### WELCOME

PRESENTATION
ON
SAFETY PRACTICES FOLLOWED IN
GREEN GAS LIMITED

Dated: 17.07.2014

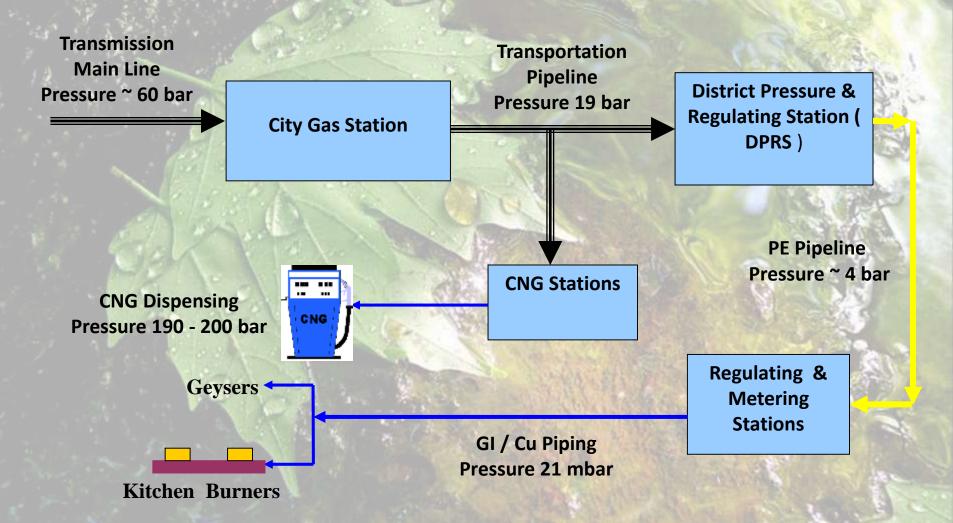
### Details of Green Gas Ltd.

- Mandated by MoP&NG for City Gas Distribution (CGD) activities in Agra, Lucknow, Western UP & Uttaranchal, in Aug' 2005.
- Incorporated on 07th Oct' 2005 as a Joint Venture (JV) of GAIL and IOCL.
- Commercial commencement in Agra & Lucknow GA in Apr' 2006.
- GGL currently provides CNG to Automotive customers and PNG to Domestic, Commercial & Industrial customers.

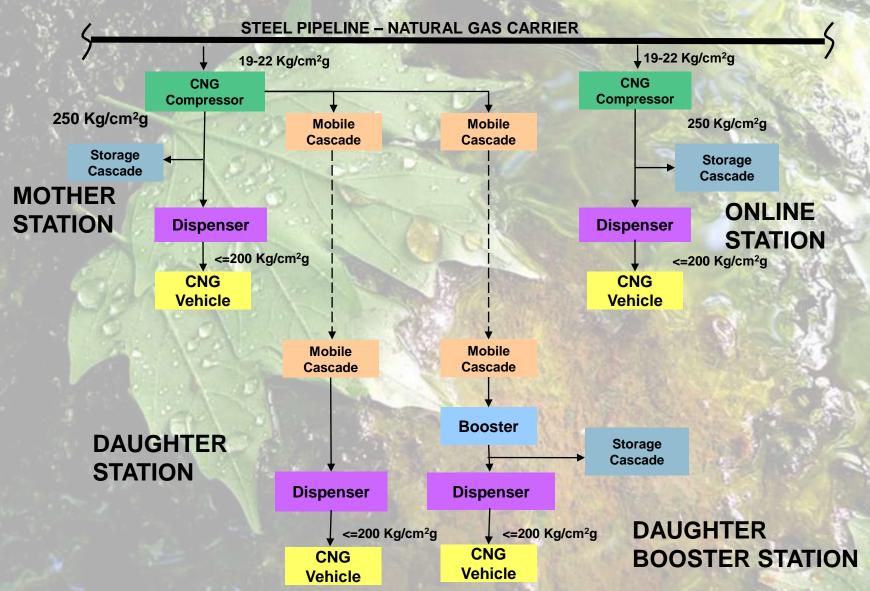
### **Physical Performance**

Particulars	UoM	Agra	Lucknow
CNG Station	Nos.	06	08
Compression Capacity	Kg/Day	81,000	97,500
Domestic Customers	Nos.	3500	900
Steel Pipeline	Km	12.57	55.25
MDPE Pipeline	Km	152.68	96.72
Commercial Customers	Nos.	06	01
Industrial Customers	Nos.	NIL	03

