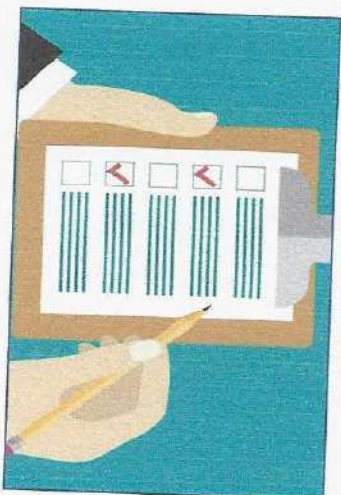




Checklist for PNGRB (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008



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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

Audit Reference Number	BSP/L/0391
Name of Auditee	Tripura Natural Gas Company Limited, Agartala GA
Location	AGARTALA
Date of audit	15.07.2023 to 17.07.2023
Name of auditors	1). Shri Jileadar Singh, 2). Shri Deepak Malik, 3). Shri D.B. Maity
Type of audit	T4S Audit
Audit Reference/ STD	PNGRB Regulation

Team composition & No. of facilities to be inspected

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala.

Sr. No.	Name of the Facility	Minimum No. of Auditors	No. of sample to be audited
1	City Gate Station (CGS)	2/3	All the CGS to be inspected. In case of 1 CGS, all the three auditors shall visit the CGS facility. For more than 1 CGS, minimum 2 auditors shall visit the CGS facility.
2	District Pressure Regulating Station (DPRS)	2	i. Upto 20 DPRS, minimum 2 shall be inspected ii. From 20-50 DPRS, minimum 3 shall be inspected iii. For > 50 DPRS, minimum 4 shall be inspected
3	CNG Stations	2	i. Upto 20 stations, minimum 2 shall be inspected ii. From 20-50 stations, minimum 3 shall be inspected iii. From 50-100 stations, minimum 4 shall be inspected iv. For, > 100 stations, minimum 5 shall be inspected
4	Domestic Consumer	1	i. For, < 1000 customer, minimum 5 shall be inspected ii. For, > 1000 customer, minimum 10 shall be inspected.
5	Commercial Consumer	1	5 customers shall be inspected.
6	Industrial Consumer	2	5 customers shall be inspected preferably with different set of modules/ requirements.

Note:

- (a) An audit team shall consist of minimum three (3) auditors with atleast 2 nos. of auditors with minimum 5 experience of operation / maintenance in CGD network facilities/ natural gas pipeline and other auditor (s) should have at least 5 years of working experience in operation, maintenance, safety etc. in oil and gas industry.
- (b) The team composition alongwith resume shall be submitted to PNGRB at least one week before the scheduled dates of audit.

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(c) All observations w.r.t. deviations from regulations shall be captured in the inspection report and key observations directly impacting the continuance of operation in safe manner shall be reported through an e-mail to PNGRB within 24 hrs. of completion of audit.

Document No: BOSAL/FM/008/05A

(d) Level-II Mock-Drill shall be conducted in all T4S inspections.

(e) A total of 3 days audit shall be conducted for each GA irrespective of its size.

(f) CNG station stations shall be selected of different type i.e. Mother, Online, Daughter, Daughter-Booster, co-located with MS, HSD, etc.

(g) Mock drill shall be conducted at CNG station also.

(h) For commercial and Industrial consumer, all type of skids shall be inspected including wall mounted.

(i) Steel network and PE network shall be checked parallelly at the sites where construction and installation activities are going on.

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

(I) GENERAL

Document No: BOSAI/FM/008/05A

Sl. No.	Particulars	Details / Observations	Recommendations
1	Name of the CGPD Entity	Tripura Natural Gas Company Limited	
2	Head office Address for Communication Telephone No. E-mail ID	Shilpa Nigam Bhavan, Khejurbagan 0381-2319390 Chouhan@tngclonline.com	
3	Control Room/Rooms Address Telephone No. E-mail ID	Dhaleswar Road No-10 03812319390 Chouhan@tngclonline.com	
4	Details of Geographical Area:	AGARTALA having authorized area of 48 sq. km.	
5	Total no. of CGS / Terminal	02 Nos. Gas supply is taken from GAIL's terminal at Maharajanj Bazaar and Khayerpur	
6	No. of Pressure Regulating Installations/DPRS (excluding consumer owned DPRS)	01	
7	Source/Sources of Supply of Gas	GAIL CTP near Maharajanj and GAIL CTP near Khayerpur CNG MS	
8	Maximum operating pressure of the network (Primary, Secondary and Tertiary)	Primary- 17 bar Secondary- 4 bar Tertiary- N/A	
9	No. of mainline isolation valves in Steel Pipe Line Network & in PE Pipe Line Network	01 in Steel pipeline and approx 80 nos. in MDPE network	
10	No. of Major crossings (River)	02	
11	No. of cased crossings - Railway/Highways	02	
12	No. of CP stations (TR units)	02	
13	Nos. of TLP & Spacing	09, 500 Meters	

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

Sl. No.	Particulars	Details / Observations	Recommendations
14	Important Facilities in the GA		
	(a) Fire station/Stations	06 Nos. State fire Service	
	(b) Police station/Stations	06	
	(c) Hospital/Medical	04(I.L.S, GBMC, IGM & TMC)	
	(d) Major Industries/Mutual Aids	GAIL INIDA LIMITED, NEEPCO & IOCL	
15	Is the installation layout with inter distances for CGS available? Lay Out No.	YES	
16	Does the above layout confirms to PNGRB T4S for CGD networks, Table-1	CGS is owned by GAIL (India) Limited. CGS- Odorant injection system is owned and maintained by TNGCL	
17	Power system details for CGS (Data card shall be maintained):	Tripura State Electricity Corp. Ltd.	
	(a) Transformer rating & type	500 KVA to 100 KVA	
	(b) HT/LT breaker Type and Rating	-Not available	
	(c) DG set details (Make, Capacity etc.)	Mahindra, 25 KVA (At Khayerpur CNG MS)	
18	Communication system details from Control room to field locations		
	(a) Telephone with STD Code	03812319391	
	(b) VHF / Walkie Talkie	Toll free no. 1800-345-0202	
	(c) CCTV	NOT AVAILABLE	
		Verified, working condition.	

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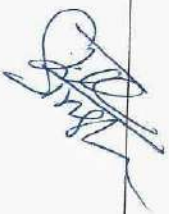
(CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sl. No.	Particulars	Details / Observations	Recommendations
	(d) Others		
19	Verify the validity of the following licenses?		
	(a) Environment Pollution Control Board for Air and Water	VALID till 2034	
	(b) Weights and Measures approval certificate for consumer meters (Alternatively verification of PNGRB T4S referenced standard (like EN or OIML)	Available and valid for all CNG Dispensing units.	
	(c) HF/VHF license	Not Available	
	(d) Clearance from electrical authorities	Not applicable	
	(e) Factory & labour license	Factory License for TRTC (3520211063263 dated 14/07/23 valid till 2032) and AD Nagar CNG Station (3520211063289 dated 14/07/23 valid till 2032) exists. Applied for Khayerpur CNG Mother Station. Necessary inspection done by Factory Inspector. The License is awaited.	Follow up to be made with Factory Inspector Dept.
	(f) Environment clearance from Ministry of Environment, Forest and Climate Change	Not available	
	(g) Statutory approval from local authorities such as Fire, Municipal Corporation, District Admin, PESO etc.	PESO License available for all Dispensing CNG Stations	
20	Whether following manuals/standards are available with the entity		
	(a) EPA 1986 and rules	YES	

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and G.S.M.)
Tripura Natural Gas Co.Ltd.,
Agartala, Tripura.

Sl. No.	Particulars	Details / Observations	Recommendations
	(b) Weights and measure rules Act	YES	
	(c) Operating manual including start up, shut down and	YES	
	(d) emergency Response and disaster management plan		
	(e) safety manual	YES	
	(f) PNGRB Act and other documents as specified in T4S	YES	
	(g) codes to which pipeline has been designed, constructed and maintained	ASME B 31.8	
	(h) Equipment manufacturers manuals for all equipments Such as for Compressors, DG, DPRS, DU, Cascade etc.	YES	
21	Whether risk analysis of the facility has been carried out and recommendations implemented?	QRA document ref. no.- TNGCL/C&P/HAZOP/QRA/13-14	
22	Whether adequate safety devices / interlocks (like SSV, SRV) have been provided, tested and documented. Major safety interlocks to be mentioned?	Adequate safety interlocks are available in all CNG Stations.	
23	Whether lines have been painted and separate colors have been provided for different services?	YES	
24	Whether list of contact persons have been displayed with telephone numbers?	List of contact Person name is displayed.	
25	HSE Management system consisting visitors safety brief, accident reporting, do & don't for consumers, ERDMP in place?	YES	




(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

(ii) **CRITICAL ACTIVITIES IN CGD NETWORK**

Sr. No.	List of Activity	If no, Implementation Plan	Time period for Implement	Status of implementation	Recommendations
1	Verify whether the Pressure Reduction skid CGS installed having (Active/monitor combination) with a minimum 50% redundancy including slam shut valve for over-protection and creep relief valve	Available at CGS under GAIL (India) Ltd. At MG Bazaar and Khayerpur	1 year	Implemented	
2	Verify whether the On-line odorization equipment designed to minimize fugitive emissions during loading, operation and maintenance	Available at Khayerpur	1 year	Implemented	
3	Verify whether the Height of the vent minimum 3 meters above working level	Confirmed	6 Months	Implemented	
4	Verify whether the Gas detectors are installed at critical locations	Installed	1 year	Implemented	
5	Verify whether Pressure reduction for DPRS (active/ monitor combination) skid installed with minimum 50% redundancy including two safety devices at least one of them shall be a slam shut valve for over pressure protection/under-pressure and inlet and outlet isolation valve	Installed at Chandrapur	2 years	Implemented	
6	Verify whether Steel reinforced rubber hoses conforming to IS 9573 Type II	Verified that Steel reinforced rubber hoses are used.	6 months.	Implemented	
7	Verify whether the pipeline test records, Joint radiography and cover available in the form of pipe book	Verified. 6" API 5L Gr. B pipeline pipe book, pipeline test record & NDT reports.	3 months	Implemented	




8	Verify whether the HSSSE Management system in place	Health Safety Security and Environment System is available but not approved by Board.	6 months	Implemented	HSSSE Management System to be approved by the Board
9	Verify availability of following records: Emergency Response Plan, Disaster Management Plan and written emergency procedures. For an Emergency Control Room, manned round the clock and equipped with effective communication system and emergency vehicles equipped or provided with communication facilities, first aid equipment, fire extinguishers, gas detectors, repair kits and tools, maps, plans, material safety data sheets etc. at its disposal.	ERDMP Certification expired on Aug'2018.	6 Months.	Implemented	ERDMP recertification to be expedited.
10	Verify whether the GIS based asset management system is available for CGID Network	GIS implemented and regular updating is in progress.	01 year	Implemented	

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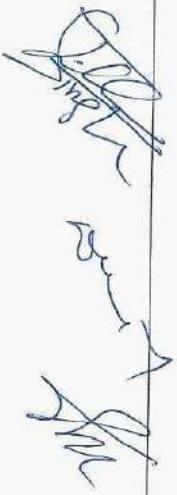
(iii) SUB TRANSMISSION PIPELINE (STPL)
There is no Sub Transmission Pipeline in Agartala GA

Sl. no.	Parameters	Details / Observations	Recommendations
1	Supply/Source Point/tap-off Point	Not Applicable	
2	Location of STPL	Not Applicable	
3	Owner of STPL	Not Applicable	
4	Total Length of STPL upto City Gate Station (in kms)	Not Applicable	
5	Verification of Pipeline MOP and MAOP (in barg)	Not Applicable	
Schedule-1A (Sr. No. 6,7,8 To be checked in 1st Audit only)			
6	Verification of Piping materials and Equipment manufactured to standards listed in Annexure-I and Annexure-II	Not Applicable	
7	Verify the Carbon equivalent	Not Applicable	
8	Verify whether the notch toughness is specified for carbon steel pipes of Size NPS 2	Not Applicable	
9	Verify whether ductile iron pipe is not used in CGID Network	Not Applicable	
10	Verify whether reinforced thermoplastic pipes (RTP) or multi layered thermoplastic pipes, if used, is complying with requirements specified in sub-clause a. to g.	Not Applicable	
Schedule-1 B (Sr. No. 11 to 16 to be checked in 1st Audit)			

