



the following 2 stages.

- Pre commissioning
- Commissioning/Start-up

13.1. Pre-Commissioning

IGL representative shall carry out the following minimum check (including other relevant checks as may consider described by manufacturer of meter, regulator, valves, etc. to ensure that the MRS has been mechanically completed in all respect for pre-commissioning.

- A schedule of required activities for pre- commissioning /commissioning/ performance guarantee test/handover shall be readily available.
- Prior to pre-commissioning of MRS and associated facilities (piping, valves, instrumentation, electrical system) shall be mechanically completed to be ready for commissioning
- All the consumables, tools and tackles, utilities, etc. bare available.
- Fire fighting system and PPE are readily available.
- All the statutory permits are available.
- The emergency management plan is available.

Following are the minimum required pre-commissioning checks but not limited to:

13.2. System Check

Checking of piping /Mechanical System

The entire facilities/system shall be checked against the IGL's/IGL's representative latest approved P & Id, GADs and other relevant design specified and codes.

Checking of utilities

Checking of all relevant utilities like, service water, compressed air, nitrogen, power, power back-up system etc.. to facilitate commissioning and safety.

13.3. Pneumatic testing

Air Flushing

The entire MRS and associated facilities shall be flushed and air cleaned to ensure readiness of the system for pneumatic test. Chemical cleaning may also be considered as per site requirements

Pressure Testing



Pneumatic testing shall be carried out a pressure of 6 bar g by means of compressed air. The test pressure shall be maintained to permit through inspection of all joints for leakage or signs of failure.

Any joint found leakage during the pressure test shall be re-tested to the specified pressure after repair.

13.4. Completion of Testing and Drying

After pneumatic test are completed, the pressure is released gradually without damaging the equipment, facilities and maintaining personnel safety measures. All vents and drains shall be kept opened till the entire system is completely drained. After draining, the system shall be completely dried using dry air.

13.5. Insertion

The insertion operation should start immediately after drying is complete. The contractor shall submit a detailed purging procedure for approval of IGL/IGL's representative prior to its implementation. During the insertion operation, the air left in the piping system shall be replaced by nitrogen before admitting the natural gas into the pipe system. The maximum allowable oxygen content inside the piping system shall be less than 1% by volume. No extra payment shall be made for nitrogen cylinders and is included in SOR.

13.6. Test Records

Records in triplicate shall be prepared and submitted by the contractor to the IGL/IGL's representative for each piping system/ facilities for the test performed.

13.7. Safety Review before start-up of commissioning

A pre-start up safety review shall be carried out of the entire piping system before permitting natural gas into the new facility.

The following minimum safety review is envisaged: Availability of all relevant design documents, welding

Availability of all relevant design documents, welding.

13.8. Commissioning

Once all pre-requisite activities (safety and pre-commissioning) test have been completed, clearance for commissioning the system shall be obtained from IGL/IGL's representative.

- The commissioning operation shall be controlled and supervised by authorize personnel who are fully known to their responsibilities during commissioning.



- The pipeline system shall be slowly charged with natural gas and pressurized gradually up to its operating conditions/parameters.
- The contractor shall obtain the IGL/IGL's representative approval of his commissioning procedure prior to starting commissioning operation.
- The pipeline system shall be slowly charged with natural gas and pressurized gradually up to its operating conditions / parameters.
- Commissioning of MRS system shall be considered completed and acceptable when the piping system is charged with natural gas at operating pressure and the MRS system is operated at normal operating conditions with all instruments/controls working satisfactorily at normal operating conditions.

GAS CHARGING IN INTERNAL PIPING

From safety point of view gas should be taken to the burners, section wise namely:

- Gas charging in internal piping
- Gas Charging in gas train burner

Sr. No	Activities	Precautions
1	Confirm the closure of gas train inlet	Observe carefully closing mark
2	Crack open the MRS outlet valve and raise the section pressure to 1 or 2 bar g or as required	Keep valve key ON position and a man with walky-talky
3	Crack open the pressure gauge tapping valve near gas train Intel valve and vent out nitrogen	Do not inhale nitrogen gas Ensure No spark. No naked flame. Methane concentration in atmosphere should not increase more than 2% if required, do venting/draining intermittently
4	Measure methane percentage. It should match feed gas composition	
5	Close the pressure gauge tapping valve completely	
6	Open the MRS outlet valve fully and observe the system for 5-10 minutes	



14.0 CONVERSION

Conversion of Burners & supply of Rubber Hose

The work in this section shall be carried out along with the internal piping or on request i.e. case to case basis and includes:

The changing of nozzles and associated controls in accordance with manufactures instructions for canteen, T-type, RV, imported burners/ovens/grills/hotplate etc.. the and imported burners/ovens/grills/hotplate. The contractor shall supply the Reinforced rubber hoses at the time of conversions, Minimum size 8 mm dia. per connection -- 1.5 meters with fixing clamps, however the size may vary for type of burners converted on NG. The contractor has to supply all types of nozzles/jets required for all types or appliances including canteen, T-type, RV, imported burners, Grills, Ovens, without any extra charges to IGL, all activities are inclusive and are payable through SOR. Item no. 34.

