Annexure-IX

Year 2015-16

Supply	Flow
	MSM3/D
Narsapur MP	0.070072729
mori+GS49	3.1951437
cairn	0
Endamaru	0
PASALPUDI	0.29096173
TATIPAKA	0
MANDAPETTA	0.28097839
Odalarevu-G1+G15	0.54603067
Lingala Kaikaluru	0.008
RSGDP	0.25918968
RAVVA1	0.24984489
GMAA	0.014816408
Kammapelam	0
SCPL Kavitam	0.008135244
Nandigama	0.018429
BG Shirke	0
RGTIL	6.3871134
ONGC Ponnamanda	0
ONGC_Adavipalem	0
kESANAPALLI	0.061239115
KEI-RSOS	0.001567975
PENUMADAM	0
NARSAPUR LP	0.0163988

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	2.10936
BGL-VIJWDA	0.0571042
SCPL-TDPLGDM	0.01799931
Lingalacustomers	0.026429
APGPCL	0.906756
TGL	0.03736332
DPML	0.020389052
SAT	0.011490044
ASL	0.009690548
GVK II	0
RAK	0.003347402
SPGL	0.64204326
BGL Kkd	0.057104256
CIL	0.020757704
NFCL	4.961309
SVPPL	0
BGL Hyd	0.1142086
MEIL	0
For Ramagundam	0
For TGPL	0
GGPL East Godavari	0
GGPL West Godavari	0
For HPCL GSPCL	0
RIL	0
EASTERN POWER- GVK I	0.70206718
KEI RSOS - EXIT	0
SEIL	0.11120435
GMR-VEMAGIRI	0.632964
Vijaya porcelain	0
Maharaja Paper	0.005436422
Padmasree	0.024360472
Konaseema	0
GMR Energy	0.001282976
GVK-GAUTAMI	0.10945199
GVK Ind	0.12984997
SILKROAD	0
RVK	0
GMR Rajahmundry	0.696

Year 2016-17

Supply	Flow
	MSM3/D
NARSAPUR MP	0.071
mori	0.688
kESANAPALLI	0.25
cairn	0.579
RGTIL	
Endamaru	0.201
PASALPUDI	0.285
TATIPAKA MP	0.585
MANDAPETTA	0.577
KEI-RSOS	0.024
Odalarevu-G1	8.839811

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	1.21923
BGL-VIJWDA	0.1026
SCPL-TDPLGDM	0.05301
Lingalacustomers	0.1345941
APGPCL	0.9063
TGL	0.03933
DPML	0.015903
RPML	0
SAT	0.01368
VPPL	0
APGDC	0.0171
PESPL	0
ASL	0.013509
KGPL	0
SEIL	0
GREL	0
GVK II	0
GMR VPGL	0
RVK	0
REL	0
RAK	0.06327
Gautami	0
SPGL	0.8208
BGL Kkd	0.04959
CIL	0.02736
Silk Road	0
NFCL	2.2743
GMR Berge	0
SVPPL	0.04275
BGL Hyd	0.11628
APEPDCL/GVKI	0.9918
reverse RIL	5.04792
MEIL	0.0171
KEI	0.13338

Year 2017-18

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053218885
mori	3.6191998
kESANAPALLI	0.28431954
cairn	0
Endamaru	0.20908876
PASALPUDI	0.29951531
TATIPAKA MP	0.50887447
MANDAPETTA W + HP	0.36135431
KEI-RSOS	0.0263914
Odalarevu-G1	8.6344278
Lingala Kaikaluru	0.012001
RSGDP	0.17367154
RAVVA1	0.23100707
GMAA	0.027154545
Kammapelam	0.007443995
SCPL Kavitam	0
Nandigama	1.641699
BG Shirke	0.27
RGTIL	1.0170636

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.009210236
BGL-VIJWDA	0.1272583
SCPL-TDPLGDM	0.21305466
Lingalacustomers	1.6537
APGPCL	2.1585388
TGL	0.14457281
DPML	0.09130914
SAT	0.06087276
ASL	0.06087276
GVK II	0
RAK	0.22827285
SPGL	1.7
BGL Kkd	0.26631833
CIL	0.13696371
NFCL	4.7311495
SVPPL	0.28153651
BGL Hyd	0.53263665
MEIL	0
For Ramagundam	0.27
For TGPL	0
GGPL East Godavari	0.01521819
GGPL West Godavari	0
For HPCL GSPCL	0
For HSIL	0
EASTERN POWER- GVK I	4.5579834
KEI RSOS - EXIT	0
SEIL	0.13696371

Year 2018-19

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.000
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	0.000
Nandigama	0.106
BG Shirke	0.290
RGTIL	1.017

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	0.000
For Ramagundam	0.290
For TGPL	0.000
GGPL East Godavari	0.012
GGPL West Godavari	0.000
For HPCL GSPCL	0.000
For HSIL	0.000
EASTERN POWER- GVK I	3.802
KEI RSOS - EXIT	0.105

Year 2019-20

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.290
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	1.017
Nandigama	0.106

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	0.000
For Ramagundam	0.290
For TGPL	0.000
GGPL East Godavari	0.012
GGPL West Godavari	0.000
For HPCL GSPCL	0.000
For HSIL	0.000
EASTERN POWER- GVK I	3.802
KEI RSOS - EXIT	0.105

Year 2020-21

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.290
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	1.017
Nandigama	0.106

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	0.000
For Ramagundam	0.290
For TGPL	0.105
GGPL East Godavari	0.012
GGPL West Godavari	0.000
For HPCL GSPCL	3.802

Year 2021-22

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.290
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	1.017
Nandigama	0.106

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	3.802
For Ramagundam	0.395
For TGPL	0.000
GGPL East Godavari	0.012
GGPL West Godavari	0.000
For HPCL GSPCL	0.000

Year 2022-23

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.290
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	0.000
Nandigama	0.106
RGTIL	1.017

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	0.000
For Ramagundam	0.290
For TGPL	0.000
GGPL East Godavari	0.012
GGPL West Godavari	0.105
For HPCL GSPCL	0.000
For MEIL	3.802

Year 2023-24

Supply	Flow
	MSM3/D
NARSAPUR MP	0.053
mori	0.664
kESANAPALLI	0.284
cairn	0.290
Endamaru	0.209
Odalarevu	9.000
PASALPUDI	0.300
TATIPAKA MP	0.509
MANDAPETTA W + HP	0.361
KEI-RSOS	0.026
Odalarevu-G1	6.000
Lingala Kaikaluru	0.012
RSGDP	0.274
RAVVA1	0.231
GMAA	0.027
Kammapelam	0.007
SCPL Kavitam	0.000
Nandigama	0.106
RGTIL	1.017

Deliveries	Flow
	MSM3/D
TO-TTPK-LANCO	0.007
BGL-VIJWDA	0.099
SCPL-TDPLGDM	0.164
Lingalacustomers	0.118
APGPCL	1.653
TGL	0.111
DPML	0.070
SAT	0.047
ASL	0.047
GVK II	0.000
RAK	0.176
SPGL	1.995
BGL Kkd	0.205
CIL	0.105
NFCL	9.752
SVPPL	0.206
BGL Hyd	0.410
MEIL	0.000
For Ramagundam	0.290
For TGPL	0.000
GGPL East Godavari	0.012
GGPL West Godavari	0.000
For HPCL GSPCL	0.000
For MEIL	0.000
For IOCL	3.802
For MNGL	0.000
Oduru exit point customers	0.105

2015-16

Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Initial	**0**												
	percent	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
[redacted]	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
LINGALA	0.25	96.9	1.2	0.45	0.5	0.6	0.1						
KEIRSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
Adavipalem	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
ONGC_Penu...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595

2016-17

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	Initial	0												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	[redacted]	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2017-18

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	LINGALA	0.25	96.9	1.2	0.45	0.5	0.6	0.1						
0025	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2018-19

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	LINGALA	0.25	96.9	1.2	0.45	0.5	0.6	0.1						
0025	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2019-20

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	LINGALA	0.25	96.9	1.2	0.45	0.5	0.6	0.1						
0025	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2020-21

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2021-22

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.34	93.36	1.85	1.14	0.32	0.41	0.18	0.1	0.3				0
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				0
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.24	87.77	4.9	1.7	0.25	0.47	0.12	0.14	0.32				0.09
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2022-23

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.358395	89.40738	3.215...	2.630518	0.4535376		0.1209434	0.09070752	0.1511...				1.572264
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.255793	87.24322	6.468...	1.49899	0.241448		0.09054301	0.08048268					0.120724
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	Kammapelam ...	1.9994	94.6716	1.059...	0.7597721	0.319904		0.119964	0.08997301	0.4798...				0.49985
0025	Lingala source	1.999	70.53473	11.21...	7.926037	1.3993	2.398801	2.368816	0.4297851	0.2998...		1.1994		0.2298851
0026	Gulf Coast Gas	0.5956	96.5222	1.8186	0.4596	0.0977	0.1007	0.0473	0.0324	0.0664				0.2595
New														

2023-24

	Name	Carbon Dioxide (CO2)	Methane (C1)	Ethane (C2)	Propane (C3)	Isobutane (IC4)	N-butane (NC4)	Isopentane (IC5)	N-pentane (NC5)	Hexane (C6)	Heptane (C7)	Heptane+ (C7+)	Octane (C8)	Nitrogen (N2)
Init...	**Initial**	**0**												
Units		*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*	*percent*
0001	NARSAPUR-...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0002	MORI-ONGC	0.49	98.61	0.25	0.19				0.03	0.31				0.12
0003	RIL D6	0.286831	98.1821	0.721...	0.300822	0.0579658	0.0799528	0.0899469	0.0279835	0.0489...				0.20388
0004	PASALARPU...	2.358395	89.40738	3.215...	2.630518	0.4535376		0.1209434	0.09070752	0.1511...				1.572264
0005	TATIPAKA HP...	2.6	92.92	1.9	1.1	0.33	0.39	0.19	0.1	0.39				0.08
0006	TATIPAK HP ...	2.32	93.56	1.7	1.02	0.3	0.37	0.17	0.09	0.47				0
0007	RAVVA JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0008	RSGDP JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0009	KESANAPAL...	2.65	83.61	4.94	4.37	1.21	1.75	0.72	0.35	0.4				
0010	ENDAMARU ...	2.53	92.4	2.93	0.83	0.15	0.3	0	0.08	0.41				0.37
0011	GMAA -ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0012	MANDAPETT...	4.255793	87.24322	6.468...	1.49899	0.241448		0.09054301	0.08048268					0.120724
0013	MANDAPETT...	4.15	88.75	5.03	1.14	0.19	0.26	0.09	0.07	0.25				0.07
0014	TATIPAKA LP...	3.878533	92.50351	1.66366	1.022249		0.2605733	0.08017639	0.07015434	0.4610...				0.060132...
0015	NARSAPUR ...	1.69	94.23	2.38	0.8	0.19	0.17	0.07	0.06	0.28				0.13
0016	PONNAMANDA	2.58	91.08	2.58	2.04	0.42	0.56	0.19	0.16	0.35				0.04
0017	KEI RSOS	2	93.63	1.84	0.99	0.29	0.35	0.21	0.1	0.59				
0018	ADAVIPELAM	0.38	96.33	1.09	0.98	0.21	0.3	0.13	0.12	0.39				0.07
0019	ONGC PENNU...	6.64	77.47	10.19	3.5	0.47	0.69	0.22	0.18	0.49				0.15
0020	CAIRN RAVVA	0.05951389	90.84709	3.809...	3.263665	0.6066577	0.9257491	0.1932938	0.1711656	0.0997...				0.023845...
0021	RSGDP-JV	0.590768	95.35396	1.972...	1.151497	0.3104035	0.2202864	0.09011715	0.09011715	0.1001...				0.1201562
0022	RAVVA-JV	0.9225011	90.02842	3.692...	3.262479	0.6004563	0.9307073	0.2001521	0.1701293	0.0900...				0.1022777
0023	GMAA-ONGC	1.06415	85.49342	3.403...	5.943178	1.244855	1.676539	0.4818793	0.391527					0.3011746
0024	Kammapelam ...	1.9994	94.6716	1.059...	0.7597721	0.319904		0.119964	0.08997301	0.4798...				0.49985
0025	Lingala source	1.999	70.53473	11.21...	7.926037	1.3993	2.398801	2.368816	0.4297851	0.2998...		1.1994		0.2298851
New														

GAIL (India) Limited
Gas & Beyond

PROCESS DESIGN BASIS FOR PIPELINE REPLACEMENT PROJECT AT KG BASIN

ODALAREVU - BODASAKURRU PIPELINE

GAIL

(SUSHIL KUMAR)

Suyog Iyer

EIL

for Abhijeet R. Bhaskar

Rev. No	Date	Purpose	Prepared by	Checked by	Approved by
1	07.05.2018	ISSUED FOR APPROVAL	AB	HKP	HKP
0	25.04.2018	CLIENT COMMENTS INCORPORATED AND ISSUED FOR APPROVAL	AB	HKP	HKP
A	16.10.2017	ISSUED FOR COMMENTS	AB	AS	AS

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7.0 SCADA & TELECOMMUNICATION SYSTEM

8.0 GENERAL PROJECT SPECIFICATIONS

9.0 SPECIAL CLIENT'S REQUIREMENT

ANNEXURE –I COMPOSITION OF GAS

1. INTRODUCTION

In KG Basin, M/s GAIL (India) Limited is operating natural gas distribution network of about 835 km cross country pipeline spread across East Godavari, West Godavari and Krishna districts of Andhra Pradesh. Gas is sourced from production installations of M/s ONGC, M/s Cairn Energy Ltd and M/s Reliance Industries Ltd.

Under KG basin pipeline replacement project, M/s GAIL (India) Limited intends to lay a new 24" cross country pipeline in K G Basin from Odalarevu to Bodasakurru.

Pipeline will be originating from CTP of M/s ONGC at Odalarevu and transport the gas to existing 24" (KKD-1) and 18" (KKD-2) pipeline at Bodasakurru.

Engineers India Limited has been awarded by GAIL (India) Limited to provide Project Management Consultancy services for Pipeline Replacement Project at KG Basin for Bodasakurru pipeline.