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(CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.
 Tripura, Tripura.
 Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Recommendations
11	Verify the Welding procedures and welder qualification procedure.	Not Applicable	
12	Verify that all NDT including radiography examination performed.	Not Applicable	
13	Verify that All carbon steel butt welds are 100% radiographed.	Not Applicable	
14	Verify whether ultrasonic testing is done If Radiography is not possible due to safety reasons	Not Applicable	
15	Verify whether defect is repaired	Not Applicable	
16	Verify whether additional radiography or ultrasonic testing is done after repair	Not Applicable	
Schedule-1 C			
17	Check whether valve body, bonnet, cover and/or end flanges and fittings are not made from cast iron and ductile iron.	Not Applicable	
18	Verify whether mechanical fitting for making hot taps is not used	Not Applicable	
19	Verify whether flanges are not used in pipeline network except for station piping e.g. CGS, DPRS, MRS etc.	Not Applicable	
Schedule-1D (Sr. No. 25, 27, 28, 29, 37, 38, 48 to be checked in 1st Audit)			
20	Verify whether the Pipe is not used of below 6.4 mm thickness	Not Applicable	
21	Verify whether the Quantitative Risk Assessment is carried out and the risk level is reduced to ALARP, if thickness is used below 6.4 mm	Not Applicable	
22	Verify whether the minimum cover requirements	Not Applicable	




 (CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O & M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Recommendations
	and clearances are provided as per Table-3 of PNGRB T&S CGD Regulations.		
23	Verify whether the minimum cover requirements is not maintained due to site constraints, then additional protection in form of casing/concreting etc. is provided	Not Applicable	
24	Verify whether the pipeline on bridges is avoided except extreme/unavoidable condition	Not Applicable	
25	Verify whether design factor 0.40 For location class 4 is used for pipeline installed under unavoidable condition on rail road, vehicular, pedestrian or other pipeline bridge	Not Applicable	
26	Verify whether suitable barricades/crash guards is installed for pipeline protection from accidental damages due to vehicular traffic	Not Applicable	
27	Verify whether specific gravity of resulting installation by anti-buoyancy measures for under water area pipe line is 1.10 or more	Not Applicable	
28	Verify whether specific gravity of resulting installation by extra anti-buoyancy measures for under water area (subject to flooding i.e. lakes, bays, swamps) pipe line is 1.20 or more	Not Applicable	
29	Verify whether buried steel pipeline is laid at least 300 mm clear distance below from the existing utilities like cable, drain, existing pipe line	Not Applicable	
31	Verify whether the minimum 03 meter separation is maintained between the steel pipe line and footing of transmission tower	Not Applicable	



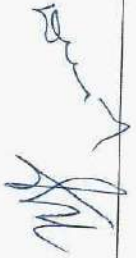

 (CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Recommendations
32	Verify whether clear distance between newly laid pipeline and existing pipeline is maintained minimum 03 meters	Not Applicable	
33	Verify whether clear separation of minimum 500 mm between adjacent pipeline is maintained, if laying more than one new hydrocarbons pipelines or mains in same trench	Not Applicable	
34	Verify whether steel pipeline or main is not located within 03 meters of any habitable dwelling or any industrial building	Not Applicable	
35	Verify whether the additional cover of at least 300 mm over and above or special protective measures such as concrete slab, steel casing are provided, if not possible to maintain the distance, given in point no.34	Not Applicable	
36	Verify whether the statutory approval is taken prior to construction of steel casing	Not Applicable	
37	Verify whether Casing Pipe diameter is used minimum two pipe sizes bigger than carrier pipe of carrier pipe	Not Applicable	
38	Verify whether Casing Pipe thickness is used as per Appendix C of API-1102	Not Applicable	
39	Verify whether angle of intersection between pipeline crossings and the rail road or highway to be crossed should be as near to 90 degree as practicable. In no case should it be less than 30 degree.	Not Applicable	
40	Verify whether Steel Casing Pipe cover is as per clause 5.7.1, 5.7.2 or 5.7.3 of API-1102	Not Applicable	




(CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O & M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Recommendations
41	Verify whether casing seals are provided at both ends to reduce the intrusion the water and fines from the surrounding soil	Not Applicable	
42	Verify whether test stations with test leads attached to the Carrier pipe and casing Pipe and monitoring is done carefully	Not Applicable	
43	Verify whether miter bends and wrinkle bends are not used in pipe lines	Not Applicable	
44	Verify whether cold field bend radius is used 40 times the Pipe diameter for pipe size NPS 20 and larger	Not Applicable	
45	Verify whether special design and construction methodologies adopted through experienced personnel/consultant and approval is taken by entity from the PNGRB, if not possible to maintain the clearances, cover, vent locations etc.	Not Applicable	
46	Verify whether the Hot taps design and construction is carried out as per API RP2201, ASME B 31.4, API 1104 Appendix B	Not Applicable	
47	Verify whether the duty filled checklist stated in API RP-2201 is available	Not Applicable	
48	Verify whether welding procedure specification and welder qualification is verified before hot tapping	Not Applicable	
49	Verify whether the full bore valve is used when making branch connections using hot taps.	Not Applicable	
50	Verify whether buried steel pipelines or mains is tested after installation using water as a test	Not Applicable	


 CHANDAN CHAKRABORTY
 (Chief Manager (Comm. and O&M))
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Recommendations
	medium at 1.4 times MAOP for minimum 24 hours for underground and 04 hours for aboveground pipeline		
51	Verify the test records post construction such as Testing Reports, Joint Coating Report, back-filling reports, Pipe book are in place.	Not Applicable	
52	Verify that the O&M procedure are developed and followed.	Not Applicable	
53	Verify the mode of inspection followed by Entity like patrolling/ line walk/ any other means	Not Applicable	
54	Verify whether All buried bends and fittings are coated with heat shrink sleeves or two pack high build epoxy coating with minimum 450 microns	Not Applicable	
55	Verify whether Insulating Joint is properly rated for temperature, pressure, and electrical properties and resistant to the natural gas	Not Applicable	
56	Verify whether Insulating Joint is not installed in enclosed areas	Not Applicable	
57	Verify whether the PSP monitoring is done on defined frequency at all test lead points	Not Applicable	
58	Verify whether the polarized pipe to soil potential values are within the prescribed limit (-0.85 V to -1.5 V)	Not Applicable	
59	Verify if Pipe to Soil Potential values is not within limit, then specify the actions taken by entity	Not Applicable	
60	Verify whether all records related to corrosion	Not Applicable	

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.
Agartala, Tripura.

Sl. no.	Parameters	Details / Observations	Document No BOSAI/FM/008/05A Recommendations
61	control stated in T4S Regulations are maintained Verify whether sacrificial anodes system is installed till the impressed current Cathodic Protection system is commissioned.	Not Applicable	

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JOHAN DAN CHAKRABORTY
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

(iv)

STEEL DISTRIBUTION NETWORK

Sr. no.	Parameters	Details / Observations	Recommendations
1	Total Length of Steel distribution network (in kms)	6.95 kms	
2	Verification of Pipeline MOP and MAOP (in barg)	17 bar/ 19 barg	
Schedule-1A (Sr. No. 3, 4, 5 to be checked in 1st Audit)			
3	Verification of Piping materials and Equipment manufactured to standards listed in Annexure-I and Annexure-II	1st Audit was carried out in 2019. Not Applicable	
4	Verify the Carbon equivalent	1st Audit was carried out in 2019. Not Applicable	
5	Verify whether the notch toughness is specified for carbon steel pipes of Size NPS 2	1st Audit was carried out in 2019. Not Applicable	
6	Verify whether ductile iron pipe is not used in CGID Network	Verified Ductile iron pipe not used	
7	Verify whether reinforced thermoplastic pipes (RTP) or multi layered thermoplastic pipes, if used, is complying with requirements specified in sub-clause a. to g.	Verified reinforced thermoplastic pipes is not used.	
Schedule-1B (Sr. No. 8 to 13 be checked in 1st Audit)			
8	Verify the Welding procedures and welder qualification procedure.	1st Audit was carried out in 2019. Not Applicable	
9	Verify that all NDT including radiography examination performed.	1st Audit was carried out in 2019. Not Applicable	
10	Verify that All carbon steel butt welds are 100% radiographed.	1st Audit was carried out in 2019. Not Applicable	
11	Verify whether ultrasonic Testing is done If Radiography is not possible due to safety reasons	1st Audit was carried out in 2019. Not Applicable	
12	Verify whether defect is repaired	1st Audit was carried out in 2019. Not Applicable	
13	Verify whether additional radiography or ultrasonic	1st Audit was carried out in 2019. Not Applicable	



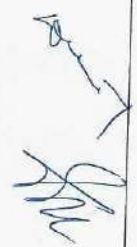


 (CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.
 Agartala, Tripura.

Sr. no.	Parameters	Details / Observations	Recommendations
Schedule-1 C			
14	Check whether valve body, bonnet, cover and/or end flanges and fittings are not made from Cast iron and ductile iron.	Cast Iron and Ductile Iron not used.	
15	Verify whether mechanical fitting for making hot taps is not used	Verified, mechanical fitting for making hot taps is not used.	
16	Verify whether flanges is not used in pipeline network except for station piping e.g. CGS, DPRS, MRS etc.	Verified that flanges are not used in pipeline network except for station piping e.g. CGS, DPRS, MRS etc	
17	Verify whether flanges is used with raised face for piping class 150 or above	Verified from As Built document dossier.	
Schedule-1D (Sr. No. 18, 25, 26, 27, 33, 35, 36, 37, 41, 43, 45 to be checked in 1st Audit)			
18	Verify whether the pipe is not used of thickness below 6.4 mm	1 st Audit was carried out in 2019. Not Applicable	
19	Verify whether the Quantitative Risk Assessment is carried out and the risk level is reduced to ALARP, if thickness is used below 6.4 mm	Not Applicable	
20	Verify whether the minimum cover requirements and clearances as per PNGRB technical standard and specification, Table-3.	Verified, Alignment Sheet drawing no. BSG/TSG/01/01, Sheet 1	
21	Verify whether the minimum cover requirements is not maintained due to site constraints, then additional protection in form of casing/Concreting etc. is provided	Not Applicable	
22	Verify whether the pipeline on bridges is avoided except extreme/unavoidable condition	Not Applicable	
23	Verify whether design factor 0.40 For location class 4 is used for pipeline installed under unavoidable condition on rail road, vehicular, pedestrian or other pipeline bridge	Yes as per design document	

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Sr. no.	Parameters	Details / Observations	Recommendations
24	Verify whether suitable barricades/crash guards is installed for pipeline protection from accidental damages due to vehicular traffic	Steel pipeline is laid underground. Khayerpur outlet line of TNGCL is under fencing.	
25	Verify whether specific gravity of resulting installation by anti-buoyancy measures for under water area pipe line is 1.10 or more	1st Audit was carried out in 2019. Not Applicable	
26	Verify whether specific gravity of resulting installation by extra anti-buoyancy measures for under water area (subject to flooding i.e. lakes, bays, swamps) pipe line is 1.20 or more	1st Audit was carried out in 2019. Not Applicable	
27	Verify whether buried steel pipeline is laid at least 300 mm below the utilities like cable, drain, existing pipe line	1st Audit was carried out in 2019. Not Applicable	
28	Verify whether buried steel pipeline is laid at least 300 mm clear distance below from the existing utilities like cable, drain, existing pipe line	Verified that steel pipeline is laid at least 300 mm clear distance below from the existing utilities like cable, drain, existing pipe line	
29	Verify whether the minimum 03 meter separation is maintained between the steel pipe line and footing of transmission tower	Steel pipeline from CGS Khayerpur to DRS does not have any transmission tower.	
30	Verify whether clear distance between newly laid pipeline and existing pipeline is maintained minimum 03 meters	Not Applicable as no new line is laid.	
31	Verify whether clear separation of minimum 500 mm between adjacent pipeline is maintained, if laying more than one new hydrocarbons pipelines or mains in same trench	Not Applicable	
32	Verify whether steel pipeline or main is not located within 03 meters of any habitable dwelling or any industrial building	Not Applicable	
33	Verify whether the additional cover of at least 300 mm	1st Audit was carried out in 2019. Not Applicable	


