

# PETROLEUM AND NATURAL GAS REGULATORY BOARD

New Delhi, the....

## 1. Short title and commencement.

These guidelines may be called the Petroleum and Natural Gas Regulatory Board (Commissioning and Gas Charging in Steel Pipelines for City or Local Natural Gas Distribution Networks) Guidelines, 2016.

## 2. Definitions.

(1) In these guidelines, unless the context otherwise requires,-

- (a) "direct purging" means the displacement of air by natural gas or vice versa;
- (b) "purging" means to free a gas conduit of air or gas, or a mixture of gas and air;
- (c) "displacement purging" means purging to a specified end-point with minimal mixing of incoming and outgoing gases;
- (d) "Engineer In-charge or responsible engineer" means the qualified engineer appointed by CGD entity who will be responsible for the application of all or part of these regulation;
- (e) "indirect purging" means the displacement of natural gas by inert gas followed by displacement by air or vice versa;
- (f) "inert gas" means any gas or mixture of gases which will neither burn nor support combustion;
- (g) "Lower Flammable Limit (L.F.L)" means the concentration of flammable gas, vapor or mist in air above which combustion can be sustained. The term may be considered equivalent to the term "lower explosive limit" (L.E.L) e.g. for methane, LFL= 5 % gas in air;
- (h) "purge end-point" means a pre-specified mixture of components, chosen so that hazardous mixtures cannot be formed at any stage of the purging operation;
- (i) "purge pressure" means the (inlet) pressure in the pipe during purging ;
- (j) "purge velocity" means the velocity of the purge gas in the pipe being purged;
- (k) "purge volume" means the theoretical volume of the purge medium to complete the purge;
- (l) "slug purging" means purging by the formation of a barrier of inert fluid between natural gas and air;
- (m) "stratification" means the situation where low density gas (e.g. natural gas) flows over the higher density gas (e.g. air or nitrogen)or, where high density gas flows under low density gas;
- (n) "vent velocity" means velocity of the purge gas in the vent pipe.

(2) Words and expressions used and not defined in these guidelines, but defined in the Act or in the rules or regulations made there under, shall have the meanings respectively assigned to them in the Act or in the rules or regulations, as the case may be.

## 3. Applicability.

- (1) These guidelines shall apply to an entity which is laying, building, operating or expanding or which proposes to lay, build, operate or expand a city or local natural gas distribution network.
- (2) These guidelines cover the general recommendation for purging, commissioning and decommissioning operations for natural gas with and without the use of inert gas in the City or Local Natural Gas Distribution Network up to riser isolation valve.
- (3) For PE pipelines and domestic installations, commissioning should be done as per the laid down and approved procedure of the entity.

- (4) This guideline shall be read in conjunction with Petroleum and Natural Gas Regulatory Board( Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008, ASME B31.8 and IGE/SR/22.

#### **4. Intent.**

It is intended to apply this guideline for the purpose of safe purging, commissioning and de-commissioning of City or Local Natural Gas Distribution Network, which has been constructed and tested confirming to specifications laid down in the PNGRB Technical Standards for CGD Networks (T4S).

Prior to start of purging activities, following shall be put in place duly approved by authorized person.

- (a) Written cleaning and purging procedures shall be developed and implemented.
- (b) Written procedure for each cleaning and purging activity shall address, as a minimum, the following items:
  - (i) Scope of work and site specific purge procedure development.
  - (ii) Environmental conditions and work locations.
  - (iii) Communication plans.
  - (iv) Control of ignition sources.
  - (v) Pre-purge piping system assessment.
  - (vi) Purge monitoring and instrumentation.

#### **5. Pre-Commissioning checks.**

Prior to commissioning, the entire pipeline system shall be checked with respect to the “as built drawings” and other design specifications. The pre-commissioning checks should include, but not limited to, following, namely:-

##### **(a) Tightness test.**

The tightness test (pneumatic) should be completed at a pressure of at least 2 bar(g) with air or any inert gas for steel network), after completion of all mechanical activities including hydro test, cleaning and drying process. For low pressure network tightness test should be done at least at operating / working pressure.

Once the pipeline is connected with live line for purging/ gas-in, it should be commissioned immediately and completed as a continuous process.

