GUJARAT GAS

FACTORY ACCEPTANCE TEST PROCEDURE
FOR
NATURAL GAS INDUSTRIAL METERING SKID

Document No.: GGL/TS/FAT/IMS/001,REV-00

GUJARAT GAS

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1 INTRODUCTION

This document defines the procedure for Factory Acceptance Test (hereinafter referred to as FAT) to be carried out for Industrial Metering Skid. The purpose of carrying out FAT is to inspect, test and check the skid, fit for use purpose and desired functionality of entire skid with respect to approved technical documents.

2 SCOPE

FAT will confirm the compliance of Industrial Metering Skid (IMS) in accordance with the specifications.

All the equipment's / instruments/ items shall be installed (as far as possible) for functionality demonstration during FAT.

3 REFERENCE DOCUMENTS

A) FOR _____ SCMH (as per PO)

Documents		**Reference No.**
1	P & ID	
2	GA Drawing – skid and filter	
3	Base frame and Foundation Drawing	
4	Canopy Drawing (wherever applicable as per PO)	
5	Painting specification	
Datasheet / Drawing of Equipment's:		
1	Cartridge Filter	

B) COMMON DOCUMENTS

Documents		**Reference No.**
1	Quality assurance plan - Mechanical Items	
2	Quality assurance plan–Instrumentation Equipment	
3	Material Test certificate, Radiography test report, Hydrostatic-test certificate	
4	Functional design specification and Operation control logic	
Datasheet / Drawing of Equipment's:		

1	Pressure Gauge – Datasheet	
2	Differential Pressure Gauge – Datasheet	
3	Ball Valves – Datasheet and drawing	
4	Check Valves – Datasheet and drawing	
5	Globe Valve – Datasheet and drawing	

4 ORIENTATION WITNESSES

All Representatives shall be briefed on operating principles of the Industrial Metering Skid (IMS) package before commencing the FAT.

5 TEST CERTIFICATES

Upon completion of the tests mentioned in this document, Test Certificate should be filled with the results, reviewed and signed/stamped/approved by representatives of all the parties-VENDOR and TPI/Client

6 VISUAL INSPECTION OF SKID

The skid will be inspected for installation of all the components as per approved P&ID and General Arrangement Drawing (GAD) and other related documents listed in section 1.3. Dimensional checking shall be done as per approved GAD.

Upon completion of the visual inspection described in this section, the Test Certificate for Visual Inspection of skid should be dully filled and signed by both parties.

7 FACTORY ACCEPTANCE TEST

7.1 PNEUMATIC LEAK TEST

Pneumatic leak test shall be carried out on completely erected skid using compressed air or Nitrogen.

1) Keep all valves open. Isolate Inlet TF (Transition Fitting) Spool and close either inlet or outlet side pipe with blind flange.
2) Check all drains and vents (incl. any other openings on pressure containing part and equipment) are in closed position and safety valve inlets and intermediate line ball valves are in open condition.

3) Charge air or nitrogen at 1 bar(g) from inlet and visually check all the joints for soundness.
4) Slowly increase the pressure in control manner by incremental steps of 1 bar(g) up to 7 bar(g).
5) After stabilization of pressure, the pressure holding period of 2 hours.
6) Check all flanged and threaded joints using soap water and also inspect for any leakage at all Isolation Valve (Ball & Globe valves), joints, connections, impulse tubing or any other connection or any other part of skid. In case the leakage from skid or its part is noticed, the same shall be attended and corrected.

8 PAINTING

Painting shall be inspected as per Painting procedure, Document No. - …….. (Reference to be mentioned)

9 DOCUMENTS REVIEW

After completion of all tests, the documents review shall be carried out. The document review shall minimum, but not limited to, cover material test certificates, Radiography test, Hydro - test certificate for pipe spools, calibration/ test reports etc. for Ball valves, PSV/CRV, SSV and PCV etc. shall be reviewed as per approved QAP for the equipment / instruments. Calibration reports for PG, TG and DPG shall be reviewed and checked for traceability with standard referece.

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TEST CERTIFICATE

VISUAL INSPECTION

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No. <to be provided by Vendor>