### City Gas Distribution – A Schematic



### **CNG VALUE CHAIN**



#### Where:

- Transportation
  - Through Pipeline network (CS/MDPE)
  - Through LCV's
- Installations
- Equipments

#### When:

### **During-**

- Design
- Construction
- Erection and commissioning
- Operations



- ASME B 31.8
- ASME B 31.3
- API 5L
- ASTM standards
- OISD 226
- OISD 179
- OISD 105
- IS 2190
- GAS CYLIDER RULES 2004
- NFPA standards
- NZS 5425
- GSR 612(E)
- GSR 39(E)

- NG pipelines designed in accordance with ASME B31.8 and manufactured as per API 5L.
- CS Pipelines coated with 3 LPE coating.
- Valves used In buried section of pipelines are butt welded only and not flange types.
- Sectionalizing valves are preferably full bore ball valves in accordance with API 6D
- QA/QC through TPIA
- WQT and WPS before welding job as per API 1104
- Continuous monitoring of job through PMC/TPIA along with company representative

- •Non Destructive testing (NDT) including radiographic examination(100%)
- Minimum 300 mm clearance from other utilities
- Hydro testing/ pneumatic testing for CS/MDPE pipeline
- Inertization through Nitrogen purging before gas charging
- •Sectionalizing valves at Max 3 km distance for steel and 1 km for MDPE pipelines
- •Use of Fire Extinguishers During commissioning of P/L.
- •Installation of markers/warning boards along the P/L route displaying Emergency Nos.

- Lightening protection shall be provided as per the requirements of IS:2309
- All electrical equipment, systems, structures pole lights control panel and fencing, etc. are suitably earthed in accordance with IS 3043.
- All the compressors, motors, switches, starters etc. installed in the premises are of flameproof construction conforming to IS:2148.
- Switch gear Room is provided at the premises as per Indian Electricity Rules.
- Installation of remote ESD switches for high pressure gas compressor packages
- Approval of station layout and License from PESO

- Installation of warning plates
- Clamping of GI piping at every 1m
- Welded risers above 20m/40m
- Regulators with UPSO and OPSO
- No concealed piping
- Specific colour coding (yellow)
- DPRS provided with redundancy, PSV's, Active & monitor regulator, slam shut valves
- Testing of GI installation before gas charging

- All electrical components installed in compressors/ dispensers are PESO approved and of flameproof type
- Gas compressors have gas detectors and flame detectors installed
- ESD switched on compressors and dispensers.
- Isolation valves for cutting gas supply
- Vibration sensors
- PSV's in each stage of compressors and in dispensers as well as cascades
- Safety interlocks for all critical parameters on compressor/dispenser

- Alarms and trips
- Use of fire resistant belts for power transmission
- Trips for accidental opening of compressor package doors
- Automated DCP flooding system for compressor units
- Dispensers provided with breakaway couplings
- All vents at suitable height.
- Cascade cylinders provided with burst discs

# SAFETY: TO ENSURE INTEGRITY OF GGL NETWORK

- Daily patrolling of the entire network
- Round the clock manning of SV stations
- CP testing for pipeline health.
- Test lead points at every km
- Checking of gas leaks in valve chambers and flange joints.
- Coating survey by Pearson/DCVG/CAT or CIPS
- Odourization- is being installed
- Network information sharing with district administration and utility companies
- Fire fighting training to patrolling persons
- Availability of fire extinguishers at SV stations

