Presentation on

Strategies for Environmental Management at

GAIL (India) Limited

New Delhi
14th December 2013
Corporate Mission & Vision

MISSION

To accelerate and optimise the effective and economic use of Natural Gas and its fractions to the benefit of the national economy

VISION

Be the leading company in natural gas and beyond with global focus, committed to customer care, value creation for all stakeholders and environment responsibility

Incorporated on 16th August, 1984
Present Business Portfolio

Transmission
- NG Transport Capacity 180 MMSCMD (~10700 Kms.)
- LPG Transport Capacity 3.8 MMTPA (~2040 Kms.)

Trading
- Gas Marketing with volume of 87 MMSCMD
- Covering 16 States across the Country

Petrochemicals
- Significant Player (~ 20%)
- Capacity 450 KTA Polymers
- Upgradation upto 900 KTA
- 70% stake in BCPL (280 KTA) with 100% Marketing rights

LHC
- Sizeable contribution
- 7 Plant across India
- Capacity ~1.4 MMTPA
  - LPG Capacity ~1.1 MMTPA
Present Business Portfolio

**E&P**
- Securing Gas Supply or Equity Oil / Gas
- 29 Domestic Blocks
- 2 Overseas (Myanmar)

**Diversification**
- PLL - LNG Dahej-10 MMT
- Kochi-2.5 MMT
- Dabhol-5 MMT
- Renewables (wind, Solar)
- RGPPL – Power (2184 MW)
- GSEG – Power (156 MW)

**Retail**
- High Growth Area
- 8 JVs
- Incorporated wholly owned subsidiary, GAIL GAS Ltd.

**GAILTel**
- Leveraging OFC
- Countrywide Presence
- Carriers Carrier Service Provider
- 13000 KM – OFC Network
Service to the Nation

India’s Premier Integrated Natural Gas Company since 1984

- About 3/4th Natural gas transmitted through pipelines in India
- More than half of natural gas sold in India
- Almost 1/5th of Polyethylene produced in India
- LPG produced for every 10th LPG cylinder in the country
- Gas supply for about 1/2 of the country’s Fertilizer produced
- Gas supply for more than 1/2 of country’s gas based power generation
- Operating more than 2/3rd of country’s CNG stations through JVs
- More than half of country’s piped natural gas supply Through JVs
Health, Safety & Environment Management System in GAIL

Compliance Audit

Emergency Planning & Response

Environment Management

Occupational Health

Accident Investigation & Analysis

Training

MOC

Inspection & Maintenance

Leadership & Commitment

Employee Participation

Facility, Design Construction & Prestartup Review

Process Safety Information

Risk Analysis & Management

3rd Party Services

Personnel Safety

Operation & Maintenance

Work Permit System

Control of Defeat & Reliability of critical devices
Environmental Management Strategies
• Natural Gas Pipeline Network
• LPG Transmission
• Gas Processing & Petrochemical Business
• City Gas Distribution
• Water & Wastewater Management
• Air Quality Management
• Solid Waste Management
• Afforestation
• Environmental Monitoring
• Mitigation of Greenhouse Gases
• Management of Noise
• Sustainability at GAIL
• Corporate Social Responsibility
• Training
• Leveraging IT for Environment Protection
Powering & Greening India through Natural Gas Network

- GAIL owns many interstate and regional Natural Gas pipeline Networks across India.

- The network supplies Natural gas to many Industries in the Power, Fertilizers, Sugar, Paper, Steel sectors etc.

- Helping them in the cause of Environment protection.

- GAIL Natural Gas pipeline network is over 10700 kms. across the country.
Major Application of Natural Gas And Their Use

COMPONENT

METHANE (C1)

ETHANE (C2)

PROPANE (C3)

BUTANE (C4)

PENTANE (C5) +

MAJOR APPLICATIONS

FERTILIZER

POWER

FUEL

CNG & PNG

LPG

PLASTICS

SYN RUBBER

INDUSTRIAL USE
(PAINTS & SOLVENTS)
LPG Transmission through Pipelines

Clean Energy across the Nation

• GAIL is the first company in India to own and operate pipelines for LPG transmission.

• It has 1,900 km LPG pipeline network 1,300 km (JLPL) and 600 km (VSPL).

• The LPG transmission system has a capacity to transport 3.8 MMTPA of LPG.

