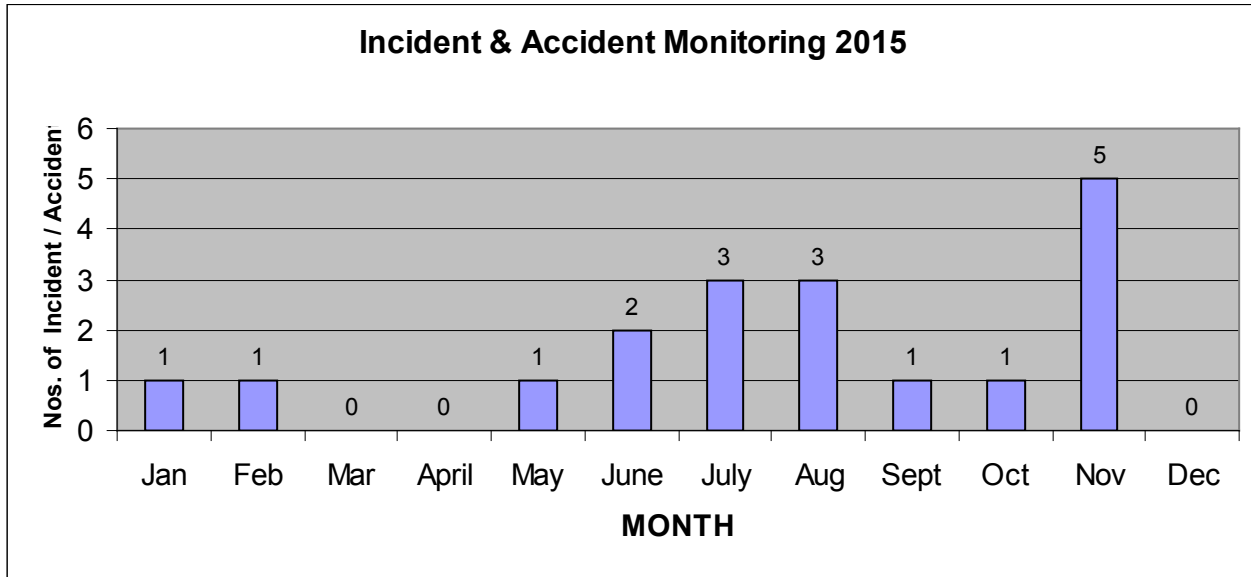




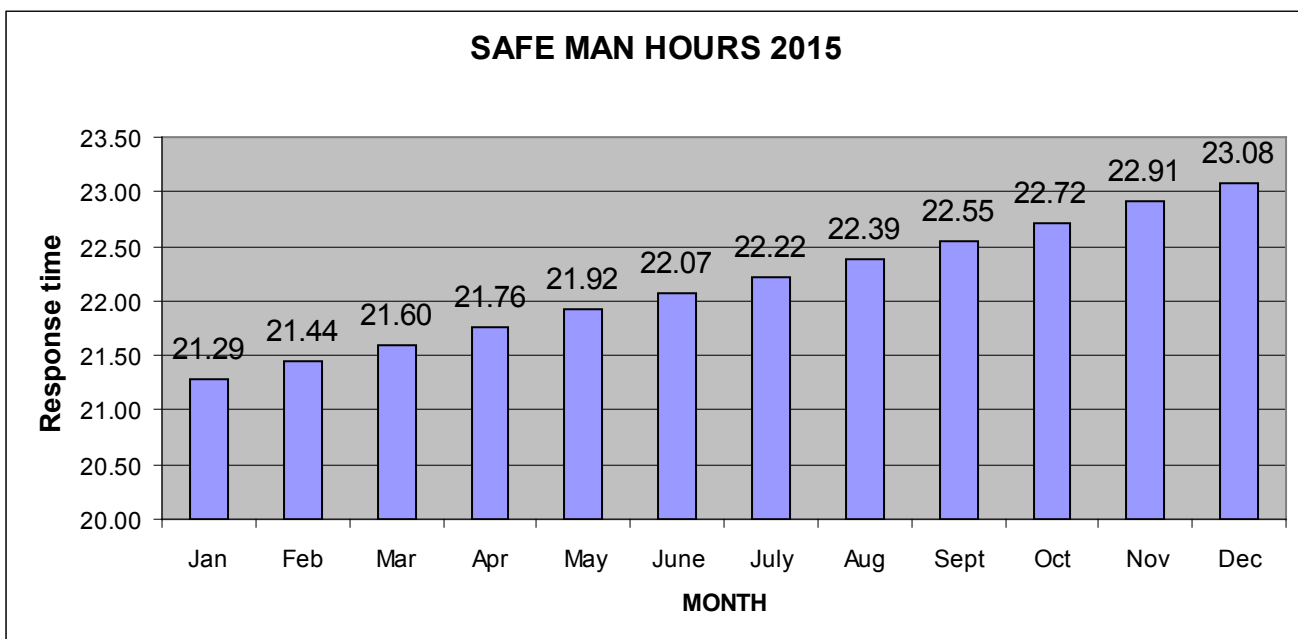
# Incident Investigation & Reporting System

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.

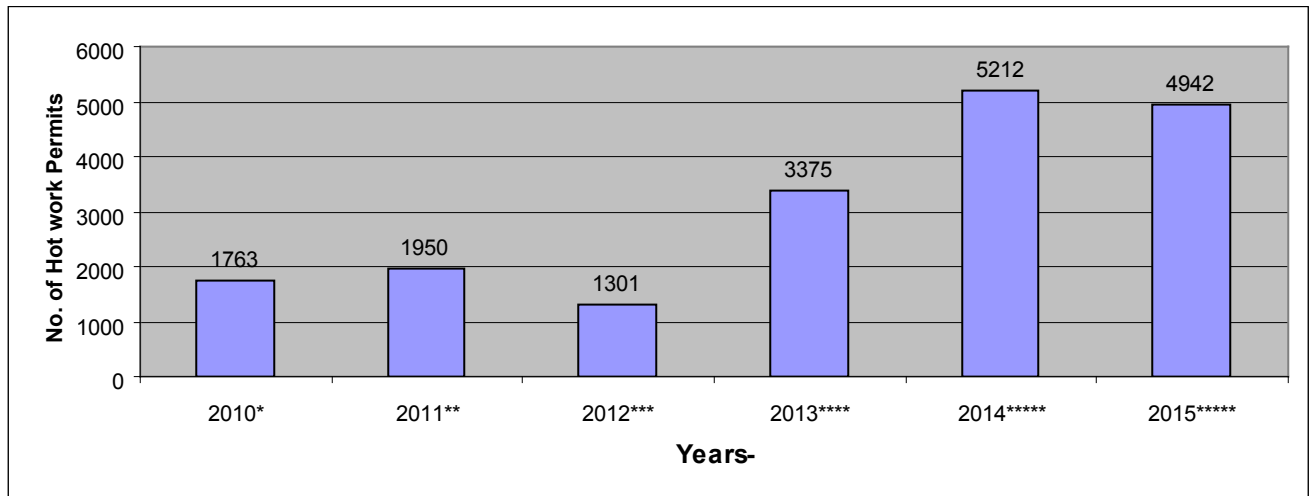
Any employee can raise one of these if they observe an unsafe situation and may recommend actions to be taken.



# Safe Manhours



# Permit To Work System Graphical Presentation



\* No Turnaround in 2010

\*\* Lube-I Refinery Turnaround March 2011

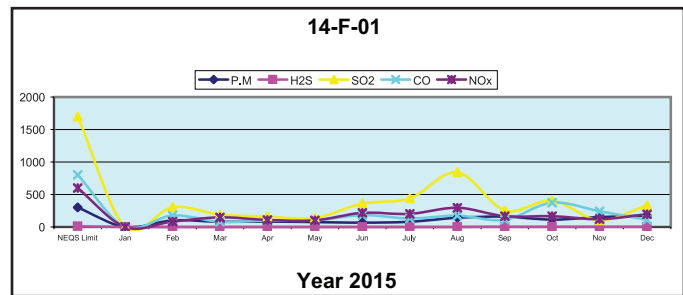
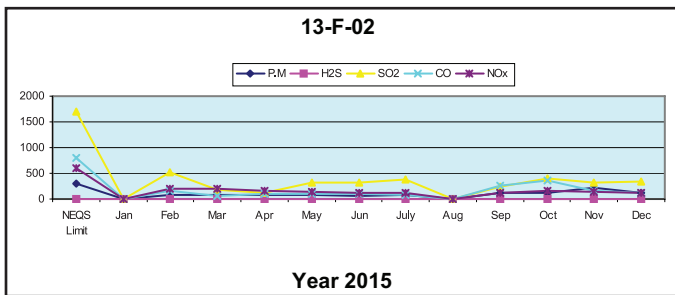
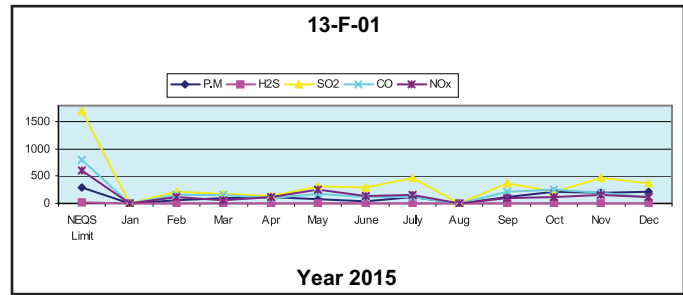
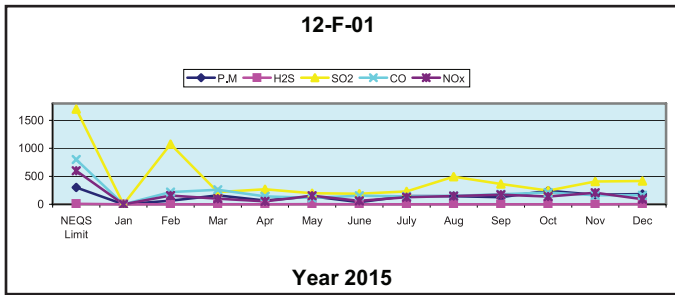
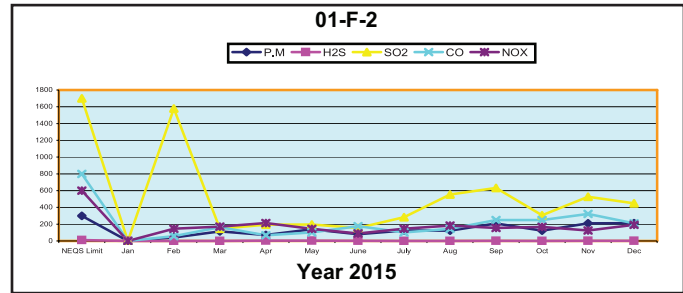
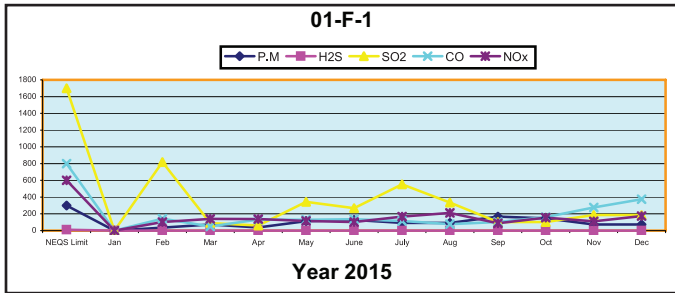
\*\*\* Lube-II Refinery Turnaround November 2012 / Fuel Refinery Turnaround December 2012