Sr.No	POINTS INSPECTED	FOUND OK
1	Skid checked as per P&ID and GA Drawing	YES / NO.
2	Process parameter in Name Plate	YES / NO.
3	Lifting Hook (incl. design calculation with factor of safety-2.0)	YES / NO.
4	Copper jumper strips on all flanges	YES / NO.
5	02 No's earthing provision diagonally opposite (Earthing boss of material SS304) at Base frame of the skid. (separate earthing clits for both instrumentation and skid piping are to be provided as per GGL specification)	YES / NO.
6	Identification Tags on all Instruments	YES / NO.
7	Painting colours as per Painting Spec.	YES / NO.
8	Spares as per P.O. requirement (technical specification / drawing to be included)	YES / NO.
9	Foundation bolt and Matching flanges	YES / NO.
10	Support for all the equipment/ Instruments, Pipes	YES / NO.
11	Rubber sheet between pipe and support	YES / NO.
12	U clamps with PVC sleeve	YES / NO.
13	Adequacy of approach for operation & maintenance	YES / NO.
14	Thread projection of stud beyond nut	YES / NO.
15	Insulating Pad to be provided between Filter leg/skirt and base frame.	YES / NO.
16	Proper alignment of pipe including piping for PG, Vent, etc.	YES / NO.
17	Locking facility in below 2" valve	YES / NO.
18	Vent assembly with brass flapper at 45 degree	YES / NO.
19	Welded and threaded joints as per the GGL PMS	YES / NO.
20	Pasted Laminated P&ID inside the canopy (A2 size)	YES / NO.
21	Calibration tags on the instruments (PG, DPG etc.)	YES / NO.
22	Filter DP Gauge Nozzle shall be SWRF.	YES / NO.

23	Meter Bolts / stud-bolts	
24	Glass window in canopy for PG, DPG and meter	YES / NO.
25	Square metal sheet provided at all the opening for the pipe (inlet, outlet, drain, vent etc.)	YES / NO.
26	Sealing of the canopy joints by sealant jelly	YES / NO.
27	Canopy doors shall be foldable type with Aldrop type locking system.	YES / NO.
28	Doors shall open fully on either sides and shall be lockable from inside & outside. Check locks availability	YES / NO.
29	All accessories in the canopy provided of SS-304 material (Hinges. Locks, Stud, Nuts , Handles etc.)	YES / NO.

_____	_____	_____
Vendor Representative	TPIA	Client Representative

DATE:

TEST CERTIFICATE

DIMENSIONAL AND WEIGHT INSPECTION

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No.

Sr.No.	POINTS INSPECTED	FOUND OK
1	Base Frame Dimension As per Foundation drawing	YES / NO
2	Height of inlet pipe from base in mm _____	YES / NO
3	Height of Outlet pipe from base in mm _____	YES / NO
4	Painting thickness of pipe line as per approved Specifications	YES / NO
5	Length of cabinet/canopy	YES / NO

Weight shall be mentioned on name plate. i. e. dry weight, water filled weight

_____ _____ _____

Vendor TPIA Client

Representative Representative

DATE:

TEST CERTIFICATE

HYDROSTATIC TEST

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No.

Sr.No.	POINTS INSPECTED	FOUND OK
1	TPIA Inspection Reports for Hydro-Test for Pipe spools of valves, as per approved procedure.	YES / NO

_____ _____ _____

Vendor Representative

TPIA

Client Representative

DATE:

TEST CERTIFICATE

PNEUMATIC TEST OF COMPLETE SKID

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No. --

Test Pressure: 7.0 Barg.

Test Media : Air/Nitrogen

Duration : 120 minutes (post pressure stabilization)

Sr.No.	POINTS INSPECTED	FOUND OK
1	LEAK TEST AT FLANGE JOINTS AND OTHER CONNECTIONS	**YES / NO**

_____ _____ _____

Vendor TPIA Client

Representative Representative

DATE:

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DOCUMENTS REVIEW

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No. --

Sr.No	INSPECTION	CHECKED	REMARKS
1.	Radiography Test Reports as per Approved QAP	Accepted / Rejected	
2.	Dye Penetration Test as per Approved QAP	Accepted / Rejected	
3	Test Certificate for Isolation Ball Valves, Globe Valve, Check Valve, filter, PG, DPG, pipe spools, canopy etc.	Accepted / Rejected	
4	Hydro test Report for Pipe spools & for items as per Approved QAP.	Accepted / Rejected	
5	Material test Report as per Approved QAP	Accepted / Rejected	
6	Calibration Report for all instruments	Accepted / Rejected	
7	Welding Procedure Specification, Welder qualification.	Accepted / Rejected	
8	Compliance Certification for Painting of skid including all items (Filtration system, Valves, etc).	Accepted / Rejected	
9	Material Correlation Chart & Welding Joints Correlation Chart	Accepted / Rejected	
10	Technical specification/datasheet/drawing/PO copy should be available for all bought out items.	Accepted / Rejected	

_____ _____ _____

Vendor Representative TPIA Client Representative

DATE:

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SNAG ACTION LIST

Project NATURAL GAS INDUSTRIAL METERING SKID.

Customer M/S. GUJARAT GAS LTD.

PO. NO.

System No.

Sr. No.	Description	Priority	Planned closure date	Action By
1				
2				
3				
4				
5				
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7				
8				
9				
10				
11				
12				
13				
14				
15				

_____ _____ _____

Vendor TPIA Client

Representative Representative

DATE: