

**TECHNICAL SCOPE**  
**FOR THE SUPPLY OF DRS/CPRS**  
**INCLUDING ANNUAL MAINTENANCE CONTRACT**

**Document No: GEL/TS/PE-PNG/SUPPLY/ABOVEGROUND/DRS/SOW**

File No: GGL-Tech. Services-2026-6-182203

## TABLE OF CONTENTS

1. OVERVIEW .....	3
2. DEFINITIONS.....	3
3. REFERENCE CODES AND STANDARDS .....	4
4. DESIGN PROCESS PARAMETERS .....	5
5. PROCESS ENGINEERING.....	5
6. VENDORS SCOPE OF WORK AND SUPPLY.....	7
7. SPECIAL NOTES .....	8
8. STRESS ANALYSIS AND SUPPORTS.....	12
9. QUALITY ASSURANCE.....	12
10. DOCUMENT HAND OVER.....	14
11. VENDOR'S SCOPE FOR AMC of DRS/CPRS (Preventive & Breakdown Maintenance): .....	15
12. ANNEXURES .....	18
ANNEXURE-01 TYPICAL PIPING & INSTRUMENTATION DIAGRAM (P&ID) .....	19
ANNEXURE-02 TYPICAL GENERAL ARRANGEMENT DRAWING (GAD).....	19
ANNEXURE-03 TYPICAL NAME PLATE FOR FILTER AND SKID .....	19
ANNEXURE-04 QUALITY ASSURANCE PLAN (QAP).....	19
ANNEXURE-05 APPROVED VENDOR LIST .....	19
ANNEXURE-06 PIPING MATERIAL SPECIFICATIONS (PMS).....	19
ANNEXURE-07 TECHNICAL NOTES FOR VALVES .....	19
ANNEXURE-08 TECHNICAL SPECIFICATION FOR VALVES .....	19
ANNEXURE-09 DATASHEET FOR GLOBE VALVE (Below 2", 800#).....	19
ANNEXURE-10 DATASHEET OF BALL VALVE (Below 2", 800#) .....	19
ANNEXURE-11 DATASHEET OF BALL VALVE (2" & 3") .....	19
ANNEXURE-12 DATASHEET OF BALL VALVE (4" and ABOVE).....	19
ANNEXURE-13 DATASHEET OF SWING CHECK VALVE .....	19

<b>ANNEXURE-14</b>	<b>DATASHEET OF PRESSURE REGULATING VALVE.....</b>	<b>19</b>
<b>ANNEXURE-15</b>	<b>DATASHEET OF SLAM SHUT VALVE.....</b>	<b>19</b>
<b>ANNEXURE-16</b>	<b>DATASHEET OF FILTER .....</b>	<b>19</b>
<b>ANNEXURE-17</b>	<b>DATASHEET OF PRESSURE SAFETY VALVE .....</b>	<b>19</b>
<b>ANNEXURE-18</b>	<b>DATASHEET OF CREEP RELIEF VALVE .....</b>	<b>19</b>
<b>ANNEXURE-19</b>	<b>DATASHEET OF FITTINGS .....</b>	<b>19</b>
<b>ANNEXURE-20</b>	<b>DATASHEET OF FLANGES AND BLIND.....</b>	<b>19</b>
<b>ANNEXURE-21</b>	<b>DATASHEET OF PRESSURE GAUGE.....</b>	<b>19</b>
<b>ANNEXURE-22</b>	<b>DATASHEET OF DIFFERENTIAL PRESSURE GAUGE .....</b>	<b>19</b>
<b>ANNEXURE-23</b>	<b>DATASHEET FOR TEMPERATURE GAUGE.....</b>	<b>19</b>
<b>ANNEXURE-24</b>	<b>DATASHEET FOR PAINTING .....</b>	<b>19</b>
<b>ANNEXURE-25</b>	<b>FACTORY ACCEPTANCE TEST PROCEDURE.....</b>	<b>19</b>
<b>ANNEXURE-26</b>	<b>SITE ACCEPTANCE TEST PROCEDURE .....</b>	<b>19</b>
<b>ANNEXURE-27</b>	<b>HYDROTEST PROCEDURE .....</b>	<b>19</b>
<b>ANNEXURE-28</b>	<b>TECHNICAL SPECIFICATION OF CANOPY.....</b>	<b>19</b>
<b>ANNEXURE-29</b>	<b>SCOPE FOR WORK FOR PLANNED MAINTENANCE OF DRS.....</b>	<b>19</b>
<b>ANNEXURE-30</b>	<b>DESIGN AND PROCESS PARAMETERS.....</b>	<b>19</b>
<b>ANNEXURE-31</b>	<b>MARKING AND COLOUR COADING.....</b>	<b>19</b>

## 1. OVERVIEW

Gujarat Energy Ltd (Erstwhile Gujarat Gas Limited), is supplying natural gas to automobile, industrial, commercial and domestic consumers including CNG stations in various Geographical Areas as per authorisation from PNGRB. Gujarat Energy Limited is procuring pressure regulating stations (DRS/CPRS) and installing it within PNGRB authorized Geographical Area for supplying Natural Gas to Domestic, Commercial and Industrial customers.

The intent of this specification is to establish minimum requirements to manufacture and supply of **DRS/CPRS which includes** Filter, PRV, SSV, PSV CRV and NRV, Valves, Vents etc.

The scope will include design, manufacture, supply, inspection, testing, marking, packaging, handling, despatch and AMC of DRS/CPRS

## 2. DEFINITIONS

In the Bid / Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires.

- a. The "GEL" or "Company" or "Owner" shall mean GUJARAT ENERGY LIMITED (GEL), incorporated under company's Act 1956 having its registered office at 3rd Floor, Block No. 15, Udyog Bhavan, Sector-11, Gandhinagar - 382010, Gujarat, hereinafter mentioned as "OWNER" which expression shall, unless repugnant to the context or meaning or meaning thereof, include all its successors, administrators, executors and assigns.

- b. The "**Bid**" shall mean the Bid submitted by the CONTRACTOR for acceptance by the GEL. The "**Contract**" shall mean the agreement and all other documents between the company and the contractor for providing the services mentioned herein.
- c. The "**Vendor**" shall mean the person or persons, firm or Company whose Bid has been accepted by GEL
- d. The "**Supervisor**" OR "**work in charge**" shall mean the person deployed by the contractor for control & supervision of the work of his work force, as per the Scope of work mentioned and to receive instructions from OWNER's Engineer-In-Charge or his representative.
- e. The "**GEL Engineer-In-Charge**" or "**GEL's representative**" shall mean the person designated as such by the Gujarat Energy Limited and shall include his authorized nominee or agent, provided however that the GEL's Representative to be so designated by GEL may be one person for certain aspects of this agreement and another person for other aspects of work covered by this Bid / Contract.
- f. "**Stores**" shall mean the Companies Stores located at various location of Gujarat.
- g. The "**Specification**" shall mean all directions, the various technical specifications, provisions attached and referred to in the Bid documents which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract or works or works as may be amplified or modified by the COMPANY during the performance of Contract in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition of relevant standard specifications including all addenda / corrigenda published before entering into the contract.
- h. "**Guarantee**" shall mean the period and other conditions governing the warranty / guarantee in respect of the work as detailed in section hereunder.
- i. "**HSE**" shall mean Health, Safety & Environment.
- j. "**GEL's Premises**" or "**Owner's Premises**" shall mean company's premise or its customer's premises where work is to be executed.
- k. "**OEM**" shall mean Original Equipment Manufacturer
- l. "**EIC**" shall mean Engineer In -Charge

### 3. REFERENCE CODES AND STANDARDS

Unless otherwise specified in this document or elsewhere in tender, the vendor shall take reference of latest version of following codes and standards.

PNGRB CGD Standard : Technical standard and specifications including safety standards for CGD networks (T4S-CGD)

PNGRB Pipeline Standard :	Technical standard and specifications for Natural Gas Pipelines (T4S-Pipeline)
ASME B 31.8 :	Gas Transmission & Distribution piping systems
IGE/TD/13 :	Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air
EN 14382 :	Safety devices for gas pressure regulating stations and installations - Gas safety shut-off devices for inlet pressures up to 100 bar
EN 334 :	Gas pressure regulators for inlet pressures up to 100 bar
EN-88 Part 1 :	Pressure regulators and associated safety devices for gas Appliances Part 1: Pressure regulators for inlet pressures up to and including 50 kPa
EN-88 Part 2 :	Pressure regulators and associated safety devices for gas Appliances Part 2: Pressure regulators for inlet pressures Above 500 mbar up to and including 5 bar
API 526 :	Flanged Steel Pressure Relief Valves
API 527 :	Seat Tightness of Pressure Relief Valves
API 520 :	Sizing, Selection, and Installation of Pressure-relieving Devices
ASME Sec VIII Division I :	Boiler and Pressure Vessel Code: Rules for Construction of Power Boilers
ASME Sec IX :	Boiler and Pressure Vessel Code: Qualification Standard for Welding, Brazing and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators
ASME Sec V :	Boiler and Pressure Vessel Code: Non-destructive Examination

#### 4. DESIGN PROCESS PARAMETERS:

Design and process parameters shall be considered as per the enclosed Annexure-30

#### 5. PROCESS ENGINEERING:

##### 5.1 COMPONENTS:

The District Regulating Skid (DRS) or Common Pressure regulating Skid (CPRS) consist of following and as per enclosed P&IDs.

##### 5.1.1 Each stream shall contain:

- Active and Monitor PRV – Pilot Operated Globe OR axial type (Pressure Regulating Valve).
- Cartridge filters with differential pressure gauges, Pressure Safety Valves, along with all Accessories vent & drain pipe with root valves.
- Globe Type SSV (Slam shut off Valve)
- Creep Relief Valves (Pipeline-mounted), Pressure & Temperature Gauge.
- Swing Type Check Valve

##### 5.1.2 Base frame with or without canopy as per purchase order.

- 5.1.3 Meter Spool piece
- Shall be provided as per the dimensions provided in this document
  - Shall have thermowell provided on meter spool.
- 5.1.4 Bypass arrangement for Meter spool
- Shall be fabricated parallel to meter spool and with the same pipe size.
  - Required for un-interrupted gas supply in case of meter damage /malfunction /choke-up.
  - Provision for wire sealing (sealing holes) shall be provided in the joints (such as isolation valves, filter drain or any other joint upstream of meter).

**Note:-**

- Pressure regulator shall be designed in such a way that inlet pressure does not come in direct contact with the main valve diaphragm (i.e. loading type of regulator only shall be accepted).
- Inlet and outlet line sizes of DRS/CPRS are sized considering Design Velocity mentioned in Annexure-30

5.2 SKID PROCESS:

The systems to be designed for Continuous operation. The skid can be basically considered in following sections:

5.2.1 Gas Filtration:

The system is having twin stream Cartridge Filter arrangement for single-stage filtration. The Cartridge Filter is designed/ provided with polyethylene/polypropylene/synthetic fibre elements for fine filtration up to 5 $\mu$ .

5.2.2 Pressure Regulation:

Variable pressure at inlet of the skid will be regulated to required pressure at outlet. The skid shall have twin stream consisting of Pressure Regulating valves in active & monitor configuration with Slam Shut off valve arranged as working and Hot-Standby Configuration. The set pressures of PRVs, SSVs & Pressure safety valves, are so adjusted that one stream is working & other operates as hot stand-by. Pressure gauges are used at skid inlet & outlet of the skid for pressure indication.

Regulating Block stream consisting of a PRV with integrated SSV & CRV to regulate the desired pressure at outlet shall be installed after Gas cleaning block. Stream discrimination shall be required and each stream shall have the capacity to supply 100% of the rated flow at the specified minimum inlet pressure and desired outlet pressure.

The selection of PRV with integrated SSV may be considered based on maximum flow at minimum inlet pressure & desired outlet pressure.

SSV shall be automatically activated; in case of pressure at the downstream of stream exceeds the set value to safeguard the downstream pipeline against over pressurization.

A CRV is considered to prevent over pressurization of the downstream system, as the result of the active failing to “lock-up” during period of low demand.

### 5.2.3 Metering accessories:

Supplying & installation of meter is under scope of Gujarat Energy Limited. Vendor to supply spacer with spool of meter for interchangeability between RPD/USM meters of different size, if required by GEL

## 6. VENDORS SCOPE OF WORK AND SUPPLY:

- The VENDOR scope of work and supply covers design, engineering, fabrication, FAT (Factory Acceptance Test), supply including loading and unloading at site, arrangement of N2 cylinder at site for SAT (Site Acceptance Test), commissioning, supply of documentation of Pressure Regulating Skids comprising of complete assembly, NDT report, and other accessories as specified in this document for natural gas supply to domestic, commercial & industrial consumers.
- VENDOR at no additional cost to GEL shall arrange the class room as well as field training for GEL O&M personnel.
- VENDOR shall be sole responsible for the material selection, design, engineering, and supply to the designated delivery point and performance testing of DPRS as per the data sheet and specification furnished and taking into consideration successful operation, safety as per the established international standards.
- VENDOR shall be responsible for replacement/repairing of skids if any part of skid is found damaged during unloading at site or store with no cost to GEL.
- VENDOR shall perform all the tests as per the GEL approved QAP.
- VENDOR shall perform Non-destructive tests as per ASME section V, ASME B 31.3 & GEL approved QAP.
- VENDOR has to supply the general items as per below minimum specifications and approval of detail specification shall be taken by the VENDOR during document approval stage-
  - a) U Clamp Sleeve shall be PVC coated.
  - b) Tag plate material shall be Aluminum.
  - c) Silicon Jelly shall be used for sealing.
  - d) HDPE sheet shall be used as Insulation pad.
- VENDOR shall provide all TC's and reports of supplied materials.
- VENDOR shall provide companion flanges with skid inlet and outlet valve.
- VENDOR shall design a skid in such a way that all equipment's & Valves of the assembly shall be easily accessible for O&M.
- VENDOR shall arrange the N2 gas cylinder for SAT and commissioning of Pressure Regulating Skid at site in line with Gujarat Energy Limited approved Procedure.
- Functional testing of the skid shall be carried out as per the GEL approved functional testing procedure.
- Site acceptance test (SAT) shall be carried out by the Vendor post completion of fabrication work at site by GEL pipeline laying contractor.

