

# Annexure-II



**Ravindra Agrawal**  
Group Executive Director  
(Gas Business)

## Gujarat State Petronet Ltd.

GSPL Bhavan, South Wing (Ground Floor), E-18,  
GIDC Electronic Estate, Nr. K-7 Circle, Sector-26,  
Gandhinagar - 382028.  
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GSPL/COMM/2022  
3<sup>rd</sup> June 2022

**Shri S C Gupta,**  
**Joint Adviser (A&T)**  
**Petroleum and Natural Gas Regulatory Board**  
1<sup>st</sup> Floor, World Trade Centre,  
Babar Road,  
New Delhi- 110 001

Subject: Submission of Capacity data for GSPL High Pressure Gas Grid for years 2021-22 and 2022-23

Ref : (i) PNGRB email dated 28<sup>th</sup> April 2022 and 26<sup>th</sup> May 2022

Dear Sir,

With reference to the above, GSPL is pleased to submit the capacity data as sought by PNGRB for the years 2021-22 and 2022-23 under PNGRB (Determining Capacity of Petroleum, Petroleum Products and Natural Gas Pipeline) Regulations 2010 for GSPL HP Gas Grid. The information sought is attached as Annexure 1 to this letter.

We would like to draw your kind attention to the fact that Capacity Assessment Group, in its Final report for Capacity Assessment of GSPL HP & LP Grid had stated that, to maintain parity with the operating margins offered to other entities, a reduction in the capacity of about 5% has been considered while determining the capacity of GSPL HP and LP Grid. The HP capacity was thus determined at 31 MMSCMD. Accordingly a reduction of 5% may please be applied to the HP & LP Capacity figures, for the respective year.

We hope that you will find the above information in order. Please feel free for seeking any clarification in the matter.

Thanking You,

Yours faithfully,

**Ravindra Agrawal**  
Group ED (Gas Business)

## Annexure 1

- (i) Year wise Schedule A duly filled in the format given as given in PNGRB (Determining Capacity of Petroleum, Petroleum Products and Natural Gas Pipeline) Regulations 2010 for Capacity Determination for the year 2011-12

GSPL Response: Filled in Schedule A for the years 2021-2022 and 2022-23 is attached to this letter.

- (ii) A schematic diagram of the Pipeline Network indicating pipeline sections, spur lines, pipeline size /lengths, entry and exit points, compressor stations as well as intermediate compressors etc.

GSPL Response : Year wise schematic diagram is attached as pdf file.

- (iii) Input data for each pipe section data such as length (km), inside diameter(mm), wall thickness (mm), pipe wall roughness (micron), knot spacing, gas equation used, ground elevation profile, subsoil temperature, pipeline efficiency, drag factor etc.

GSPL Response: Pl. refer to excel files 'PNGRB Point 3 Data April\*.xlsx' files for each year

- (iv) Input data including all gas sources, gas entry temperature & pressure, quality & composition of natural gas, minimum and maximum gas flow etc.

GSPL Response: Pl. refer to excel files 'PNGRB Point 4 Data April\*.xlsx' files for each year.

- (v) The Constant & variable parameters considered as defined in PNGRB (Determining Capacity of Petroleum, Petroleum Products and Natural Gas Pipeline) Regulations 2010

GSPL Response: Pl. refer to Annexure A of Schedule A

- (vi) Ground or Elevation profile of entire pipeline system

GSPL Response: Pl. refer to excel files 'PNGRB Point 3 Data April\*.xlsx' files, Sheet "Nodes" for each year

- (vii) Compressor data (performance data, performance curves, fuel gas consumption, standby scenario, as built-Datasheets, P&IDs etc)

GSPL Response : Pl. see attached pdf files (a) com\_performance data.pdf (ii) engine performance curve.pdf (iii) Engine Performance at Full load.pdf (iv) Gas Turbine Data Sheet.pdf (v) GTC – P&ID.pdf (vi) Performance Curve –P-35480.pdf

- (viii) The year wise native input & output files of simulations for the entire pipeline system considering steady state condition of the pipeline hydraulics with contractual flow parameters (pressure, temperature and flow) at entry and exit points along with input and output summary.