2. BASIC PARAMETERS

2.1. ODALAREVU Despatch Station

2.1.1	Product to be transported	Natural Gas
2.1.2	Product properties/specifications	As per Annexure-I
2.1.3	Design codes	ASME B31.8 and PNGRB Guidelines will be followed as applicable. However, in case of contradictory stipulations, the more stringent conditions will prevail.
2.1.4	Source of product	ONGC CTP
2.1.5	Pipeline design throughput	6 MMSCMD

2.2. BODASUKURRU Receipt Station

2.2.1	Product to be transported	Natural Gas
2.2.2	Product properties/specifications	Same as Odalarevu Despatch Station
2.2.3	Design codes	ASME B31.8 and PNGRB Guidelines will be followed as applicable. However, in case of contradictory stipulations, the more stringent conditions will prevail.
2.2.4	Source of product	Natural Gas from 24" Bodasakurru pipeline will be the gas supply source for this receipt station.
2.2.5	Pipeline design throughput	6 MMSCMD

3. PROJECT SCOPE & BATTERY LIMITS:

3.1. At ODALAREVU

Hook-up with 26" ONGC gas compressor downstream metering system at CTP ONGC

3.1.1. Battery limit conditions

Inlet flow rate, MMSCMD	:	6MMSCMD
Operating pressure, Kg/cm2g	:	60
Operating temperature, ° C	:	45-50

3.2. At Bodasakurru receipt station upstream of metering skid

S.No	Consumers	Location	Flow Rate MMSCMD	Required Delivery Pressure, Kg/cm2g	Required Delivery Temperature, Deg C
1	Existing 24" pipeline	Bodasakurru	4 - 6	56 – 58	As per hydraulics
2.	Existing 18" pipeline	Bodasakurru	2	34 - 40	As per hydraulics

1

Note-1: 12" tap-off for interconnection with existing 12" pipeline at GAIL Odalarevu approx. 1km from dispatch terminal will be provided in Bodasakurru pipeline.

Note-2: 12" tap-off for interconnection with existing 8" pipeline at GAIL Odalarevu approx. 1km from dispatch terminal will be provided in Bodasakurru pipeline.

4. PIPELINE PARAMETERS

4.1. Odalarevu – Bodasakurru pipeline

4.1.1	Pipeline operating life	25 years
4.1.2	Pipeline Length	13.8km
4.1.3	Pipeline roughness	45Microns
4.1.4	Material of construction for pipeline	Carbon Steel
4.1.5	Pipeline Corrosion Allowance	1mm
4.1.6	Subsoil temperature	20 - 30 °C throughout the entire length of the pipeline.
4.1.7	Design Pressure	72.0 Kg/cm2 (g)
4.1.8	Design temperature	-29 °C to 60 °C for all buried sections -29 °C to 65 °C for above ground portion
4.1.9	Pipeline laying	Buried
4.1.10	Burial Depth, m	Min. 1.0 m, as per PNGRB norms.

4.1.11	Ground profile	-
4.1.12	Pipeline corrosion protection system	Pipeline shall be protected from external corrosion by suitable external 3 layers PE coating and impressed current cathodic protection.
4.1.13	Corrosion Monitoring System	Corrosion monitoring system will be provided as required.
4.1.14	Design margin (for pipeline)	No hydraulics study is envisaged in this project.
4.1.15	Sectionalizing Valves	Sectionalizing valves will be provided along the pipeline as per ASME B31.8

5. DISPATCH / RECEIPT STATION PARAMETERS

5.1. ODALAREVU dispatch terminal design parameters

5.1.1	Source of Gas	Natural Gas from ONGC CTP
5.1.2	Location	Odalarevu Dispatch Terminal
5.1.3	Battery limit temperature, °C (Normal/Design)	45-50 / 65
5.1.4	Battery limit pressure, kg/cm2 g (Normal/Design)	60 / 72.0
5.1.5	Flow rate, MMSCMD	6 MMSCMD

5.2. BODASAKURRU receipt terminal design parameters

5.2.1.1	Source of Gas	Odalarevu - Bodasakurru Pipeline.
5.2.1.2	Location	Bodasakurru Receipt terminal
5.2.1.3	Battery limit temperature, °C (Normal/Design)	25 - 30 / 65
5.2.1.4	Battery limit pressure, kg/cm2 g (Normal/Design)	For KKD-1 : 56 - 58 / 72.0 For KKD-2 : 34 - 40 / 72.0
5.2.1.5	Flow rate, MMSCMD	For KKD-1 : 6 MMSCMD For KKD-2 : 2 MMSCMD

1

5.3. Utility specification at dispatch/ receipt cum dispatch station/consumer terminals.

S.NO	Parameters	Plant Air	Nitrogen	Service Water
5.3.1	Source	BY GAIL/ Consumers	BY GAIL/ Consumers	BY GAIL/ Consumers
5.3.2	Dew Point	-	(-)40°C	-
5.3.3	Pressure, Kg/cm2g (min/nor/design)	5.0/ 8.0 / 10.5	5.0/7.5/10.5	3.0
5.3.4	Temperature,° C	50.0	50.0	Ambient
5.3.5	Consumption	170 Nm3/hr (intermittent)	170 Nm^3/hr (Max) (Intermittent for purging, inertisation etc.)	5 m3/hr (intermittent)
5.3.6	Quality	Oil Free	Oil Free	-

6. INSTRUMENTATION

6.1	General	Adequate instruments and control system shall be provided for safe and efficient operations. The pipelines shall be monitored and controlled through supervisory control and data acquisition (SCADA) system designed for remote monitoring and control for safe, efficient and economic operation of the pipeline. RTUs shall be provided at required locations for signal transmission to SCADA. All transmitters shall be smart type transmitters. Remote monitoring and control shall be through SCADA.
6.2	Control Philosophy	Stations monitoring will be from field and SCADA.
6.3	Interlock & Shut down	Not Applicable
6.4	Safety valve isolation	Safety valve isolation will be provided wherever required. These isolation valves should be locked open.
6.5	Block & by-pass valve for control valves	As per design.
6.6	Type of control	Electronic and/ or pneumatic
6.7	Final control element	Line Gas

7. SCADA & TELECOMMUNICATION SYSTEM

The SCADA system is to be provided for the pipeline facility to ensure effective and reliable control, management and supervision from SMCS at Rajahmundary using Remote Telemetry Units (RTU) along the pipeline route at suitable location. Interface will be provided for APPS & other third party utility.

8. GENERAL PROJECT SPECIFICATIONS

8.1. Numbering system to be followed:

8.1.1	Equipments	As per EIL standard
8.1.2	Instruments	As per EIL standard
8.1.3	Drawings/Documents	As per EIL standard

8.2. Unit numbers to be followed:

	Station	Unit number
8.2.1	Odalarevu	072
8.2.3	Bodasakurru	007

8.3. Units of Measurement: Metric, unless otherwise specified. Gas flow rate shall be in MMSCMD.

9. Special Client requirements

9.1. No hydraulic study is envisaged in this project. New 24" Pipeline is being used to supply gas from Odalarevu to Bodasakurru. Operating Conditions for incorporating in the process data sheets shall be provided by M/s GAIL.

9.2. All actuator valves shall be Gas Over Oil actuator (GOV) valves.

9.3. One number of H2S analyser and one number of moisture analyser is to be provided at dispatch terminal.

9.4. Scrapper launcher and receiver at Odalarevu and Bodasakurru respectively shall be free issue material supplied by GAIL.

ANNEXURE-I

Gas Composition

OIL AND NATURAL GAS CORPORATION LTD.
Regional Geoscience Laboratory, KG-PG Basin
Rajamahendravaram

Chemistry Laboratories

No.RGL/RJY/REC/GC-F4/17-18/1107

Report Date: 03-May-2017

GAS ANALYSIS REPORT

Test Report No.	:	RGL/RJY/GC/G(II)/ 060/17-18
Lab. Sl. No.	:	G/060/17-18
Type of sample	:	Installation
Sample Details :		
Source	:	Odalarevu GCS
Sampling point	:	Trunk Line
Pressure details	:	49.62Kg/Cm2
Temperature	:	-
Date and time of Collection	:	02-May-2017 , 06:00 AM
Collected by	:	I/C installation
Date of receipt in lab.	:	02-May-2017

Analytical Data (Composition in Percentage Mole)

Methane	:	97.90
Ethane	:	0.67
Propane	:	0.49
i-Butane	:	0.13
n-Butane	:	0.18
i-Pentane	:	0.07
n-Pentane	:	0.06
Hexanes	:	0.16
Carbondioxide	:	0.28
Nitrogen	:	0.06

Physical Properties at 15 Deg C and 14.696 psi (ISO6976)

Compressibility Factor(Z)	:	0.9978	
Specific Gravity	:	0.5770	
Heat value (Inferior) MJ/M^3	:	34.93	(8348.3 KCAL/M3)
Heat Value (Superior) MJ/M^3	:	38.76	(9263.6 KCAL/M3)

Observations :

S. Govindayya 03/5/17
S.Govindayya,JTA(Chem.)
Investigator

03.5.17
G.S.R.D.Prasad,DGM(Chem.)
I/C - Gas Lab

DISTRIBUTION :

1. Surface Manager, EO Asset, ONGC, Kakinada
2. GM (Chem), Surface Team, EOA,ONGC, Kakinada
3. Office Copy

Sh. C. Sekhar Kumar, AM(Chemistry) - SS [illegible]

05/05/17
S. SATYAPAL
GM(P), SM-EOA

Entity data/ inputs has been verified by EIL w.r.t stepwise methodology given in Clause no. 5.(5) and supported data/ inputs submitted by Entity/ PNGRB. Tabulated below are the comparative capacity assessment figures (rounded-off figures) at an interval of one year as carried out by entity & EIL:

Assessment years	Pipeline Capacity as determined by Entity (in MMSCMD)	Pipeline Capacity as assessed by EIL (in MMSCMD)	Remark
	Entity	EIL	
	Software used - Pipeline Studio (TGNET)	Software used - Pipeline Studio (TGNET)	
2015-16	5.70	11.41	Size of Pipeline section of Tatipaka -Chinchinad P/L was 18" in assessment year 2015-16 which has been changed to 24" in the next assessment year.
2016-17	9.58	12.10	
2017-18	8.15	17.37	Sources increased by 8 no's and deliveries reduced by 7 no's
2018-19	8.77	19.37	Odalarevu source added
2019-20	8.09	19.37	
2020-21	8.41	19.37	
2021-22	8.41	19.37	
2022-23	7.44	19.37	
2023-24	6.97	19.37	

** As the pipeline capacity was arrived as per PNGRB regulation [based on MAOP considerations], hence variation in determined capacity for various assessment years is due to change in sources and /or deliveries and / or network length and / or network configuration etc.

2015-16

Pipe			
	km		in
1		5	13.4409
10		9	17.2425
13		5.2	12.1929
14		39	17.2441
15		15	17.2441
16		35.5	17.2440994
16-2		1.8	12.2480031
17		35.5	17.2440994
18		9	17.2440994
19		52	17.2440994
2		1.5	17.2440994
20		2.1	12.1929
21		2.1	17.2425
22		2	12.1929
23		8	17.2425
24		7	17.2425
24-2		0.7	6.1220472
25		7	12.1929
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	13.4409
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	12.1929
34		8	17.24248
34-2		5.8	3.996063
35		3.5	15.496063
36		6.3	15.496063
37		20.5	17.2425
38		9.8	15.314961
38-2		0.3	3.996063
39		20.5	15.314961
4		5	17.2425
40		9.5	13.4409
41		26	12.192913
44		8.95	12.1929
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	17.2425
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	17.2425
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	17.2425
81		0.7	3.99606
82		22	12.1929
83		5.4	10.248031
84		4	13.496063
85		4.5	12.1929
86		10.5	8.1220472
9		17	17.2425

2016-17

Pipe			
	km		in
1		20.5	15.315
10in x 17.76 km-2		17.76	10.192913
10in x1.1km		1.1	10.248
10in x4KM		4	10.248031
10in x4KM-2		4	10.248031
12in x 10km		10	12.1929
12in x 12km		12	12.1929
12in x 17km		17	12.1929
12in x 26km		26	12.192913
12in x 3.7km		3.7	12.1929
12in x 8.95 km-2		8.95	12.192913
12in x8km-2		8	12.1929
12inx1.7km		1.7	12.1929
12inx13km		13	12.1929
12inx22km		22	12.192913
12inx5km		5	12.192913
14IN X9.5 KM-2		9.5	13.315
16inx33km-2		20.5	15.314961
16inx9.8km		9.8	15.314961
18in x 15km-2		15	17.2425
18in x 17km-2		17	17.2425
18in x 19.2km-2		19.2	17.2425
18in x 5km-3		5	17.2425
18in x 9.5km-2		9.5	17.2425
18in x 9km-2		9	17.2425
18in x8km		8	17.2425
18INX15KM-2		15	17.2441
18inx2km		2	17.2425
18inx2km-2		2.1	17.2425
18INX35.5 5KM		35.5	17.244094
18INX35.5KM		35.5	17.244094
18INX39KM		39	17.2441
18INX52KM		52	17.244094
18inx7km		7	17.2425
18inx7km-2		7	17.2425
18inx8km		8	17.2425
18inx8km-2		8	17.2425
18INX9KM-2		9	17.244094
2		30	23.189
20inx41km		20.5	19.188976
20inx41km-2		20.5	19.188976
24in x 15km		15	23.189
24in x 17km		17	23.189
24in x 19.2km		19.2	23.189
24in x 5km-2		5	23.189
24in x 9.5km		9.5	23.189
24in x 9km		9	23.189
24INX1.5KM-2		1.5	23.204685
24INX12Km		12	23.204685
24INX5KM-2		5	23.2047
4in x 0.1 km-2		0.1	3.996063
4in x 0.5 km		0.5	3.99606
4in x 4.2km		4.3	3.99606
4in x0.3km		0.3	3.996063
4in x0.7km		0.7	3.99606
4in x1.2km-4		1.2	3.99606
4in x2km		2	3.996063
4in x6.7km		6.7	3.99606
4in x9km-2		9	3.99606
4in x9km-3		9	3.99606
4inx0.01km		0.02	3.99606
4inx0.6km		0.6	3.99606
6in x 0.75km		0.75	6.12205
6in x 14km		14	6.1220472
8in x 10km		10	8.12205
8in x 12km		12	8.12205
8in x 17km		17	8.12205
8in x 26km		26	8.12205
8in x 42km		42	8.12205
8in x 5KM		5	8.1220472
8in x 6.3		6.3	8.12205
8in x5km		5	8.1220472
8in x6.7km		6.7	8.12205
8inx12km		12	8.12205
8iun x 10.9km		10.9	8.12205
Pipe0003		13.6	23.189

2017-18

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
44		8.95	12.1929
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
82		22	12.1929
9		17	23.189

2018-19

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
44		8.95	12.1929
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

2019-20

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
44		8.95	12.1929
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

2020-21

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
444		8.95	12.192913
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

2021-22

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
444		8.95	12.192913
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