- VENDOR shall provide additional items that are needed at the time of commissioning and same will be considered as a part of work and no additional cost will be paid by Gujarat Energy Limited.
- VENDOR shall supply the necessary repair kit and consumables required as part of commissioning process with no cost to GEL.
- Any soft material used shall be able to retain its functional properties for minimum period of 18 months.
- VENDOR shall adopt standard operating policy for fabrication of skids.

## 7. SPECIAL NOTES

- Isolation valves for PG & PT shall be ½" Ball Valve (NPT).
- All PGs shall have 2 ball valves at root.
- Isolation valve (as root valve) is required for DPG.
- CRV shall have minimum 1" Flanged Inlet connection
- Insulating Pad to be provided between Filter leg/skirt and base frame.
- Supply of foundation bolts is under Bidder's Scope. Supplier to provide Foundation Bolt Hole size, location details and supplier of bolts
- A copy of approved P&ID on 3mm ACP sheet with adhesive shall be displayed on the inside of the shelter.
- Lifting lugs shall be provided properly as per C.G. of the skid. Lifting Procedure to be recommended by the bidder.
- All impulse tubing shall be of Material SS 316.
- For equipment not manufactured by the Bidder, OEM accredited Certification is required for consent on service, supports, spare & maintenance.
- Filter DP Gauge Nozzle shall be SWRF.
- SSV with limit switch is required.
- Sound pressure levels shall be limited to the values prescribed by Environmental Authorities but in no case shall exceed 110 dbA. VENDER shall provide noise suppression treatment to limit the noise level.
- Vendor shall provide 02 No's earthing provision diagonally opposite (Earthing boss of material SS304) at Base frame of the skid.
- Platform along with handrails shall be provided with skid in case of vertical filters and any other equipment's having height more than 2 mtrs.
- 1" Drain assembly for filters to be supplied in all sizes of DRS.
- Factory Acceptance Test for the Skid shall be witnessed by TPIA.
- Additional 10 nos. of Copper Jumpers to be supplied loose with each skid.
- Vertically orientation of filters is preferred.
- VENDOR shall provide companion flanges with skid inlet and outlet valve.
- The general arrangement of the skid shall be of compact design. Metering spool shall be provided in the GAD.
- The canopy shall be designed in such a way that it shall accommodate the metering block installed by GEL and shall have ease for O&M activities.
- All piping, pipe fittings & fasteners to be used are hot dip galvanized.

- Plug in the vent shall be provided for testing.
- Vent assembly with brass flapper at 45 degree shall be provided.
- PSV and CRV upstream valves to be lock open type
- Flange and piping in the vent shall be as per PMS (Piping Material Specification).
- Flange and piping in the downstream of PSV and CRV shall be as per PMS (Piping Material Specification) in 150#, 300# and 600#.
- Window glass used in the cut-out of the Canopy shall provide the protection as per IP 50. Spool piece will also have thermowell.
- Foundation drawing shall be submitted with following details-
  - a) Bought out item Weight
  - b) Base frame weight
  - c) Equipment, Pipe & Fitting weight
  - d) Canopy weight
  - e) Empty weight
  - f) Hydrotest weight
  - g) Total weight of skid without canopy
- Size of the base-frame and Canopy shall be as per the enclosed GAD. However, vendor shall carry out stress analysis before submitting the drawing to GEL for approval.  
Base frame drawing shall be submitted with minimum following details-
  - a) Base frame plan with location of Support, Earthing Base, Lifting Lug plate, Support base plate, foundation base plate etc.
  - b) Support drawing for each type of support
  - c) Lifting lug drawing
  - d) Earthing Base
  - e) Foundation base plate
  - f) Support base plate
- VENDOR shall provide provision for meter with spool length of same pipe size as per the details given below-

Meter Spool in 2 piece size has been derived considering meter F-to-F length for equivalent flow capacity of DRS. RPD meter/USM meter with 5dx10d requirement is not considered for deriving the same.

Spool for meter and additional spool length for replacement of lower size meter to be provided separately.

Sr. No.	DRS/CPRS (in SCMH)	Spool piece diameter (in Inch)	Total Spool Length (in mm)
1	500	3"	171
2	1000	3"	1250

3	2000	4"	1250
4	5000	6"	1250
5	10000	8"	2000

- Vendor shall provide Copper jumper plate/Strip at all flange joints of the skid as per the dimensions given below-

Nominal Pipe Size (mm/Inch)	150 Class Flange			300 Class Flange			600 Class Flange		
	Copper plate length (mm)	Copper Strip Width (mm)	Copper Strip Thickness (mm)	Copper Strip length (mm)	Copper Strip Width (mm)	Copper Strip Thickness (mm)	Copper Strip length (mm)	Copper Strip Width (mm)	Copper Strip Thickness (mm)
15 (1/2")	115	25	3	125	25	3	130	25	3
20 (3/4")	120	25	3	145	25	3	140	25	3
25 (1")	120	25	3	145	25	3	145	25	3
40 (1 1/2")	125	25	3	165	25	3	165	32	3
50 (2")	135	40	3	170	40	3	165	32	3
80 (3")	155	40	3	180	40	3	180	32	3
100 (4")	155	40	3	195	40	3	215	38	3
150 (6")	160	40	3	215	40	3	240	40	3
200 (8")	175	40	3	235	40	3	270	40	3
250 (10")	180	40	3	250	40	3	295	40	3
300 (12")	185	40	3	270	40	3	295	40	3

- Vendor shall consider the minimum inlet/outlet size of the skid and Filter size as tabulated below. However, final sizing calculation shall be submitted by the Vendor.

DRS Size	Minimum Inlet Size (Inch)	Minimum Outlet Size (Inch)	Minimum Filter shell Size (Inch)
500 SCMh	2"	2"	6"
1000 SCMh	2"	2"	6"
2000 SCMh	3"	3"	6"
5000 SCMh	4"	6"	8"
10000 SCMh	6"	8"	6"

- Base frame and Support –

Description	Material	Size
Baseframe	IS 2062 Gr. A	ISMC-150 x 75
Support	IS 2062 Gr. A	ISMC 100 x 50
Earthing Boss	SS304	Dia. 30 x 40 LG
Lifting Lug Plate	IS 2062 Gr. A	100 x 80 x 16 Thk
Support Base Plate	IS 2062 Gr. A	125 x 100 x 8 Thk
Hex Nut Bolt Set	MS	M12 x 50
U clamp set PVC Coating	IS 2062 Gr. A	M10
Foundation Base Plate	IS 2062 Gr. A	100 x 100 x 10 Thk
Foundation Bolt Set	MS	M16 x 300 LG

- VENDOR shall provide proper packing of all equipment, piping, appurtenances and styrene packing to safeguard all components of the skid during transportation.
- In-case of Comprehensive AMC- Supply of nut & bolt shall be in GEL Scope which are heavily rusted and cannot be used further. While in case of minor rust same need to be painted at the time of AMC.

## 8. STRESS ANALYSIS AND SUPPORTS

DRS shall be subject to internal and external forces such as change in temperature and pressure and ground movement. Stress analysis shall be carried out in accordance with guidance from IGE/TD/12 and ASME B31.8. Attention shall be given to the design in the following circumstances:

- Where fatigue stressing caused by regular pressure and / or temperature changes or vibration may occur.
- Where large changes in temperature are possible.
- Where adequate flexibility is difficult to obtain, for example in a long meter run or similar straight run of aboveground pipe.

Primarily, supports serve to retain DRS streams and equipment level and at the desired height, and to allow safe removal of equipment for maintenance or replacement. Supports shall be located to contain the bending stresses in any stream within allowable limits. The location of supports shall be such as to ensure that other stresses also remain within allowable limits. Sufficient supports shall be provided to avoid excessive deflections and high stresses caused by the additional weight of fluid contained during hydrostatic testing. Where appropriate, heavy components shall be supported to prevent bending or torsional loading of adjacent pipework. Supports shall be designed to cope with any mechanical or noise-excited vibration. Supports welded directly to pipe shall be of the full encirclement type. Local welding stresses shall be avoided, for example by using thick-walled pipe and controlled welding onto the pipe longitudinally. Anchor supports shall be located so as to minimize stresses and be designed to withstand the loads indicated by stress analysis. The possibility of the reversal of the forces shall be considered. Support shall incorporate electrical insulation to meet the requirements of any CP system. Corrosion shall be prevented at the point of contact of the support and the pipework by effectively sealing the interface. Where it is considered necessary, pipe supports shall be designed to be removable for maintenance work and for inspection purpose. Sensing and auxiliary pipework shall be adequately supported to cater for its small diameter and inherent vulnerability.

## 9. QUALITY ASSURANCE

- The Contractor/Manufacture /Vendor shall submit below tabulated documents after getting firm order from Owner for review and approval as per the requirement mentioned in the table. VENDOR shall responsible for the submitting of all drawing and technical documents including QAP to Gujarat Energy Limited for approval **within 15 days after placement of order**.