GSPL Response :Pl. refer to the \*.TGW files for respective year.

- (ix) Designed & current operational data including power consumption at compressor stations.

GSPL Response: Pl. see attached “Compressor Design data.pdf”, excel files “Capacity \*.xlsx” and TGW files of respective year for the details

- (x) System pressure drop considered at the outlet of supply points, at intermediate compressor stations and at the inlet of exit points

GSPL Response: Pl. refer to the \*.TGW files of respective year.

- (xi) Consumer and supply contracts with contractual pressure, flow, temperature, gas quality etc. at all source and delivery nodes.

GSPL Response: The Contractual volume details are incorporated in the excel & \*.tgw files.

- (xii) In case some shippers receive gas from a common point on the trunkline, provide the information / data /details about such groups of shippers for gas delivery point of view from trunkline.

GSPL Response: May please refer schematic map.

- (xiii) Inlet pressure at any other source points

GSPL Response: Inlet pressure at each source point is included in excel files ‘PNGRB Point 4 Data April\*.xlsx’ files for each year

- (xiv) MAOP of the Pipeline

GSPL Response:Pl. refer to excel files ‘PNGRB Point 3 Data \*.xlsx’ files and Sheet “Pipelines” for each year

- (xv) Methodology followed for carrying out capacity determination

GSPL Response: Using Panhandle Modified flow equation (Pl. refer Schedule A Sl#5)

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \emptyset$ pipelines <b>Panhandle -B</b> Module for $\geq 24'' \text{ } \emptyset$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	This information is continuously variable. The Excel and *.tgw files capture the relevant information for determination of Capacity.
7	Composition of natural gas	Please refer Excel File "PNGRB Point 4 Data April*.xlsx" for respective year
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-A</b>
11	Capacity of the pipeline under existing operating conditions	Same as submitted
12	Maximum achievable Capacity of the pipeline under steady state	Please refer <b>Annexure-B</b>

	conditions as determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible, section wise capacity is given in excel file "PNGRB Point 3 Data.xlsx" under headings of Flow (head) MMSCMD and Flow (tail) MMSCMD
14	Expected addition of entry points and exit points scheduled in near future	Currently not anticipated

Note: Submit the system flow diagram & hydraulic gradient

**Annexure-A**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

**Annexure-B**

<b>Sr. No.</b>	<b>Natural Gas Pipeline</b>	<b>Financial Year</b>	<b>Maximum Capacity (MMSCMD)</b>
1.	GSPL's High	2021-22	35.21
2.	Pressure Gujarat Gas Grid	2022-23	34.17



## Gujarat State Petronet Ltd.

GSPL Bhavan,

E-18, GIDC Electronics Estate, Nr. K-7 Circle,

Sector-26, Gandhinagar-382028.

Tel.: +91-79-23268500/600 Fax : +91-79-23268506

Website : www.gspcgroup.com

GSPL/COMM/2023

5<sup>th</sup> October 2023

**Shri Anil Garg,**  
**Joint Adviser (Technical Services)**  
**Petroleum and Natural Gas Regulatory Board**  
1<sup>st</sup> Floor, World Trade Centre,  
Babar Road,  
New Delhi- 110 001

Subject: Submission of Financial Year wise Schedule A for GSPL High Pressure Gas Grid

Ref : (i) GSPL's data submission related to Capacity Determination on 29<sup>th</sup> April 2023

(ii) Meeting with PNGRB and EIL officials on 29<sup>th</sup> September, 2023

Dear Sir,

With reference to the meeting at SI#2 above, GSPL is pleased to submit Financial year wise Schedule A as per attached files.

We hope that you will find the above information in order. Please feel free for seeking any clarification in the matter.

Thanking You,

Yours faithfully,

**Devendra Agrawal**  
**General Manager (Commercial)**

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year : 2017-18**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \varnothing$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \varnothing$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 17-18.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> . Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	27.22 MMSCMD

12	Maximum achievable Capacity of the pipeline under steady state conditions as determined under Regulation 5 of these regulations	28.291 MMSCMD
13	Section wise maximum achievable capacity of the pipeline as determined under Regulation 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	GIGL Palanpur connectivity

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.