##### **(b) Function-test of field equipment and system.**

The supports, route markers, valves, instruments, controls, interlocks etc. are adequately installed and physically checked along the pipeline. All the valves / equipment are checked for intended applications by simulating the operation condition before the gas is introduced to ensure that each valve is operating correctly. The pipeline and allied systems, including safety systems shall be fully function-tested. The pressure and temperature gauges shall be calibrated prior to use before installation.

##### **(c) Survey of the pipeline.**

A detailed survey (preferably through line walk) of the pipeline route shall be carried out to confirm that no leakage is observed along the pipeline alignment and at the associated equipments & installations and also to ensure that proper fittings / supports, route markers, SV installation as applicable etc. have been installed along the network. Ensure all points other than purging & venting are in closed condition.

**(d) Purging in the Pipeline.**

The entire primary network, which is ready and proposed for commissioning, shall be purged with air or Inert Gas at positive pressure of not less than 2 bar(g). Reading of Pressure Gauge installed at each Inlet point, Exit point and other specific points {like Sectionalizing valves (SVs) and Tap off Points (TOPs)} shall be noted in a specified format.

**(e) Checking of Communication System.**

Availability of proper communication system should be checked and confirmed to the Commissioning In-charge.

**6. Commissioning Preparation.**

After completion of the pre-commissioning checks, the pipeline network is considered to be ready for the commissioning.

Written procedures shall be prepared to ensure that operations are carried out in a safe manner.

**6.1 Safety Audit.**

Before start of commissioning works, the Safety Officer of CGD entity shall carry out a Safety Audit, the relevant details of which shall be recorded on the Safety Checklist in accordance with the Technical & Safety Guidelines as per -Technical standards and ERDMP.

The Audit shall verify that:

- (a) All Commissioning personnel have been made aware of the safety hazards of the operations to be undertaken.
- (b) Procedures & Documents –including those for possible emergencies shall be developed and followed.
- (c) The agreed area has been cordoned off.
- (d) Communications are working satisfactorily.
- (e) Work Permit is issued to the relevant agency.

**6.2 Responsibilities during the commissioning operations.**

The CGD entity authorized for a GA shall have the overall responsibility for the implementation, record and control of all procedures, forms & formats contained in this Technical Document.

The Commissioning In-charge along with the team of Supervisors / Technicians, involved in the Main Line (ML) network commissioning shall have the direct responsibility for following all the procedure(s) and generating all the records as per the formats prescribed in this Technical Document.

**6.3 Commissioning Process.**

As a part of procedure, the entity should ensure specific checklist prior to pipeline commissioning based on type of purging method adopted by them i.e. direct, indirect, complete displacement, slug displacement as discussed hereinafter in this guidelines. However, illustrative check lists are annexed to this guideline for reference.

Check & Report to Control Station about the following prior to commissioning, wherever applicable:

- (a) Valves are checked for respective opening / closing positions.

- (b) Check Line Pressure. In case of any over pressure in the line, open the Vent & Drain Valves and depressurize the line.
- (c) Close all the Vent Valves.
- (d) Open the Vent Line if any.
- (e) Nitrogen flow rate shall be controlled by opening / closing the inlet purging valve.
- (f) Ensure proper Nitrogen Purging at first Vent point next to the starting point.
- (g) After Confirmation from vent point, open the valve.
- (h) Record the line pressure at every 10 minutes interval.
- (i) Ensure Positive Pressure (not less than 1.5 kg/cm<sup>2</sup>) for Nitrogen Purging in the entire Pipeline.
- (j) After ensuring the nitrogen purging, close purging valve.
- (k) Remove the Nitrogen Purging Connection and install a Blind / Plug and Close the Valve.
- (l) Gas-in to be started after confirmation of readiness at all stations with closed valves in closed position.
- (m) Gas Inlet valve to be opened for 5° angle (crack open) and simultaneously nitrogen shall be vented. With further valve opening, Pipeline shall be pressurized up to 5 kg/cm<sup>2</sup> at first SV installations (or end point if primary network is less than 2.5 kms). Gas availability shall be ensured at this point by LEL / Methane detector and shall be communicated back to Control Station.
- (n) Subsequently, each section of Pipeline shall be pressurized so that entire ML network is free from Nitrogen and is pressurized with Natural Gas at a pressure of 5 kg/cm<sup>2</sup> up to end of the pipeline.
- (o) Hold the pressure of 5 kg/cm<sup>2</sup> for a minimum of 01 hour and check the entire ML network for No Leakage.
- (p) If any leakage is observed, it shall be recorded and arrested properly. No Leakage condition shall be recorded at each location of the ML network (i.e. pipeline, SVs, and TOPs).
- (q) In No Leakage condition, Natural Gas Inlet Valve shall be further opened to increase Line Pressure to 10 kg/cm<sup>2</sup>.
- (r) Hold the pressure of 10 kg/cm<sup>2</sup> for minimum 01 hour and check the entire ML network for No Leakage.
- (s) Repeat the above mentioned process in the steps of 10 kg/cm<sup>2</sup> until the MAOP of the ML network is reached.
- (t) Final Leak test to be carried out at Maximum Allowable Operating Pressure (MAOP).
- (u) Valve position is to be recorded in the Specified Format (Annexure – I) and shall be maintained as per post Gas-In valve status.