SN	Document	Requirement
<b>Engineering</b>		
1	P& I Diagram	GEL Approval
2	GA & Isometric Drawing	GEL Approval
3	Skid Sizing Calculation Sheet for Inlet, Intermediate & Outlet, DP across the skid as well as major centre	Information
4	Bill of Material with vendor detail	GEL Approval
6	WPS/PQR	TPI Approval
7	Operation & Control Philosophy	Information
8	Operation, Installation & Maintenance Manual	Information
<b>Quality</b>		
1	Quality Assurance Plan	Same as Tender
2	Factory Acceptance Test Procedure	GEL Approval
3	Functional Test Procedure	Information
4	Site Acceptance Test Procedure	GEL Approval
5	Hydrostatic test Procedure	Information
6	Hydrostatic test report	TPI Approval
7	Non-Destructive examination	TPI Approval
<b>Valves &amp; Equipment's</b>		
1	PRV (Monitor) + SSV datasheet	GEL Approval
2	PRV (Monitor) + SSV design calculation	GEL Approval
3	PRV (Active) datasheet	GEL Approval
4	PRV (Active) design calculation	GEL Approval
5	PSV datasheet	GEL Approval
6	CRV datasheet	GEL Approval
7	CRV design calculation	Information
8	PSV design calculation	Information
9	Filter datasheet	Same as Tender
11	Filter drawing	TPI Approval
12	Design of filter vessels consisting sizing calculation, weld schedule, GAD, support details, QAP, Selection of cartridge etc.	TPI Approval
13	Detailed Cross Section Drawing for equipment's like valves, regulators, slam shut, relief valve, check valve etc.	GEL Approval
14	Filter cartridge selection	Same as Tender
<b>Civil &amp; Structural</b>		
1	Base Frame drawing	GEL Approval
2	Civil Foundation drawing	GEL Approval
3	Name Plate	GEL Approval
4	Tubing Support Drawing	Information
5	Canopy Drawing & Specification	GEL Approval
<b>Other items</b>		
1	Specifications for general items like U clamp sleeve, tagging, insulation padding, canopy window glass, sealant jelly	Information

- Prior dispatching of materials, Vendor shall offer material lot to GEL/GEL representative for final acceptance test as per GEL approved QAP at their premise. The manufacturer is entirely responsible for the quality of the skid manufactured by them.
- All control checks prescribed in the GEL specifications do not relieve him of his responsibility.
- VENDOR shall provide all testing report as mentioned in Quality Assurance Plan (QAP) for review during FAT. Also all tests to be certified out during FAT shall be witnessed by TPI/Gujarat Energy Limited representative.
- VENDOR shall provide WPS & PQR before commencement of fabrication job for approval.
- VENDOR shall provide all TCs of bought out materials.
- VENDOR shall procure bought items from approved Vendors of Gujarat Energy Limited.
- For any control test or examination required under the supervision of GEL/GEL representative, Vendor shall informed in writing one (1) Week in advance about inspection date & place along with production schedule.
- **Third Party Inspection (TPA)** for Filter document approval is in vendor scope.
- **Third Party Inspection (TPA)** for in-process and final Inspection upto dispatch clearance of DRS/CPRS as per GEL approved QAP and Technical Specification is in GEL scope. For any control test or examination required under the supervision of GEL/GEL representative, Vendor shall inform in writing 10 GEL working days in advance about inspection date & place along with production schedule.

## 10. DOCUMENT HAND OVER

**MANUFACTURER** shall also submit the 1 set hard copies and one (1) digital copy on Compact Disc of following documents along with shipment of skid and one (1) digital copy along with hard copy of the Inspection Release note and Summary report to GEL corporate office.

- As-built Bill Of Material;
- As-built P&I Diagram;
- As-built Plan & Isometric Drawing;
- As-built Cross Section Drawing;
- Approved Quality Assurance Plan;
- Material test certificates (physical property, chemical composition, make, heat treatment report, etc.) as applicable for items in nicely bound volumes.
- Traceability Records (including welding rods);
- Statutory test certificates, as applicable.
- WPS, PQT & WQT records wetted by TPIA;
- Dimensional Check Report;
- Non Destructive Test Report: RT, UT & MPT
- Pressure Testing Certificate: Hydrostatic & Pneumatic Test;
- Performance / Functional test Certificate;
- Painting Specification and Report;
- Inspection & test reports for all mandatory tests duly certified by Gujarat Energy Limited authorized TPI/representative after review/witness as per the applicable code as well as test reports for any supplementary tests, in nicely bound volumes.
- VENDOR shall provide Purchase orders of bought out items along with all TCs.
- Mechanical Gauge / Instrument Calibration Certificates;