**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year : 2018-2019**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \emptyset$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \emptyset$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 18-19.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> . Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	29.16 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions as	29.621 MMSCMD

	determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Currently not anticipated

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.

**Annexure A**

**Composition of Gas for FY 2018-19**

HP Network											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet		97.39210	1.49080	0.46670	0.08160	0.12690	0.00360	0.00000		0.43830
2	RGTEL	0.05340	87.73410	9.76520	1.65122	0.25261	0.27030	0.01205	0.00559	0.00840	0.24710
3	ONGC	0.03000	99.63000	0.21000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13000
4	GIGL Palanpur	0.00885	84.73287	10.53835	2.72894	0.91704	0.53501	0.14800	0.09303	0.04823	0.24967

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year: 2019-20**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \varnothing$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \varnothing$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 19-20.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	31.61 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions as	32.131 MMSCMD

	determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Mundra LNG Terminal Connectivity

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.

**Composition of Gas for FY 2019-20**

HP Network											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet	0.00000	94.52171	4.94510	0.28870	0.05070	0.06610	0.00010			0.12760
2	RGTIL	0.06720	93.15391	5.43280	0.99940	0.10260	0.12160	0.00910	0.00600	0.00950	0.09790
3	ONGC	0.03000	99.63000	0.21000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13000
4	GIGL	0.01007	83.94618	10.77163	3.02536	1.09559	0.65141	0.12792	0.07743	0.04115	0.25327

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year: 2020-21**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \varnothing$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \varnothing$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 20-21.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	29.48 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions as	35.22 MMSCMD

	determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Swan LNG Terminal Connectivity

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.

**Annexure A**

**Composition of Gas for FY 2020-21**

HP Network Details											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet	0.00000	95.24750	3.85950	0.38200	0.07020	0.10740	0.00240	0.00000	0.00000	0.33100
2	RGIL	0.00000	89.66550	8.96080	0.89160	0.13650	0.14400	0.00240	0.00000	0.00000	0.19920
3	ONGC	0.17240	97.92250	0.23010	0.00570	0.00060	0.00000	0.00000	0.00100	0.00000	1.66770
4	Mundra LNG	0.00000	94.17681	5.22530	0.45310	0.05540	0.05280	0.00460	0.00250	0.00060	0.02890
5	GIGL Palanpur	0.00779	83.97046	10.72639	3.05922	1.10831	0.60668	0.13822	0.08660	0.05099	0.24535

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year: 2021-22**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \emptyset$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \emptyset$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 21-22.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> . Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	27.65 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions as	35.21 MMSCMD

	determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Swan LNG Terminal Connectivity

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.

**Annexure A**

**Composition of Gas for FY 2021-22**

HP Network Details											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet	0.00000	96.95174	1.86564	0.50246	0.07253	0.10582	0.00499	0.00181	0.00000	0.49504
2	RGIL	0.12598	97.32000	1.82133	0.28304	0.04740	0.04556	0.01162	0.00333	0.03480	0.30695
3	ONGC	0.17240	97.92250	0.23010	0.00570	0.00060	0.00000	0.00000	0.00100	0.00000	1.66770
4	Mundra LNG	0.00000	95.50930	3.42140	0.67820	0.20790	0.13550	0.01030	0.00260	0.00000	0.03490
5	GIGL Palanpur	0.00912	84.15784	10.68499	2.99630	1.03988	0.58784	0.14001	0.08769	0.05089	0.24544

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year: 2022-23**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \varnothing$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \varnothing$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 22-23.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> . Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	20.53 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions as	34.17 MMSCMD

	determined under section 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under section 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Swan LNG Terminal Connectivity

Note:

(i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.

(ii) Above information shall be approved by person authorized by the board of entity.

