

Amendments in CGD IMS Regulations					
Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
1	2. Definitions	add	<p>(h) "Shall" indicates that the provision in which it occurs is mandatory;</p> <p>(i) "Should" Indicates that the provision in which it occurs is recommendatory but not mandatory;</p>	<p>CELL:</p> <p>(h) Nil</p> <p>(i) nil</p> <p>(k) "Subject Matter Expert (SME)" means an individual who possesses knowledge and experience in the process or discipline he represents as per ASME B 31Q;</p> <p>Other definitions / terminologies used for integrity assessment like anomaly, defect, MAOP etc. not defined above, shall be as defined in ASME 31.8S.</p>	<p>(g) "Subject Matter Expert (SME)" means an individual who possesses knowledge and experience in the process or discipline he represents as per ASME B 31Q.</p> <p>(h) "Shall" indicates that the provision in which it occurs is mandatory;</p> <p>(i) "Should" Indicates that the provision in which it occurs is recommendatory but not mandatory;</p> <p>Other definitions / terminologies used for integrity assessment like anomaly, defect, MAOP etc. not defined above, shall be as defined in ASME 31.8S.</p>
2	5. Objective.	These Regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for city gas distribution networks through -	These Regulations outline the basic features and requirements for developing and implementing an effective and efficient Integrity Management Plan (IMP) for making them reasonable and prudent operator of city gas distribution networks to manage its integrity and to continue providing safe and reliable delivery of natural gas to its customers through	<p>GAIL:</p> <p>May be modified as:</p> <p>These Regulations outline the basic features and requirements for developing and implementing an effective and efficient management plan for making them reasonable and prudent operator of city gas distribution networks to manage its integrity and to continue providing safe and reliable delivery of natural gas to its customers through</p> <p>Word integrity may be deleted to appropriate sentence meaning.</p> <p>GGL:</p> <p>These Regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for making them responsible and prudent operator of city gas distribution networks to manage its integrity and to continue providing safe and reliable delivery of natural gas to its customers through -</p>	No change.
				<p>MGL:</p> <p>These Regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for making the entities reasonable and prudent operator of city gas distribution networks to manage its integrity and to continue providing safe and reliable delivery of natural gas to its customers through -</p>	

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				<p><u>TGPL:</u></p> <p>These Regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for reasonable and prudent operation of city gas distribution networks to manage its integrity and provide safe and reliable delivery of natural gas to its customers through -</p>	
3	8. Requirement under other statutes.	It shall be necessary to comply with all statutory rules, regulations and Acts in force as applicable and requisite approvals shall be obtained from the relevant competent authorities for the CGD networks.	It shall be necessary to identify and comply list of applicable statutory rules, regulations and Acts in force as applicable and requisite approvals shall be obtained from the relevant competent authorities for the CGD networks.	<p><u>GAIL:</u></p> <p>May be modified as:</p> <p>It shall be necessary to identify and comply applicable statutory rules, regulations and Acts in force as applicable and requisite approvals shall be obtained from the relevant competent authorities for the CGD networks.</p> <p>Word 'list' of may be deleted to appropriate sentence meaning.</p> <p><u>GGL:</u></p> <p>It shall be necessary to identify and comply with all applicable statutory rules, regulations and Acts in force as applicable and requisite approvals shall be obtained from the relevant competent authorities for the CGD networks.</p>	No change.

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4	SCHEDULES-1	<p>Objective</p> <p>The objective of Integrity Management System (IMS) is to ensure the integrity of CGD networks at all times to ensure public protection of environment, maximum availability of CGD networks and also minimizing business risks associated with operations of gas network. The availability of the Integrity Management System will allow professionals and technicians in integrity tasks to ensure work plans and targets in the short, medium and long term horizon which in turn will improve their efficiency and satisfaction to attain them.</p>	<p>1.1. Objective</p> <p>The objective of Integrity Management System (IMS) is to ensure the integrity of CGD networks at all times to ensure public protection of environment, optimal availability of CGD networks and minimizing risks associated with operations of gas network. The availability of the Integrity Management System will allow professionals and technicians in integrity tasks to ensure work plans and targets in the short, medium and long term horizon which in turn will improve their efficiency and satisfaction.</p>	<p>GAIL:</p> <p>May be modified as:</p> <p>1.1. Objective</p> <p>The objective of Integrity Management System (IMS) is to ensure the integrity of CGD networks at all times to ensure protection of public and environment, optimal availability of CGD networks and also minimizing risks associated with operations of gas network. The availability of the Integrity Management System will allow professionals and technicians in integrity tasks to ensure work plans and targets in the short, medium and long term horizon which in turn will improve their efficiency and satisfaction.</p> <p>Sentence 'to ensure public protection of environment' may be replaced as 'to ensure protection of public and environment' for clarity. Further word 'Business' may be considered for removal.</p> <p>Business Risk is having wide spectrum ranging from Economical, Financial, Operation, Regulatory, Competition etc. The purpose of IMS System integrity requires commitment by all operating personnel using comprehensive, systematic, and integrated processes to safely operate and maintain pipeline systems (Reference ASME 31.8S & API 1160).</p> <p>MGL:</p> <p>The objective of Integrity Management System (IMS) is to ensure the integrity of CGD networks at all times to ensure protection of public, environment , optimal availability of CGD networks and also minimizing business risks associated with operations of gas network. The availability of the Integrity Management System will allow professionals and relevant personnel undertaking integrity tasks to ensure work plans and targets in the short, medium and long term horizon which in turn will improve their efficiency and satisfaction.</p>	<p>No change.</p>