In addition to the above, the following should also be ensured before start of commissioning activities, namely:-

**(a) Personnel Training.**

All personnel should be properly briefed or trained for the correct operational and safety practices prior to commissioning.

**(b) Responsibility.**

The Engineer in-charge shall be the authorized person to ensure the safe delivery of gas during the commissioning. No operation should be commenced until the system checks and compliance are approved by the engineer in-charge.

**(c) Vent Design.**

Design of vent pipe wherever applicable should be as below:

- Minimum height of vent pipe shall be 3 metres above working level. It should be vertically installed and should discharge to open air;

- Vent pipe should be sited at least 5 meters downwind of possible sources of ignition or potential sources of ignition;
- Vent pipe should be firmly supported and sited where vented gas will not drift in to a residential area;
- Vent pipe should be metallic, as the gas velocities involved could generate static electricity in polyethylene vent pipes;
- Vent pipe should be properly earthed and not fitted with a flame trap.

**(d) Special Requirements.**

- i. Branch systems may be purged simultaneously or sequentially. If the purging is sequential, the largest branch should be purged first. Each sub-branch should then be completely purged at its extremity.
- ii. Purging should be continuous. The minimum purge velocity should be maintained or exceeded throughout the operation, to prevent stratification, but in no case it should exceed 20 m/s.
- iii. When decommissioning through direct purge to air, the purging is continued until gas concentration reached an acceptable level and is confirmed by two consecutive readings.
- iv. When purging to inert gas, the purge should continue until a satisfactory end-point has been confirmed using a suitable instrument.
- v. When purging from inert gas to air, the purge should continue until the required oxygen level is confirmed at each vent using a suitable instrument.
- vi. The source of natural gas should be selected to provide an adequate supply at the rate required to maintain the purge velocity throughout the operation. It should be ensured that network is not over pressurized during purging.
- vii. The pipework that has been hydrostatically strength or soundness tested should be dried by purging

**(e) Commissioning Preparations.**

The commissioning basically consists of the following steps:

- (a) Freeing of the primary network of O<sub>2</sub> & moisture (i.e. pipeline, SVs, and TOPs).
- (b) Freeing of the primary network of O<sub>2</sub> should be done by air or inert gas purging propelled by Natural Gas.
- (c) Venting shall be carried out at the respective stations / vent points / end points as and when found necessary.
- (d) The pipeline section shall be in proper condition before the gas is to be injected into it. The pipeline section shall be dried properly as per the specification and entire pipeline shall be purged as per the pre-commissioning procedure laid in this specification.
- (e) All SVs and TOPs having branch lines for future shall be isolated by means of Blinds at downstream.
- (f) All Tee-offs in-between lines shall be isolated by means of Blinds at downstream of the first Isolation valve of the TOPs.
- (g) Schematic Drawing of the entire primary network shall be made available to Commissioning In-charge (CI) and other persons as per the directions of CI.

**7. Safety Measures.**

Adequate no. of Safety gadgets, personal protective equipments, emergency handling facilities, sign boards, do and don'ts etc as required in the commissioning document should be positioned and available at designated place before start of commissioning activities. A minimum of following shall be ensured at all purging sites.

- (a) A minimum of 2 dry powder type extinguishers (5 kg) should be available on all purging /venting sites.
- (b) Smoking, naked light or other sources of ignition should be prohibited. Warning signage/ pictograms like “NO SMOKING” and “NO NAKED LIGHTS” should be prominently displayed around the work site, including at vent points.
- (c) Electrical continuity bonds (copper) need to be fitted across separated metallic pipes prior to purging operation.
- (d) Adequate hearing protection should be available, where required.
- (e) It should be emphasized that purged gas other than air is potentially dangerous leading to asphyxiation and information to prevent asphyxiation should be provided in procedure.

**8. Purging and Commissioning.**

**(a) Direct Purging.**

Direct purging should not be used to purge pipeline with more than 6 branches unless each branch can be isolated and purged individually.

A short stub where the length is less than 8 diameters is not required to be separately purged and each of the longer branches would require an additional purge point.

The written procedure should be developed specifying, as to how operations are co-coordinated to ensure that the purge rates in Table 1 are maintained throughout the system being purged.

- Pipeline larger than 50 mm nominal bore is treated as mains.
- In all purging operations, purging is continued till the hazardous mixtures are removed from entire pipeline section.

Purge end-points testing for direct purging should be as per below table using suitable instrument.

Operation	End-point
Commissioning through Air to natural gas	Normally $\geq 95\%$ v/v Natural gas (corresponding to 90% gas in air reading on a suitable instrument when calibrated for methane) Two consecutive readings at an interval of 10 minutes shall be recorded.
Decommissioning through Natural gas to air	Maximum of 2% Natural gas (40% of LFL). Two consecutive readings at an interval of 10 minutes shall be recorded.

**Table 1** - Minimum pressure and suggested purge riders and vent sizes for direct purging natural gas to achieve the minimum velocity to prevent stratification.

Nominal Bore in MM	Purge rider and vent size nominal bore (mm)	
	Source pressure in bar	
	30 mbar	2 bar
50	15	15
75	25	25
100	25	25
150	25	25
200	50	25
250	50	50
300	50	50
400	75	50
450	75	50
600	150	50

**Note:** Maximum length of ride, 10 Mtr. / No more than 6 bends with full bore valves and full bore connections.

**(b) Indirect Purging.**

In case the sizes of purge riders and vent are not as specified in Table 1 or the main has more than 6 branches, then the main is indirectly purged, unless otherwise directed by the responsible engineer.

Purge end-points testing for indirect purging should be as per table below using suitable instrument.

Operation	End-point
Commissioning	Using N <sub>2</sub>
Air to inert	Maximum of 8% oxygen
Inert to natural gas	Normally $\geq 95\%$ v/v natural gas (corresponding to 90% gas in air reading on a suitable instrument when calibrated for methane)
Decommissioning	Maximum of 2% Natural gas (40% of LFL). Two consecutive readings at an interval of 10 minutes shall be recorded
Natural gas to inert	Maximum of 7.5% natural gas
Inert to air	$\geq 20\%$ oxygen

For mains longer than 250 m, slug purging may be used as a substitute for complete displacement for economic reasons.

**(i) Complete displacement.**

Mains with branches are indirectly purged by complete displacement, starting with the largest diameter branch and progressing to the smallest.

When carrying out a complete purge with inert gas, a minimum volume equal to 1.5 times the swept volume of the network or main is required.

The quantity of inert gas or purge gas for the completion of a purge shall be as directed by engineer in-charge, however the minimum quantities should be as per below table.

**Table 2** - Minimum quantity of inert/ purge gas (m<sup>3</sup>)

Pipe nominal size (mm)	Minimum quantity of inert/purge gas per 10 meters length of mains (m <sup>3</sup> )
100	0.13
150	0.30
200	0.50
250	0.80
300	1.20
400	2.00
450	2.50
600	4.50

To prevent over pressurization, the vent pipe control valve should be kept open before inert gas is introduced into the main.

For mains with branches, purging is progressive from the point of supply to the vent pipe on the largest main, progressing to the vent pipe on the smallest main.

**(ii) Slug displacement.**

For mains with branches, each branch should be isolated and purged individually. The individual slug volume of inert gas should not be less than 10% of the pipe volume. The minimum slug volume should be as per below table.