Sr. no.	Parameters	Details / Observations	Recommendations
	over and above or special protective measures such as concrete slab, steel casing are provided, if not possible to maintain the distance, given in point no. 33		
34	Verify whether the statutory approval is taken prior to construction of steel casing	Verified that statutory approval has been taken prior to construction of steel casing.	
35	Verify whether casing pipe diameter is used minimum two pipe sizes bigger than carrier pipe of carrier pipe	Ist Audit was carried out in 2019. Not Applicable	
36	Verify whether angle of intersection between pipeline crossings and the rail road or highway to be crossed should be as near to 90 degree as practicable. In no case should it be less than 30 degree.	Ist Audit was carried out in 2019. Not Applicable	
37	Verify whether Steel Casing Pipe cover is as per clause 5.7.1, 5.7.2 or 5.7.3 of API-1102	Ist Audit was carried out in 2019. Not Applicable	
38	Verify whether casing seals are provided at both ends to reduce the intrusion the water and fines from the surrounding soil	Verified	
39	Verify whether test stations with test leads attached to the carrier pipe and casing pipe and monitoring is done carefully	Verified	
40	Verify whether miters bends and wrinkle bends are not used in pipe lines	Verified. No miters and wrinkle bends used.	
41	Verify whether cold field bend radius is used 40 times the pipe diameter for pipe size NPS 20 and larger	Ist Audit was carried out in 2019. Not Applicable	
42	Verify whether special design and construction methodologies adopted through experienced personnel/consultant and approval is taken by entity from the PNGRB, if not possible to maintain the clearances, cover, vent locations etc.	Verified from the Project document of PMC MECON Ltd.	
43	Verify whether the hot taps design and construction is carried out as per API RP2201, ASME B 31.4, API	Ist Audit was carried out in 2019. Not Applicable	

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Sr. no.	Parameters	Details / Observations	Recommendations
44	1104, Appendix - B Verify whether the duly filled checklist stated in API RP-2201 is available	Verified and same is available.	
45	Verify whether Welding procedure specification and welder qualification is verified before hot tapping	1st Audit was carried out in 2019. Not Applicable	
46	Verify whether the full bore valve is used when making branch connections using hot taps.	Not Applicable	
47	Verify whether buried steel pipelines or mains is tested after installation using water as a test medium at 1.4 times MAOP for minimum 24 hours for underground and 04 hours for aboveground pipeline	Verified, Report No 4 dated 04/02/2014	
48	Verify the test records post construction such as Testing Reports, Joint Coating Report, back-filling reports, Pipe book are in place.	Yes and same mentioned in Pipe book.	
49	Verify whether the spacing between valves on distribution mains are maintained as per PNGRB technical standard	Verified and found the spacing is maintained.	
Schedule-1E			
50	Verify that the O&M procedure are developed and followed.	Yes, O&M manual Ref. No. P:007798R11086 001 is developed and being followed	
51	Verify the mode of inspection followed by Entity like patrolling/ line walk/ any other means? And frequency is maintained	Yes being done by walk.	
52	Verify marker position by maximum spacing 100 meters in urban area and 200 meters within industrial parks for steel mains	Verified.	
53	Verify whether markers are marked in bold and legible local language	Verified markers are marked in English and Bengali.	
54	Verify whether highly congested areas are surveyed using gas detectors at least once in 03 months and	Yes. However no major urban population density along the pipeline	

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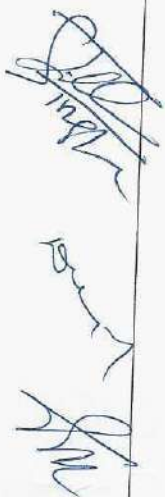
Sr. no.	Parameters	Details / Observations	Recommendations
55	other area at least once in a year Verify whether steel pipelines and mains used in CGD Network is not used for dual service	Verified.	
Schedule -1F			
56	Verify whether all buried bends and fittings are coated with heat shrink sleeves or two pack high build epoxy coating with minimum 450 microns	Verified and found to be ok	
57	Verify whether insulating joint is properly rated for temperature, pressure, and electrical properties and resistant to the natural gas	Verified and found to be ok	
58	Verify whether insulating joint is not installed in enclosed areas	Verified	
59	Verify whether the PSP monitoring is done on defined frequency at all test lead points	Verified. Done on Quarterly basis.	
60	Verify whether the polarized pipe to soil potential values are observing within the prescribed limit (-0.85 V to - 1.5 V)	Yes. During site visit PSP measured at TLP - Khayerpur CNG Station is (-0.95 V to - 1.123 V)	
61	Verify if Pipe to Soil Potential values are not within limits, what action is taken by entity	Not Applicable	
62	Verify whether sacrificial anodes system is installed till the impressed current Cathodic Protection system is commissioned	Yes	
63	Verify whether cathodic protection system is maintained	Verified, cathodic protection system is maintained and working conditions.	
64	Verify whether all records related to corrosion control stated in T4S CGD Regulations are maintained	Verified that all records related to corrosion control stated in T4S CGD Regulations are maintained	

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(V) CITY GATE STATION (CGS)

Sr. No.	Parameters	Details / Observations	Recommendations
1	Identification of PRI at CGS	Not Applicable	
2	Location of CGS / Terminal	CGS operated and maintained by GAIL (India) Ltd.	
3	Connectivity Details	Not Applicable	
4	Gas Flow Rate	Not Applicable	
5	ANSI Pressure class	Not Applicable	
Schedule-1 A (Sr. No. 6 to be checked in 1 st Audit)			
6	Verification of piping materials and Equipment manufactured to standards listed in Annexure-I and Annexure-II	Not Applicable	
Schedule-1 B (Sr. No. 7 & 8 to be checked in 1 st Audit)			
7	Verify the Welding procedures and welder qualification procedure.	Not Applicable	
8	Verify that all NDT including radiography examination performed.	Not Applicable	
Schedule-1 C			
9	Check whether Valve Body, Bonnet, cover and/or end flanges and fittings are not made from Cast Iron and Ductile iron.	Not Applicable	
Schedule-1 D (Sr. No. 12, 30 to be checked in 1 st Audit)			
10	Check whether the Property laid out roads around various facilities is provided within the installation	Installation being operated and maintained by GAIL.	
11	Check whether the facility is provided with proper boundary wall/fencing with Gate(s) in line with MHA (Ministry of Home affairs)	Installation being operated and maintained by GAIL.	
12	Check whether the depth of top cover of buried pipe line inside the CGS is minimum 1.2 meter	1st Audit was carried out in 2019. Not Applicable	



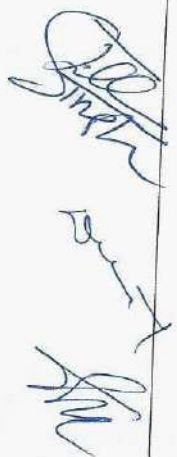

Sr. No.	Parameters	Details / Observations	Recommendations
13	Whether CGS is installed with configuration specified in PNGRB T4S CGD Regulations at Table-1	Installation being operated and maintained by GAIL	
14	Check whether the platforms and crossovers is provided where required	Installation being operated and maintained by GAIL	
15	Verify whether the Minimum 50% redundancy of Pressure Reduction Skid is available	Installation being operated and maintained by GAIL	
16	Verify whether the gas filtration facilities with 100% redundancy is provided	Installation being operated and maintained by GAIL	
17	Verify weather provision is made for venting, purging, and draining for isolation during construction or maintenance	Installation being operated and maintained by GAIL	
18	Verify whether the vent line is terminated at minimum height of 3 meters above the working level	Installation being operated and maintained by GAIL	
19	Verify whether the distance between vent and boundary wall/Fencing 05 meter.	Installation being operated and maintained by GAIL	
20	Verify whether the vent line is terminated in Safe area * (Vent opening should have top cover to avoid choking) ** (Bend/Elbow above 90 deg. at vent Opening is not permitted to avoid venting Gas in return Direction)	Installation being operated and maintained by GAIL	
21	Verify whether the Gas detectors are installed	Installation being operated and maintained by GAIL	
22	Verify whether the all facilities handling Gas are located downwind from Heaters, in case of fired Gas Heaters required and used	Installation being operated and maintained by GAIL	
23	Verify whether the Facilities are connected with Earthing System & Monitoring is being done as per IS 3043	Installation being operated and maintained by GAIL	
24	Verify whether the Electrical Equipment are installed in line with IS 5571	Installation being operated and maintained by GAIL	
25	Verify whether the Lightning protection is provided?	Installation being operated and maintained by GAIL	

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[Signature]
 (CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sr. No.	Parameters	Details / Observations	Recommendations
26	Verify whether the Upstream Dry Gas Filter(s) is/are installed when rotary or turbine meters used	Installation being operated and maintained by GAIL	
27	Verify whether the quick closing valve (with Remote operation facility) is installed in inlet of unmanned CGS	Installation being operated and maintained by GAIL	
28	Verify whether the adequate instrumentation and control system are in place.	Installation being operated and maintained by GAIL	
29	Verify whether the underground Coated Steel Pipe continue at least 300 mm above ground	Installation being operated and maintained by GAIL	
30	Verify whether the testing of piping is done before commissioning	Ist Audit was carried out in 2019. Not Applicable	
31	Verify whether the pressure sound level does not exceed the limit prescribed by Environmental Authorities or 110 dBA.	Installation being operated and maintained by GAIL	
Schedule-1E			
32	Verify that the O&M procedure are developed.	Facility being operated & maintained by GAIL.	
33	Verify whether the calibration plan for meters, gauges and other safety instruments installed in DPRS, is available	Installation being operated and maintained by GAIL	
34	Verify whether the plan for functional testing of pressure regulation and control equipment (Active/Monitor Regulator, Slum Shut Valve, Pressure Relief Valves and Control Valves etc.) is available.	Installation being operated and maintained by GAIL	
35	Verify whether the limits of Operating Parameters (Pressure, Temperature, flow, Levels etc.) are established in O&M procedure and set in equipments	Installation being operated and maintained by GAIL	
Schedule-1G			
36	Verify whether online odourisation equipment has been installed and odourisation system is in working condition	Odourization unit has been installed at Khayerpur CNG Station adjacent to GAIL's receiving station. Odourization unit supplied by M/s CPL Energy Ltd. Is	



Sr. No.

Parameters

Details / Observations

Recommendations

Document No: BOSAI/FM/008/05A

37	Verify whether odorizing equipment is located in a separate area at CGS	installed and is in working condition. Yes	
38	Verify whether 1.5 meter distance around the odorizing and other facilities is maintained	Yes	
39	Verify whether maintenance is done of odourisation system	Yes	
40	Verify whether a pre - determined quantity of suitable odorant is dosed into the gas stream.	Yes, Currently 17 ppm is being injected.	
41	Verify whether quantity of odorant dosing is safe for human as well as materials and equipments used in CGD system	Yes	
42	Verify whether odour level test is carried out at various defined locations and at extreme ends of network	No.	System for odour level at various defined locations and extreme end of network to be implemented.
43	Verify whether corrective action is taken, in case of odour levels falls below the acceptable levels	Not Applicable	
44	Verify whether odourant absorber like Activated Carbon saw dust, dry sand and odorant neutralizer like sodium hypochlorite is provided	Yes	
45	Verify whether provision is made for eye wash or emergency shower near odorant handling and injection systems, in case of ethyl mercaptan is used as odourant.	Yes	
46	Verify whether PPE like face shield, mask, rubber hand gloves, gumboot, safety goggles etc. is available	Yes	

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(vi) DPRS/IPRS

Sr. no.	Parameters	Details / Observations	Recommendations
1	Identification	DRS-01, PRS-01	
2	Location of PRI(s)	DRS-01: Chandrapur PRS-01: Bodijungnagar	
3	Connectivity Details	i. Gas received from GAIL's CGS at Khayerpur at 17 bar and reduced to 3.8 bar at DRS-01: Chandrapur and supplied to MDPE network of Agartala City. ii. Gas received from GAIL's CGS at NEEPCO at 06 bar and reduced to 4 bar at PRS-01: Bodijungnagar and supplied to MDPE network of Bodijungnagar.	
4	Gas Flow Rate	DRS-01: Chandrapur: 6500 SCMH PRS-01: Bodijungnagar: 6000 SCMH	
5	ANSI Pressure class	150#	
6	No. of PRI	02 Nos.	
7	Verification of Pipeline MOP and MAOP (in barg)	<u>DRS-01</u> MOP - 17 kg/cm2 MAOP - 19 kg/cm2 <u>PRS-01</u> MOP - 3.8 kg/cm2 MAOP - 19 kg/cm2	
8	Verification of piping materials and Equipment manufactured to standards listed in Annexure-I and Annexure-II	ISI Audit was carried out in 2019. Not Applicable	
Schedule-1 A (Sr. No. 8 to be checked in 1 st Audit)			
Schedule-1 B (Sr. No. 9 & 10 to be checked in 1 st Audit)			






Sr. no.	Parameters	Details / Observations	Recommendations
9	Verify the Welding procedures and welder qualification procedure.	1st Audit was carried out in 2019. Not Applicable	
10	Verify that all NDT including radiography examination performed.	1st Audit was carried out in 2019. Not Applicable	
Schedule-1 C			
11	Check whether valve body, bonnet, cover and/or end flanges and fittings are not made from cast iron and ductile iron.	Verified and found as per PNGRB Regulations	
Schedule -ID (Sr. No. 34 to be checked in 1st Audit)			
12	Check whether the DPRS located belowground or aboveground?	Aboveground	
13	Verify whether the Enclosed Chamber with provision of entry or buried Hermetically Sealed module type chamber with proper cathodic protection is provided, in case of underground DPRS	Not Applicable	
14	Verify whether the active and Monitor combination is available in DPRS	Verified at site. Active and Monitor combination is available in DPRS	
15	Verify whether the minimum 50% redundancy of pressure reduction skid is available	Verified. 50% redundancy of pressure reduction skid is available	
16	Verify whether the Gas Filtration Facilities with 100% redundancy is provided	Verified. the Gas Filtration Facilities with 100% redundancy is provided	
17	Verify weather provision is there for venting, purging, and draining for isolation during Construction or maintenance	Verified. Provision is there for venting, purging, and draining for isolation during Construction or maintenance	
18	Verify if the butterfly valves are used in underground DPRS, it conforms to the requirements given in Annexure - I	Not Applicable	
19	Verify whether a dedicated isolation valve is	Not Applicable	

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Sr. no.	Parameters	Details / Observations	Recommendations
	installed upstream of underground DPRS sited.		
20	Verify whether the vent line is terminated at minimum height of 3 meters above the ground level (In case of Underground DPRS) or above the working level (In case of Aboveground DPRS)	Verified. Vent line is terminated at minimum height of 3 meters above the ground level.	
21	Verify whether the vent line is terminated in Safe area *(Vent opening should have top cover to avoid chocking) ** (Bend/Elbow above 90 deg. at vent Opening is not permitted to avoid venting Gas in return Direction)	Verified. The vent line is terminated in Safe area	
22	Verify whether the aboveground DPRS/IPRS is installed with proximity not less than 2 meters from nearest structure/ building as per PNGRB technical standard	Verified. Found to be Ok.	
23	Verify whether safety features like crash guards, caging of facilities and like other facilities provided and maximum outlet pressure is restricted up to 2.0 bar (g) for wall mounted regulating system	Not Applicable	
24	Verify whether the Gas detectors are installed	Gas Detectors are not installed at Chandrapur DRS.	Gas detector to be installed at Chandrapur DRS.
25	Verify whether the fencing is provided to above ground DPRS or not?	Verified. Fencing is done.	
26	Verify whether the all facilities handling Gas are located downwind from heaters, in case of fired Gas Heaters required and used	Not Applicable	

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Sr. no.	Parameters	Details / Observations	Recommendations
27	Verify whether the DPRS is connected with Earthing System & Monitoring is being done as per IS 3043	Complied however, Monitoring report is not available.	Monitoring Report to be maintained.
28	Verify whether the Electrical Equipment are installed in line with IS 5571	No electrical equipment is available.	
29	Verify whether electrical area classification of installation is done as per IS-5572	No electrical equipment is available.	
30	Verify whether the isolation valve is provided at inlet & outlet of DPRS and easy accessible to operation	Yes, provided inside DPRS, not easily accessible	Inlet/outlet Isolation Valve to be provided for easy accessible location.
31	Verify whether the isolation valve is provided in Piping at inlet & outlet of DPRS and easy accessible to operation	Refer Point No. 30	
32	Verify whether the upstream dry gas filter(s) is/are installed when rotary or turbine meters used	No Metering unit is provided in DPRS.	
33	Verify whether the underground Coated Steel Pipe continue at least 300 mm above ground	Yes	
34	Verify whether the testing of piping is done before Commissioning	Verified hydro-test report no. 4 dated 04/01/2014	
35	Verify whether the pressure sound level does not exceed the limit prescribed by Environmental Authorities or 110 dBA	Yes	
Schedule-1E			
36	Verify that the O&M procedure are developed	O&M Manual by Tractable Engineers Ref. No.: P.007798R11086 001	
37	Verify whether the calibration Plan for Meters, Gauges and other safety instruments installed in DPRS, is available	Calibration done periodically.	

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

Sr. no.	Parameters	Details / Observations	Document No: BOSAI/FM/008/05A Recommendations
		1. Calibration Certificate No. - KTS/030623/4/3 dated 04/06/2023 of PSV-3143/2012 at DRS-01: Chandrapur. Calibration due: 02/06/2024 2. Calibration Certificate No. - KTS/170623/2/3 dated 18/06/2023 of PSV-31477/2012 at PRS-02: Bodhjungnagar. Calibration due- 16/06/2024	
38	Verify whether the Plan for functional testing of pressure regulation and control equipment (Active/Monitor Regulator, Slum Shut Valve, Pressure Relief Valves and Control Valves etc.) is available.	Yes and verified. Health check up of skids at Bodhjungnagar done on 27/03/2023 (Refer- Report of M/s Nirmal Industrial Controls dated 27/03/2023) and Health check up of skid at Chandrapur was done on (Refer- Report of M/s Nirmal Industrial Controls dated 05/07/2023)	
39	Verify whether the limits of operating parameters (Pressure, Temperature, flow, Levels etc.) are established in O & M procedure and set in equipments	Yes and verified. Refer- Report of M/s Nirmal Industrial Controls dated 27/03/2023 and 05/07/2023	

Note---1. Separate Checklist to be filled for every inspected DPRS

2. Checklist to be filled also for every inspected IPRS

3. Refer Annexure-I and Annexure-II for material details for various components.

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(vii) PE NETWORK

Sr. no.	Parameters	Details / Observations	Recommendations
1	Verification of total length of PE Distribution network (in kms)	Approx 1040 KM	
2	Verification of Pipeline MOP and MAOP (in barg)	3.4 barg/ 6 to 7 barg	
Schedule-1A (Sr. No. 3 to be checked in 1st Audit)			
3	Verification of piping materials and Equipment manufactured to standards listed in Annexure-I and Annexure-II	1st Audit was carried out in 2019. Not Applicable	
4	Verify whether the reprocessed material is not used during pipe manufacturing	1st Audit was carried out in 2019. Not Applicable	
5	Verify whether the colour of pipe used for Natural gas service is yellow for PE 80 grade and orange for PE 100 grade.	Yes. PE 100 and Orange colour.	
6	Verify whether permanent marking is impressed or embossed to a depth/height of 0.02 to 0.15 mm	Yes. PE Pipe marking is available.	
7	Verify whether PE Pipe is not used for above ground gas pipes	Yes Verified during site visit.	
8	Verify that if PE Pipe re-used then are Pipe traceability, documents, free from visible defects, re-testing verified by the entity	Not Applicable	
Schedule-1 C (Sr. No. 13, 14 to be checked in 1st Audit)			
9	Verify whether thermoplastic fittings conforming to ISO 4437 Part 3 or EN 1555 Part 3 is used in CGD network	Verified that thermoplastic fittings used is conforming to ISO 4437 Part 3 or EN 1555 Part 3	
10	Verify whether the electro-fusion fittings are as per	Verified that the electro-fusion fittings are as per ISO	

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CHANDAN CHAKRABORTY
Chief Manager (Comm. and Opn)
Tripura Natural Gas Co. Ltd.
Agartala, Tripura.

Sr. no.	Parameters	Details / Observations	Recommendations
	ISO 8085 Part-3 / EN 1555-3 and fittings fabricated from pipe is not used	8085 Part-3 / EN 1555-3 [Refer- Test Certificate No. GPPS-QA-F-07 dated 16/01/2022]	
11	Verify whether each electro fusion fitting is bar coded and have permanent fusion indicator or a data card conforming to ISO-7810/ISO-7811	Verified that electro fusion fitting is bar coded and have permanent fusion indicator or a data card conforming to ISO-7810/ISO-7811	
12	Verify whether the fusion jointing is carried out as per the procedure outlined in the standard DVS 2202 or equivalent	Verified that the fusion jointing is carried out as per the procedure outlined in the standard DVS 2202 or equivalent	
13	Verify whether all plastic fittings have been type tested by internationally recognized testing agency prior to use	1st Audit was carried out in 2019. Not Applicable	
14	Verify whether thermoplastic/thermosetting fittings is not used in above ground piping system	1st Audit was carried out in 2019. Not Applicable	
15	Verify whether fittings fabricated from pipes is not used	Verified	
16	Verify whether the colour of fittings is yellow or black	Black	
17	Verify whether polyethylene resins used for thermoplastic fittings is virgin, cadmium free pigmented compound. Anti-oxidant and UV Stabilizers are meeting the requirements as per EN 1555-1, and ISO 4437-1	Verified.	
18	Verify whether mechanical fittings for making hot taps on thermoplastic mains and service lines is electro fusion type	Verified	
Schedule-1D (Sr. No. 19, 20, 21, 24, 29 to be checked in 1st Audit)			
19	Verify whether Pipe thickness is not less than 2.3 mm and selected from SDR Table-4	1st Audit was carried out in 2019. Not Applicable	
20	Verify whether pipe with non-standard SDR is not used	1st Audit was carried out in 2019. Not Applicable	

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Sr. no.	Parameters	Details / Observations	Recommendations
21	Verify whether buried service lines are provided with a minimum cover of 1.0 m.	1st Audit was carried out in 2019. Not Applicable	
22	Verify whether additional protective measures such as concrete slabs or high impact resistance plastic sheets is installed at least 300 mm above the service line where it is impractical to provide 1.0 m cover due to physical constraints	Verified	
23	Verify whether the depth of cover is not less than 600 mm	Verified	
24	Verify whether wall thickness of the fittings is more or equal to the wall thickness of the pipe jointed	1st Audit was carried out in 2019. Not Applicable	
25	Verify whether warning tape of yellow colour 200 mm above the pipe is laid where open cut trench technique used	Verified	
26	Verify whether trench width during laying is at least 300 mm	Verified	
27	Verify whether threaded joints/butt fusion method/solvent cement method/adhesive method/heat fusion method/compression couplings method/range method, in plastic pipe is not used, only electro fusion fittings joint is made	Verified	
28	Verify whether the bed of trench is free of sharp object, stones and in rocky areas trench is padded with soft soil or sand to minimum depth of 150 mm below the pipe	Verified	
29	Verify the procedure for Hot taps installation is available	1st Audit was carried out in 2019. Not Applicable	
31	Verify whether Special saddle or split ice type electro fusion fittings is used during hot tapping.	Verified	

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Sr. no.	Parameters	Details / Observations	Recommendations
32	Verify that test medium is used air/nitrogen for test pressure 100 psig and water for higher than 100 psig	Verified	
33	Verify that test duration is minimum 24 hours for greater than 1 km section length and minimum 04 hours for shorter than 1 km section length	Verified	
34	Verify whether the adequate safety i.e. relief valve, relevant warning signs, deployment of Emergency response plan is adhered during testing.	Verified	
35	Verify the test records post construction i.e. testing reports, back filling reports, pipe book are in place.	Verified	
36	Verify whether the spacing between valves on plastic distribution mains are maintained as per PNGRB technical standard	Verified	
37	Verify whether plastic service lines is not installed under or inside the building	Verified	
38	Verify whether the valves are installed on the inlet and outlet piping of each regulator station controlling flow or pressure of gas in distribution system	Not Applicable	
Schedule -1E			
39	Verify that the O&M procedure are developed.	O&M Procedure P.007798R11086001	
40	Verify the mode of inspection followed by Entity like patrolling/ line walk/ any other means? and frequency maintained	Yes on daily basis	
41	Verify whether highly congested areas is surveyed using gas detectors at least once in 03 months and other area at least once in a year	Complied	