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5	SCHEDULES-1	<p>The IMS will enable the CGD operator to select an identified system for implementation such that the IMS will be uniform for all CGD entities within the country.</p> <p>An effective Integrity Management System shall be - (d) optimizing the life of the CGD network with the inbuilt incident implementation of Integrity Management Plan (IMP) investigation and data collection including review by the entity.</p>	<p>1.2. The IMS will enable the CGD operator to select an identified system for implementation such that the IMS will be uniform for all CGD entities within the country.</p> <p>1.3. An effective Integrity Management System shall be - (d) optimizing the life of the CGD network with inbuilt incident implementation of Integrity Management Plan (IMP) investigation and data collection including periodic review by the entity.</p>	<p><u>GAIL:</u> Sub Clause D may be modified as: An effective Integrity Management System shall be (d) Enhancing the life of the CGD network with implementation of Integrity Management Plan (IMP), Incident Analysis and data collection including periodic review by the entity. Meaning of inbuilt incident implementation is not defined.</p> <p><u>GGL:</u> 1.2.The IMS will enable the CGD operator to select an identified system for implementation such that the framework of IMS will be uniform for all CGD entities within the country. 1.3.An effective Integrity Management System shall be - (a) ensuring the integrity of CGD network and associated facilities in all areas which have potential for adverse consequences;</p> <p><u>CEIL:</u> 1.3 • Ensure CGD network integrity in all areas which have potential for adverse consequences. • Promote a more rigorous and systematic management of CGD network integrity and mitigating the risk; • Enhance the general confidence of the public in the operation of CGD network. • Enhance the life of CGD network with inbuilt incident investigation and data collection including review by the entity.</p>	<p>To modify as under:</p> <p>An effective Integrity Management System should aim to:</p> <ul style="list-style-type: none"> • Ensure the quality of CGD network integrity in all areas which have potential for adverse consequences. • Promote a more rigorous and systematic management of CGD network integrity and mitigate the risk; • Enhance the general confidence of the public in operation of CGD network • Enhance the life of the CGD network with inbuilt incident implementation of Integrity Management Plan (IMP) investigation and data collection including periodic review by the entity