# STANDARD SAFETY PROCEDURES FOLLOWED IN GGL

- Equipment maintenance by OEM's/trained staff.
- Maintenance as per OEM recommended schedule
- Use of OEM spares
- Leak check for above ground piping at schedule intervals
- Leak checks in all equipments at regular interval
- Regular calibration of PT/TT and gauges
- Regular calibration of PSV's
- Regular calibration of gas detectors and flame detectors
- Regular maintenance of fire extinguishers
- Hydro-testing of cascades
- Pressure vessel testing

# STANDARD SAFETY PROCEDURES FOLLOWED IN GGL

- Random checking of vehicles
- Guidelines of motor vehicles act
- TREM card
- Spark arrestors installed on LCV's
- LCV driver training on safe operations
- Availability of extinguishers on LCV's
- Use of wheel chokes and earthing of LCV's during filling.
- No filling while passenger on board
- Proper Ingress and Egress.
- Queuing of vehicles.
- Avoiding over crowding of vehicles inside station
- Checking suitability of vehicles for filling.
- Disembarking of passengers.
- Ensuring keys are removed.

# STANDARD SAFETY PROCEDURES FOLLOWED IN GGL

- Use of 2 nos. Hand held Explosive meters at each Online Station.
- Display of Warning Sign Boards like Stop Vehicle, Flammable Gas, No Smoking etc.
- Training Imparted to all DSM, Technicians & Operators regarding safety in refuelling.
- Fire fighting training to all GGL/outsource staff
- Use of PPE's at the Station.
- Use of Non-sparking tools.
- Traffic cones.
- Barricading tapes.
- Wind sock.
- Availability of extinguishers in excess to recommended of OISD 179
- Regular checking of all electrical connections

### RISK INVLOVED IN CGD INDUSTRY

- Improper maintenance of CNG vehicles: unprotected battery terminals, use of local spares, loose electrical connections
- Customer awareness programs
- CNG cylinder due for hydro-testing coming for refuelling
- Random checking of vehicles
- Sharing of data with RTO for checking before issuing fitness certificate
- Third party excavation along gas pipeline network
- Sharing of details of network with district administration, utility companies
- Installation of markers along ROU
- Continuous patrolling along the network

### RISK INVLOVED IN CGD INDUSTRY

- PNG network being very extensive highly susceptible to third party damage.
- Continuous partolling
- Customer awareness
- Possibility of modification in GI installation by customer himself
- Customer awareness
- Reasonable modification charges
- Frequently changing geography due to flyovers, metros, road widening
- Coordination with concerned agencies during work execution
- Limited space availability for installation of valve chambers, SV stations and DPRS
- DRS/SV installed in public places properly fenced
- Round the clock manning

# PNGRB – Technical & Safety Standards (T4S)

- GSR 612(E): Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks
- It includes Technical & Safety aspects of Design, Materials, Fabrication, Installation, Inspection and Testing, Commissioning, operations, maintenance, modifications and abandonment of CGD networks including CGS and downstream Primary (49 barg 7 barg), Secondary (7 barg 100 mbarg) & Tertiary networks (less than 100 mbarg)
- It excludes CNG Station of all types (Mother Station, Online Station, Daughter Booster Station & Daughter Station) and suggests that it shall be governed as per PESO Gas Cylinder Rules 2004 and/or any further modifications or amendments from time to time
- It also excludes steel pipeline between City Gate Station (CGS) and Natural Gas Pipeline (Sub-transmission pipelines) and suggests that it shall be governed as per separate regulations

# Other Safety Initiatives: PNGRB guidelines

- HSE policy
- ERDMP
- Classification of emergencies
- MOU on mutual aid
- ERV
- Hazop study
- QRA study
- Regular training on safe operations
- Fire fighting drills
- Mock drills
- Emergency Response Team
- Safety committee meetings