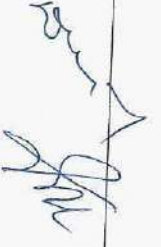
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(viii) INDUSTRIAL CONSUMERS

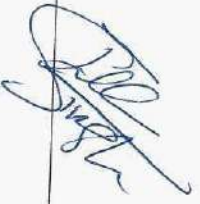
Sr. no.	Parameters	Details / Observations	Recommendations
1	Verification of total number of Connections (in nos.)	45	
2	Verification of Pipeline MOP and MAOP (in barg)	3.4 barg/ 6 to 7 barg	
Schedule-1 A (Sr. No. 3 to be checked in 1st Audit)			
3	Verification of piping materials and Equipment manufactured to PNGRB technical standards and specifications listed in Annexure-I, Annexure-II and Annexure-IV	1st Audit was carried out in 2019. Not Applicable	
4	Verification of steel reinforced rubber hose to IS: 9573 Type II	Not Applicable. TNGCL's scope is upto outlet flange of metering unit.	
5	Verify the Rubber Hose length is used maximum 1.5 meter	Not Applicable. TNGCL's scope is upto outlet flange of metering unit.	
6	Verify whether both end of Rubber Hose is firmly clamped on the nozzles by metallic clamps	Not Applicable. TNGCL's scope is upto outlet flange of metering unit.	
Schedule-1 C			
7	Check whether valve body, bonnet, cover and/or end flanges and fittings are not made from Cast iron and ductile iron.	Not Applicable	
Schedule -1D (Sr. No. 9 to be checked in 1st Audit)			
8	Verify the procedure for plastic pipe and tubings joints and connections is in place.	Verified.	
9	Verify whether the testing is done before commissioning	1st Audit was carried out in 2019. Not Applicable	
10	Verify the test records post construction is in place.	Yes.	
11	Verify whether the location of customer's meter and regulator installation are made safe manner.	Yes.	

Sr. no.	Parameters	Details / Observations	Recommendations
12	Verify if meter is installed outside the premises then protection by steel fencing is provided	Yes	
13	Verify whether the PNGRB (Gas Supplies to Industrial, Commercial Customers) Guidelines, 2020 is complied, if natural ventilation is not available	No.	Certification of Internal Piping line to be carried out by TPIA as per PNGRB (Gas Supplies to Industrial, Commercial Customers) Guidelines, 2020. Testing Certificate to be obtained from customer before commencing gas supply.
14	Verify whether the vent line is terminated at minimum height of 3 meters above the ground level	Yes	
Schedule -1E			
15	Verify that the O&M procedure are developed and followed.	O&M Manual: P.007798R11086001 has been developed and being followed.	
Schedule -1F			
16	Verify whether above ground pipe line is protected from corrosion.	Yes through application of paint	

NOTES: Refer Schedule 1D of CGD technical standard:

- Customer IPRS installation shall be independently approved by certified third party agency before the entity supplies the gas.
- Recertification shall be carried out once in 3 years.





(ix)

DOMESTIC AND COMMERCIAL CONSUMERS

Document No: BOSAI/FM/008/05A

Sl. no.	Parameters	Details / Observations	Recommendations
1	Verification of total number of Connections (in nos.)	45000	
2	Verification of Pipeline MOP and MAOP (in barg)	MOP- 4 bar MAOP-6-7 bar	
Schedule-1 A (Sr. No. 3 to be checked in 1st Audit)			
3	Verification of piping materials and Equipment manufactured to PNGRB technical standards and specifications listed in Annexure-I, Annexure-II and Annexure-IV	Ist Audit was carried out in 2019. Not Applicable	
4	Verification of steel reinforced rubber hose to IS: 9573 Type II	Checked 10 consumer. Non-standard hoses found in 4 nos consumer kitchen.	CGD entry to ensure all customer having non-standard hoses to be changed to steel reinforced rubber hose to IS: 9573 Type II
5	Verify the Rubber Hose length is used maximum 1.5 meter	Yes, Rubber Hose length is used maximum 1.5 meter.	
6	Verify whether both end of Rubber Hose is firmly clamped on the nozzles by metallic clamps	Checked 10 nos consumer. Out of 10, consumers both end of Rubber Hose is not firmly clamped on the nozzles by metallic clamps of 8 nos consumer.	CGD entry to check all the consumer and ensure that both end of Rubber Hose is firmly clamped on the nozzles by metallic clamps.
Schedule-1 C			
7	Check whether valve body, bonnet, cover and/or end flanges and fittings are not made from Cast iron and ductile iron.	No	
Schedule-1D (Sr. No. 9 to be checked in 1st Audit)			
8	Verify the procedure for Plastic pipe and tubing joints and connections is in place.	Yes	
9	Verify the test records post construction is in place.	Ist Audit was carried out in 2019. Not Applicable	
11	Verify whether transition fittings is used for transition from plastic pipe to GI pipe	Transition fittings is used for transition from plastic pipe to GI pipe. However, Sand has not filled in pipe of Transition fitting joint.	CGD entry to ensure sand is filled in pipe of transition fitting.
12	Verify whether plastic part of transition fitting protruding above ground is protected by encasing it with concrete	No, plastic part of transition fitting protruding above ground is protected by GI Sleeve. However concrete	Concrete guard to be provided around MDPE pipe portion of transition fitting.

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Sr. no.	Parameters	Details / Observations
13	guard Verify whether carbon steel section beyond transition fitting is below ground and it is protected against corrosion by minimum 400 micron thick 2 pack high build epoxy coating	guard has not been provided. Yes, carbon steel section beyond transition fitting is below ground and it is protected against corrosion by minimum 400 micron thick 2 pack high build epoxy coating.
14	Verify whether above ground service piping is galvanized iron or copper or carbon steel protected by anti-corrosive coating	Pipe is protected with Anti corrosive coating paint. However, colour is not as per code.
15	Verify whether welded risers are used wherever the service line riser is installed in confined spaces like basements.	Yes
16	Verify whether the gap between riser and wall is minimum 25 mm and is supported at every 2 m	Yes
17	Verify whether ventilators are provided in confined space	There is no confined space.
18	Verify whether the PNGRB (Gas Supplies to Multi Occupancy Residential Buildings) Guidelines, 2020 and the PNGRB (Gas Supplies to Industrial, Commercial Customers) Guidelines, 2020, as applicable is adhered to wherever natural ventilation is not available	PNGRB (Gas Supplies to Multi Occupancy Residential Buildings) Guidelines, 2020 and the PNGRB (Gas Supplies to Industrial, Commercial Customers) Guidelines, 2020, as applicable is adhered to.
19	Verify whether sleeve for laying steel pipe through wall, or under outer wall foundations of building or under the building is not used and it is protected against corrosion by minimum 400 micron thick 2 pack high build epoxy coating	Yes
20	Verify whether plastic pipe above ground is not used. In case any section of plastic pipe extends above ground, verify whether it is completely encased in a concrete casing	Some places concrete casing is not there as per PNGRB guideline.
21	Verify whether plastic service lines under or inside the building is not installed	Plastic service line is not used.
		CGD entity to check all consumers and ensure concrete casing is not there as per PNGRB guideline.

Sr. no.	Parameters	Details / Observations	Recommendations
22	Verify whether piping connecting consumer meter set assembly to consumer gas appliance is either GI or copper up to last valve located near actual appliance	Verified . piping connecting consumer meter set assembly to consumer gas appliance is either GI or copper up to last valve located near actual appliance.	
23	Verify whether appliance is connected to gas line with a flexible and braided hose as per IS 9573.	Checked 10 consumer. Rubber hoses found in 4 nos consumer kitchen.	CGD entity to ensure all customer having rubber hoses to be changed to steel reinforced rubber hose to IS: 9573 Type II
25	Verify whether the hose does not expose to internal or external temperature exceeding the recommended limits	No	
26	Verify whether the length of the hose is not more than 1.5 meters and both ends of the hose is firmly clamped on the nozzle by metallic clamps	Checked 10 nos consumer. Out of 10, consumers both end of Rubber Hose is not firmly clamped on the nozzles by metallic clamps of 8 nos consumer.	CGD entity to check all the consumer and ensure that both end of Rubber Hose is firmly clamped on the nozzles by metallic clamps.
27	Verify whether the location of customer's meter and regulator installation are made safe manner.	Verified 10 consumers . It is Ok.	
28	Verify if meter is installed outside the premises then protection by steel fencing is provided	Installed inside the premises	
Schedule -1E			
29	Verify that the O&M procedure are developed and followed.	O&M procedure are developed and followed.	
Schedule -1F			
30	Verify whether above ground pipeline is protected from corrosion.	Yes.	

NOTES: Refer Schedule 1D of CGD technical standard

Minimum 10 nos. houses to be checked, on random basis across the network for the verification of aboveground installations.

(X) CNG DISPENSING STATION

Document No: BOSAI/FM/008/05A

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
1	Location of CNG Station	Radhanagar	Krishnagar
2	Type of CNG Station	Daughter Booster	Mother
3	Compression Capacity (Total)	450 SCMH	1180 SCMH
4	Verify whether the valid PESO license is in place for all CNG stations.	G/HO/TR/07/3(G24814) valid till 30/09/2032	G/HO/TR/07/4(G29250) valid till 30/09/2023
NATURAL GAS QUALITY & ODOURISATION			
5	Verify whether Quality of Compressed Natural Gas (CNG) for automotive purposes is governed by IS:15958.	Yes verified from Quality Reports	Yes verified from Quality Reports
6	Verify Whether the odour is strong enough to detect its presence down to a concentration of CNG in air not exceeding 20% of the lower limit of flammability.	Yes verified from Odorant Concentration Report	Yes verified from Odorant Concentration Report
7	Verify whether the injection of odorizing agent is being done in sufficient quantity to ensure perception of CNG leakage in line with IS:15319.	Yes verified from Odorant Concentration Report	Yes verified from Odorant Concentration Report
8	Verify whether the suitable type of filters is used for limiting liquid particulate in the CNG.	Comuscant Filter is being used.	Comuscant Filter is being used.
9	verify whether the odourisation and filtration system is located in a separate working area from the compressor or CNG storage unit and clear safety distance of 1.5 M around the odourisation and filtration system is maintained, in case the natural gas is not odourised.	Not Applicable	Not Applicable
10	Verify whether the odourisation pumping as and filtration system have 100% stand-by capacity	Not Applicable	Not Applicable
FACILITY PLANNING			
11	Verify whether the CNG refueling system is comprise of a gas compression apparatus, static or mobile cascade or pressure vessel and a gas dispenser incorporating a measuring device.	Verified & found in order.	Verified & found in order.