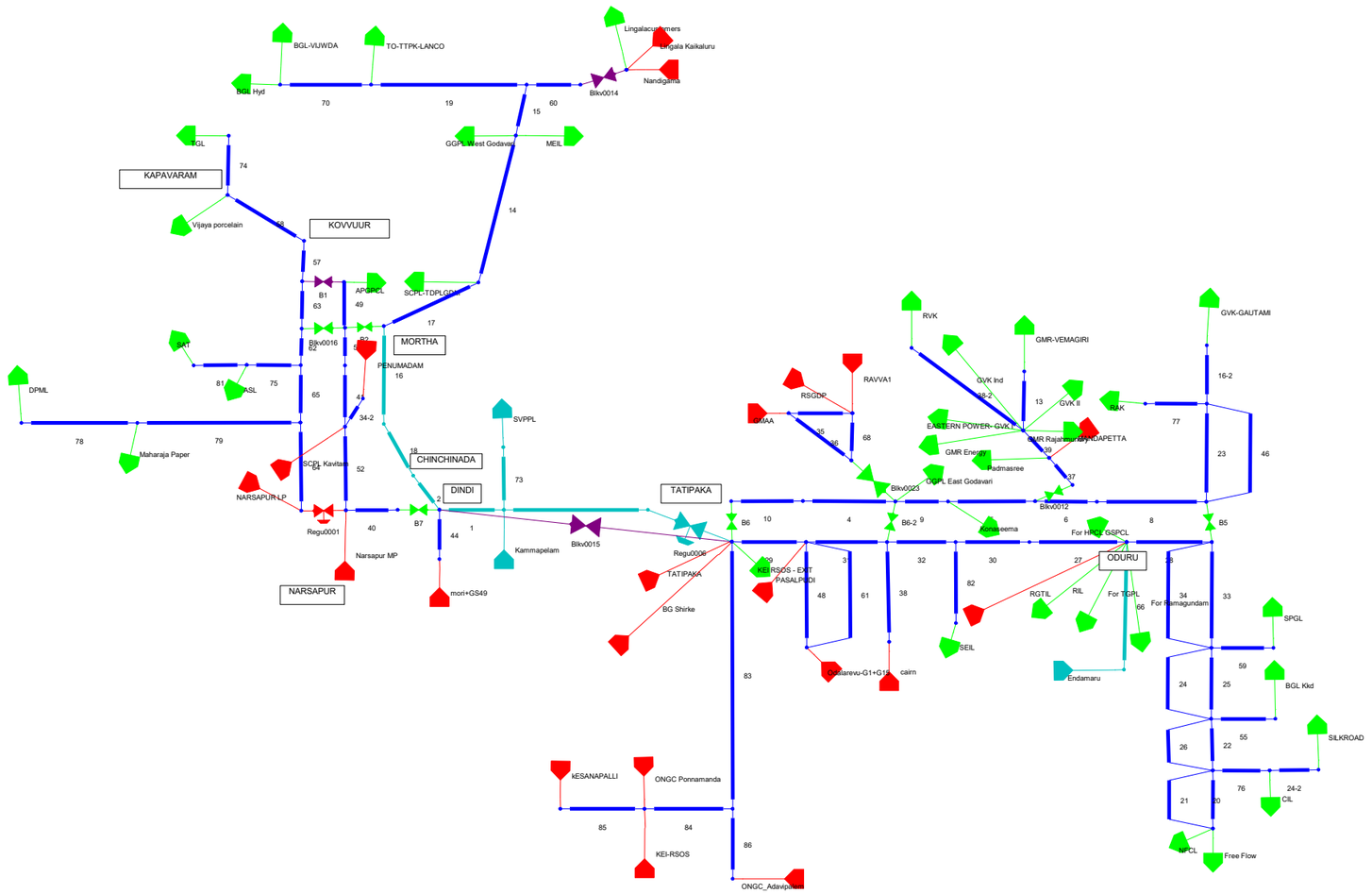
2022-23

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
444		8.95	12.192913
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
57-2		0.1	3.99
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

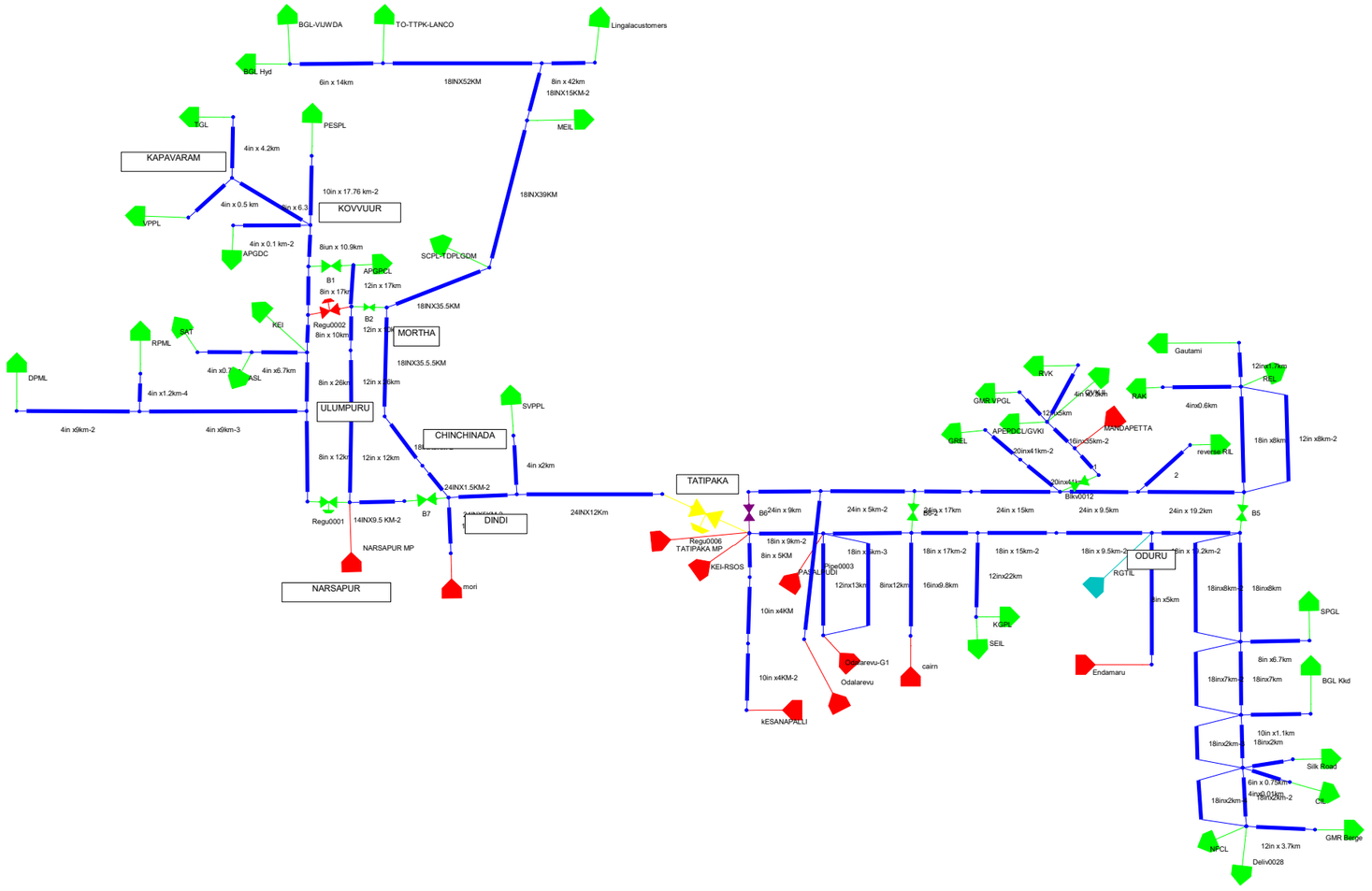
2023-24

Pipe			
	km		in
1		5	23.2047
10		9	23.189
14		39	17.2441
15		15	17.2441
16		35.5	17.244094
17		35.5	17.244094
18		9	17.244094
19		52	17.244094
2		1.5	23.204685
20		2.1	17.2425
21		2.1	17.2425
22		2	17.2425
23		8	17.2425
24		7	17.2425
25		7	17.2425
26		2	17.2425
27		9.5	17.2425
28		19.2	17.2425
29		9	17.2425
3		12	23.204685
30		15	17.2425
31		5	17.2425
32		17	17.2425
33		8	17.24248
34		8	17.24248
35		3.5	15.496063
36		6.3	15.496063
37		20.5	15.315
38		9.8	15.314961
39		20.5	15.314961
4		5	23.189
40		9.5	13.315
41		26	12.192913
444		8.95	12.192913
46		8	12.1929
48		13	12.1929
49		17	12.1929
5		15	23.189
50		10	12.1929
52		12	12.1929
53		4	10.248031
54		4	10.248031
55		1.1	10.248
57		10.9	8.12205
57-2		0.1	3.99
58		6.3	8.12205
59		6.7	8.12205
6		9.5	23.189
60		42	8.12205
61		12	8.12205
62		10	8.12205
63		17	8.12205
64		12	8.12205
65		26	8.12205
66		5	8.1220472
67		5	8.1220472
68		9.8	8.1220472
7		13.6	23.189
70		14	6.1220472
73		2	3.996063
74		4.3	3.99606
75		6.7	3.99606
76		0.02	3.99606
77		0.6	3.99606
78		9	3.99606
79		9	3.99606
8		19.2	23.189
81		0.7	3.99606
9		17	23.189