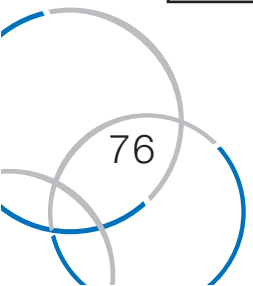
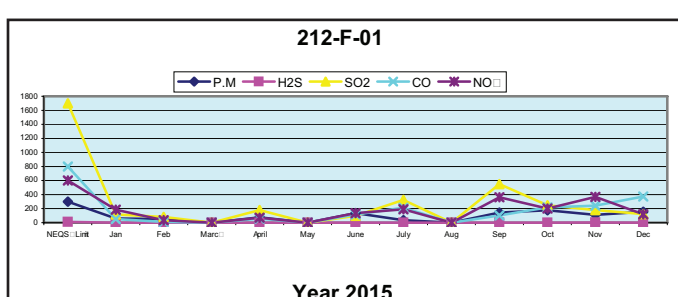
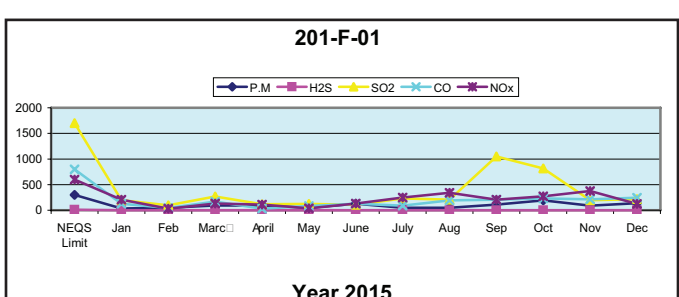
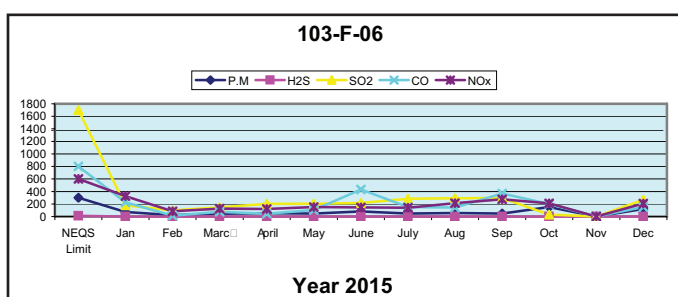
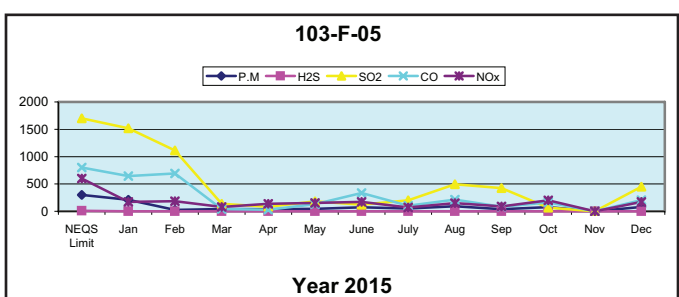
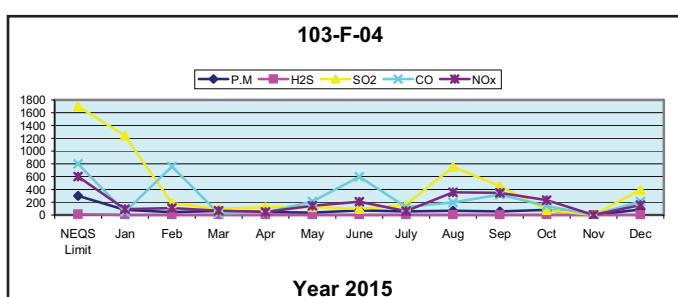
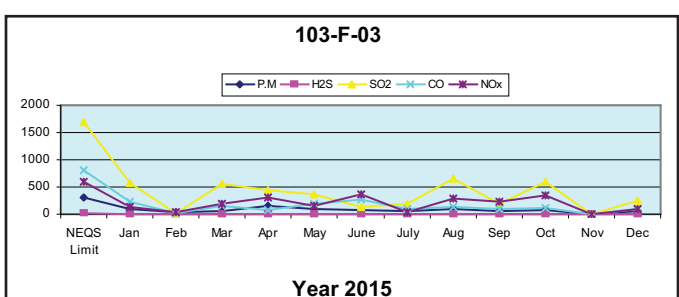
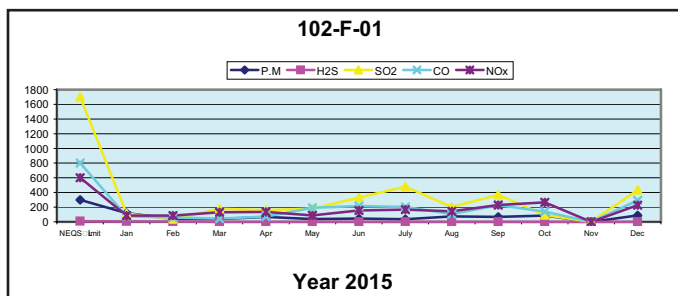
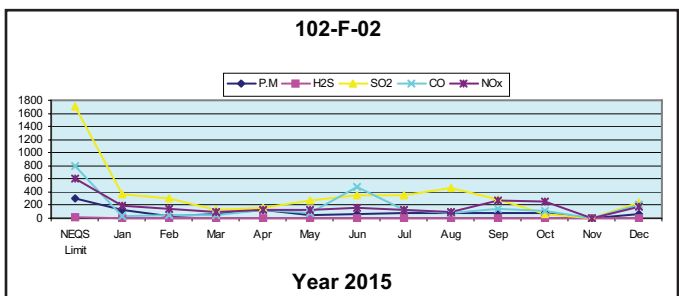
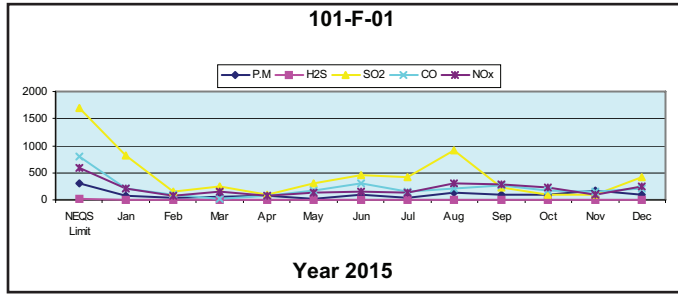
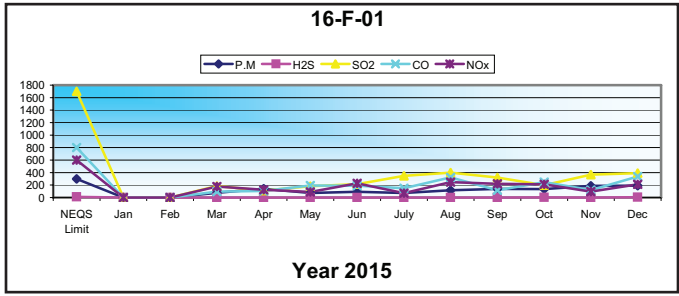
\*\*\*\* No Turnaround in 2013

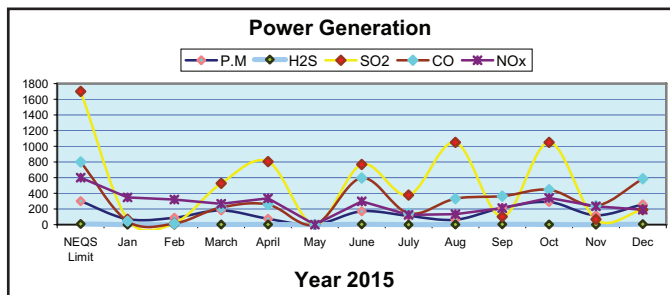
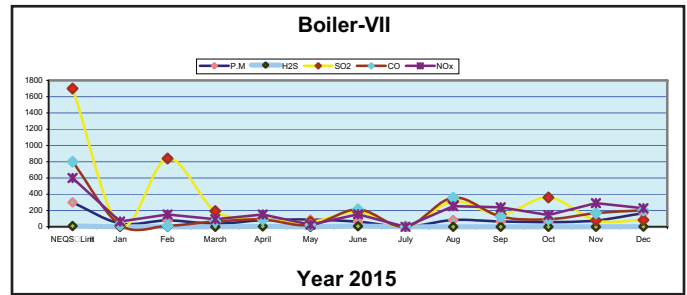
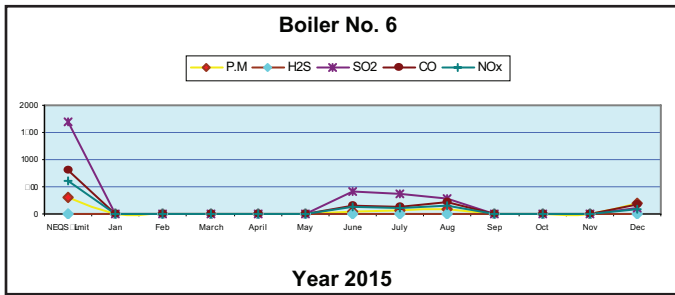
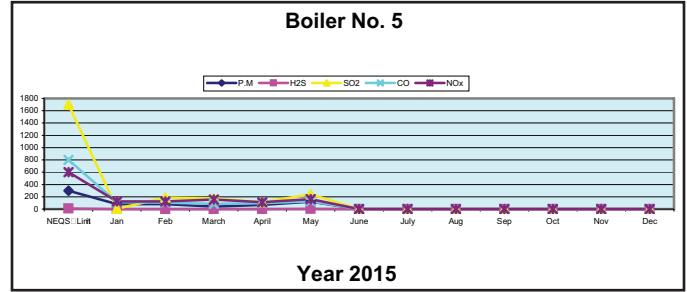
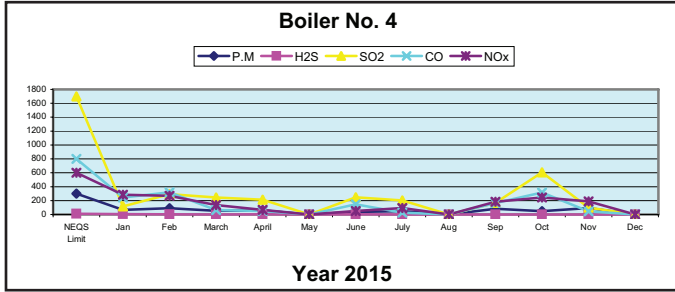
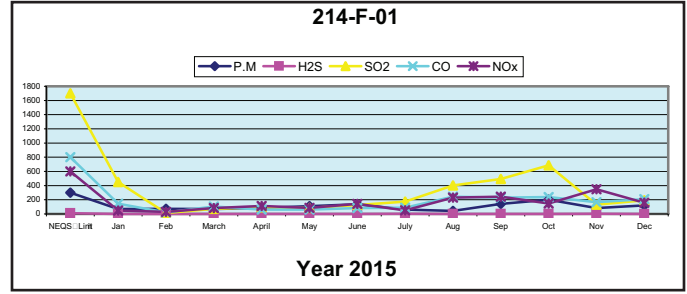
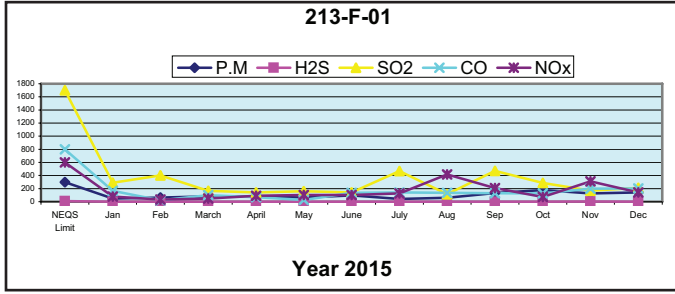
\*\*\*\*\* Lube-I Refinery Turnaround December 2014 - January 2015



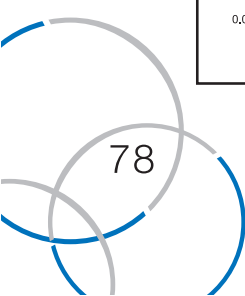
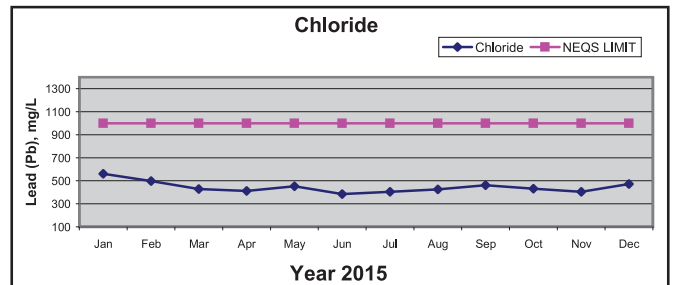
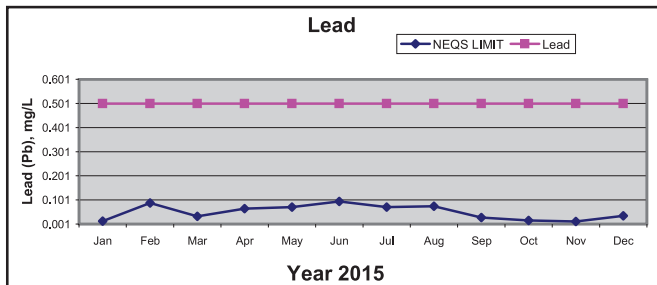
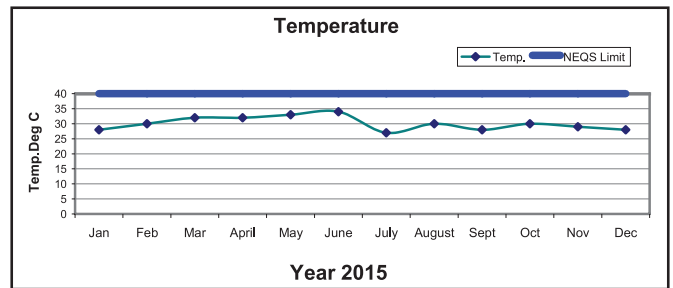
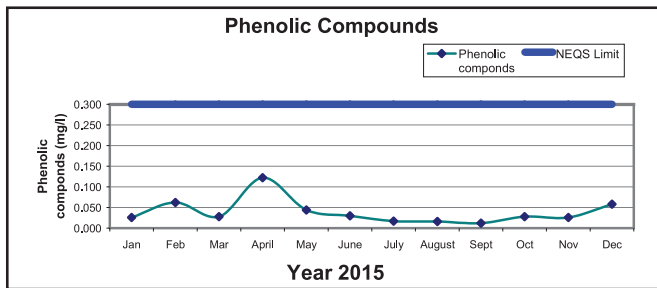
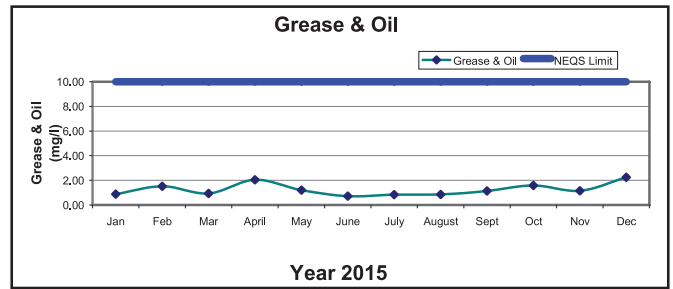
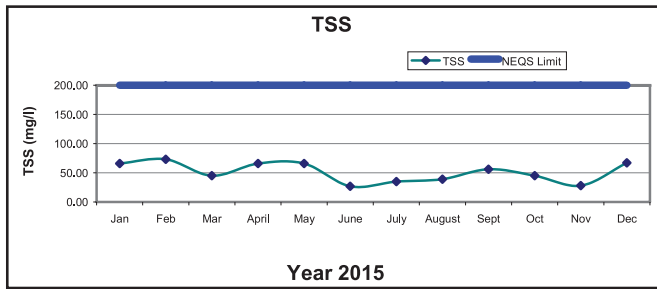
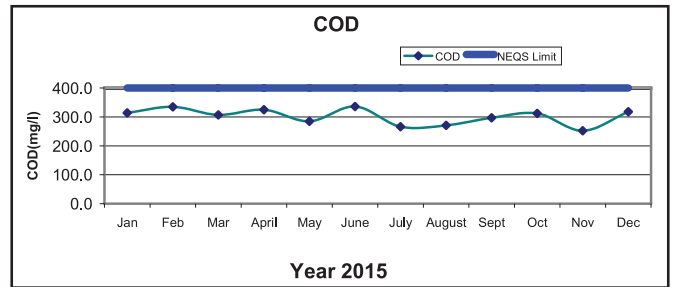
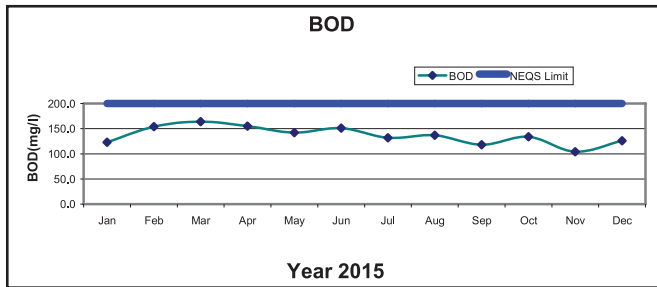
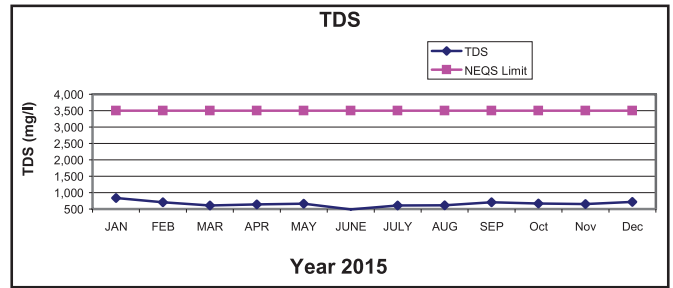
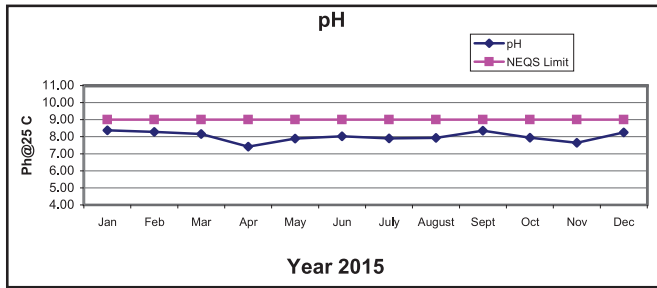
# Ambient Air Monitoring





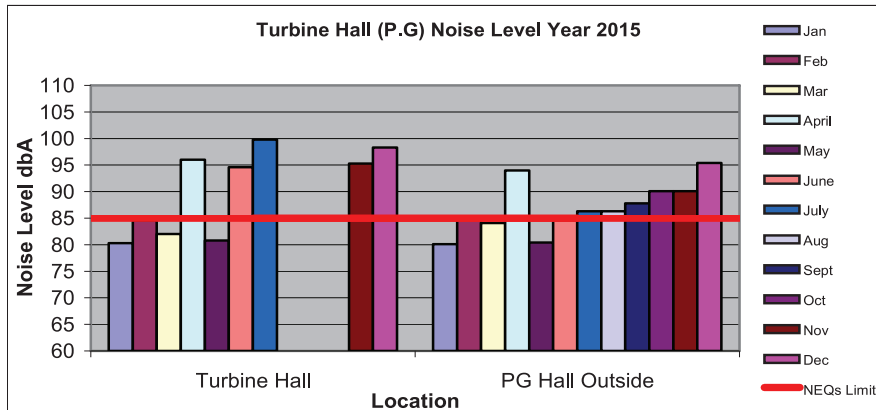
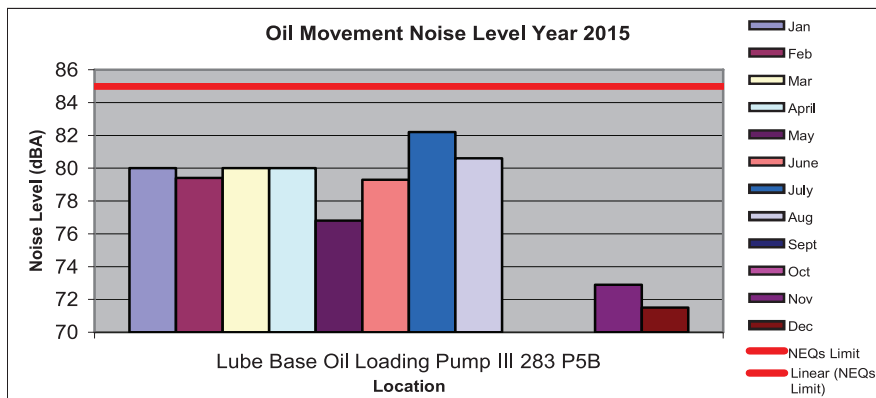
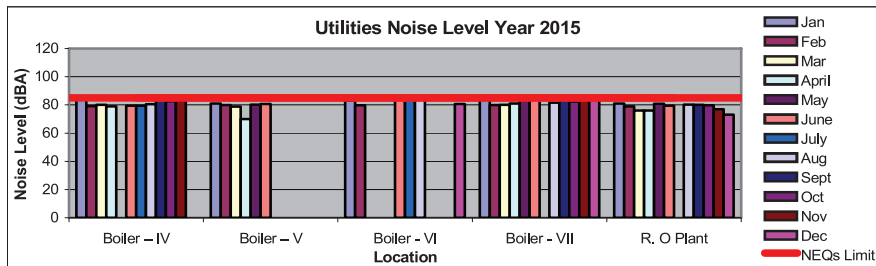
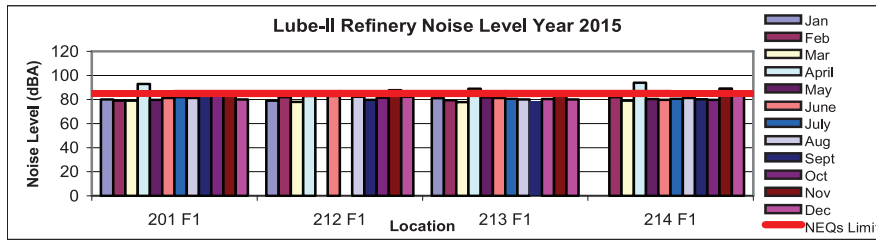
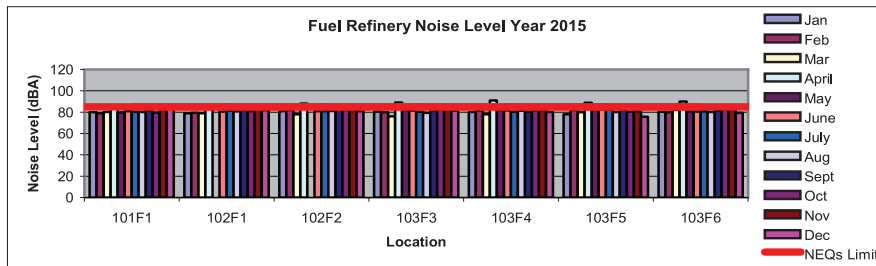