# Other Safety Initiatives: PNGRB guidelines

- Emergency control centres
- Display of MSDS at strategic points
- Accident/ Emergency reporting procedures
- Assembly point for head count
- Display of emergency contact nos/ hospitals/ police stations/ fire stations
- Screening of safety films at CNG stations
- Safety awareness programs for PNG consumers
- Distribution of safety pamphlets
- Celebration of fire service week/ fire & Safety week for safety awareness

### Reporting of Emergencies

	Reporting Format					
		Type-I Near Miss Incident	Type- II Without loss of Production, Supply or Human Life	Type-III With loss of Production, Supply or Human Life	Type-IV Fire	Type-V Explosion/Fire/Gas Leakage/other emergencies involving public
	Location	✓	✓	✓	✓	✓
ľ	Time	✓	✓	✓	✓	✓
į	First witnessed by	✓	✓	✓	✓	✓
1	Details of Incident	✓	✓	✓	✓	✓
	Action Taken	✓	✓	✓	✓	✓
	Reporting Authority	Operator or (O&M)	Operator or (O&M)	Shift I/C	HSE Officer	Section I/C
j	Internal investigating Authority	Head (HSE)	Head (HSE)	Head (O&M)	Head (HSE)	Head of Station
	External Investigation	Х	Х	✓	✓	✓
	Reports to PNGRB	X	X	✓ (*)	✓(*)	√(*)

#### ✓ To be filled in reported

X Not required to be reported

(\*) shall also include the history of Type-I & Type-II incidents

# Compliance Schedule of ERDMP

	Schedule of Implementation of Coo		
S. N	Activity	Implementation Time (from the notification date of Codes of Practices for ERDMP)	Compliance in GGL
1	On-site Emergency Plan	3 months	Prepared and followed
2	Off-site Emergency Plan(submission of information to District Authority)	3 months	In process
3	Resources in position	6 months*	Done
4	Accredited Third Party Certification of ERDMP	1 year	Done
5	Testing and Mock Drills (On-site)	3 months	Done on regular basis
6	Testing and Mock Drills (Off-site)	** 12 months	Done with Mutual Aid Partners

Note: A copy of ERDMP, duly approved by the Board of Directors of the organization shall be submitted to the PNGRB.

- \* Long delivery items should be tied up with mutual aid organizations upto 12 months
- \*\* To be coordinated with District Authority.

## Compliance Timeline on Critical Activities

S.N	Critical Infrastructure/activity/processes	Time period for Implementation	Implementation Plan	Compliance in GGL
1.	Pressure reduction skid CGS(active/monitor combination) with a minimum 50% redundancy including slam shut valve for over pressure protection and creep relief valves	1 Year	Modification of CGS Skid	Done for DRS/ MRS and wherever required
2.	On line odourisation equipment designed to minimize fugitive emissions during loading, operation and maintenance.	1 Year	Automated odourisation systems to be used	Being installed
3.	Height of vent shall be minimum 3 meters above working level.	6 months	Increase height of vent	Done
4.	Gas detectors shall be installed at critical locations.	1 Year	Install gas detectors in the CGS and District Pressure Regulating Station	Installed
5.	Pressure reduction for DRS (active/monitor combination) skid with minimum 50% redundancy including two safety devices at least one of them shall be a slam shut valve for over pressure protection/under pressure and inlet and outlet isolation valves.	2 Year	Modification/replac ement	Done
6.	Steel reinforced rubber hose conforming to IS 9573 Type IV.	6 months	Replacement of all rubber hoses@ fifty thousand per year	Done
7.	Pipeline test record and joint radiography and cover in form of pipe book.	3 months	Can be submitted in stages	Done
8.	HSE Management System	6 months	To be implemented	Being implemented
9.	Emergency Response Plan, Disaster Management Plan and written emergency procedure. Also, provide for an Emergency Control Room, manned round the clock and equipped with effective communication system and emergency vehicles fitted with communication facilities, first aid equipment. Fire extinguishers, gas detectors, repair kits and tools, maps plans, material safety data sheets etc. at its disposal.	6 months	To be implemented	Done