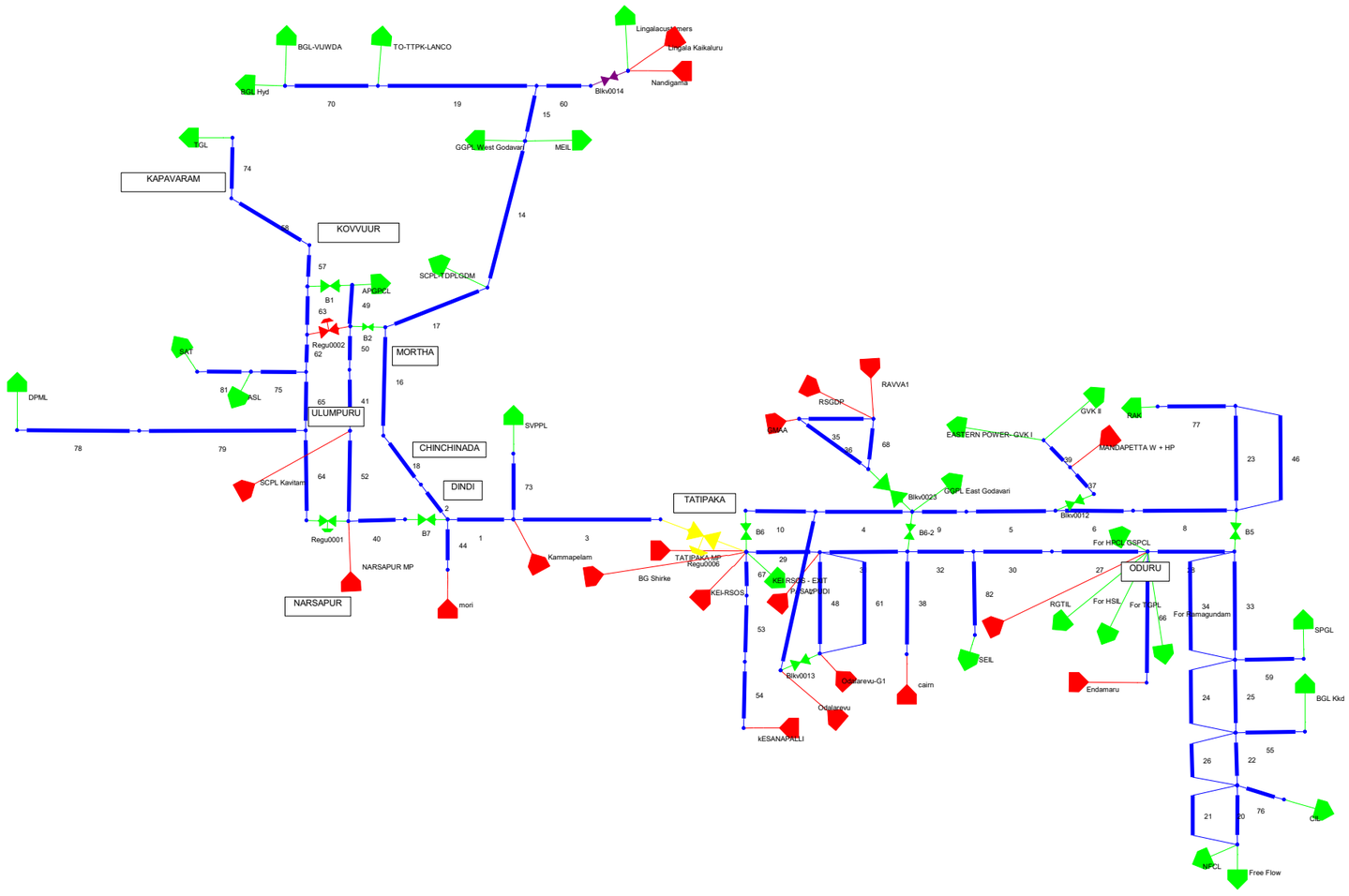
KGBasin_15-16



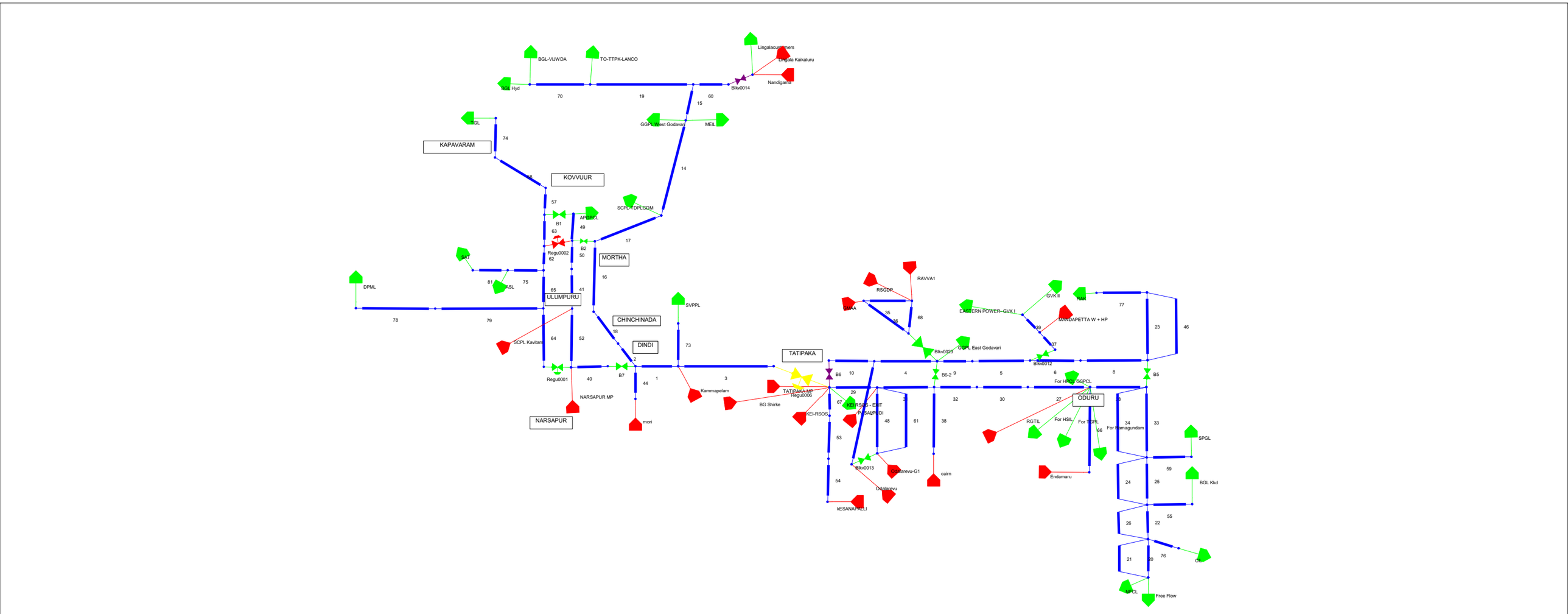
KGBasin_annl 2016-17



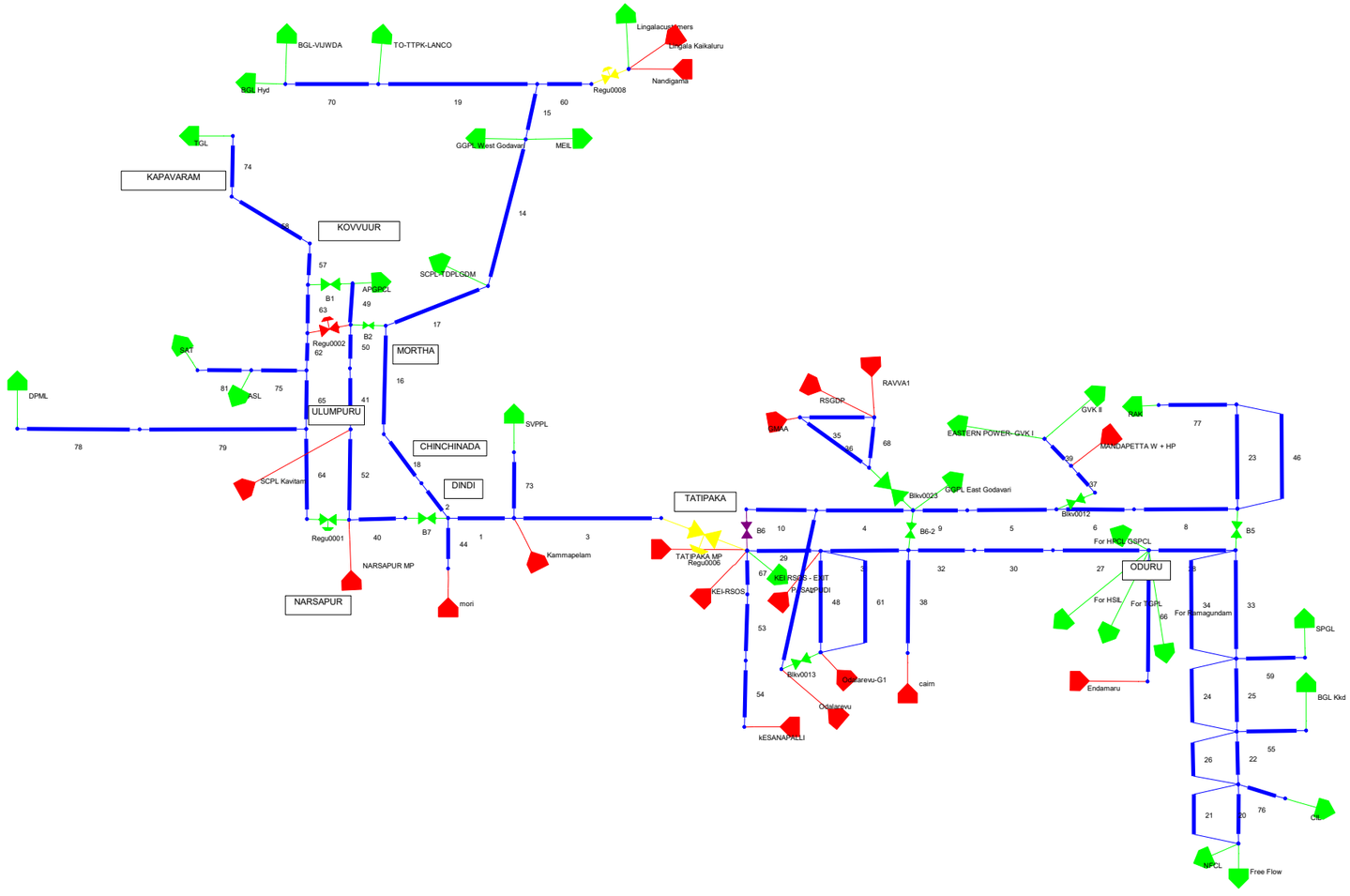
KGBasin_17-18



KGBasin_18-19



KGBasin_19-20



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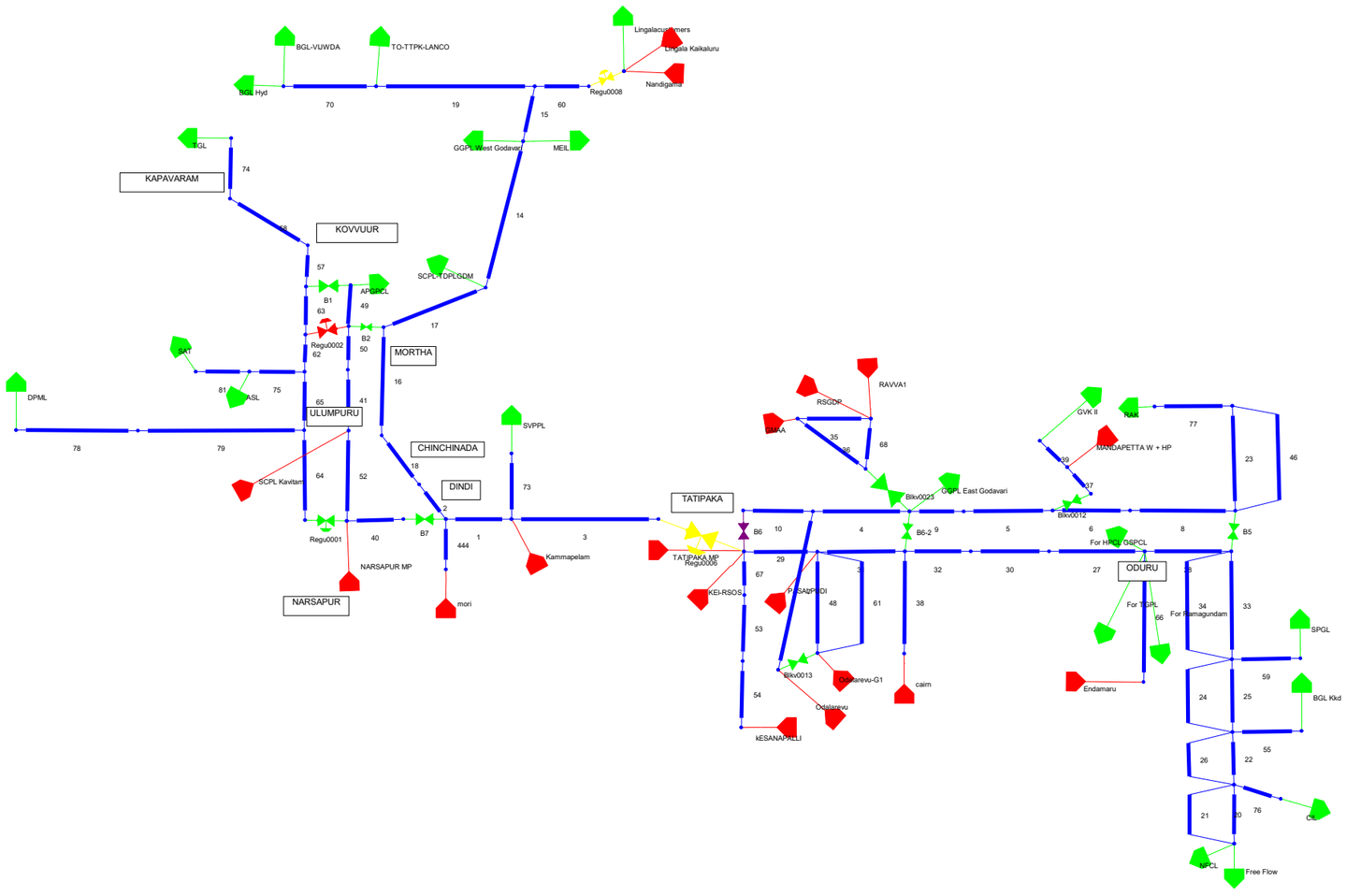

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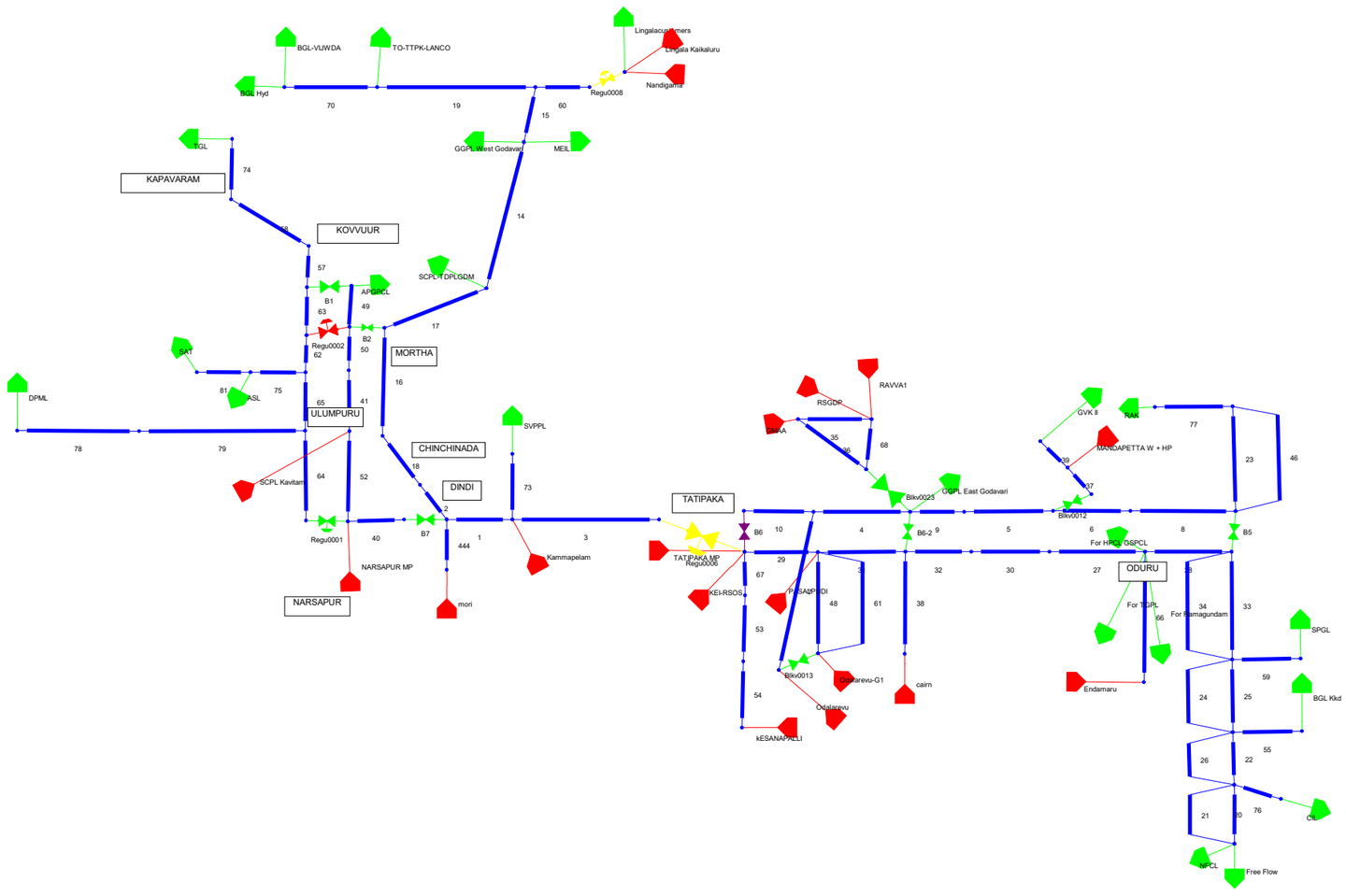

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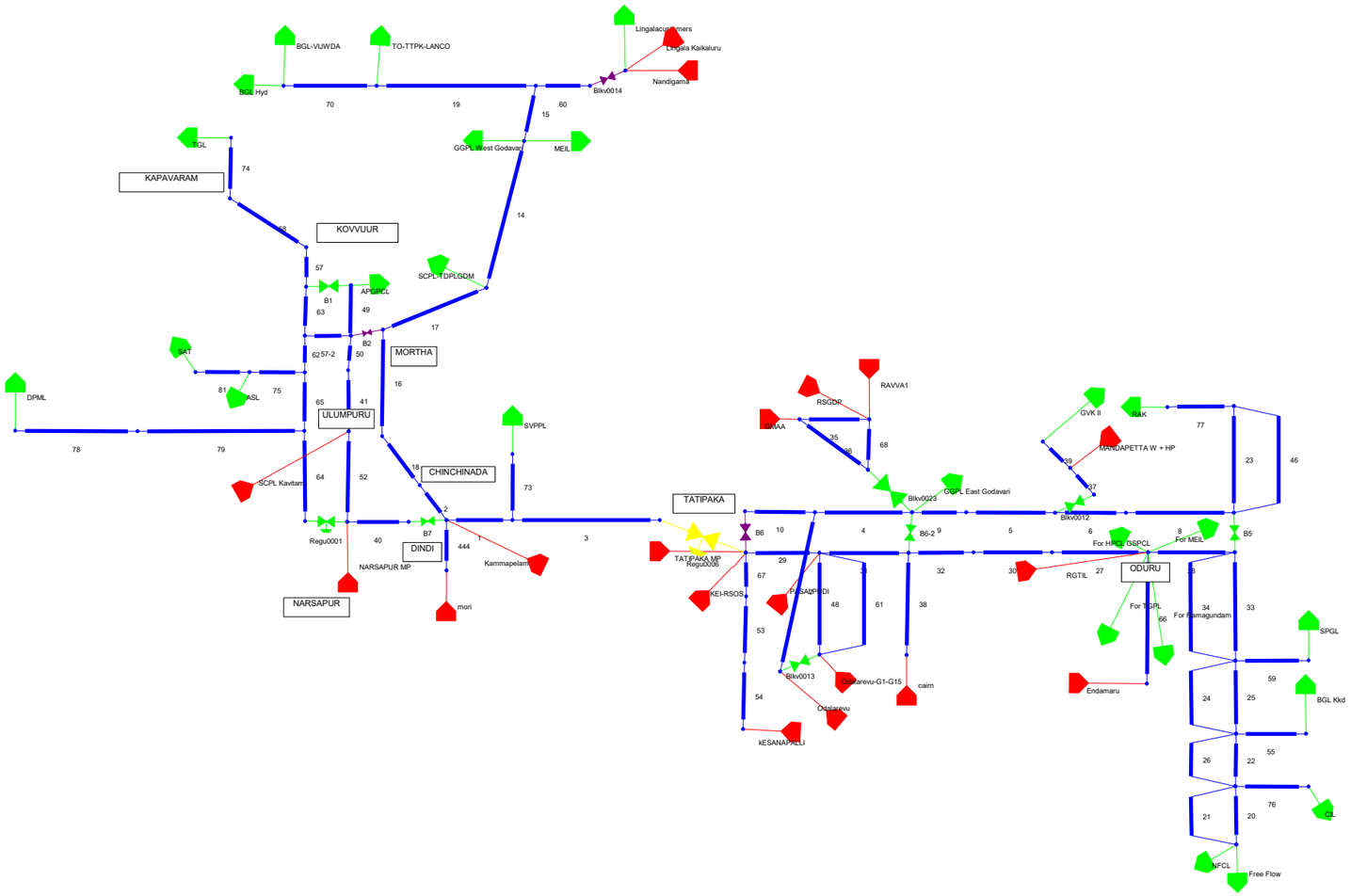