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6	SCHEDULE 2	<p>2.3 Such a comprehensive integrity management system essentially comprises of the following elements -</p> <p>(a) Integrity Management Plan (IMP): This encompasses collection and validation of data, assessment of spectrum of risks, risk ranking, assessment of integrity with reference to risks, risks mitigation, updation of data and reassessment of risk;</p> <p>(b) Performance evaluation of Integrity Management Plan: This is a mechanism to monitor the effectiveness of integrity management plan adopted and for further improvement;</p> <p>(c) Communication Plan: This covers a structured plan to regulate information and data exchange within and amongst the internal and external environment;</p> <p>(d) Management of Change: This is the process to incorporate the system changes (technical physical, procedural and organization changes) in to integrity management plan to update the integrity management plan;</p> <p>(e) Quality Control: This is the process to establish the requirements of quality in execution of the processes defined in the integrity management plan. These elements are further detailed in Schedule 6.</p>	Deleted		
7	SCHEDULE 3	<p>3.1 Physical description. Description of CGD Network should include specific description of the primary networks, secondary and tertiary networks with respect to design specifications, length, major installations details such as:</p> <p>3.1.1 Sub Transmission Pipeline (STPL)</p> <p>3.1.2 City Gas Station (CGS)</p> <p>3.1.3 Odorization System</p> <p>3.1.4 Steel pipeline networks</p> <p>3.1.5 Secondary PE networks</p> <p>3.1.6 Tertiary networks, PE, GI and/ or copper</p> <p>3.1.7 District Regulating Station (DRS)</p> <p>3.1.8 Isolation Valves (Steel, PE)</p> <p>3.1.9 CNG station-Mother, Online, Daughter Booster Station (DBS)</p> <p>3.1.10 Individual Pressure Regulating Station (IPRS), Common Pressure Regulating Station (CPRS), Metering Station (MRS)</p> <p>3.1.11 Control room and/or Master Control Station (if any)</p>	<p>3.1 Physical description. Description of CGD Network should include specific description of the primary networks, secondary and tertiary networks with respect to design specifications, length, major installations details such as:</p> <p>3.1.1 Sub Transmission Pipeline (STPL)</p> <p>3.1.2 City Gas Station (CGS)</p> <p>3.1.3 LNG/ LCNG dispensing stations</p> <p>3.1.4 Odorization System</p> <p>3.1.5 Steel pipeline networks</p> <p>3.1.6 Secondary PE networks</p> <p>3.1.7 Tertiary networks, PE, GI and/ or copper</p> <p>3.1.8 District Regulating Station (DRS)</p> <p>3.1.9 Isolation Valves (Steel, PE)</p> <p>3.1.10 CNG station-Mother, Online, Daughter Booster Station (DBS)</p> <p>3.1.11 Compressor at CNG stations</p>	<p>GGL:</p> <p>.....</p> <p>3.1.18 Customer base (PNG, CNG, Industrial and Commercial installations)</p> <p>CEIL:</p> <p>3.1.3 LNG/ LCNG/HCNG dispensing stations/LNG Vaporisation skid</p> <p>3.1.1 Cascade & Cascade Transport Vehicle (CTV) / LNG Tank truck</p>	<p>To modify as under:</p> <p>3.1 Physical description. Description of CGD Network should include specific description of the primary networks, secondary and tertiary networks with respect to design specifications, length, major installations details such as:</p> <p>3.1.1 Sub Transmission Pipeline (STPL)</p> <p>3.1.2 City Gas Station (CGS)</p> <p>3.1.3 LNG/ LCNG dispensing stations / LNG Vaporisation skid</p> <p>3.1.4 Odorization System</p> <p>3.1.5 Steel pipeline networks</p> <p>3.1.6 Secondary PE networks</p> <p>3.1.7 Tertiary networks, PE, GI and/ or copper</p> <p>3.1.8 District Regulating Station (DRS)</p> <p>3.1.9 Isolation Valves (Steel, PE)</p> <p>3.1.10 CNG station-Mother, Online, Daughter Booster Station (DBS)</p> <p>3.1.11 Compressor at CNG stations</p>

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		3.1.12 Instrumentation and Electrical systems 3.1.13 Supervisory Control and Data Acquisition (if any) 3.1.14 Safety Equipments 3.1.15 Customer base (PNG, CNG, Industrial and Commercial)	3.1.12 Cascade & Cascade Transport Vehicle (CTV) 3.1.13 Individual Pressure Regulating Station (IPRS), Common Pressure Regulating Station (CPRS), Metering Station (MRS) 3.1.14 Control room and/or Master Control Station (if any) 3.1.15 Instrumentation and Electrical systems 3.1.16 Supervisory Control and Data Acquisition (if any) 3.1.17 Safety Equipments 3.1.18 Customer base (PNG, CNG, Industrial and Commercial)		3.1.12 Cascade & Cascade Transport Vehicle (CTV)/ LNG Tank truck 3.1.13 Individual Pressure Regulating Station (IPRS), Common Pressure Regulating Station (CPRS), Metering Station (MRS) 3.1.14 Control room and/or Master Control Station (if any) 3.1.15 Instrumentation and Electrical systems 3.1.16 Supervisory Control and Data Acquisition (if any) 3.1.17 Safety Equipments 3.1.18 Customer base (PNG, CNG, Industrial and Commercial installations)
8	SCHEDULE 3	3.2 Other description. 3.2.1 Interfaces with other Geographical Area / pipeline / Facilities (if available); 3.2.2 Incident reporting; 3.2.3 Information on Documentation Relating to design, construction, operations, maintenance, etc.; 3.2.4 Statutory requirements.	3.2 Other description. 3.2.1 Interfaces with other Geographical Area / pipeline / Facilities (if available); 3.2.2 Information on Documentation Relating to design, construction, operations, maintenance, etc.;		
9	SCHEDULE 4	4.2 Though subsequent schedule in these regulations apply to both prescriptive and performance based type of Integrity Management System, present regulations mainly focus on prescriptive aspects in absence of adequate historical Integrity Management System data.	4.2 Though subsequent schedule in these regulations apply to both prescriptive and performance based type of Integrity Management System, present regulations mainly focus on prescriptive aspects in absence of adequate historical Integrity Management System data. However, the industry can adopt the performance based typed of Integrity Management System based on analysis of the baseline data and subsequent trends.		
10	SCHEDULE 5	SCHEDULE 5 Integrity Assessment Tools Some of the tools for Integrity assessment are provided below. The operator should use as many support systems necessary to achieve the Integrity Management Plan for CGD networks. It may be noted that the baseline data for specific measurement should be available with the operator as a ready-reckoner: Such other methods for integrity assessment may be also adopted by the CGD entity as it thinks fit, apart from the above mentioned ones.	Removed and added in Schedule 6.1.5		