- Warranty Certificate;
- FAT Report;
- TPI approved Inspection release Note;
- Equipment Design, sizing & Calculation Documents;
- System Pressure Drop;
- Valve Documentation;
- Filter Cartridge Details & specification;
- Safety Relief Valve Documentation;
- Functional Description of system consisting Operation philosophy;
- Equipment & Instrument Data Sheets;
- Line Designation List;
- As-built Instrument Index;
- Cable Schedule;
- Power Consumption Details;
- Modbus Register Addresses for all points & parameters;
- Operation and maintenance instruction manual & requirements;
- Typical Noise Assessment & Control Report;
- Typical Hazardous Area Classification;
- Original Equipment / instrument catalogs;
- Un-priced Purchase order of all the bought out items;
- List of spares along with Purchase Specification
- Compliance certificate in line with GEL Bid;
- Other information which MANUFACTURER seems necessary.
- FAT/SAT Procedure;
- Start-up and Commissioning Procedure;
- Summary report which includes all the test as per QAP, TC/Report number, Observed values of tests

## **11. Vendor's Scope for AMC of DRS/CPRS (Preventive & Breakdown Maintenance):**

### **11.1 Warranty Period:**

- ***18 Months from the date of delivery or 12 months from the date of commissioning, whichever is earlier.***
- VENDOR shall carry out free preventive and breakdown maintenance activities during warranty periods. Periodicity of preventive maintenance shall be maintained as per AOMP attached with tender document during the warranty period.
- Vendor shall provide service along with the required spares without any charges and required tools and tackles to perform maintenance activities.
- Any spares/ material changed during warranty period shall be provided with minimum 6 months warranty from the date of installation of spare or period defined above, whichever is more.

- Vendor shall carry the AMC work as per the attached scope of work for planned maintenance and as per the instructions of GEL Engineer-in-charge. GEL shall provide the schedule for the AMC to Vendor.
- No additional charge will be paid during warranty period for free preventive and breakdown maintenance services.
- Lodging, boarding, travelling, overheads, etc. incurred in such activities shall be borne by Vendor.

### **11.2 Out of warranty period (Comprehensive) – wherever applicable as per the SOR requirement.**

- Vendor shall ensure to provide the AMC of DRS/CPRS for 5 Years (60 months) after the warranty period is expired at sole discretion of GEL as per the requirement of SOR item.
- Vendor shall provide service along with the required spares without any charges and required tools and tackles to perform preventive & breakdown maintenance activities.
- Periodicity of preventive maintenance shall be maintained as per AOMP attached with tender document and also for 5 years after warranty period as per the rates quoted in SOR.
- GEL shall provide the schedule for the periodic preventive maintenance program to VENDOR.
- Vendor shall ensure that the AMC is carried out within schedule provided by GEL representative.
- Any spares/ material changed during maintenance shall be provided with minimum 6 months warranty from the date of installation of spare.
- No additional charge will be paid during preventive and breakdown maintenance services.
- Lodging, boarding, travelling, overheads, etc. incurred in such activities shall be borne by Vendor.

#### **Note:**

- *Any additional visit subsequent to the comprehensive AMC required due to the malfunctioning of DRS/CPRS has to be at the cost of VENDOR.*
- *Non-compliance to the periodicity mentioned against scheduled maintenance during warranty period as well as 5 years of comprehensive AMC will be liable for penalty as per applicable penalty terms.*
- *Gujarat Energy Limited EIC/Representative shall give planning through written communication (e-mail) prior to minimum 07 days for preventive maintenance of DRS/CPRS under warranty period well in advance. Preventive maintenance to be carried out within 15 days from the due date of preventive maintenance. Vendor to co-ordinate with operations team before scheduling the AMC activity.*
- *Procedure for planned maintenance of DRS/CRPS is available with site EIC.*

### **11.3 Vendor shall ensure the below precautionary Measures while executing the AMC of DRS/CPRS:**

- Necessary work permit shall be obtained from GEL.
- Ensure at least one DCP type fire-extinguisher is placed near the DRS/CPRS provided by GEL with valid date.
- Ensure that the area surrounding DRS/CPRS is barricaded.
- Ensure only authorized & permitted person are allowed in the barricaded area.
- Ensure that personnel are wearing required PPE's as per GEL PPE matrix during AMC of DRS/CPRS
- Ensure proper Tools & Tackles are available at site locations. Only non-sparking type of tools are to be used.
- Ensure that Risk Assessment is done before the AMC of DRS/CPRS to avoid any damage.
- Ensure trained personnel authorized by O&M are doing the AMC of DRS/CPRS.
- Ensure necessary emergency arrangements before work is executed if the same is to be concluded as confined space is undertaken.