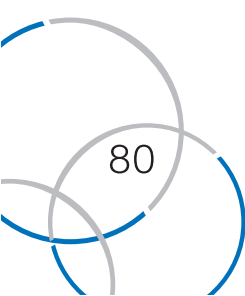
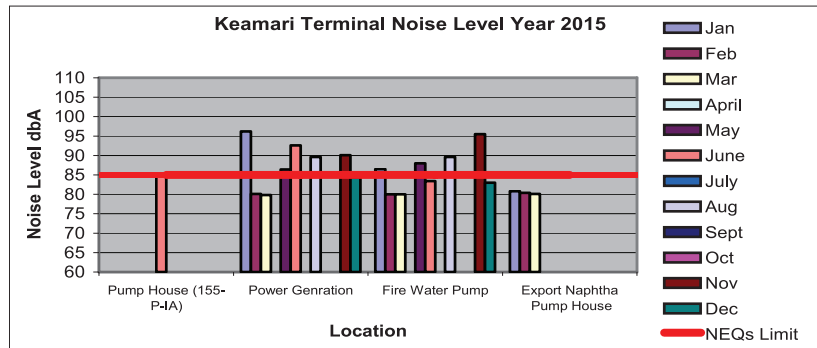
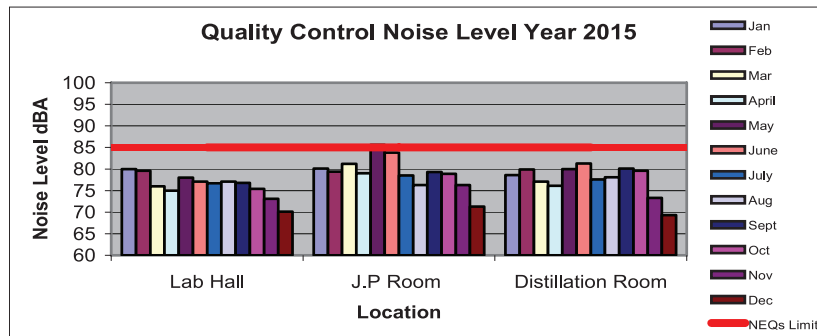
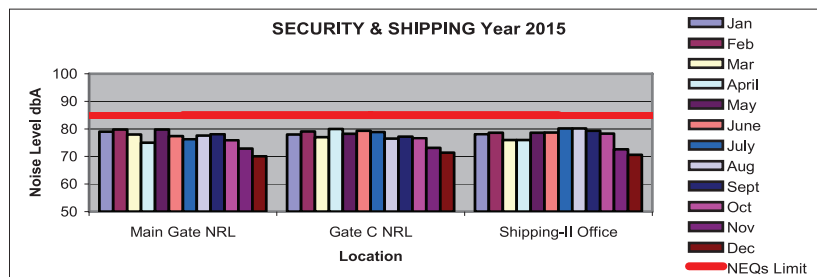
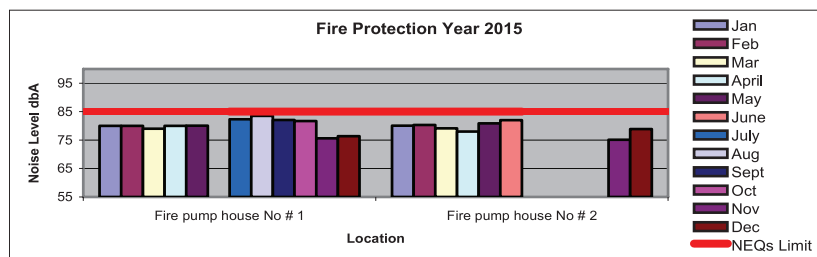
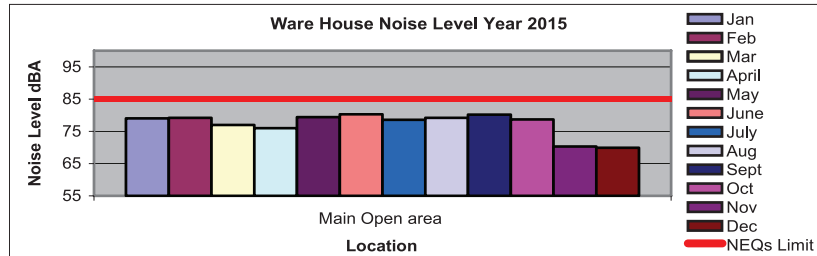
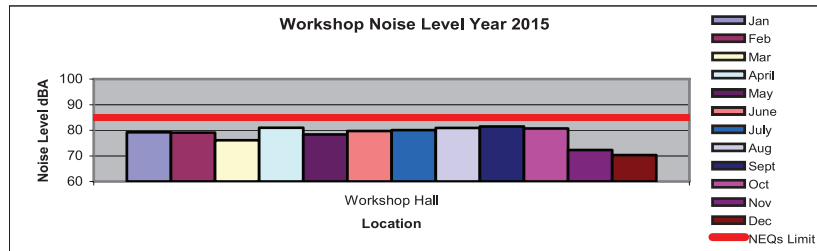
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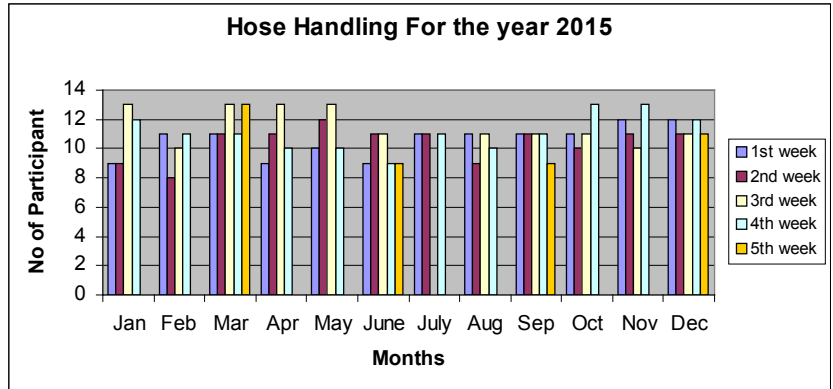


