



GUJARAT GAS

# DESIGN AND PROCESS PARAMETERS FOR DISTRICT REGULATING SKID

Document No.: GGL/TS/PE-PNG/SUPPLY/DRS/D&PP

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## DESIGN AND PROCESS PARAMETERS

### FOR DRS/CPRS (TYPE -1 & TYPE-2) 300#

### DESIGNED FOR INLET PRESSURE OF MINIMUM 10 BARG & 5 BARG RESPECTIVELY

**Project Name** : DRS - District Regulating Skid (Pressure Reduction Skid)

**Revision** : 0

1. Confirming Standard : PNGRB Technical Standard, ASME B 31.8 and IGE/TD/13, (Latest Edition)
2. Piping/Filter Standard : ASME B 31.8, API 1104 and ASME Sec.- VIII & IX with (latest addenda)
3. Functional Requirements : IGE/TD/13 and as per agreed MANUFACTURER's Recommendation
4. Class Location : Location Class Four (4) as per PNGRB Standard
5. Medium : Natural Gas
6. Design & Operating Data :

Item No	DRS Flow (SCMH)- <b>TYPE 1</b>	Design Flow, SCMH @ Inlet Pressure	Design Pr. (Barg)	Design Temp. Deg. C	Inlet Operating Pressure (Barg)	Operating Temp. Deg. C	Set Range of Regulator (Barg)	Outlet set Pres. (Barg)
1	500	500@10 Barg	49	-10 to 65	10-40	0-50	1.5- 6	4
2	1000	1000@10 barg	49	-10 to 65	10-40	0-50	1.5- 6	4
3	2000	2000@10 barg	49	-10 to 65	10-40	0-50	1.5- 6	4
4	5000	5000@10 barg	49	-10 to 65	10-40	0-50	1.5- 6	4

Item No	DRS Flow (SCMH) <b>TYPE 2</b>	Design Flow, SCMH @ Inlet Pressure	Design Pr. (Barg)	Design Temp. Deg. C	Inlet Operating Pressure (Barg)	Operating Temp. Deg. C	Set Range of Regulator (Barg)	Outlet set Pres. (Barg)
1	500	500@5 Barg	49	-10 to 65	5 - 40	0-50	1.5- 4	4
2	1000	1000@5 barg	49	-10 to 65	5 - 40	0-50	1.5- 4	4
3	2000	2000@5 barg	49	-10 to 65	5 - 40	0-50	1.5- 4	4
4	5000	5000@5 barg	49	-10 to 65	5 - 40	0-50	1.5- 4	4

Note : Piping size of regulator downstream shall be designed considering 4.0 bar outlet pressure.

**1. Limiting Gas Velocity:**

- Filter Upstream - Designing of pipeline size before filter, velocity to be considered 20 m/s.
- Filter Downstream & Before Regulators - Velocity to be consider 30 m/s
- After Regulator - Velocity to be consider 30 m/s

**2. Environment Considerations:**

All equipment shall be designed for operation, storage & transportation under the following environmental conditions.

**3. Site Conditions**

The entire instrumentation system shall be designed for the following site conditions:

Max. /Min. temperature	:	50 / 0 ° C
Relative Humidity	:	100%
Hazardous Area classification	:	<b>Zone 1, Gas group IIA / IIB, Temp. Class T3</b>

**4. Gas Composition:**

Following Gas composition has been considered for design and engineering of PRS skids:

General Gas Composition	
Component	Mole %
CH <sub>4</sub>	92.66%
Nitrogen	0.42%
C <sub>2</sub> H <sub>6</sub>	6.32%
C <sub>3</sub> H <sub>8</sub>	0.49%
i-C <sub>4</sub> H <sub>10</sub>	0.05%
n-C <sub>4</sub> H <sub>10</sub>	0.06%

**5. Sizing Criteria:**

For sizing of inlet piping, outlet piping, Regulator and SSV below criteria shall be considered-

**Type-1 DRS**

Inlet Pressure	Outlet Pressure
Min : 10 barg	Min : 4.0 barg
Normal : 10 barg	Normal : 4 barg (Set Point)
Max : 26 barg	Max. : 5 barg

**Type-2 DRS**

Inlet Pressure	Outlet Pressure
Min : 05 barg	Min : 1.5 barg
Normal : 10 barg	Normal : 4 barg (Set Point)
Max : 26 barg	Max. : 4 barg