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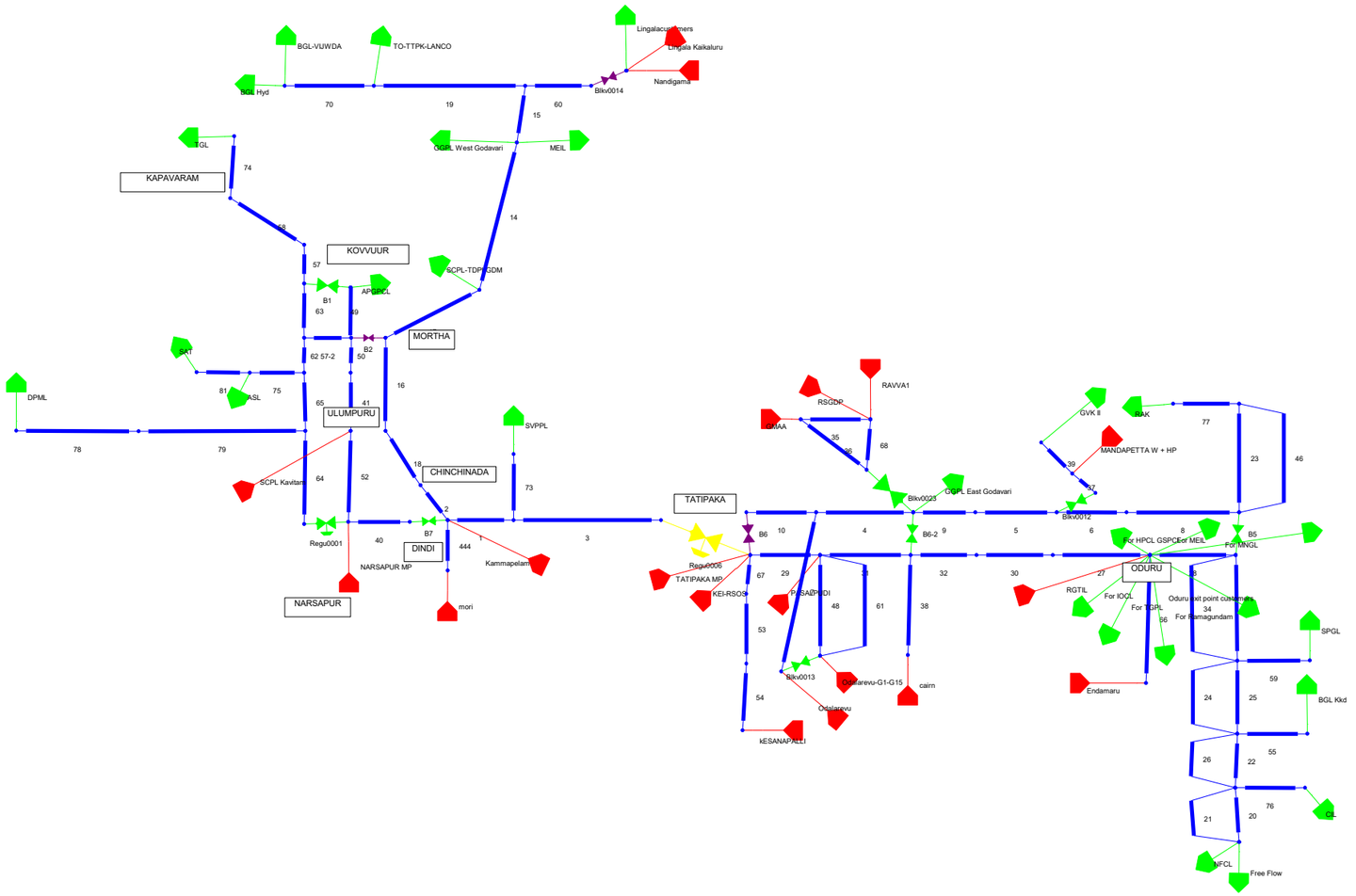
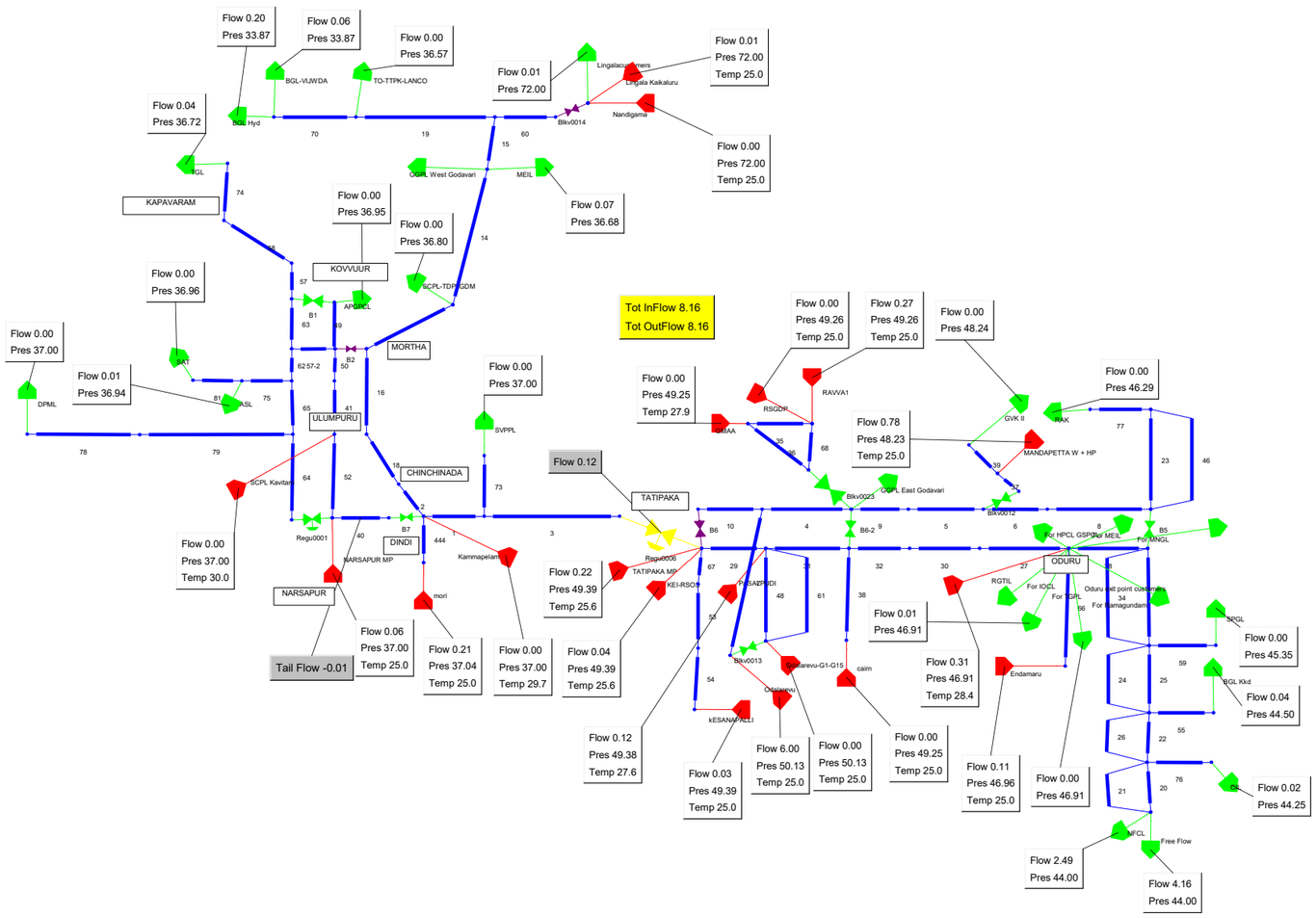


Pipe	Flow	Length	Diameter
	MSM3/D	KM	Inch
60	0	42	8.12205
70	0.31055907	14	6.1220472
17	0.46708149	35.5	17.244094
16	1.5031681	35.5	17.244094
14	0.30328105	39	17.2441
19	0.303281	52	17.244094
40	0.83885259	9.5	13.315
64	0.39293293	12	8.12205
63	0.22913248	17	8.12205
57	0.11115038	10.9	8.12205
58	0.11115022	6.3	8.12205
44	0.6640931	8.95	12.1929
74	0.11115026	4.3	3.99606
65	0.32273273	26	8.12205
52	0.49913915	12	12.1929
49	1.5352255	17	12.1929
78	0.07020016	9	3.99606
79	0.070200162	9	3.99606
62	0.22913249	10	8.12205
2	1.5031671	1.5	23.204685
41	0.49913908	26	12.192913
18	1.5031674	9	17.244094
3	1.886933	12	23.204685
75	0.093600228	6.7	3.99606
81	0.046800113	0.7	3.99606
50	0.49913906	10	12.1929
10	1.8452064	9	23.189
4	10.012779	5	23.189
9	10.765565	17	23.189
5	10.765536	15	23.189
6	7.2249586	9.5	23.189
8	7.2249716	19.2	23.189
29	0.77786658	9	17.2425
31	4.2194004	5	17.2425
32	3.8867307	17	17.2425
30	3.7814293	15	17.2425
27	3.7814316	9.5	17.2425
28	5.0075842	19.2	17.2425
48	2.3096692	13	12.1929
61	0.83235733	12	8.12205
38	0	9.8	15.314961
37	3.5405897	20.5	15.315
77	0.17549991	0.6	3.99606
23	0.12507647	8	17.2425
46	0.050423734	8	12.1929
33	6.0285269	8	17.24248

34	6.0285269	8	17.24248
59	1.9948489	6.7	8.12205
25	5.0311121	7	17.2425
24	5.0311121	7	17.2425
55	0.20475028	1.1	10.248
22	4.9287406	2	17.2425
76	0.10530022	0.02	3.99606
20	4.8760945	2.1	17.2425
26	4.9287406	2	17.2425
21	4.8760945	2.1	17.2425
66	0.20909034	5	8.1220472
53	0.28431966	4	10.248031
54	0.28431954	4	10.248031
67	0.28431981	5	8.1220472
1	1.6779259	5	23.2047
73	0.21645044	2	3.996063
39	3.9019652	20.5	15.314961
7	11.85799	13.6	23.189
15	0.30328102	15	17.2441
36	0.36619518	6.3	15.496063
35	0.33903856	3.5	15.496063
68	0.065640035	9.8	8.1220472
82	0.10529984	22	12.1929

KGBasin_PNGRB2023



GAIL's views/inputs/comments on Draft Report on
Capacity Assessment of 05 Natural Gas Pipelines of GAIL shared by PNGRB

PNGRB, vide email dated 26.02.2024, has shared Draft Report for capacity assessment of following Natural Gas Pipelines of GAIL, soliciting GAIL's inputs on the same:

1. Narimanam-Kuthalam (NKM) sub-network of Cauvery Basin Natural Gas Pipeline Network
2. Chhainsa-Jhajjar-Hissar Natural Gas Pipeline (CJHPL)
3. Gujarat Natural Gas Pipeline Network
4. KG Basin Natural Gas Pipeline Network
5. GAIL Integrated Natural Gas Pipeline (GAIL INGPL)

In this regard, following are the comments / queries based on GAIL's understanding of the document:

A. Comments in general to all the networks assessments shared

I. For the purpose of reviewing the aforesaid draft reports, the respective TNet files are required so that the multiple assumptions of source/delivery/pipelines etc. can be viewed for clarity on assessment methodology. The request for sharing the TNet files has been submitted to PNGRB vide email dated 07.03.2024.

II. During the Capacity assessment exercise of 2011-12, the capacity determination was carried out by a Capacity Assessment Group (CAG) comprising of Prof. A Moharir of IIT Bombay, PNGRB representative and representatives of other entities owning and operating gas pipelines in the country (representatives of 02 transporters other than the entity of which the pipeline capacity is to be certified). The group ensured transparent approach to capacity assessment exercise through inclusion of practical and industrial aspects of determining capacity after discussion with the entities. It is understood that such constitution of Capacity Assessment Group, has not been done in the instant capacity assessment exercise.

III. It is pertinent to note that the capacity assessment group consisting of representatives from IIT Bombay, GSPL, GAIL, RGTIL as well as PNGRB, laid down various parameters to be considered for capacity assessment for natural gas pipeline networks. During capacity assessment of natural gas pipelines under the provision of regulations the duly constituted committee deliberated on various practical limitations and suggested following aspects for determination/finalization of natural gas pipeline networks capacity:
    1. All deliveries within 50 km of any source shall be limited to contractual flow quantities.
    2. Pressure drop across the metering and regulating stations taken as 4 barg or higher on the basis of documentary evidence.
    3. Pressure drop across check meter / station will be 2 barg.
    4. Following source capacity limitations to be considered:
        a. Depleting Source/Field: Source will be considered as a limiting source based on actual/current pressure and volume.

b. LNG terminal capacity: Terminal will be considered as a limiting source based on regasification capacity.
c. Contractual off-take: All source and customer contractual pressure volume requirement are to be considered
d. Entry point pressure limitations of source: All contractual obligations of pressure and offtake to be considered.

5. It was also considered that the farthest / most critical customer shall be considered for free flow (volume maximization). It was agreed that such method would give true capacity of the pipeline and all other customers on the network in this case would also be fulfilled in terms of their contractual requirements.

The committee further deliberated that these aspects shall be uniformly applicable in all the future capacity assessment of natural gas pipelines.

The points at point nos. III (1-4) above are referenced from the PNGRB order of 2016 on capacity of EWPL of M/s RGTIL. The document titled Order pertaining to capacity of Natural Gas East West Pipeline (EWPL) of M/s Reliance Gas Transportation Infrastructure Limited (RGTIL) for the period between 1.4.2010 to 31.03.2011 and 01.04.2011 to 31.03.2012 has been referenced. It is not clear whether the aforementioned parameters have been included in the capacity determination of subject networks or not.

IV. Further, CAG report of 2011 for RIL's EWPL, clause 1 (c)(b)(5) inter alia states that "At limiting condition of installed equipment (maximum available turbine power, compressor speed or maximum pressure, etc.) or delivery pressures, the maximum volumetric flow possible is considered as the capacity of the pipeline system that can be used for declaring system capacity. There was no data to suggest that other units such as filter, cooler, etc. were capacity limiting. In principle, any unit at such stations as represented in the station P&ID could be limiting and should be duly considered in capacity estimation". This implies that all limiting conditions of installed equipment viz. metering skids etc. must be considered in the capacity determination.
Since GAIL has not been provided the TNET files of the simulation, it is understood that the assessment of capacity of these networks has been carried out considering the equipment limitations at each of the tap-off locations as considered in previous assessments quoted herein. For instance, the installed pressure reduction skids at each of the branch lines along Sultanpur Neemrana section of CJHPL will pose limitations on account of their installed capacity.

V. Additionally, the CAG report of 2011 for RIL's EWPL, clause 1 (c)(b)(3) points out that pipeline efficiency can deteriorate with time with increase in surface roughness and may also vary across different sections. GAIL's experience with pipeline operations indicate that pipeline efficiencies range mostly between 85%-90% and the same vary across sections based on different diameters, pipeline roughness, coating and age difference factors, gas type etc. It is understood that same has been considered for the instant cases as the report does not mention the efficiency considered against each of the networks in the assessment.

The aforementioned assumptions of the previous CAG have been evolved based on detailed deliberations carried out between stakeholders, PNGRB and

their appointed representative from IIT Bombay. These deliberations acknowledged the various practical aspects of determination of pipeline capacity. Therefore, it is GAIL's request that these deliberations and recommendations of the last CAG may please be considered in the instant case as well.

VI. In the draft reports of capacity assessment clause 6.2 "Step wise methodology given for Capacity determination in Clause No. 5.(5) of PNGRB capacity regulation" at sub clause (ii) and (iii), it is mentioned that as per capacity regulation, at the originating point and at intermediate points in the direction of flow, the pressure should be set as a fixed parameter. It is requested to please provide the MAOP considered and the underlying philosophy in its selection thereof, in each of the cases and the individual sections. Further, it is understood that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be.

B. <u>Comments specific to the individual networks</u>:

Chhainsa-Jhajjar-Hissar NGPL (CJHPL):

VII. As per regulation 5 (5) (a) (iii) of the Capacity Determination Regulations, *" …. software will be run till any customer connected to the system reaches limiting condition of pressure required at the respective exit point or maximum flow capacity is reached at entry or intermediate compressor stations (if installed in the system) or the velocity of natural gas reaches limiting value…"*. In this regard, GAIL would like to emphasize that Chhainsa Compressor station is the feed compressor for CJHPL as well as for Dadri-Bawana-Nangal NG Pipeline (DBNPL) and Dadri-Panipat NG Pipeline (DPPL). Hence, total capacity of these networks will not exceed the capacity of Chhainsa compressor station. It may be noted that the rated capacity of Chhainsa compressor station is 53.5 MMSCMD.

VIII. It is requested to please provide the MAOP considered and the underlying philosophy in its selection thereof, in each of the cases and the individual sections. Further it is understood that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be.

Gujarat Regional, Cauvery Basin (NKM) and KG Basin Networks:

IX. Sub points (iii) and (iv) of clause 6.2 of the draft reports shared, may be read in conjunction with RIL order dated 30.12.2016 wherein it is emphasised that capacity assessment exercise for declared capacity goes by contractual obligations with regards to supply gas pressure. The networks of Gujarat, KG Basin and Cauvery Basin consist of depleting sources and there are contractual obligations on their offtake at pressures which are lower than the design pressure of the network they are connected to. It is requested to kindly confirm whether such contractual offtake requirements have been considered while assessment of capacity of these pipeline networks.

X. The RIL order dated 30.12.2016, add emphasis on the above. The order cites a case wherein, to maximise capacity of GSPL network, CAG had taken higher pressure at Atakpardi source of 93 barg instead of 85 barg HLPL pressure. By running the simulation with other nearby sources at higher pressure, simulated node pressure at HLPL came out to be 86 barg which was higher as against the maximum contractual available pressure at HLPL, thus automatically forcing flow from HLPL source as zero. Such case would mean that the contractual offtake of gas from sources will not be honoured.

XI. Further, the methodology adopted and elaborated at clause 6.2 of the draft reports mentions that gas at the entry point has been assumed as unlimited with MAOP conditions and then the selected software was run till any customer connected to the system reaches limiting condition as defined in regulation. In this regard, this, when read in conjunction with the aspects mentioned above at serial no. A(III), require that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be. It is requested to kindly confirm the MAOP considered for each section.

XII. In view of the above, it is requested to kindly confirm that the above-mentioned observations have been considered during the present capacity assessment. Further, it is again requested that TNet files may be provided for understanding the methodology of capacity assessment.

C. <u>Comments related to data</u>:

XIII. **MAOP data:**

a) **NKM Subnetwork of Cauvery Basin Network:** As per the data shared, the MAOP considered by EIL in the capacity assessment of NKM subnetwork of Cauvery Basin Network is 49 kg/cm2. In this regard, it is submitted that the NKM subnetwork is a closely interconnected network connected with multiple local gas fields. Though certain pipeline sections in this subnetwork have design pressure more than 19 kg/cm2, the entire subnetwork has MAOP of 19 kg/cm2.

b) Gujarat NGPL Subnetworks: A table showing the MAOP considered by EIL in the draft reports and the inputs of GAIL is provided below for kind consideration:

SN	Subnetwork	In EIL Report – MAOP (kg/cm2)	GAIL Inputs – MAOP (kg/cm2)	Remarks
1	Motwan,	19	5.5	
2	Kadi Kalol	19	49	
3	Mehsana	19	5.5	MRTS pipeline is non-existing and Sabar Dairy connectivity is customer pipeline.
4	Paliyad	19	5.5	
5	Kalol Ramol	49	4.5	

XIV. **Ex-Hazira Subnetwork data:** The requisite data in respect of determination of capacity of the Ex-Hazira subnetwork of Gujarat NGPL have been submitted to PNGRB vide email dated 05.03.2024.

XV. **Pipeline section details:** The length of KG Basin has been given as 796.97 km and that for NKM subnetwork of Cauvery Basin has been given as 245.33 km in the draft report. It is requested to kindly provide the sections considered for capacity determination.

XVI. **KG Basin pipeline replacement:** In the draft report it has been mentioned that Tatipaka -Oduru – KJ point section was changed in Assessment year 2017-18. Original & replacement sizes are both 18" respectively. Further, the length of replaced 24" pipeline section of Tatipaka – Chinchinad has been mentioned as 18.5 km. Both these data may please be reviewed in light of point no. 6.2.1.11 (d) (ii) under PNGRB's Ruling on actual capex at page 18 of the KG Basin Tariff Order dated 28.06.2019, a snapshot of the relevant table is provided below:

(Rs. Crore)

S. No.	Pipeline Sections	Original Size	Replaced size	Replaced Length (Km)	Capex Claimed	Capex considered
1	Tatipaka-Chinchinada	18"	24"	19.67	83.47	55.23
2	Tatipaka-Oduru-KJ Point	18"	24"	75.65	269.00	212.43
	Total			**95.32**	**352.47**	**267.66**

D. <u>Other comments related to Tariff submissions:</u>

XVII. **GAIL Integrated NG Pipeline:**

i) As mentioned in the Draft Capacity Assessment Report, "Tie-In Connectivity" from Natural Gas source of Jaya Fields (Jambusar, Gujarat) of M/s Vedanta Ltd. to South Gujarat Main sub-network of Gujarat Natural Gas Pipeline Network (GNGPN) of GAIL was not a part of Integrated pipeline network and South Gujarat Main sub-network as provided by entity. However, it is informed that while submission of Integrated NGPL Tariff to PNGRB, the Jambusar Tie-in connectivity with South Gujarat Sub-network with its expected commissioning date has been conveyed as Sep-2023 and the same was also considered by PNGRB in their Tariff Order.

ii) GAIL Integrated NGPL Capacity before and after commissioning of new source/Tie-in connectivities (additional capacity) may please be mentioned separately with respective dates in order to determine the Normative Volumes as per PNGRB Tariff Regulations.

iii) As per Draft Capacity Assesssment Report, Impact for Bokaro Tie-in connectivity and Jharia Tie-in connectivity has been considered in FY 2023-24. However, expected commissioning date of these Tie-in connectivity was August 2024 and same has been considered by PNGRB in the Tariff Order. Accordingly, the same may please be reviewed.

iv) At page no. 13 of the draft report, it is mentioned that Baroda, Kadi-Kalol, Kalol-Ramol, Mehsana, Motwan, Paliyad and Ex-Hazira sub-network are part of South Gujarat low pressure network and are shown as part of the sources of GAIL Integrated NGPL. The same may please be reviewed since the Baroda sub-network alone is part of the GAIL Integrated NGPL and other sub-networks are not a part of the same.

XVIII. **NKM Subnetwork of Cauvery Basin:**

The capacity of Cauvery Basin-NKM subnetwork before and after commissioning of the Madanam Tie-in connectivity may please be mentioned separately in the report for the purpose of calculation of Normative Volume as on respective commissioning dates as per PNGRB Tariff Regulations.

XIX. **CJHPL:**

Capacity of CJHPL before and after commissioning of the following may please be mentioned separately with respective dates in the report for the purpose of calculation of Normative Volume as per PNGRB Tariff Regulations:

i) Chhainsa Compressor Station
ii) Sultanpur-Jhajjar-Hissar section

XX. **Gujarat NGPL:**

i) Capex and Opex of certain customers (i.e. Schott Glass, HSGL, Haldyn Glass and Punjab Steel) of South Gujarat-Main were not considered by PNGRB while tariff processing of GAIL Integrated NGPL. Accordingly, the same needs to be specified separately in Capacity Assessment Report so that necessary treatment of Capex and Opex may be done in next tariff review by PNGRB.
ii) Capex and Opex of one another customer (i.e. Shyam Industries) under Kalol-Ramol sub-network also was not allowed in last tariff order. Accordingly, this section also needs to be specified separately in Capacity determination report for necessary treatment.

XXI. **KG Basin Network:**

i) Odalarevu Bodasakuru pipeline Tie-in connectivity was completed in Nov 2018, whereas, it has been mentioned in the draft Capacity Assessment Report that the Odalarevu source has been added in the year 2016-17.
ii) Bantumili Tie-in connectivity was completed in March-2023, and hence the impact of the same on the capacity of KG Basin Network may have to be determined.

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GAIL's views/inputs/comments on Draft Report on
Capacity Assessment of 05 Natural Gas Pipelines of GAIL shared by PNGRB

PNGRB, vide email dated 26.02.2024, has shared Draft Report for capacity assessment of following Natural Gas Pipelines of GAIL, soliciting GAIL's inputs on the same:

1. Narimanam-Kuthalam (NKM) sub-network of Cauvery Basin Natural Gas Pipeline Network
2. Chhainsa-Jhajjar-Hissar Natural Gas Pipeline (CJHPL)
3. Gujarat Natural Gas Pipeline Network
4. KG Basin Natural Gas Pipeline Network
5. GAIL Integrated Natural Gas Pipeline (GAIL INGPL)

In this regard, following are the comments / queries based on GAIL's understanding of the document:

A. Comments in general to all the networks assessments shared

I. For the purpose of reviewing the aforesaid draft reports, the respective TNet files are required so that the multiple assumptions of source/delivery/pipelines etc. can be viewed for clarity on assessment methodology. The request for sharing the TNet files has been submitted to PNGRB vide email dated 07.03.2024.

II. During the Capacity assessment exercise of 2011-12, the capacity determination was carried out by a Capacity Assessment Group (CAG) comprising of Prof. A Moharir of IIT Bombay, PNGRB representative and representatives of other entities owning and operating gas pipelines in the country (representatives of 02 transporters other than the entity of which the pipeline capacity is to be certified). The group ensured transparent approach to capacity assessment exercise through inclusion of practical and industrial aspects of determining capacity after discussion with the entities. It is understood that such constitution of Capacity Assessment Group, has not been done in the instant capacity assessment exercise.

III. It is pertinent to note that the capacity assessment group consisting of representatives from IIT Bombay, GSPL, GAIL, RGTIL as well as PNGRB, laid down various parameters to be considered for capacity assessment for natural gas pipeline networks. During capacity assessment of natural gas pipelines under the provision of regulations the duly constituted committee deliberated on various practical limitations and suggested following aspects for determination/finalization of natural gas pipeline networks capacity:
    1. All deliveries within 50 km of any source shall be limited to contractual flow quantities.
    2. Pressure drop across the metering and regulating stations taken as 4 barg or higher on the basis of documentary evidence.
    3. Pressure drop across check meter / station will be 2 barg.
    4. Following source capacity limitations to be considered:
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b. LNG terminal capacity: Terminal will be considered as a limiting source based on regasification capacity.
c. Contractual off-take: All source and customer contractual pressure volume requirement are to be considered
d. Entry point pressure limitations of source: All contractual obligations of pressure and offtake to be considered.

5. It was also considered that the farthest / most critical customer shall be considered for free flow (volume maximization). It was agreed that such method would give true capacity of the pipeline and all other customers on the network in this case would also be fulfilled in terms of their contractual requirements.

The committee further deliberated that these aspects shall be uniformly applicable in all the future capacity assessment of natural gas pipelines.

The points at point nos. III (1-4) above are referenced from the PNGRB order of 2016 on capacity of EWPL of M/s RGTIL. The document titled Order pertaining to capacity of Natural Gas East West Pipeline (EWPL) of M/s Reliance Gas Transportation Infrastructure Limited (RGTIL) for the period between 1.4.2010 to 31.03.2011 and 01.04.2011 to 31.03.2012 has been referenced. It is not clear whether the aforementioned parameters have been included in the capacity determination of subject networks or not.