• The pipelines have helped the cause of Environment by:
  • reducing the tanker traffic on roads
  • creating better environment, lesser pollution & safety
  • availability of cleaner domestic fuel to millions of households
City Gas Distribution (CGD)
Business in India

- Network ~ 1563 Km
- Cities Served ~ 31
- No. of CNG Stations ~ 587
- Vehicles Operating on CNG ~ 10.0 Lakhs
- No. of Households on PNG ~ 10.0 Lakhs
- Commercial Connections ~ 2585
- Industrial Connections ~ 841
GAIL’s JVs & Subsidiary

IGL, Delhi
MGL, Mumbai
BGL, Hyd & Vijaywada
CUGL, Kanpur
GGL, Agra
GGL, Lucknow
GGL, Baroda
MGL, Mumbai
MNGL, Pune
TNGCL, Tripura
AGL, M.P. (Indore, Ujjain, Gwalior)

City Gas Distribution In India
- 8 Existing JVCs
- GA’s covered- 23/58
- CNG Stations - 587/855
- CNG Vehicles 10 Lac/18 Lacs
- Domestic Connection- 10 Lac/21 Lac
Benefits of PNG (Piped Natural Gas)

- Continuous and adequate supply
- Safe fuel
- Lighter than air
- Cleanest burning fuel
- Economical to LPG and any other liquid fuels
Benefits of CNG (Compressed Natural Gas)

- Cleanest burning fuel
- Produce least emissions
- Significantly less pollutants than Gasoline.
- Reduced maintenance costs by as much as 40%.
- Same mileage as gasoline.
- Cheaper per equivalent gallon than gasoline.
Environmental Measures in GAIL Process Plants

- Use of Natural Gas as feedstock & fuel stock at all process plants of GAIL virtually eliminating:
  - Suspended Particulate matter (SPM) and
  - Oxides of Sulphur (SOx) emissions

- Provision of Adequate stack heights for dispersion of flue gas.

- Continuous monitoring of Ambient Air Quality through:
  - Fixed Monitoring stations and
  - Mobile Monitoring stations
Online analyzers are installed in all the stacks for continuous monitoring.

Continuous endeavours to reduce fuel consumption by adopting innovative Energy Conservation measures.

All safety valves, pressure controlled valves etc. are connected to a highly reliable flare system.

Flares have been designed for smokeless burning.

Loading Facilities with vapour return circuits.
• Gas detection system to ensure quick detection and control of a gas leak.
• Low NOx burners installed to control oxides of Nitrogen (NOx) emissions.
• Comprehensive Mechanical preventive maintenance practices to arrest fugitive emissions.
• Use of Floating Roof tanks and double mechanical seals in pumps for minimizing fugitive emissions.
SELECTED SITE FOR GAIL, PATA PETROCHEMICAL...
• Extensive Green Belt developed at all locations across the country to mitigate pollutants.

• Creation of water bodies, green belt, lawns, parks, ecological parks to enhance habitat and attract flora and fauna in the region.

• The Total Green belt area of total land holdings of GAIL is 41%. The Green belt area is about 17.2 million square mtrs.
Skyline of Petrochemical Complex in U.P
Elaborate Wastewater Treatment Plants & Sewage Treatment Plants to treat waste waters and meeting discharge standards at all times.

Maximizing reuse of treated waste waters for horticulture purpose and other purposes.

Rain water harvesting measures at all plants to increase ground water levels and reduce our water consumption.
• Effective solid waste management practices at all the locations.

• Disposal of hazardous waste to registered common hazardous waste Treatment Storage Disposal Facility (TSDF)/ Approved recyclers.

• Structured training program for higher environmental and sustainable development awareness.
• GAIL units are certified with:
  • ISO 9001, Quality Management System
  • ISO 14001, Environmental Management System and
  • OHSAS 18001 Occupational Health and Safety Management System.

• GAIL has installed 120 MW Wind Power Generation facilities in the States of Gujarat, Tamil Nadu & Karnataka.
• Environmental Initiatives on Green House Gas accounting, fugitive emissions monitoring with USEPA taken at many installations of GAIL.

• Changing lives with a well defined CSR Policy and Implementation of various projects for inclusive growth.
  • Focus areas include Education, Infrastructure, health & hygiene, Sanitation & water supply.
• GAIL’s environmental initiatives are focused on resource conservation, and are aimed at preserving and protecting the natural resources for future generations.

• GAIL helps preserve the scenic beauty of the TAJ; seventh wonder of the world; from the effects of pollution.
  • Special Project for Taj Trapezium area for Gas supply to Mathura Refinery, Agra and Firozabad.
GAIL (India) Limited

THANK YOU