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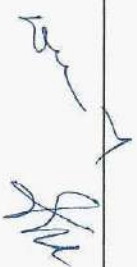
Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRIC CNG Station
12	Verify whether the systems and components of CNG facility(ies) is certified for CNG use and marked accordingly by applicable statutory authority or the agency authorized by such authority.	Verified & found in order.	Verified & found in order.
13	Verify whether inter-distances between various equipment, storage cylinders or cascade and like other device is as per Table-1 & Table-2 of this schedule.	Yes all the equipment is placed as per inter distance norms and endorsed by PESO.	Yes all the equipment is placed as per inter distance norms and endorsed by PESO.
14	Verify whether Safety distances not indicated in table-1 & table-2 is as approved by Petroleum and Explosives Safety Organisation on case to case basis after due consideration of all influencing factors.	Verified & found in order.	Verified & found in order.
15	Verify whether the CNG storage and dispensing facilities inside a MS or HSD Service Station is located in an isolated area not interfering in the vehicular movement on the drive way and not coming within the hazardous areas of petroleum facilities as prescribed in the Fourth schedule of the Petroleum Rules, 2002.	Verified & found in order.	Verified & found in order.
16	Verify whether the CNG facilities is not located beneath bare electric power lines or where exposed by their failure.	Yes. No CNG Station are located beneath bare electric power line	Yes. No CNG Station are located beneath bare electric power line
17	In case CNG Compressors or Storage units installed on the top of the RCC canopy then verify whether its validation is done by a qualified engineer	CNG Storage units are installed on ground over a foundation	CNG Storage units are installed on ground over a foundation
18	In case the compressor is installed on the top of the canopy then verify the cascades are not placed above such compressor and it should comply with the points (i) to (xiii) of clause 4.2.5.	Not Applicable	Not Applicable
19	Verify whether provisions related to convenience store or ATM or office cabin is regulated as per point (a) to (e) of clause 4.2.6.	No	No



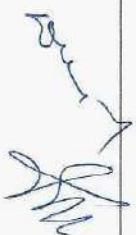

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRIC CNG Station
20	If Multiple cascades are located maintaining inter-distance of minimum 1 m, then, verify whether the required safety distances are considered of the water capacity of the higher capacity individual cascade.	Not Applicable	Not Applicable
21	Verify whether a suitable curbing platform is provided at the base of the dispensing unit to prevent vehicles from coming too near the unit.	Yes	Yes
22	Verify whether installations meets 4 Hr Fire rating in line with IS 1642:1989-Code of practice for fire safety of buildings, If on the side towards the boundary of the installation, the clearance as specified in the Table-2 is not available	Not Applicable	Not Applicable
23	Whether the buried pipe come out of the ground, the wrapping coating is continued for a length of at least 300 mm above ground	Not Applicable	Not Applicable
24	Whether the vent routed to a safe area and in a manner that gas vented out is blown away from the nearest building and the height of the vent is minimum 3 meters above the working level	Yes	Yes
CNG STORAGE SYSTEM (STATIC)			
24	Verify whether the cascade having horizontal cylinders and sited parallel to other cascade or cylinder fittings is arranged such that they do not face cylinder fittings of other cascade.	N/A as CNG Station is operational with one Stationary cascade.	Verified & found OK
25	Verify whether cylinder installed horizontally in a cascade is separated from another cylinder in the cascade by a distance of minimum 20 mm.	Yes verified	Yes verified
26	Verify whether cascade with horizontal cylinders have the valves fitted on the same side within the cascade opposite to the refueling point and arranged in a manner that any gas leakage is discharged upwards.	Yes verified	Yes verified




Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRIC CNG Station
27	Verify whether cascade or bulk units are installed on a firm, compacted, well-drained non-combustible foundation and such foundation may be in the form of a plinth with the raised edge at 2 M from the front and sides of the cascade forming a kerb up to which vehicles are permitted and the cascade is securely anchored to prevent floating in case flooding is anticipated.	Yes verified	Yes verified
28	Verify whether gas storage facility is protected from the effects of the weather by a roof or canopy designed to facilitate the dispersion of free or escaped gas.	Yes. All cascades are provided with canopy designed facilitated by pathway for dispersion of gas	Yes. All cascades are provided with canopy designed facilitated by pathway for dispersion of gas
29	Verify whether adequate means are provided to prevent the flow or accumulation of flammable or combustible liquids under containers such as by grading, pads or diversion cuts.	Yes Verified	Yes Verified
30	Verify whether the static CNG storage system comply with the following provisions:		
31	a) The frame structural members must be designed for a vertical load of 2 times the maximum gross weight of the bundle and the design stress levels shall not exceed is as per IS 800;	Yes Verified	Yes Verified
	b) The frame must not contain any protrusions from the exterior frame structure that could cause a hazardous condition;	Verified no protrusions from the exterior frame structure	Verified no protrusions from the exterior frame structure
	c) The frame design must prevent collection of water or other debris that would increase the tare weight of bundles filled by weight;	Verified no debris or water is collected in the frame design	Verified no debris or water is collected in the frame design
	d) The cylinders shall be manufactured as per IS 7285-1, IS 7285-2, ISO 11119-1, ISO 11119-2, ISO 11119-3, ISO 11120, EN 12245, EN 12247;	cylinders are manufactured as per IS 7285-1, IS 7285-2, ISO 11119-1, ISO 11119-2, ISO 11119-3, ISO 11120, EN 12245, EN 12247	cylinders are manufactured as per IS 7285-1, IS 7285-2, ISO 11119-1, ISO 11119-2, ISO 11119-3, ISO 11120, EN 12245, EN 12247

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	e) Individual cascade shall have all cylinders of a particular make, type and capacity and all cylinders in a cascade shall conform to a single design code (mentioned above in para (d));	Yes all cylinders are of same make, type and capacity in one no. of cylinder.	Yes all cylinders are of same make, type and capacity in one no. of cylinder.
32	Verify whether cascade storage on the top of the roof is permitted on first floor and there is no any further construction or inhabitation above this storage.	No cascade is installed above roof.	No cascade is installed above roof.
CNG STORAGE SYSTEM (Mobile):			
33	Verify whether the dedicated trailer, truck or any other vehicle are used for transportation of CNG storage units and such units have lugs fitted for lifting and in no case magnetic device are used for lifting purposes.	Yes dedicated LCV's are used for transporting CNG. Lugs are fitted for lifting.	Yes dedicated LCV's are used for transporting CNG. Lugs are fitted for lifting.
34	Verify whether the vehicle with the cascade thereon, are placed with easy access and egress on a low platform or hard compacted ground, which are extend to atleast another one meter on all sides and this platform or hard ground are under a light roof or canopy as described in point 27 above.	Verified & found ok	Verified & found ok
35	Verify whether the trailers or vehicle carrying CNG are made immovable by application of brake and wheel choke prior to initiation of filling or dispensing operation.	Wheel Chockes of vehicle for unloading not available.	Wheel Chockes of vehicle for loading not available.
36	Verify whether attached to a trailer or mounted on a vehicle chassis frame the cascade are designed to meet the requirements of point (i) to (xiv) of clause 6.5.	Verified & found ok	Verified & found ok
CYLINDERS:			
37	Verify whether the cylinders and their fittings for CNG use are designed, manufactured, tested including hydrostatic stretch test at a pressure in full conformity to IS 7285-1, IS 7285-2, ISO 11119-1, ISO 11119-2, ISO 11119-3, ISO 11120, EN 12245, EN 12247 or other national or international standards having approval from statutory authority under	Yes All Standard are being followed	Yes All Standard are being followed


 (CHANDAN CHAKRABORTY)
 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.
 Agartala, Tripura.

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	Gas Cylinder Rules, 2004 i.e. Petroleum and Explosives Safety Organization considering the maximum allowable operating pressure of 250 bar.		
38	Verify whether cylinders are permanently and clearly marked for "CNG only" and also labelled "CNG ONLY" in letter at least 25 mm high in contrasting colour in a location which is visible after installation.	Yes All Cylinders are marked	Yes All Cylinders are marked
39	Verify whether the cylinders are re-examined or re-tested every three years and in accordance with Gas Cylinder Rules, 2004 by a competent person in line with the directives of the Petroleum and Explosives Safety Organisation with due markings and no cylinder is used which has not been duly re-tested	Yes All Cylinders are tested once in three years	Yes All Cylinders are tested once in three years
40	Verify whether cylinders are painted white to reduce solar heating effect and protect it from atmospheric corrosion.	Yes	Yes
CNG PIPING OR TUBING:			
41	Verify whether all rigid piping, tubing, fittings and other piping components are confirm to the recommendations of ANSI B 31.3 and all the elements of piping are designed for the full range of pressures, temperatures and loading.	Yes all rigid piping, tubing, fittings and other piping components are confirm to the recommendations of ANSI B 31.3	Yes all rigid piping, tubing, fittings and other piping components are confirm to the recommendations of ANSI B 31.3
42	Verify whether gaskets, packing and any other materials used are compatible with natural gas and its service conditions.	Yes gaskets, packing and any other materials used are compatible with natural gas and its service conditions.	Yes gaskets, packing and any other materials used are compatible with natural gas and its service conditions.
43	Verify whether all the piping and tubing have minimum turns with adequate provision for expansion, contraction, jarring, vibration and settling and the exterior piping may be either buried with suitable corrosion protection or installed 30 cm. above the ground level with supports and protection against mechanical and corrosive damage.	Yes Verified	Yes Verified
44	Verify whether rigid pipelines have welded joints between their respective components.	Yes Verified	Yes Verified
45	Verify whether all the piping and tubing withstand a pressure equal to	Yes, Verified from Pneumatic & Hydrotest	Yes, Verified from Pneumatic & Hydrotest

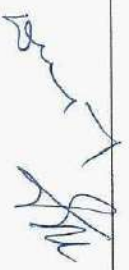



(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O.S.M.)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRIC CNG Station
	that of safety relief device and tested accordingly after assembly and the testing is done by inert gas and in case natural gas is used the suitable safety measures are adhered to.	report	report
46	Verify whether the fuel lines have a positive segregation with electrical cables.	Yes Verified	Yes Verified
VALVES:			
47	Verify whether minimum of four shut off valves are fitted between the gas storage unit and vehicle refueling filling nozzle as explained in points (a) to (d) of clause 8.7	Yes Verified	Yes Verified
48	Verify whether all valves mentioned in above point and other elements of piping are suitable for the full range of pressure and temperature have permanent marking for service rating and like other markings.	Yes all valves are suitable for full range for various parameters	Yes all valves are suitable for full range for various parameters
CNG HOSES:			
49	Verify whether internally braided, electrically continuous, non-metallic and metallic hoses resistant to corrosion and suitable to the natural gas service are used for CNG service in the downstream of emergency and isolation shut off valve.	Yes All Hose are suitable for natural gas medium. Verified from Dispenser MTC.	Yes All Hose are suitable for natural gas medium. Verified from Dispenser MTC.
50	Verify whether the flexible hoses and their connections are suitable for most severe pressure and temperature service condition expected with a burst pressure of at least four times the maximum working pressure.	Yes All Hose are suitable for severe pressure and temperature conditions	Yes All Hose are suitable for severe pressure and temperature conditions
51	Verify whether the flexible hoses with their connections are be tested after assembly and prior to use to at least two times the working pressure and also tested to a pneumatic pressure of at least 400 bar under water and thereafter, all the hoses are examined visually and tested for leaks with soapuds or equivalent at an interval not exceeding one year and hoses are rejected and destroyed in the event of any leakage and such tests are recorded and such records are available at installations at all times and such tests, examinations, rejections and destruction is done safely in a controlled environment by the trained technicians having	Verified & found OK	Verified & found OK




Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	adequate expertise with respect to the assembly of hoses, breakaways, valves and fuel nozzles.		
52	Verify whether flexible hoses have permanent marking indicating the manufacturer's name or identification, working pressure and suitability for use with CNG.	Verified at Site and found that flexible hoses have permanent marking indicating the manufacturer's name or identification, working pressure and suitability for use with CNG.	Verified at Site and found that flexible hoses have permanent marking indicating the manufacturer's name or identification, working pressure and suitability for use with CNG.
53	Verify whether CNG flexible electrically conductive hose is meeting the requirement as per NFPA-52 or NGV 4.2 or equivalent.	Yes, All Hoses are meeting the standard. Verified from MTC	Yes, All Hoses are meeting the standard. Verified from MTC
PRESSURE GAUGES:			
54	Verify whether every CNG storage unit including each cascade or bulk storage tank is provided with a suitable pressure gauge directly in communication with them.	Yes. All cascades are connected with pressure gauge directly.	Yes. All cascades are connected with pressure gauge directly.
55	Verify whether the CNG storage unit have an opening not to exceed 14-mm diameter at the connection where pressure gauge is mounted.	Yes. Verified from manufacturers' documents	Yes. Verified from manufacturers' documents
56	Verify whether the pressure gauge have dial graduated to read approximately double the operating pressure but in no case less than 1.2 times the pressure at which pressure relief valve is set to function.	Yes. Verified from manufacturers' documents	Yes. Verified from manufacturers' documents
57	Verify whether all pressure gauges in the installation are tested and calibrated atleast once a year and records maintained.	Yes. All Pressure gauges are tested once in a year and record also available	Yes. All Pressure gauges are tested once in a year and record also available
COMPRESSOR STATION:			
58	Verify whether the piping and its fittings upto the battery limit of CNG installation conforms to ASME B 31.8 or equivalent	Yes All fittings are as standard ASME B 31.8. Verified from MTC.	Yes All fittings are as standard ASME B 31.8. Verified from MTC.
59	Verify whether compressor are designed for use in CNG service and for the pressures and temperature to which it may be subjected under normal operating conditions conforming to API 618/ API 813 / API 11 P or equivalent standard and flame proof electric motor and associated fittings conforms to IS/IEC 60079 suitable for Gas Group IIA as applicable for Natural Gas.	Yes. All Compressor are designed as per required Standard.	Yes. All Compressor are designed as per required Standard.