**Annexure A**

**Composition of Gas for FY 2022-23**

HP Network Details											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet	0.0000	97.1757	1.9001	0.4266	0.0706	0.1035	0.0038	0.0007	0.0000	0.3189
2	RGIL	0.2251	98.8625	0.3427	0.1917	0.0471	0.0354	0.0189	0.0071	0.0421	0.2274
3	ONGC	0.1708	97.8733	0.2271	0.0053	0.0059					1.7176
4	Mundra LNG	0.0000	92.4291	6.8256	0.5142	0.0867	0.0715	0.0019	0.0004	0.0000	0.0706
5	GIGL Palanpur	0.0198	84.1700	10.5537	3.0096	1.0323	0.6036	0.1710	0.1121	0.0739	0.2540

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition

### **Schedule A**

[see regulation 5(5)(a)(x)]

Format for furnishing information regarding determining capacity of  
Natural Gas Pipeline

**Financial Year : 2023-2024**

1	Name of Entity	Gujarat State Petronet Ltd.
2	Address & Contact details of Entity	GSPL Bhavan, E-18, GIDC Electronic Estate, Nr. K-7 Circle, Sector-26, Gandhinagar-382028 Tel.: +91-79-23268500/600
3	Name of Natural Gas Pipeline	GSPL's High Pressure Gujarat Gas Grid
4	Name of Software package used	TGNet
5	Approved Flow equation used (mention name of flow equation)	<b>Panhandle -A</b> Module for $\leq 24'' \text{ } \varnothing$ pipelines <b>Panhandle -B</b> Module for $> 24'' \text{ } \varnothing$ pipelines
6	Details of injection/entry point and delivery/exit points and sections on the pipeline	Please refer to Capacity 23-24.xlsx file for entry/exit points. The Excel and *.tgw files capture the relevant information.
7	Composition of natural gas	Please refer <b>Annexure-A</b>
8	Entity agrees to have considered the Technical standards, specifications and safety standards as specified by the Board	Yes/ No
9	Entity agrees to have considered the relevant provisions of Petroleum and Natural Gas Regulatory Board Regulations	Yes/ No
10	Constant and variable parameters used under steady state conditions for determining capacity of the pipeline	Please refer <b>Annexure-B</b> . Please refer the File Input Data 20*.xlsx for figures
11	Capacity of the pipeline under existing operating conditions	22.60 MMSCMD
12	Maximum achievable Capacity of the pipeline under steady state conditions	34.17 MMSCMD

	as determined under Regulation 5 of these regulations	
13	Section wise maximum achievable capacity of the pipeline as determined under Regulation 5 of these regulations	Several combinations are possible.
14	Expected addition of entry points and exit points scheduled in near future	Chhara and Swan LNG terminal connectivity.

Note:

- (i) Submit the system flow diagram, hydraulic gradient and simulation files of software package used for capacity determination.
- (ii) Above information shall be approved by person authorized by the board of entity.

**Annexure A**

**Composition of Gas for FY 2023-24**

HP Network Details											
Sr no.	Entry Point	Carbon Dioxide (CO2) percent	Methane percent	Ethane percent	Propane percent	I - Butane percent	n- Butane percent	I - Pentane percent	n- Pentane percent	C6+ percent	Nitrogen percent
1	Petronet	0.00000	97.17574	1.90008	0.42656	0.07061	0.10349	0.00384	0.00073	0.00000	0.31894
2	RGIL	0.22509	98.86247	0.34271	0.19174	0.04709	0.03543	0.01889	0.00709	0.04207	0.22742
3	ONGC	0.17080	97.87329	0.22710	0.00530	0.00590					1.71761
4	Mundra LNG	0.00000	92.42910	6.82560	0.51420	0.08670	0.07150	0.00190	0.00040	0.00000	0.07060
5	GIGL Palanpur	0.01977	84.17004	10.55368	3.00962	1.03235	0.60360	0.17098	0.11209	0.07388	0.25399

**Annexure-B**

<b>Sr. No.</b>	<b>Constant Parameter</b>	<b>Variable Parameter</b>
1.	Internal Diameter	Operating Temperature
2.	Length	Inlet Temperature
3.	Roughness	Outlet Temperature
4.	Efficiency factor	Inlet Pressure
5.	Formula	Outlet pressure
6.	Velocity	Source Supply flow
7.	STP	Delivery flow
8.	-----	Elevation difference
9.	-----	Gas composition