Cleaning and performing minor maintenance of appliances, during the tenure of the contract. Attend all complaints related to proper working of appliances, testing for gas escapes, soundness and performance of appliances. Instructing & educating customer for safe use of natural gas and for fixing of safety and conversion labels. Contractor must attend the complaints regarding appliances, leakage, fire etc. till the total area is handed over to Owner's operation and maintenance.

All consumables (Nozzles, greases etc.), changing or repairing of any items damaged during conversion arc in contractor's scope, the contractor will have to provide both pin gauges and standard sized nozzles, The payment will be released by IGL only after submission of necessary documents i.e. JMR card of the individual commercial/ industrial connection.

15.0 MODIFICATION IN EXISTING MRS

It includes taking shutdown of existing MRS, dismantling meters/ regulators, replacement/Fixing of meters/regulators with associated inlet and outlet connections/fittings supply of pipes & fittings, pipe cutting, threading, welding & firmly fixing with approved meter clamps/ brackets and other supports by proper grouting. Restoring the area to the original condition as per the specifications and complete satisfaction of consumer.

Modifications / replacements (of meter or regulator or both) in MRS using threaded fittings/ flanged end (same size or bigger) shall be payable through SOR Item 33.1 to 33.6 depending upon the types and unit of meters and regulators replaced, the rates include all as above along with testing of joints till re-commissioning. Wherever, there is modifications in MRS which can be carried out only through welding for same length of MRS or bigger upto 3.00 mtrs in addition to MRS length, the work is payable only through no. or joints welded tor completion of



**STANDARD SPECIFICATION
FOR INSTALLATION OF MRS & INTERNAL PIPING
FOR COMMERCIAL & INDUSTRIAL CUSTOMERS**

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modifications and no separate payments is applicable for additional pipe/fitting used and payable as per SOR Item no 33.7 only. In case erected length after modification is more than 3.00 mtrs of original length of MRS, then the running meters shall be applicable and payable through SOR item no. 33.8 only.



ANNEXURE - 01

PAINT SYSTEM FOR ABOVE GROUND PIPING									
Paint system Nr.	Substrate	Exposure conditions	Surface preparations	1 st Coat	2 nd coat	3 rd coat	4 th coat	5 th coat	Nominal Total DFT
201	Bare carbon steel & ferritic alloys	T up to 65°C	Sa3	Zinc rich ethyl silicate primer 75(µm)	Epoxy Sealer polyamide/ C 50 (µm)	High Build epoxy polyamide U/C recoatable 80(µm)	PU finish recoatable 50(µm)		255µm
201P	As above but site touch-up	T up to 650C	Sa3 (spot blast)S03 only when blasting is not possible	Zinc rich two pack epoxy primer 50(µm)	Epoxy M.I.O . recoatable 80 (µm)	Epoxy HB U/C. recoatable 60 (µm)	PU finish 50µm		240µm
201 W	Bare carbon steel to be welded	T up to 650C	Sa 2.5 min.	Welding primer two components epoxy 20 (µm)	6 to 9 months after welding procedure cleaning of weld With 3rd coat Touch-up If needed	HB M.I.O Epoxy Modified U/C 80µm	HB M.I.O Epoxy Modified U/C 80µm	PU finish 50µm	230µm
202	Bare carbon steel & ferritic alloys	T up to 650C	Sa3	Zinc rich ethyl silicate primer 75(µm)	Heat resist. Silicone Acrylic White 30µm	Heat resist. Silicone Acrylic White 30µm			135µm
202 P	As above but site touch-up	T up to 65°C	Sa3 (spot blast)	Zinc ethyl silicate primer 75(µm)	Heat resist. Silicone Acrylic White 30µm	Heat resist. Silicone Acrylic White 30µm			135µm



ANNEXURE - 02

S r.	Particulars	Type of Inspection	% of Inspection	Scope	
1	Material Test Certificate verification	TC verification (Raw Material)	100%	Contractor	IGL/TPI
2	Welding Procedure Specification	Document verification /approval	100%	P	R
3	Welders qualification Test	Document verification/ witness	100%	P	R
4	DP Test	DP rest on root	100%	P	R/W (in case of new welder)
5	Welding Inspection	Visual inspection	100%	P	RW(min 10%)
6	Radiography	Review of films	100%	P	RW(min 10%)
7	Hydro/Pneumatic Testing	Hydro/Pneumatic testing of entire pipeline	100%	P	W

Legend:

P- Perform, R-Review, RW- Random Witness (min 10%), W-Witness, TPI- Third Party Inspector



ANNEXURE - 05

DP TEST REPORT					
Client:	INDRAPRASTHA GAS LIMITED			REPORT NO.	
Project:				DATE	
MRS No.				PIPE MATERIAL	
S. No	Size	JOINT NO.	SEGMENT	INSPECTED BY	REMARKS
CONTRACTOR'S (Name & Signature)		TPIA (Name & Signature)		PMC (Name & Signature)	
				IGL (Name & Signature)	