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 Chief Manager (Comm. and O&M)
 Tripura Natural Gas Co. Ltd.,
 Agartala, Tripura.

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
60	Verify whether compressor is fitted with the requirements stated in points (a) to (g) of clause 11.3	Yes. Verified	Yes. Verified
61	Verify whether the compressor is provided with clear and permanent markings readily accessible and easy to read in the installed position as per the points (a) to (j) in clause 11.4	Verified at site that the compressor is provided with clear and permanent markings i.e. Manufacturer's name, Model, Serial No., Month and year of manufacturing, Certificate of approval no., rated capacity (SCMH), Operating speed (RPM), required driving power (in KW), Maximum outlet pressure.	Verified at site that the compressor is provided with clear and permanent markings i.e. Manufacturer's name, Model, Serial No., Month and year of manufacturing, Certificate of approval no., rated capacity (SCMH), Operating speed (RPM), required driving power (in KW), Maximum outlet pressure.
62	Verify whether the compressor and it's all fittings is tested for compliance of relevant standard suitable for CNG use by a qualified engineer.	Verified for Compressor SI. No. 090108. Model: B3030	Verified for Compressor SI. No. 121101.4. Model: Gas Engine Driven Compressor
PRESSURE RELIEF DEVICE:			
63	Verify whether safety relief devices conform to the requirements of API 520 or equivalent equipment design standards.	Yes. All SRV installed as per the standard	Yes. All SRV installed as per the standard
64	Verify whether safety relief devices are installed with unobstructed full size discharge to a safe place on bulk tanks and cylinders in the vertical position with suitable rain caps and such devices have their outlet arranged in a manner so that in case of emergency a high-pressure gas escapes from the devices does not directly hit on operators or persons in the close vicinity.	Yes. All SRV installed directly with line with no shut off valve installed in pathway	Yes. All SRV installed directly with line with no shut off valve installed in pathway
65	Verify whether the cylinder have safety relief devices fitted in conformity to the Gas Cylinder Rules, 2004.	Yes All SRV are installed conformity to Gas Cylinder Rules, 2992	Yes All SRV are installed conformity to Gas Cylinder Rules, 2992
66	Verify whether piping is protected by safety relief devices in conformity to design standards.	Yes Verified	Yes Verified
67	Verify whether safety relief valves have a locking arrangement to prevent tampering by unauthorised persons and any adjustments to the safety relief valves is made by manufacturer or a competent person and	Verified that safety relief valves have a locking arrangement	Verified that safety relief valves have a locking arrangement

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	such valves have a permanent tag indicating pressure setting, date of re-setting or setting and capacity.		
68	Verify whether all safety relief devices are tested at least once a year for proper operations and records are maintained.	Verified that all safety relief devices are tested at least once a year for proper operations and records are maintained.	Verified that all safety relief devices are tested at least once a year for proper operations and records are maintained.
69	Verify whether all the safety relief devices have manufacturer's permanent marking indicating the following; namely: - (a) Set pressure to start discharge; and (b) Discharge capacity in CuM / min.	Manufacturer's name with set pressure and discharge capacity has been indicated in all the available SRV's	Manufacturer's name with set pressure and discharge capacity has been indicated in all the available SRV's
70	Verify whether no shut off valves is installed between the safety relief device and the gas storage unit or bulk tank.	Verified with Cascade SL No. EKCT/TINGCL/260-S-40/05	Verified with Cascade SL No. EKCT/TINGCL/260-S-40/12
71	Verify whether all natural gas devices not otherwise specifically mentioned are constructed and installed to provide a safety equivalent to that other parts of the system.	Yes Verified from equipment specification	Yes Verified from equipment specification
72	Verify whether the gas detectors interlocked with compressor cut out switch in the electrical system of the compressor are installed which would automatically switch off the unit in case of major gas leak.	Interlocks are available between GD and Compressor to give alarm & stop the compressor in case of any gas detection & between flame detection & compressor to stop the compressor	Interlocks are available between GD and Compressor to give alarm & stop the compressor in case of any gas detection & between flame detection & compressor to stop the compressor
73	Verify whether the colour (yellow or black) coding used for fitting (valves, pressure reducing device).	Verified, Yellow colour.	Verified, Yellow colour.
ELECTRICAL EQUIPMENT			
73	Verify whether all electrical wiring and equipment, gas storage dispensing unit located in hazardous area Division I and II are in accordance with the law in force relating to electricity, Gas Cylinder Rules, 2004 and IS:5571, IS:5572, NFPA - 52.	Yes Verified from MTC	Yes Verified from MTC
74	Verify whether the earthing at the installation, protection against ignition	Lightning arrestor has been provided.	Lightning arrestor has been provided.




Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRIC CNG Station
	arising out of static, lightning and stray currents are as per the law in force relating to electricity.		
75	Verify whether electrical power distribution system is as per paragraph 4.0 of Schedule 1	Yes Verified & complied to 4.0 of Schedule	Yes Verified & complied to 4.0 of Schedule
76	Verify whether a suitable LT power distribution panel (PDP) is designed, to feed the various types of loads safely in downstream distribution on the LT side, from a centralized location.	Yes	Yes
SAFETY AT VEHICLE FOR REFUELLING			
77	Verify whether the vehicles have approved type of CNG kit fitted in accordance with the guidelines of Government of India, Ministry of Surface Transport, and authorised in a workshop conducted for such purpose and such workshop issue a fitness certificate to the vehicle for its suitability for CNG use and such certificate is always carried by the driver of the vehicle at all times.	Yes Checked before filling the vehicle	Yes Checked before filling the vehicle
78	Verify whether driver of the vehicle carries the record showing the last examination of the vital parts of the system fitted in the vehicle for CNG use and their next due date for such examination and such record includes the test periodicity of cylinder, pressure relief devices, pressure gauges, piping and other like requirements.	Yes Checked before filling the vehicle	Yes Checked before filling the vehicle
79	Verify whether the cylinder with valves and connected facilities fitted in the vehicle are in accordance with Gas Cylinder Rules, 2004 and such cylinder are subjected to hydraulic test at least once every three years.	Yes Checked before filling the vehicle	Yes Checked before filling the vehicle
80	Verify whether every vehicle using CNG fuel system displays "CNG" labels prominently in compliance to the law in force relating to motor vehicle.	Yes Checked before filling the vehicle	Yes Checked before filling the vehicle
81	Verify whether manufacturing of Type-1 and Type 2 Nozzles are in accordance with NGV1 and ISO 14469-2 standards.	Yes. Verified from MTC	Yes. Verified from MTC

Sr. No.		Items		Document No: BOSAI/FM/008/05A	
DISPENSING UNIT:		SK Petroleum Agency		Details / Observations	
82		Verify whether dispensers are installed on a suitable foundation observing the minimum safety distances and like other precautions, as given in paragraph 4.2 and the dispensing unit to be protected against possible damage by vehicular movement and the dispenser mounting and installation is in accordance with NFPA 52 and NFPA30A or as per design standard.	Yes, Necessary safety measures are complied as per design standard	Yes, Necessary safety measures are complied as per design standard	
83		Verify whether the flexible hoses fitted on the dispenser are mechanically and electrically continuous and the design, material and construction of hoses suitable for CNG and withstand not less than four times the maximum working pressure of the system.	Yes, flexible hoses used are mechanically and electrically continuous and have bursting pressure of four times the maximum working pressure	Yes, flexible hoses used are mechanically and electrically continuous and have bursting pressure of four times the maximum working pressure	
84		Verify whether the dispensing unit is of a type approved by the Petroleum and Explosives Safety Organisation or concerned Statutory Authorities.	Yes Dispenser unit and Model is approved by PESO. Verified from Model Approval A/P/HQ/DL/104/5701(P454625) dtd 26/09/2019	Yes Dispenser unit and Model is approved by PESO. Verified from Model Approval A/P/HQ/DL/104/5701(P454625) dtd 26/09/2019	
85		Verify whether dispensing unit is suitable for use of CNG in accordance with NGV 4.1 and hoses as per NGV 4.2 and breakaway as per NGV 4.4.	Yes Verified from MTC	Yes Verified from MTC	
CNG REFUELING INTO VEHICLES:					
86		Verify whether the vehicle refueling is done by an experienced operator duly certified by the oil or gas company having control over the refueling station.	Yes Verified	Yes Verified	
87		Verify whether the operator of the CNG dispensing unit checks the following prior to refueling the gas: (a) The driver of the vehicle is carrying updated history record as specified in paragraph 14; (b) There is no smoking, naked flame or any other source of ignition within six meters of the refueling point;	Verified & found in order Verified & found in order	Verified & found in order Verified & found in order	

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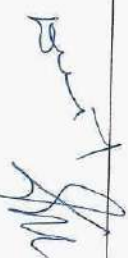
(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

Sr No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	(c) There is no leakage in the CNG fuel system reported by the driver of the vehicle;	Verified & found in order	Verified & found in order
	(d) The fuel connection is in good condition and matches the dispensers filling nozzle and the fuel connection shall be tight without any leakage;	Verified & found in order	Verified & found in order
	(e) The engine is switched off, hand brake is firmly applied, the vehicle parked in gear or in "P" with automatic transmission; and	Verified & found in order	Verified & found in order
	(f) No passenger including crew remain inside the vehicle.	Verified & found in order	Verified & found in order
88	Verify whether procedure of refueling displayed near the dispensing unit and the same is strictly followed by the operator.	Yes SOP is displayed near dispensing unit	Yes SOP is displayed near dispensing unit
89	Verify whether the cylinder on the vehicle is not charged in excess of maximum allowable working pressure at normal temperature for the cylinder.	Yes Verified	Yes Verified
90	Verify whether the operator and driver ensure that there are no apparent gas leaks either on the vehicle or on the dispensing point before the refueled vehicle is driven away from the dispensing point.	Yes Verified	Yes Verified
91	Verify whether the warning signs depicting "STOP VEHICLE", "NO SMOKING", "NO OPEN FLAME PERMITTED", "FLAMMABLE GAS", "NO MOBILE PHONE", "SWITCH OFF THE MOBILE PHONES" are displayed on suitable places at the dispensing station and compressor areas and the location of the signs are such that they are prominently visible from each point of the transfer or operation.	No All warning boards are not displayed near to the Dispensing and Compressor area.	Yes All warning boards are displayed near to the Dispensing and Compressor area
92	Verify whether the operator take all measures for ensuring smooth vehicle movement in the outlet including restriction on number of vehicles near the fill points.	Yes Verified	Yes Verified
FIRE PROTECTION:			
93	Verify whether the fire fighting facilities is carefully planned after considering the availability of municipal fire tenders and other related matters and, the portable fire extinguishers are positioned as per the	Yes. Portable fire extinguisher is placed at CNG Station as per Clause 7.1 of T4S	Yes. Portable fire extinguisher is placed at CNG Station as per Clause 7.1 of T4S

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
	table given in Clause 17.1.		
94	Verify whether any other flammable materials not specified in this standard in the CNG installation is stored in a non-flammable chamber with a minimum safety distance of 15 M from compressor station or MCC or electrical installation, as the case maybe.	Verified. Not Stored	Verified. Not Stored
95	Verify whether all approaches to machines, compressors, storage facilities and work places are free from obstacles, so that they are readily accessible in an emergency.	Yes All approaches to equipment are free from obstacle.	Yes All approaches to equipment are free from obstacle.
96	Verify whether the electrical installations are inspected by an Electrical Inspector as per IE Rules in force and compliance is made as pointed out in the inspection and the records are maintained for all periodic inspections.	IE Rules Not applicable	IE Rules Not applicable
97	Verify whether the Flameproof characteristics of electrical equipment is checked through visual checks, condition of gasket, completeness and tightness of bolts, glands and as recommended by manufacturer's test certificates.	Verified & found in order	Verified & found in order
98	Verify whether the unauthorised additions or modifications of the service station whether temporary or permanent, which are not permissible or authorized under the law or the standards in practice, are taken up.	Verified	Verified
99	Verify whether the proper illumination is ensured for all operating and non-operating areas.	Lighting has not been provided in Compressor area of SK Petroleum Agency, Radhanagar	Yes Verified
100	Verify whether all electrical maintenance at the Automotive Station is undertaken by electrical technician licensed under law in force and under the supervision of authorised person in this behalf.	Yes	Yes
101	Verify whether each installation have minimum two numbers hand held explosive meter in working conditions at all times.	Gas explosive meter is not available	Gas explosive meter is not available




Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
102	Verify whether the work permit is issued by designated person and is followed and the Annexure – vi (A) and vi (B) in Schedule 1 are followed.	Yes Verified	Yes Verified
EMERGENCY PLAN AND PROCEDURE			
103	Verify whether a comprehensive ERDMP is developed in accordance to the PNGRB (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010 and copies of the ERDMP is available to all personnel at the CNG dispensing station.	ERDMP certification expired on Aug'2018.	ERDMP certification expired on Aug'2018.
104	Verify whether the entity having control over the refueling station draw an operational emergency plan in consultation with adjoining establishments and local authorities e.g. fire brigade, police, and other District Emergency Authorities and like other Authorities. for the circumstances mentioned in clause 18.2	ERDMP certification expired on Aug'2018.	ERDMP certification expired on Aug'2018.
105	Verify whether the emergency plan specified in paragraph 18.2 is disseminated amongst all personnel involved to ensure that they understand their roles and responsibilities in the event of an emergency.	There is no record available for decimation of sharing learning from the incidents.	There is no record available for decimation of sharing learning from the incidents.
106	Verify whether the operator of the refueling station have close liaison with Fire Service, the Police, the Municipal Authorities and the person supplying gas to CNG facility.	Yes.	Yes.
107	Verify whether important telephone numbers for emergency use are displayed prominently.	Important telephone numbers for emergency are not displayed	Important telephone numbers for emergency are displayed.
108	Verify whether means of communication is always at the disposal of the In charge of the installation on 24 hours basis.	Yes	Yes
109	Verify whether the emergency plan is tested with drill at least once a year.	Level-2 mock drill has not been conducted. Mock drill to be carried out regularly as under all CNG Stations i. Level-1 mockdrill- minimum once in 3 months.	Level-2 mock drill has not been conducted. Mock drill to be carried out regularly as under all CNG Stations i. Level-1 mockdrill- minimum once in 3 months.


Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
		ii. Level-II mock drill- minimum once in 6 months. iii. Level-III mock drill- once in a year.	ii. Level-II mock drill- minimum once in 6 months. iii. Level-III mock drill- once in a year.
COMPETENCE ASSURANCE AND ASSESSMENT:			
110	Verify whether entity has developed, implemented, and maintained a written training plan to instruct all CNG dispensing station personnel with respect to the matters specified in paragraphs 19.2.1 to 19.3.	No Records available. Location to develop, implement, and maintain a written training plan to instruct all CNG dispensing station personnel with respect to the matters specified in paragraphs 19.2.1 to 19.3. and record to be maintained.	No Records available. Location to develop, implement, and maintain a written training plan to instruct all CNG dispensing station personnel with respect to the matters specified in paragraphs 19.2.1 to 19.3. and record to be maintained.
111	Verify whether proper records for the training and refresher courses are maintained at the installation.	No Records available. Location to arrange refresher courses for the CNG dispensing Station personnel and record to be maintained.	No Records available. Location to arrange refresher courses for the CNG dispensing Station personnel and record to be maintained.
AUTOMATION:			
112	Verify whether the automation (Forecourt Control) where provided, has complied with the provisions as specified paragraph 5.0 of Schedule 1.	Not Applicable.	Not Applicable.
SAFETY INSPECTIONS OR AUDIT:			
113	Verify whether the safety inspections or audit of CNG dispensing station is carried out as per the table given in Clause 21.0	Safety inspections or audit of CNG dispensing station is carried out as per the table given in Clause 21.0. However, Compliance report is not available. Compliance Report to be made.	Safety inspections or audit of CNG dispensing station is carried out as per the table given in Clause 21.0. However, Compliance report is not available. Compliance Report to be made.
OTHER:			
114	Check whether the Central CNG office is in place for attending complaints.	Yes	Yes
115	Verify that resistance of earth pit is monitoring in defined frequency and Grid resistance value is not exceeded 01 ohm as per IS 3043	Earthing grids at CNG Stations are not maintained as per IS 3043. Same to be	Earthing grids at CNG Stations are not maintained as per IS 3043. Same to be

Sr. No.	Items	Details / Observations	
		SK Petroleum Agency	TRTC CNG Station
		revamped and maintained as per standard. Location to maintain record as per IS 3043.	revamped and maintained as per standard. Location to maintain record as per IS 3043.
116	Verify whether driver of CNG vehicle has valid driving license, Hazardous good transport training certificate and vehicle has spark arrestor or exemption certificate of PESO for that type of vehicle	LCV Vehicle No.-TR01AR 1693 Driver name- Sougata Das License was valid upto 05/04/2024	LCV Vehicle No.-TR01AR 1698 Driver name- Deepak Roy License was valid upto 05/09/2024
117	Verify whether the station is in compliance with pollution control boards (hazardous waste disposal, dB levels)	N/A	N/A
118	Verify whether the record of the practice like carrying out periodic work place inspection of all critical activities by senior management team is available.	Periodic work place inspection of all critical activities by senior management team is not available	Periodic work place inspection of all critical activities by senior management team is not available
119	Whether the limits of operating parameters (pressure, temperature, flow, levels etc.) are indicated	Yes. Operating parameter are maintained in log book	Yes. Operating parameter are maintained in log book

Note-1. Separate Checklist to be filled for every inspected CNG Station.

For more details, the PNGRB (Dispensing of Automotive Fuels) Regulations, 2018 may be referred.

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(x) IMPORTANT SAFETY CHECKS

Sr. No.	Items	Details / Observations	Recommendations
1	Verify whether the Quantitative Risk assessment is carried out for the installations within the city limits for the area having steel pipe wall less than 6.4 mm.	QRA document ref. no.- TNGCI/C&P/HAZOP/QRA/13-14	
2	Verify whether the pressure control facilities are provided with Over pressure shut-off valve.	Yes provided in DRS Chandrapur, PRS at MG Bazar & Bodhjungnagar	
3	Verify whether the necessary safety precautions are taken during testing and commissioning.	Yes. Work Permit System is implemented.	
4	Verify whether the Safe Control of Operation process is in place and records are maintained.	Yes.	
5	Verify whether the calibration record of meters, gauges and other instrument are available.	All instruments and gauges installed at Compressors, Dispensers etc. are duly calibrated.	
6	Verify whether the GIS based asset management system is in place and database is updated	Partially GIS mapping done and balance under progress.	Full GIS mapping to be done.
7	Verify whether Mock Drill is being conducted, what is frequency as required twice a year (sch. I E)	Presently mock drill has not been conducted as per Schedule IE	Mock drill to be carried out regularly as under all CNG Stations i. Level-I mockdrill- minimum once in 3 months. ii. Level-II mock drill- minimum once in 6 months. Level-III mock drill- once in a year.
8	Verify whether Designated Liaison Officer is nominated by entity for Liaisoning with other authorities Name	Designated Liaison Officer has not been nominated.	Designated Liaison Officer shall be nominated.
9	Verify whether Safety Audits of internal and external activities are being done at defined interval	Internal Audit carried out once in a year and last external audit carried out on 06/11/2022. However, compliance report is not available.	Internal audits are to be carried out every quarterly and all compliance report record to be made in time bound manner and record to be kept.

Sr. No.	Items	Details / Observations	Recommendations
10	Verify whether observations/ Non conformities of safety audits are complied	Yes	

(xii) OTHER OBSERVATIONS/ RECCOMENDATION

- Total other observations and recommendations- 20 nos. as per Annexure-I
- Observations as per Flash Audit Report- 10 nos. as per Annexure-II
- Observations as per Mock Drill Report- 07 nos. as per Annexure-III

Enclosure:-

- Opening Closing meeting report
- Mock Drill Report
- Flash Audit Report
- Other Observations & Recommendations

Signature:

Team Leader:

Date:

Signature of Associate Auditor

Signature of Associate Auditor

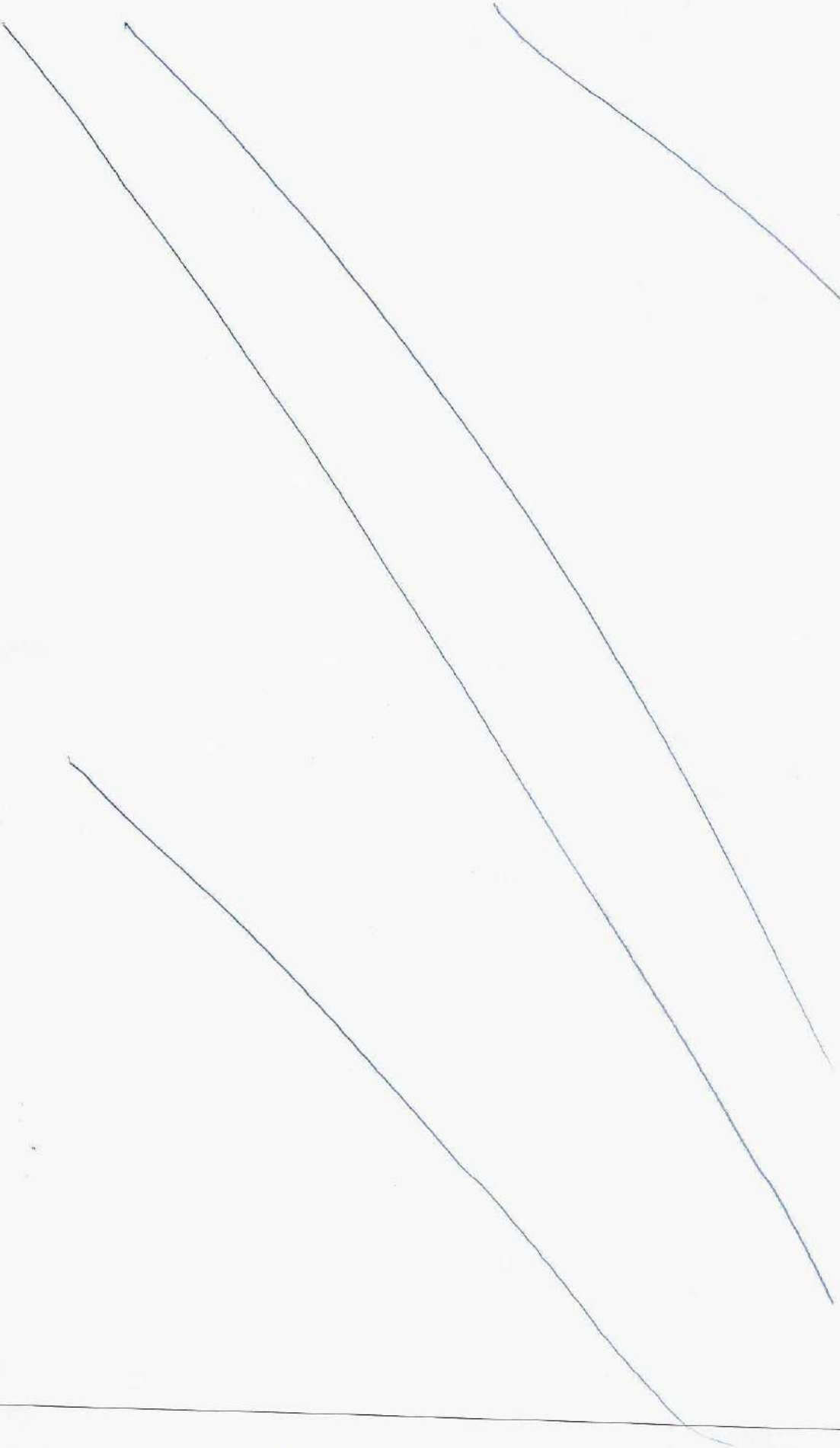
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Unit Head

Date:

(HANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.

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(CHANDAN CHAKRABORTY)
Chief Manager (Comm. and O&M)
Tripura Natural Gas Co. Ltd.,
Agartala, Tripura.