All spares and services required to carry out the above AMC is under the scope of Vendor. Vendor shall keep a stock of recommended spares for each capacity of DRS/CPRS at their workshop & bring the same to carry out AMC of DRS/CPRS supplied at their end and also maintain the same in one kit at each operations head office of GUJARAT ENERGY which shall be used during the emergency only with prior approval of Manager- Technical.

## 12. IMPLEMENTATION OF DIGITIZATION INITIATIVES

GEL has implemented and will implement various initiatives towards automation and digitization of the activities and processes with an aim of having high efficiency work, to reduce manual efforts, to improve communication and collaboration. Accordingly, VENDOR shall implement the same including but not limited to online documentation and transaction monitoring, online document review and approval, online data uploading and updating, online material management etc. with no additional cost to OWNER. Time to time, VENDOR shall ensure the required resources like smart phones, computers, internet connectivity etc. to implement the app based/web-based process including training of the manpower for the same.

OWNER has implemented Vendor Invoice Submission Application (VISA) for office automation, digitization and transparency in processing of vendor invoices. VENDOR shall upload the invoices and other specified supporting documents on VISA before submitting physical set of Invoice & documents along with covering letter generated from application to respective GEL Offices. Additional reports/documents (not specified on VISA portal), may be directly submitted to concerned GEL- Contract Owner / EIC as per requirements. The onus of selecting relevant name of GEL Contract Owner & GEL GA/Office (where physical invoice is to be submitted by vendor) is on the VENDOR for timely processing of invoices and for further certification / payment

## 13. PENALTY

SN	Parameters	Service Level Agreement	Penalty
----	------------	-------------------------	---------

1	Preventive Maintenance during Warranty Period & AMC Period	Within 15 days from the due date of preventive maintenance	Delay in executing the maintenance as per schedule penalty of 10,000 INR will be levied by Gujarat Gas limited. Any further delay of 7 days beyond 15 days is liable for additional penalty of 500 INR/day.
2	Breakdown Maintenance during Warranty Period & AMC Period	Within 2 days from the date of communication from Gujarat Gas	Delay in executing the maintenance penalty of 5,000 INR will be levied by Gujarat Gas limited. Any further delay of beyond 2 days additional penalty of 500 INR/day will be levied.

#### 14. ANNEXURES

- ANNEXURE-01 TYPICAL PIPING & INSTRUMENTATION DIAGRAM (P&ID)
- ANNEXURE-02 TYPICAL GENERAL ARRANGEMENT DRAWING (GAD)
- ANNEXURE-03 TYPICAL NAME PLATE FOR FILTER AND SKID
- ANNEXURE-04 QUALITY ASSURANCE PLAN (QAP)
- ANNEXURE-05 APPROVED VENDOR LIST
- ANNEXURE-06 PIPING MATERIAL SPECIFICATIONS (PMS)
- ANNEXURE-07 TECHNICAL NOTES FOR VALVES
- ANNEXURE-08 TECHNICAL SPECIFICATION FOR VALVES
- ANNEXURE-09 DATASHEET FOR GLOBE VALVE (Below 2", 800#)
- ANNEXURE-10 DATASHEET OF BALL VALVE (Below 2", 800#)
- ANNEXURE-11 DATASHEET OF BALL VALVE (2" & 3")
- ANNEXURE-12 DATASHEET OF BALL VALVE (4" and ABOVE)
- ANNEXURE-13 DATASHEET OF SWING CHECK VALVE
- ANNEXURE-14 DATASHEET OF PRESSURE REGULATING VALVE
- ANNEXURE-15 DATASHEET OF SLAM SHUT VALVE
- ANNEXURE-16 DATASHEET OF FILTER
- ANNEXURE-17 DATASHEET OF PRESSURE SAFETY VALVE
- ANNEXURE-18 DATASHEET OF CREEP RELIEF VALVE
- ANNEXURE-19 DATASHEET OF FITTINGS
- ANNEXURE-20 DATASHEET OF FLANGES AND BLIND
- ANNEXURE-21 DATASHEET OF PRESSURE GAUGE
- ANNEXURE-22 DATASHEET OF DIFFERENTIAL PRESSURE GAUGE
- ANNEXURE-23 DATASHEET FOR TEMPERATURE GAUGE
- ANNEXURE-24 DATASHEET FOR PAINTING
- ANNEXURE-25 FACTORY ACCEPTANCE TEST PROCEDURE
- ANNEXURE-26 SITE ACCEPTANCE TEST PROCEDURE
- ANNEXURE-27 HYDROTEST PROCEDURE
- ANNEXURE-28 TECHNICAL SPECIFICATION OF CANOPY
- ANNEXURE-29 SCOPE FOR WORK FOR PLANNED MAINTENANCE OF DRS
- ANNEXURE-30 DESIGN AND PROCESS PARAMETERS
- ANNEXURE-31 MARKING AND COLOUR COADING