**Table 3** - Minimum slug volumes (m<sup>3</sup>)

Pipe nominal size (mm)	Mains length (meter)					
	Over 250 to 500	Over 500 to 1,000	Over 1,000 to 1,500	Over 1,500 to 2,500	Over 2,500 to 5,000	Over 5,000 to 10,000
100	*	*	*	*	*	*
150	*	*	*	*	*	*
200	*	*	*	8	16	32
250	*	*	8	13	25	50
300	*	7	11	18	36	72
400	6.5	13	19	32	64	128
450	8	16	24	40	80	160
600	15	30	45	75	150	300

Mains indicated by an asterisk are more conveniently purged by complete displacement. All cylinders carrying inert gas should be checked with certificates to ensure that no gas other than inert gas is used for purging.

(iii) **On completion of the inert gas purge.**

The inert gas control valve is closed. The gas is purged continuously until it is received at the vent pipe test points and two successive tests confirm 90% gas in air and dew point is checked to confirm there is no moisture in the pipeline. The vent pipe is then closed and disconnected and the valve plugged. The inert gas assembly should be disconnected. The main is confirmed as being at the correct working pressure. The mains connection should then be completed.

**9. Commissioning Records.**

The commissioning records should as a minimum include, but not limited to, following, namely:-

- (a) Cleaning, swabbing and drying procedures.
- (b) Cleaning, swabbing and drying results.
- (c) Functional-testing of pipeline monitoring instruments.
- (d) Control equipment systems.
- (e) Completed pre-start checklist.
- (f) Purging report.
- (g) Commissioning report.

**Enclosure: -**

- (1) Attachment 1 I – Report Formats
- (2) Attachment 2 II – Checklist for Pre commissioning Survey
- (3) Attachment 3 III – Line Diagram of entire network proposed for commissioning & gas charging



**POST NATURAL GAS-IN VALVES POSITION CHECK LIST**

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_  
 Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S.N	Valve No.	Type of Valve	Position	Checked	Found Position	Remarks/ O.K./ Not O.K.

<b>Witnessed by :</b>			
<b>Organization</b>	<b>Contractor</b>	<b>TPIA / Consultant</b>	<b>Client</b>
<b>Name</b>			
<b>Signature</b>			
<b>Date</b>			

**NITROGEN / INERT GAS PURGING RECORD**

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_  
 Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S.N	Time	P/L Purging Pressure(Bar)	Temp (°C)	Inert gas Flow Vol (M <sup>3</sup> )	%age of HC in the vent	Remarks
<b>Witnessed by :</b>						
<b>Organization</b>	<b>Contractor</b>		<b>TPIA / Consultant</b>		<b>Client</b>	
<b>Name</b>						
<b>Signature</b>						
<b>Date</b>						

**NITROGEN/ INERT GAS PURGING REPORT**

Name of Entity: \_\_\_\_\_  
 Report No.: \_\_\_\_\_

Station/Area/location: \_\_\_\_\_  
 Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S.N	Subject	Detail description
1.	Reason of purging	To lower the percentage of O2 to the acceptable limit ( < 1% ), moisture within specified limits
2.	Estimated duration of work	
3.	Type of purging	
4.	Purging Media	Nitrogen / Inert Gas
5.	Start Date & Time	
6.	Finish Date & Time	
7.	Total Duration	
8.	Calculated Volume reqd to purge	
9.	Actual Volume Used	
10.	Inlet Pressure	
11.	Outlet Pressure	
12.	Final pressure after packing	
13.	Injection Point	
14.	Sampling Point	
15.	Acceptance Criteria	
16.	Final O2% achieved	

Witnessed by :			
Organization	Contractor	TPIA / Consultant	Client
Name			
Signature			
Date			

**COMMISSIONING REPORT**

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_  
 Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S.N	Subject	Detail description
1.	Name of the Company	
2.	Equipment to be charged	
3.	Location of the Equipment	
4.	Reason of Charging	Gas Pipeline Commissioning
5.	Estimated duration of Work	
6.	Type of Charging	Nitrogen Propelled by Natural Gas
7.	Charging Media	Inert / Nitrogen / Natural Gas
8.	Start Date & Time	
9.	Finish Date & Time	
10.	Total Duration	
11.	Final Pressure after Packing	
12.	Sampling Point	
13.	Acceptance Criteria	Oxygen < 1%, moisture within specified limits
14.	Final filling media	Natural Gas

Remarks:

<b>Witnessed by :</b>			
<b>Organization</b>	<b>Contractor</b>	<b>TPIA / Consultant</b>	<b>Client</b>
<b>Name</b>			
<b>Signature</b>			
<b>Date</b>			