# Workstation Noise Levels Monitoring

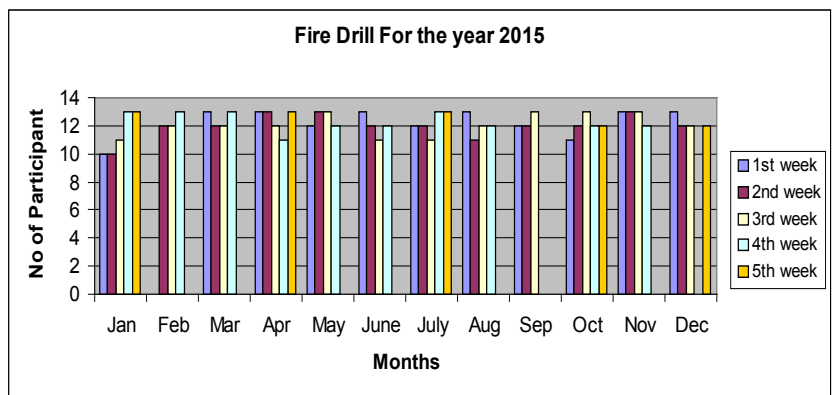




# Hose Handling Practice



# Live Fire Drills



## United Insurance Broker **Visit**



## IMS (HSEQ) **External Audit**



## Contractor's **Safety Meeting**



# Emergency Preparedness and Response



## Chinese Contractor (M/S. Hualu) Meeting



## Fire Extinguisher Hands On Training



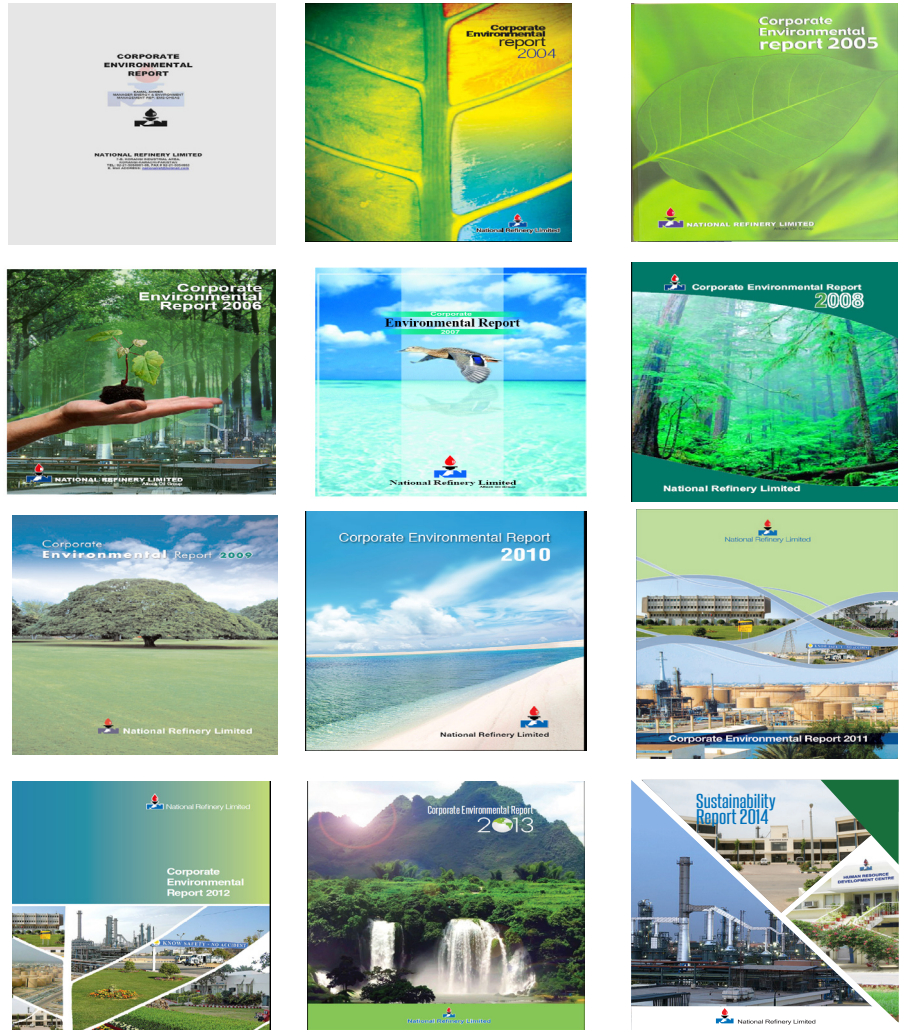
# Training



# External Communication

## CORPORATE ENVIRONMENTAL REPORT

[http://www.nrlpak.com/corp\\_env\\_report.html](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](http://www.nrlpak.com/annual_reports.html)