IV. Further, CAG report of 2011 for RIL's EWPL, clause 1 (c)(b)(5) inter alia states that "At limiting condition of installed equipment (maximum available turbine power, compressor speed or maximum pressure, etc.) or delivery pressures, the maximum volumetric flow possible is considered as the capacity of the pipeline system that can be used for declaring system capacity. There was no data to suggest that other units such as filter, cooler, etc. were capacity limiting. In principle, any unit at such stations as represented in the station P&ID could be limiting and should be duly considered in capacity estimation". This implies that all limiting conditions of installed equipment viz. metering skids etc. must be considered in the capacity determination.
Since GAIL has not been provided the TNET files of the simulation, it is understood that the assessment of capacity of these networks has been carried out considering the equipment limitations at each of the tap-off locations as considered in previous assessments quoted herein. For instance, the installed pressure reduction skids at each of the branch lines along Sultanpur Neemrana section of CJHPL will pose limitations on account of their installed capacity.

V. Additionally, the CAG report of 2011 for RIL's EWPL, clause 1 (c)(b)(3) points out that pipeline efficiency can deteriorate with time with increase in surface roughness and may also vary across different sections. GAIL's experience with pipeline operations indicate that pipeline efficiencies range mostly between 85%-90% and the same vary across sections based on different diameters, pipeline roughness, coating and age difference factors, gas type etc. It is understood that same has been considered for the instant cases as the report does not mention the efficiency considered against each of the networks in the assessment.

The aforementioned assumptions of the previous CAG have been evolved based on detailed deliberations carried out between stakeholders, PNGRB and

their appointed representative from IIT Bombay. These deliberations acknowledged the various practical aspects of determination of pipeline capacity. Therefore, it is GAIL's request that these deliberations and recommendations of the last CAG may please be considered in the instant case as well.

VI. In the draft reports of capacity assessment clause 6.2 "Step wise methodology given for Capacity determination in Clause No. 5.(5) of PNGRB capacity regulation" at sub clause (ii) and (iii), it is mentioned that as per capacity regulation, at the originating point and at intermediate points in the direction of flow, the pressure should be set as a fixed parameter. It is requested to please provide the MAOP considered and the underlying philosophy in its selection thereof, in each of the cases and the individual sections. Further, it is understood that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be.

B. <u>Comments specific to the individual networks</u>:

Chhainsa-Jhajjar-Hissar NGPL (CJHPL):

VII. As per regulation 5 (5) (a) (iii) of the Capacity Determination Regulations, *" …. software will be run till any customer connected to the system reaches limiting condition of pressure required at the respective exit point or maximum flow capacity is reached at entry or intermediate compressor stations (if installed in the system) or the velocity of natural gas reaches limiting value…"*. In this regard, GAIL would like to emphasize that Chhainsa Compressor station is the feed compressor for CJHPL as well as for Dadri-Bawana-Nangal NG Pipeline (DBNPL) and Dadri-Panipat NG Pipeline (DPPL). Hence, total capacity of these networks will not exceed the capacity of Chhainsa compressor station. It may be noted that the rated capacity of Chhainsa compressor station is 53.5 MMSCMD.

VIII. It is requested to please provide the MAOP considered and the underlying philosophy in its selection thereof, in each of the cases and the individual sections. Further it is understood that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be.

Gujarat Regional, Cauvery Basin (NKM) and KG Basin Networks:

IX. Sub points (iii) and (iv) of clause 6.2 of the draft reports shared, may be read in conjunction with RIL order dated 30.12.2016 wherein it is emphasised that capacity assessment exercise for declared capacity goes by contractual obligations with regards to supply gas pressure. The networks of Gujarat, KG Basin and Cauvery Basin consist of depleting sources and there are contractual obligations on their offtake at pressures which are lower than the design pressure of the network they are connected to. It is requested to kindly confirm whether such contractual offtake requirements have been considered while assessment of capacity of these pipeline networks.

X. The RIL order dated 30.12.2016, add emphasis on the above. The order cites a case wherein, to maximise capacity of GSPL network, CAG had taken higher pressure at Atakpardi source of 93 barg instead of 85 barg HLPL pressure. By running the simulation with other nearby sources at higher pressure, simulated node pressure at HLPL came out to be 86 barg which was higher as against the maximum contractual available pressure at HLPL, thus automatically forcing flow from HLPL source as zero. Such case would mean that the contractual offtake of gas from sources will not be honoured.

XI. Further, the methodology adopted and elaborated at clause 6.2 of the draft reports mentions that gas at the entry point has been assumed as unlimited with MAOP conditions and then the selected software was run till any customer connected to the system reaches limiting condition as defined in regulation. In this regard, this, when read in conjunction with the aspects mentioned above at serial no. A(III), require that MAOP will be 4 kg/cm2 below the design pressure or the de-rated value as the case may be. It is requested to kindly confirm the MAOP considered for each section.

XII. In view of the above, it is requested to kindly confirm that the above-mentioned observations have been considered during the present capacity assessment. Further, it is again requested that TNet files may be provided for understanding the methodology of capacity assessment.

C. <u>Comments related to data</u>:

XIII. **MAOP data:**

a) **NKM Subnetwork of Cauvery Basin Network:** As per the data shared, the MAOP considered by EIL in the capacity assessment of NKM subnetwork of Cauvery Basin Network is 49 kg/cm2. In this regard, it is submitted that the NKM subnetwork is a closely interconnected network connected with multiple local gas fields. Though certain pipeline sections in this subnetwork have design pressure more than 19 kg/cm2, the entire subnetwork has MAOP of 19 kg/cm2.

b) Gujarat NGPL Subnetworks: A table showing the MAOP considered by EIL in the draft reports and the inputs of GAIL is provided below for kind consideration:

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3	Mehsana	19	5.5	MRTS pipeline is non-existing and Sabar Dairy connectivity is customer pipeline.
4	Paliyad	19	5.5	
5	Kalol Ramol	49	4.5	

XIV. **Ex-Hazira Subnetwork data:** The requisite data in respect of determination of capacity of the Ex-Hazira subnetwork of Gujarat NGPL have been submitted to PNGRB vide email dated 05.03.2024.

XV. **Pipeline section details:** The length of KG Basin has been given as 796.97 km and that for NKM subnetwork of Cauvery Basin has been given as 245.33 km in the draft report. It is requested to kindly provide the sections considered for capacity determination.

XVI. **KG Basin pipeline replacement:** In the draft report it has been mentioned that Tatipaka -Oduru – KJ point section was changed in Assessment year 2017-18. Original & replacement sizes are both 18" respectively. Further, the length of replaced 24" pipeline section of Tatipaka – Chinchinad has been mentioned as 18.5 km. Both these data may please be reviewed in light of point no. 6.2.1.11 (d) (ii) under PNGRB's Ruling on actual capex at page 18 of the KG Basin Tariff Order dated 28.06.2019, a snapshot of the relevant table is provided below:

(Rs. Crore)

S. No.	Pipeline Sections	Original Size	Replaced size	Replaced Length (Km)	Capex Claimed	Capex considered
1	Tatipaka-Chinchinada	18"	24"	19.67	83.47	55.23
2	Tatipaka-Oduru-KJ Point	18"	24"	75.65	269.00	212.43
	Total			**95.32**	**352.47**	**267.66**

D. <u>Other comments related to Tariff submissions:</u>

XVII. **GAIL Integrated NG Pipeline:**

i) As mentioned in the Draft Capacity Assessment Report, "Tie-In Connectivity" from Natural Gas source of Jaya Fields (Jambusar, Gujarat) of M/s Vedanta Ltd. to South Gujarat Main sub-network of Gujarat Natural Gas Pipeline Network (GNGPN) of GAIL was not a part of Integrated pipeline network and South Gujarat Main sub-network as provided by entity. However, it is informed that while submission of Integrated NGPL Tariff to PNGRB, the Jambusar Tie-in connectivity with South Gujarat Sub-network with its expected commissioning date has been conveyed as Sep-2023 and the same was also considered by PNGRB in their Tariff Order.

ii) GAIL Integrated NGPL Capacity before and after commissioning of new source/Tie-in connectivities (additional capacity) may please be mentioned separately with respective dates in order to determine the Normative Volumes as per PNGRB Tariff Regulations.

iii) As per Draft Capacity Assesssment Report, Impact for Bokaro Tie-in connectivity and Jharia Tie-in connectivity has been considered in FY 2023-24. However, expected commissioning date of these Tie-in connectivity was August 2024 and same has been considered by PNGRB in the Tariff Order. Accordingly, the same may please be reviewed.

iv) At page no. 13 of the draft report, it is mentioned that Baroda, Kadi-Kalol, Kalol-Ramol, Mehsana, Motwan, Paliyad and Ex-Hazira sub-network are part of South Gujarat low pressure network and are shown as part of the sources of GAIL Integrated NGPL. The same may please be reviewed since the Baroda sub-network alone is part of the GAIL Integrated NGPL and other sub-networks are not a part of the same.

XVIII. **NKM Subnetwork of Cauvery Basin:**

The capacity of Cauvery Basin-NKM subnetwork before and after commissioning of the Madanam Tie-in connectivity may please be mentioned separately in the report for the purpose of calculation of Normative Volume as on respective commissioning dates as per PNGRB Tariff Regulations.

XIX. **CJHPL:**

Capacity of CJHPL before and after commissioning of the following may please be mentioned separately with respective dates in the report for the purpose of calculation of Normative Volume as per PNGRB Tariff Regulations:

i) Chhainsa Compressor Station
ii) Sultanpur-Jhajjar-Hissar section

XX. **Gujarat NGPL:**

i) Capex and Opex of certain customers (i.e. Schott Glass, HSGL, Haldyn Glass and Punjab Steel) of South Gujarat-Main were not considered by PNGRB while tariff processing of GAIL Integrated NGPL. Accordingly, the same needs to be specified separately in Capacity Assessment Report so that necessary treatment of Capex and Opex may be done in next tariff review by PNGRB.
ii) Capex and Opex of one another customer (i.e. Shyam Industries) under Kalol-Ramol sub-network also was not allowed in last tariff order. Accordingly, this section also needs to be specified separately in Capacity determination report for necessary treatment.

XXI. **KG Basin Network:**

i) Odalarevu Bodasakuru pipeline Tie-in connectivity was completed in Nov 2018, whereas, it has been mentioned in the draft Capacity Assessment Report that the Odalarevu source has been added in the year 2016-17.
ii) Bantumili Tie-in connectivity was completed in March-2023, and hence the impact of the same on the capacity of KG Basin Network may have to be determined.

*****

Email

GAIL KG Basin network

From : ANSHU KUMAR <anshu.kumar@eil.co.in> Thu, Apr 04, 2024 10:14 PM

Subject : GAIL KG Basin network 2 attachments

To : Technical Division PNGRB <e-technical@pngrb.gov.in>

Cc : JAYATI GHOSH <jayati.ghosh@eil.co.in>, HASMUKH K PARMAR <hk.parmar@eil.co.in>, MRAGANG SHEAKHAR <m.sheakhar@eil.co.in>, VAIBHAV VAIBHAV <vaibhav.srivastava@eil.co.in>, Gagan Aggarwal <gaggarwal@pngrb.gov.in>, Anil Garg <garg.anil@pngrb.gov.in>

Dear Sir,

As discussed, with regard to attached mail, pl. find attached updated report for GAIL KG Basin network incorporating all observations.

Annexures : https://email.gov.in/home...riefcase/PNGRB%2001032024

Regards,
Anshu

From : Technical Division PNGRB <e-technical@pngrb.gov.in> Mon, Apr 01, 2024 04:50 PM

Subject : Re: Capacity Assessment of the GAIL's five NGPL networks

To : MRAGANG SHEAKHAR <m.sheakhar@eil.co.in>, HASMUKH K PARMAR <hk.parmar@eil.co.in>, ANSHU KUMAR <anshu.kumar@eil.co.in>

Cc : JAYATI GHOSH <jayati.ghosh@eil.co.in>, Anil Garg <garg.anil@pngrb.gov.in>, Muktikam Phukan <muktikamphukan@pngrb.gov.in>, Gagan Aggarwal <gaggarwal@pngrb.gov.in>, Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>, Voona Venkata Narendra <narendra.vv@pngrb.gov.in>

Reply To : Technical Division PNGRB <e-technical.pngrb@nic.in>

Sir,

This is in reference to the Final report submitted by EIL on Capacity assessment of Natural Gas pipeline network and inputs/comments submitted by Entity for the same. The following points were observed in EIL's Capacity Assessment Report for **GAILs' KG Basin NGPL**:

a. 18.5 KM of network length has been mentioned for Tatipaka-Chinchinada pipeline section, whereas the entity has informed that the length of the same section is 19.67 KM.
b. 18" dia. has been considered for Tatipaka-Oduru-KJ Point section, however, entity informed that the size of this section is 24" Dia. after replacement.
c. Odalarevu source has been considered from year 2016-17 whereas entity has informed that this source was commissioned in 2018.

You are advised to review the above, revise the report if required and submit the Final Report by 02.04.2024 1600 Hrs.