## **Mutual Aid Agreement**



### **Fire Fighting Training**





### **Fire Fighting Training**



### Consumer Awareness programs



### Safety Pamphlets: Customer Awareness



#### ग्रीन गैस लिमिटेड

ंभा देखित विविद्य का प्रीयका स्थान स्थानक का नुपार तान्तु रिजरटर्ड कार्यालय - फॉरब्यूना टॉवर, द्वितीय तल, १०, राष्ट्रा प्रताप मार्ग, लंगन्त्र - 226001 प्रतेम - 0522-4088530

गैस भरवाते समय वाहन चालकों के लिये निर्देष

#### क्या करना चाहिये

- स्टेशन में प्रवेश के पहले यह सुनिश्चित करें कि वाहन में झड़वर के अलावा कोई व्यक्ति/सवारी न हों।
- स्टेशन में प्रवेश के दौरान वाहन में लगे सभी उपकरण जैसे टेप, रेडियों, लाइट्स आदि बंद हो।
- √ वाहन को हमेशा हैण्ड ब्रेक या गियर में खड़ा करें।
- ✓ सुनिश्चित करें कि वाहन की चाभी निकाल दी गई है।
- / सुनिश्चित करें कि वाहन में कोई सामान न रखा हो।
- √ सुनिश्चित कर लें कि बाहन से गैस रिसाव तो नहीं हो रहा
  है।
- गैस रिसाव चेक करने के लिये हमेशा साबुन का पानी/झाग इस्तेमाल करें।
- वाहन का सी.एन.जी. रजिस्ट्रेशन प्रमाण पत्र हमेशा रखें
   और मांगने पर दिखाएं।
- ✓ स्टेशन में आने और जाने के लिये निर्देशित रास्तों का ही उपयोग करें।
- √ सुनिश्चित कर लें कि वाहन से नोजल हटा दिया गया है।

#### क्या नहीं करना चाहिये

- ४ स्टेशन पर मोबाइल फोन का उपयोग न करें।
- 200 कि. वा. /हे. भी. ' के प्रेशर से अधिक गैस भरवाने का अनुरोध न करें, यह खतरनाक हो सकता है।
- 🗶 वाहम में कोई ज्वलनशील पदार्थ न रखे।
- 🗶 स्टेशन पर प्रसंपान न करें।
- ैं से रिसाय चैक करने के लिये मोमबली या माविस का उपयोग न करें।
- शैस भरवाले समय डिस्पेन्सर और वाहन के पास न खडे रहें।
- वाहन में कोई ऐसी वस्तु न रखें जिससे स्टेशन का कोई उपकरण प्रभावित हो।

#### आपकी सुरक्षा आपके हाथ

आपातकालीन स्थिति में उपयोग किये जाने वाले नंबरः

कील मेंक प्रिक्रिकेट

emers affection

समानक पुलिस

#### लखनऊ शहर में सी.एन. जी. वितरण स्टेशनों की मुची

- जी.जी.एल. मदर स्टेशन, अमासी, ह्याई अब्डे के सामने, लखनक
- जी.जी.एल. मदर स्टेशन, विभूतिखण्ड, (यू.पी.एस.आर.टी. सी. डिपा), गोमती नगर, लखनऊ
- कोको सी एन जी स्टेशन, विमूतिखण्ड, निकट वैंक ऑफ इण्डिया मवन, गोमती नगर, लखनक
- इन्दिस ओटो आई.बी.पी. सी.एन.जी स्टेशन, पी.पी.-। सेक्टर-एम, आशियाना कालोनी, लखनक
- त्रीकुटा सी.एन.जी किलिंग स्टेशन, कानपुर हरदोई बाईपास रोड निकट बुद्धेश्वर पीराहा, लखनज
- स्टेण्डर्ड पयुल्स सी.एन.जी. स्टेशन, सीतापुर रोड, मडियाँव, लखनऊ

### **Training certification**



#### ग्रीन गैस लिमिटेड

#### GREEN GAS LIMITED

IN SHIRT WINDOWS OF GAR, SHARE LITTLE & HARM THE COMPUTATION LITTLE STORY LITTLE SHARE HER SHIP LITTLE STORY LITTLE SHARE LITTLE SHARE

Dated 22.03.10

#### TRAINING CERTIFICATE

It is to certify that the Tourish Address has attended training on 'CNG related operational procedures and practices for safety in CNG dispensing at the CNG station'.