## GAS CHARGING REPORT

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_

Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

Details of Steel Pipe Line/ Section:

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S.N	Subject	Detail Description		
1.	Name of the Company			
2.	Equipment to be charged			
3.	Location of the Equipment			
4.	Reason of Charging	To lower the Oxygen to the acceptable limit (<1%), moisture as specified		
5.	Estimated duration of Work			
6.	Type of Charging			
7.	Charging Media	Nitrogen/Inert/ Natural Gas		
8.	Start Date & Time			
9.	Finish Date & Time			
10.	Total Duration			
11.	Calculated Volume required			
12.	To charge			
13.	Actual vol. Used			
14.	Inlet pressure			
15.	Outlet pressure			
16.	Final Pressure after Packing			
17.	Charging point			
18.	Sampling Point			
19.	Acceptance Criteria	Oxygen < 1%, moisture within specified limits		
20.	Final LEL achieved	100%LEL		
21.	Remarks :			
22.	Witnessed by:			
	Organization	Contractor	TPIA / Consultant	Client
	Name			
	Signature			
	Date			

**CHECKLIST FOR PRE-COMMISSIONING SURVEY**

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_  
 Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

S. N	Description of Work	Compliance by:Contractor	Verified by: TPIA / PMC	Remarks
(I)	PRIMARY NETWORKS			
1	All Earthwork for Mainline Completed			
2	All Works related to Crossings Completed			
3	Certified Copy of Final Pipe Book			
(II)	CNG STATION / DPRS / MRS			
1	All Hydrostatic Testing Completed			
2	Accepted Hydrostatic Testing Report			
3	Painting work Completed for all aboveground Piping			
4	All Supports are leveled and grouted			
5	All Valves are installed with Handles			
6	Functionality of valves Completed			
7	Backfilling of process area completed			
8	All Pressure & Temperature Gauges duly certified and installed			
9	Fire extinguishers placed at respective locations			
(III)	TAP-OFF POINTS			
1	Hydrostatic Testing Completed			
2	History Sheet & Accepted Hydrostatic Testing Report			
3	Coating & Painting Completed			
4	Suitable Valve Chamber is constructed for the Valve			
5	All Valves are installed with Handles and are in operating condition			
6	Functionality of valves Completed and ends are flanged			
7	Backfilling of process area completed			
8	Fire extinguishers placed at respective locations			
(IV)	SV STATION(S)			
1	All Piping Erection & Hydrostatic Testing			

	Completed			
2	Piping History Sheet & Accepted Hydrostatic Testing Report			
3	Painting work & 1 <sup>st</sup> Coat of Painting Completed for all aboveground Piping as req.			
4	All Supports are leveled and grouted			
5	All Valves are installed with Handles			
6	Functionality of valves Completed			
7	Backfilling of process area completed			
8	Chain link fencing and gate erection (if required) completed in all respect			
9	All Pressure Gauges dully calibrated and installed			
(V)	OTHER PIPELINE SECTION (Laid but not ready for Gas Charging)			
1	All Piping Erection & Hydrostatic Testing Completed			
2	Accepted Hydrostatic Testing Report			
3	All supports are leveled with Handles & Operating			
4	All Valves are installed with Handles			
5	Functionality of valves Completed			
6	Backfilling of process area completed			
7	All Pressure Gauges dully calibrated and installed			
8	Fire extinguishers placed at respective locations			

Witnessed by:			
<b>Organization</b>	<b>Contractor</b>	<b>TPIA / Consultant</b>	<b>Client</b>
<b>Name</b>			
<b>Signature</b>			
<b>Date</b>			

**“LINE DIAGRAM ALONG WITH LOCATION OF VALVES, VENT POINTS, PRESSURE GAUGES ETC. OF THE ENTIRE NETWORK PROPOSED FOR COMMISSIONING & GAS CHARGING.”**

Name of Entity: \_\_\_\_\_ Station/Area/location: \_\_\_\_\_

Report No.: \_\_\_\_\_ Date : \_\_\_\_\_

**Details of Steel Pipe Line/ Section:**

Dia(Ø)		From(Point/ location)	
Length, Mtr		To (Point/ location)	

Witnessed by:			
<b>Organization</b>	<b>Contractor</b>	<b>TPIA / Consultant</b>	<b>Client</b>
<b>Name</b>			
<b>Signature</b>			
<b>Date</b>			