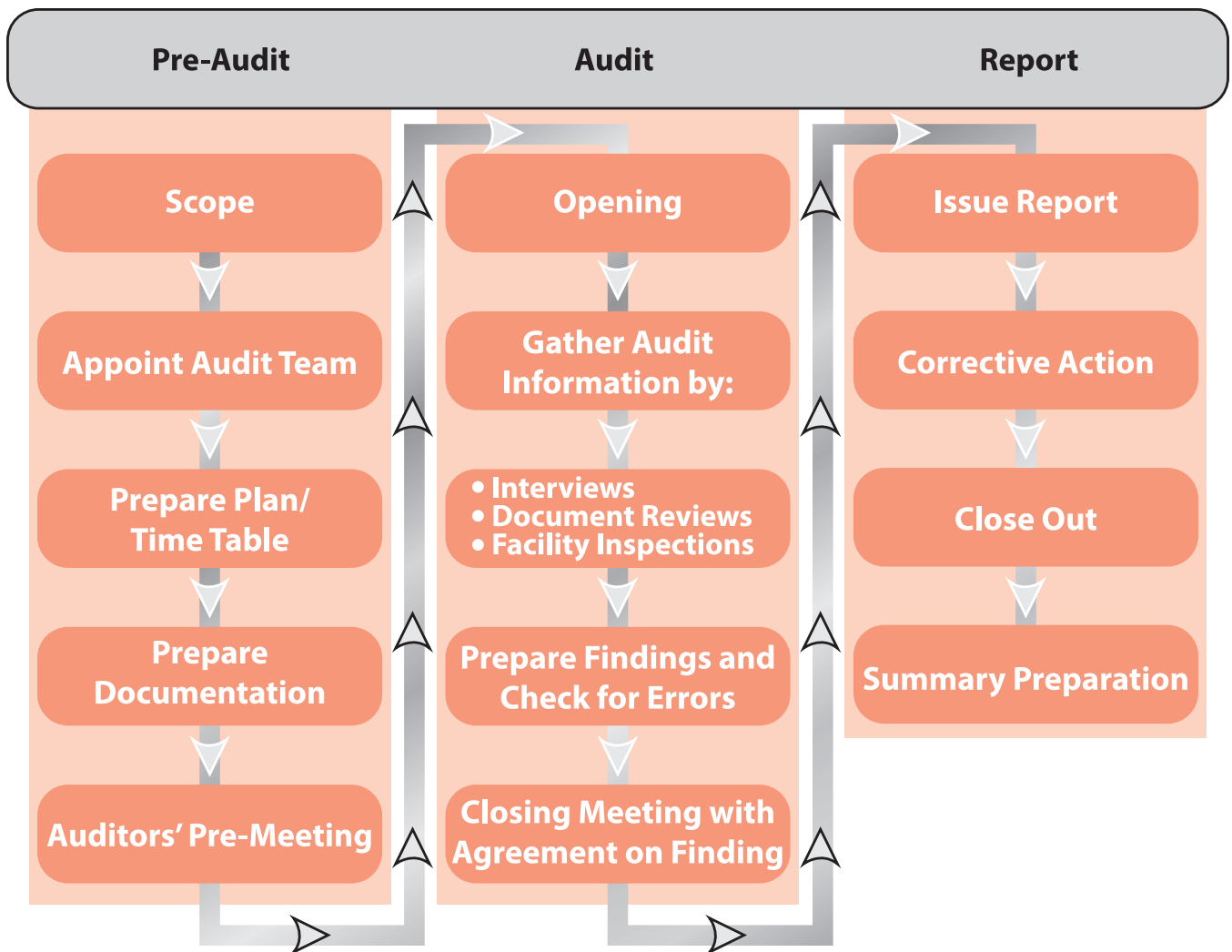
# IMS (HSEQ) Audit

The mechanism for the planning and implementation of Internal Audit for Quality, Environmental, Health and Safety management system against standards and verification of regulatory compliance at NRL.

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.

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

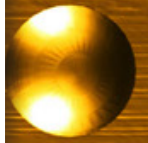
The Civil Defence Local Authority and Federal Authority also conduct audits once a year.





# AWARDS







## Honors

S. No.	Certification / Award	Period
1	Certification of BS-OHSAS 18001: 2007 Occupational Health and Safety Management System	13th Consecutive year 2003 - 2015
2	Certification of ISO 14001: 2004 Environmental Management System	13th Consecutive year 2003 - 2015
3	Certification of ISO 9001: 2008 Quality Management System	9th Consecutive year 2007 - 2015
4	Annual Environment Excellence Award National Forum for Environment & Health (NFEH)	12th Consecutive year 2004 - 2015
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

## STATEMENT OF COMPLIANCE:

TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan being an independent assessor carried out a 3<sup>rd</sup> party assessment of NRL for IMS(HSEQ) Management System requirements compliance. After a thorough Re-certification audit, the auditors of TUV Austria recommended for confirmation for the continuation certification of ISO 14001:2004, OH&SMS 18001:2007 and ISO 9001:2008 standards.

The scope covered during Re-certification audit for NRL includes manufacturing, supply, marketing, sales and export of wide range of petroleum & petrochemical products at Korangi refinery, Korangi-Keamari pipeline and Keamari Terminal.

During the Re-certification audit of NRL a competent team of TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan, review the following activity for continual improvement.

- Management commitment for the implementation, continual improvement of IMS (HSEQ) Management System.
- Define and documented reporting requirements of IMS (HSEQ) against the applicable petroleum and petrochemical industry guideline to assure consistency of industry scope.
- Site visits to observe operations and how well IMS (HSEQ) Management requirements effectively incorporate in business processes.
- Processes were in place contributing to core safety, health and environmental performance indicators.
- Meeting with relevant departmental staff that manage and perform the activity.
- Comply with the applicable legal and regulatory requirements.
- Stakeholder's engagement process.

This has been verified through re-certification audit conducted in April 2015 that National Refinery Limited has well established, documented, implemented and maintained requirements contained in the Environmental Management System ISO 14001:2004, Occupational Health and Safety Management System OH&SMS 18001:2007 and Quality Management System, ISO 9001:2008 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.

TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan select the competent auditors based on their qualification, training and experience for National Refinery Limited scope of work. In addition we have gone through Sustainability Report 2015 and found it appropriate to the above IMS (HSEQ) Management system.

**TUV Austria Bureau of Inspection and Certification (Pvt.) Limited- Pakistan**



# Glossary

LR1	Lube-I Refinery	AWT	Awareness, Training and Competence
FRE	Fuel Refinery	CAC	Communications, Consultation and
LR2	Lube-II Refinery		Participation
OKR	Oil Movement	MAM	Calibration, Monitoring and Measurement
OKT	Keamari Terminal	EVC	Evaluation of Compliance
UT1	Utilities	AUD	Internal Audit
FPR	Fire Protection	EPR	Emergency Preparedness and Response
MT1	Maintenance-I	TRR	Tracking of Regulations and other
TLW	Turnaround Planning / Local Manufacturing		Requirements
	/ Workshop / Auto shop	AAP	Agency Approvals for EMS & OHSAS
PGR	Power Generation	OCP	Operational Control
MEL	Maintenance (Electrical)	CCP	Contractor Control
MT3	Maintenance-III	AIA	Environmental Aspects & Impacts Analysis
INS	Instrumentation	EOT	Environmental Objectives, Targets and
HSE	Health Safety & Environment		Management Programs
TSR	Technical Services	HRA	Occupational Health & Safety Hazards
QCL	Quality Control		Identification and Risks Assessment
PPE	Production Planning & Economics	OTM	Occupational Health & Safety Objectives
PRJ	Project		and management Program
CON	Contract	RIP	Review of (HSEQ) Identified Projects
ENG	Engineering	NCR	Control of Non-Conforming Product
MBL	Management Block	QOB	Quality Objectives, Targets and Analysis of
DIS	Dispensary		Data
ISP	Inspection	CO2	Carbon Dioxide
SMS	Shipping, marketing & Sales	Db	Decibel-unit for measuring noise level
STR	Supply & Trade Relation	EPA	Environmental Protection Agency- Govt. of
WHS	Ware House		Pakistan
IMP	Import	IGPD	Imperial Gallons Per Day
LRU	Local Purchase	LTI	Lost Time Injury
ITS	Information Technology & System	MR	Management Representative
LCA	Legal & Corporate Affairs	MSDS	Material Safety Data Sheet
HUR	Human Resource	NEQS	National Environment Quality Standards
PER	Personnel	NOx	Oxides of Nitrogen
SCY	Security	SOx	Oxides Sulphur
SPR	System procedures	OH&SMS	Occupational Health Safety Management
DDC	Document Data Control		System
MRM	Management Review Meetings	OHSAS	Occupational Health and Safety
SRR	Structure, Roles, Responsibilities and		Assessment Series
	Accountabilities		
CPA	Corrective and Preventive Action		

# 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

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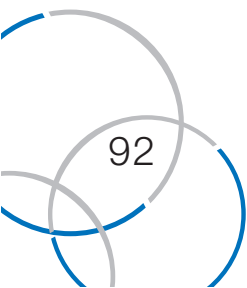
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Many many thanks for your time in answering these questions. Your answers / input will play a significant link for the improvement of this report.

## Please Forward to

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

Your Name:	_____
Your Designation:	_____
Organization:	_____
Email:	_____







National Refinery Limited



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