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

पेट्रोलियम एवं प्राकृतिक गैस विनियामक बोर्ड
Petroleum and Natural Gas Regulatory Board
प्रथम-तल, वर्ल्ड ट्रेड सेंटर, बाबर रोड, नई दिल्ली -११० ००१
1st Floor, World Trade Center, Babar Road, New Delhi - 110 001

W: www.pngrb.gov.in
E: e-Technical@pngrb.gov.in

Report _GKGBNGL.pdf
635 KB

Email **ANSHU KUMAR**

Re: Capacity Assessment of the GAIL's CJHPL, KG BASIN & INTEGRATED NGPL networks

From : MRAGANG SHEAKHAR <m.sheakhar@eil.co.in> Thu, Mar 21, 2024 07:11 PM

Subject : Re: Capacity Assessment of the GAIL's CJHPL, KG BASIN & INTEGRATED NGPL networks 3 attachments

To : Technical Division PNGRB <e-technical.pngrb@nic.in>

Cc : JAYATI GHOSH <jayati.ghosh@eil.co.in>, HASMUKH K PARMAR <hk.parmar@eil.co.in>, ANSHU KUMAR <anshu.kumar@eil.co.in>, Anil Garg <garg.anil@pngrb.gov.in>, Muktikam Phukan <muktikamphukan@pngrb.gov.in>, Gagan Aggarwal <gaggarwal@pngrb.gov.in>, Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>, Voona Venkata Narendra <narendra.vv@pngrb.gov.in>, VAIBHAV VAIBHAV <vaibhav.srivastava@eil.co.in>

Dear Sir,

With regard to Entity observations received vide trailing mail, no change is envisaged for capacity of subject networks and hence final study reports are attached for following :

- CHHAINSA-JHAJJAR-HISSAR NATURAL GAS PIPELINE (CJHPL)
- INTEGRATED/INTERCONNECTED PIPELINE NETWORK
- KG BASIN NGPL NETWORK

Annexures : https://email.gov.in/home...riefcase/PNGRB%2001032024
Regards,

Mragang Sheakhar | Process-1| Engineers India Limited, P&I Building, Gurgaon
Ground Floor, Icom 3025, Mobile 9555438664

From: "Technical Division PNGRB" <e-technical@pngrb.gov.in>
To: "JAYATI GHOSH" <jayati.ghosh@eil.co.in>
Cc: "HASMUKH K PARMAR" <hk.parmar@eil.co.in>, "MRAGANG SHEAKHAR" <m.sheakhar@eil.co.in>, "ANSHU KUMAR" <anshu.kumar@eil.co.in>, "Anil Garg" <garg.anil@pngrb.gov.in>, "Muktikam Phukan" <muktikamphukan@pngrb.gov.in>, "Gagan Aggarwal" <gaggarwal@pngrb.gov.in>, "Yuvraj Singh Rathore" <yuvraj.rathore@pngrb.gov.in>, "Voona Venkata

Narendra" <narendra.vv@pngrb.gov.in>
Sent: Tuesday, March 19, 2024 2:29:26 PM
Subject: Capacity Assessment of the GAIL's five NGPL networks

Dear Madam,

This has reference to updated reports on capacity assessment of the subject pipeline network and the meeting held on 26.02.2024 w.r.t review of the Capacity Assessment of the 06 Natural Gas Pipeline Networks.

As decided in the meeting the updated reports were shared with GAIL along with input/output files provided by EIL and GAIL was advised to submit its inputs on the updated report of the Capacity Assessment latest by 07.03.2024. Accordingly, GAIL has provided its inputs vide emails dated 07.03.2024, 18.03.2024 & 19.03.2024 which are enclosed as trailing mail(s).

In view of the above, EIL is hereby advised to review the inputs provided by GAIL and submit its reply to inputs of GAIL. Also, same may be annexed in the final report.

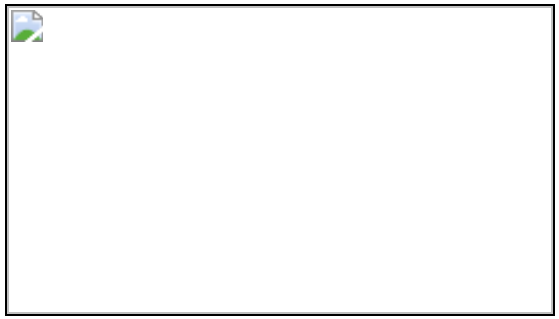
The Final report of the capacity assessment of five GAIL NGPL networks along with all Annexures shall be submitted to PNGRB by **22.03.2024** positively.

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

पेट्रोलियम एवं प्राकृतिक गैस विनियामक बोर्ड
Petroleum and Natural Gas Regulatory Board
प्रथम-तल, वर्ल्ड ट्रेड सेंटर, बाबर रोड, नई दिल्ली -११० ००१
1st Floor, World Trade Center, Babar Road, New Delhi - 110 001

W: www.pngrb.gov.in
E: e-Technical@pngrb.gov.in
D: 011-23457741



From: "Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप)" <cragroup@gail.co.in>
To: "Technical Division PNGRB" <e-technical.pngrb@nic.in>
Cc: "Secretary" <secretary@pngrb.gov.in>, "Anil Garg" <garg.anil@pngrb.gov.in>, "Gagan Aggarwal" <gaggarwal@pngrb.gov.in>, "Yuvraj Singh Rathore" <yuvraj.rathore@pngrb.gov.in>, "Voona Venkata Narendra" <narendra.vv@pngrb.gov.in>, skishore@gail.co.in, jpathak@gail.co.in, "r kannan" <r_kannan@gail.co.in>
Sent: Tuesday, March 19, 2024 10:30:58 AM
Subject: RE: Capacity Assessment of the GAIL's five NGPL networks

Dear Sir,

In continuation to the inputs/comments of GAIL as provided vide the trailing email, it is requested to kindly consider the following input also:

“In previous capacity assessment exercises by Capacity Assessment Group, an allowance of 5% was also considered for declared capacity as theoretical capacity are determined considering extreme conditions. Same may also be included in the present capacity assessment to maintain uniformity.”

Regards,

R Kannan,

DGM (Mktg-RA),

Regulatory Affairs Group,

GAIL (India) Limited, New Delhi

From: Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप)
Sent: 18 March 2024 17:47
To: 'Technical Division PNGRB' <e-technical.pngrb@nic.in>
Cc: R Kannan (आर. कन्नन) <r_kannan@gail.co.in>; Secretary <secretary@pngrb.gov.in>; Anil Garg <garg.anil@pngrb.gov.in>; Gagan Aggarwal <gaggarwal@pngrb.gov.in>; Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>; Voona Venkata Narendra <narendra.vv@pngrb.gov.in>; Sumit Kishore (सुमित किशोर) <skishore@gail.co.in>; Jitendra Pathak (जितेन्द्र पाठक) <jpathak@gail.co.in>; R Kannan (आर. कन्नन) <r_kannan@gail.co.in>
Subject: RE: Capacity Assessment of the GAIL's five NGPL networks

Dear Sir,

With reference to the trailing email communications, and the meeting held at PNGRB on 14.03.2024, please find enclosed GAIL inputs/comments on the Draft Capacity Assessment Reports prepared by EIL for the following NG Pipelines of GAIL:

1. GAIL Integrated NGPL
2. Cauvery Basin Network – NKM subnetwork
3. Chhainsa Jhajjar Hissar NGPL
4. KG Basin Network
5. Gujarat NGPL subnetworks

Regards,

R Kannan,

DGM (Mktg-RA),

Regulatory Affairs Group,

GAIL (India) Limited, New Delhi

From: Technical Division PNGRB <e-technical@pngrb.gov.in>
Sent: 11 March 2024 14:34
To: Jitendra Pathak (जितेन्द्र पाठक) <jpathak@gail.co.in>; Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप) <cragroup@gail.co.in>
Cc: R Kannan (आर. कन्नन) <r_kannan@gail.co.in>; Secretary <secretary@pngrb.gov.in>; Anil Garg <garg.anil@pngrb.gov.in>; Gagan Aggarwal <gaggarwal@pngrb.gov.in>; Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>; Voona Venkata Narendra <narendra.vv@pngrb.gov.in>
Subject: Re: Capacity Assessment of the GAIL's five NGPL networks

This has reference to trailing mails(s).

We acknowledge the comments provided by GAIL.

As GAIL has not submitted any specific inputs to the EIL's Capacity Assessment draft reports for the five NGPL networks, we are going ahead with the reports for their finalization.

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

पेट्रोलियम एवं प्राकृतिक गैस विनियामक बोर्ड

Petroleum and Natural Gas Regulatory Board

प्रथम-तल, वर्ल्ड ट्रेड सेंटर, बाबर रोड, नई दिल्ली -११० ००१

1st Floor, World Trade Center, Babar Road, New Delhi - 110 001

W: www.pngrb.gov.in

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D: 011-23457741

From: "Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप)" <cragroup@gail.co.in>
To: "Technical Division PNGRB" <e-technical.pngrb@nic.in>
Cc: "Secretary" <secretary@pngrb.gov.in>, "Anil Garg" <garg.anil@pngrb.gov.in>, "Gagan Aggarwal" <gaggarwal@pngrb.gov.in>, "Yuvraj Singh Rathore" <yuvraj.rathore@pngrb.gov.in>, "Voona Venkata Narendra" <narendra.vv@pngrb.gov.in>, jpathak@gail.co.in, "r kannan" <r_kannan@gail.co.in>
Sent: Thursday, March 7, 2024 6:45:49 PM
Subject: RE: Capacity Assessment of the GAIL's five NGPL networks

Dear Sir,

With reference to the trailing emails on the subject, it is submitted that the draft Reports are being studied by concerned Departments in GAIL for providing inputs. Collating the inputs and subsequent approval needs sufficient time.

Further, it is observed that respective TNet files, based on which the draft reports have been prepared by EIL, are not available in the data folders shared by PNGRB. The TNet files are required to understand multiple assumptions of source/delivery/pipelines etc. to have better clarity on assessment methodology.

Hence, it is requested to kindly share the TNet files and allow us 2 more weeks for submitting the comments of GAIL on these draft reports.

Regards,

R Kannan,

DGM (Mktg-RA),

Regulatory Affairs Group,

GAIL (India) Limited, New Delhi

From: Technical Division PNGRB <e-technical@pngrb.gov.in>
Sent: 04 March 2024 15:20
To: Jitendra Pathak (जितेन्द्र पाठक) <jpathak@gail.co.in>; Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप) <cragroup@gail.co.in>
Cc: R Kannan (आर. कन्नन) <r_kannan@gail.co.in>; Secretary <secretary@pngrb.gov.in>; Anil Garg <garg.anil@pngrb.gov.in>; Gagan Aggarwal <gaggarwal@pngrb.gov.in>; Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>; Voona Venkata Narendra <narendra.vv@pngrb.gov.in>
Subject: Re: Capacity Assessment of the GAIL's five NGPL networks

Sir,

This is in furtherance to trailing mail(s). The input/output datasheet for capacity assessed for GAIL Gujarat Sub-Network by EIL is being forwarded for your perusal.

In line with the previous mail, you are advised to provide your inputs (as per Email dated 26.02.2024) latest by 07.03.2024 *for all the five NGPL networks*. In absence of any inputs by 07.03.2024, it will be presumed that you have no inputs w.r.t Capacity Assessment Report(s) of EIL and same may be considered as final report(s) towards capacity assessment.

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

From: "Technical Division PNGRB" <e-technical@pngrb.gov.in>
To: "Jitendra Pathak (जितेन्द्र पाठक)" <jpathak@gail.co.in>, "Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप)" <cragroup@gail.co.in>
Cc: "R Kannan (आर. कन्नन)" <r_kannan@gail.co.in>, "Secretary" <secretary@pngrb.gov.in>, "Anil Garg" <garg.anil@pngrb.gov.in>, "Gagan Aggarwal" <gaggarwal@pngrb.gov.in>, "Yuvraj Singh Rathore" <yuvraj.rathore@pngrb.gov.in>, "Voona Venkata Narendra" <narendra.vv@pngrb.gov.in>
Sent: Saturday, March 2, 2024 3:46:20 PM
Subject: Re: Capacity Assessment of the GAIL's five NGPL networks

Sir,

This is in furtherance to trailing mail(s). The input/output datasheet for capacity assessed of EIL is being forwarded for your perusal.

You are advised to provide your inputs (as per Email dated 26.02.2024) latest by 07.03.2024 for following NGPL networks. In absence of any inputs by 07.03.2024, it will be presumed that you have no inputs w.r.t Capacity Assessment Report(s) of EIL and same may be considered as final report(s) towards capacity assessment. Please find enclosed datasheet for:

1. GAIL Integrated NGPL
2. Cauvery Basin Network
3. Chhainsa Jhajjar Hisar NGPL
4. KG Basin Network
5. Gujarat Sub-Network NGPL(will be share by Monday)

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

पेट्रोलियम एवं प्राकृतिक गैस विनियामक बोर्ड

Petroleum and Natural Gas Regulatory Board

प्रथम-तल, वर्ल्ड ट्रेड सेंटर, बाबर रोड, नई दिल्ली -११० ००१

1st Floor, World Trade Center, Babar Road, New Delhi - 110 001

From: "Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप)" <cragroup@gail.co.in>
To: "Technical Division PNGRB" <e-technical.pngrb@nic.in>
Cc: "Secretary" <secretary@pngrb.gov.in>, "Anil Garg" <garg.anil@pngrb.gov.in>, "Gagan Aggarwal" <gaggarwal@pngrb.gov.in>, "Yuvraj Singh Rathore" <yuvraj.rathore@pngrb.gov.in>, "Voona Venkata Narendra" <narendra.vv@pngrb.gov.in>, jpathak@gail.co.in, "r kannan" <r_kannan@gail.co.in>
Sent: Thursday, February 29, 2024 4:07:43 PM
Subject: RE: Capacity Assessment of the GAIL's five NGPL networks

Dear Sir,

Vide the trailing email and through One Drive, PNGRB has shared the DRAFT REPORTS of Capacity Assessment of the following five Natural Gas Pipeline networks of GAIL:

1. GAIL Integrated NGPL
2. Cauvery Basin Network
3. Chainsa – Jhajjar – Hissar NGPL
4. Gujarat NGPL sub networks
5. KG Basin Network

Studying these Draft Reports and the documents needs sufficient time. Hence, it is requested to kindly allow us one month time for providing the comments of GAIL on these draft reports.

Further, it is requested to kindly share the assumptions, if any, which might have been considered by EIL in the capacity determination in place of any unavailable data.

Regards,

R Kannan,

DGM (Mktg-RA),

Regulatory Affairs Group,

GAIL (India) Limited, New Delhi

From: Technical Division PNGRB <e-technical@pngrb.gov.in>
Sent: 26 February 2024 17:42
To: Jitendra Pathak (जितेन्द्र पाठक) <jpathak@gail.co.in>; Corporate Regulatory Affairs group (निगमित विनियामक मामला ग्रुप) <cragroup@gail.co.in>
Cc: R Kannan (आर. कन्नन) <r_kannan@gail.co.in>; Secretary <secretary@pngrb.gov.in>; Anil Garg <garg.anil@pngrb.gov.in>; Gagan Aggarwal <gaggarwal@pngrb.gov.in>; Yuvraj Singh Rathore <yuvraj.rathore@pngrb.gov.in>; Voona Venkata Narendra <narendra.vv@pngrb.gov.in>
Subject: Fwd: Capacity Assessment of the GAIL's five NGPL networks
Importance: High

Sir,

Based on inputs from GAIL, EIL has submitted the reports of Capacity Assessment of five Natural Gas Pipeline networks (Copies enclosed and annexures of the reports have been shared through One Drive link).

You may like to see the same and offer your inputs on the following:

1. Verification of data/details considered by EIL in its assessments.
2. Difference between methodology adopted by EIL and GAIL, in line with the existing provisions of PNGRB (Determining Capacity of Petroleum, Petroleum Products and Natural Gas Pipeline) Regulations, 2010 for assessment of the capacity of

the respective NGPL networks.
You are advised to submit the same by 29.02.2024 positively.

धन्यवाद और सादर | Thanks and Regards,

तकनीकी विभाग | Technical Division

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E: e-Technical@pngrb.gov.in

D: 011-23457741

Har Ek Kaam Desh Ke Naam

Har Ek Kaam Desh Ke Naam

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