He has shown keen interest during the training period and his performance has been found satisfactory.

Training In charge

(Samit Pandey) Manager (OsCM) Authorized Signatory

(Ashutash Lohumi) Manager (HR) This is to certify that Mr. Tanveer Abbas

Fighting Four/GGL

has successfully completed theoretical and practical instruction on

Swagelok Fitting Installation & Tube BendingTraining

Conducted by Swagelok Delhi

Swagelok

Auth. Sign

03/03/2011

#### Validity: 1 Year from the date of issue

This Card is not transferable. On Demand it must be produced & its loss must be reported to the Head of the Department.

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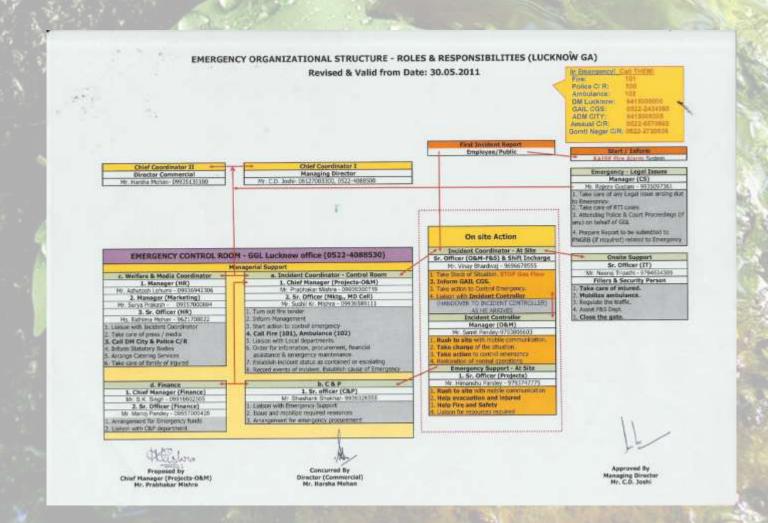
Swagelok Delhi, Unit No. 414, Radisson Suites, Block B Sushant Lok Phase 1, Gurgaon – 122 009-01

Ph: 0124-4045631/2/3 Fax: 0124-4045634 E-mail: swagelokdel@gmail.com Web: www.swagelok.com

Swagelok

Regit Cities: Finished from 2" Flore 10 Rana Flang Many, Liabane (6 Pt. 208 661 Proces 2022 elektric assetze: For 1622-4588228

### **Emergency Organization structure**



### **GGL – ERDMP Accredited**

Certification Engineers International Limited



#### **ERDMP Accreditation Certificate**

This is to certify that

Emergency Response & Disaster Management Plan of

#### **Green Gas Limited**

for CGD Network at Lucknow and Agra

Have been Reviewed, Verified and found to comply with requirements of Statutory Lows & ERDMP Regulation, 2010 of Petroleum & Natural Gas Regulatory Board

Refer Report & Check list attached for Observations / Remarks.

Date of Certificate: 31.03.2013

Validity of Certificate till: 30.03.2016

Issued By

M.P. Jain

Certificate No. CEIL/930% TROMP/AKS/010

- Review & Verification of Emergency Response Plan carried out on pample basis at per statutory regulations, matienal / international standards & best empreceing practices.
- Continues in subject to received satisfactory maintenance of plans, equipment, machineries, safety devices, safety practices, resources and payded equation procedures.
- This Certificate has been insent without projection to say Party. Neither CEL you the Impactor shall under any disconstances be held exposurable or limits to any person for any car, continue, of fault or negligence, what-so-cher.