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11	SCHEDULE 6	Figure-1: CGD Network Integrity Management Plan - Flow Diagram	The updated flow diagram attached as Annexure-I .	<p>GAIL:</p> <p>A para on "Review assumptions used in Risk Assessment" and "Is risk assessment due or warranted based on review of assumptions?" may be provided in document for better understanding.</p> <p>GGL:</p> <p>Rename as Schedule 5. Flow (Yes/No) from decision box not mentioned.</p>	No change.
12	SCHEDULE 6	<p>6.1.1 Initial data gathering, review and integration. Four aspects should be visualized during data collection:</p> <p>1) Data alignment Integration of disparate data sources to a common location. This helps in pinpointing risks to be attended.</p>	<p>6.1.1 Initial data gathering, review and integration. Four aspects should be visualized during data collection:</p> <p>1) Data alignment Integration of disparate data sources to a common location (GIS). This helps in pinpointing risks to be attended.</p>	<p>AGL:</p> <p>• Integration of disparate data sources to a common location (GIS) / equivalent software. Kindly add GIS /Equivalent software (Instead of GIS)</p> <p>GGL:</p> <p>Re-number as 5.1.1 Re-numbering of further schedules to be done accordingly.</p> <p>MGL:</p> <p>Only three aspects are listed; probably "Data History" may be a separate aspects which will make four aspects. 1) Data alignment - Integration of disparate data sources to a common location (GIS or other system/method considered suitable by the entity).</p>	<p>No change.</p> <p>As there is no software available equivalent to GIS. Hence, only GIS should be there.</p>

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13	SCHEDULE 6	<p>6.1.2 Identification of Threats: Gas pipeline incident data analyzed and classified by Pipeline Research Council International (PRCI) represents 22 root causes for threat to pipeline integrity. One of the causes reported by the operator is “unknown”. The remaining 21 threats have been grouped into three groups based</p> <p>.....</p> <p>.....</p> <p>(III) Time independent Threats:</p> <p>7) Third party /mechanical damage:</p> <p>i. Damage inflicted by first, second or third party (instantaneous /immediate failure)</p> <p>ii. Previously damaged pipe (delayed failure mode)</p> <p>iii. Vandalism</p> <p>iv. Rat bites</p> <p>v. Electric Arching</p>	<p>6.1.2 Identification of Threats: Gas pipeline incident data analyzed and classified by Pipeline Research Council International (PRCI) represents 22 root causes for threat to pipeline integrity. One of the causes reported by the operator is “unknown”. The remaining 25 threats have been grouped into three groups based</p> <p>.....</p> <p>.....</p> <p>(II) Time independent Threats:</p> <p>7) Third party /mechanical damage:</p> <p>i. Damage inflicted by first, second or third party (instantaneous /immediate failure)</p> <p>ii. Previously damaged pipe (delayed failure mode)</p> <p>iii. Vandalism</p> <p>iv. Rat bites</p> <p>v. Electric Arching</p> <p>vi. Joint failures (particularly in PE pipeline)</p> <p>vii. AC / DC Interference</p>	<p>GAIL:</p> <p>Proposed to be categorized in accordance with Pipeline Research Council International (PRCI) to align with ASME 31.8S & API 1160. Sub threats may be covered under appropriate Section of Threat Category /‘Unknown’ based on the Incident Analysis by an entity.</p> <p>Electric Arching, Joint failures (particularly in PE pipeline) & AC / DC Interference may not be categorized as Third Party/Mechanical Damage</p> <p>MGL:</p> <p>Mismatch in the number of threats between 22 & 25 as mentioned in the Para and as listed below the Para.</p> <p>CEIL:</p> <p>(I) Time Dependent Threats:</p> <p>1) External Corrosion</p> <p>2) Internal Corrosion</p> <p>Internal corrosion due to off spec. gas* (At source end inline with PNGRB GSR 541(E) and customer end CGD access code, Gas cylinder rules also to be considered due to process upset condition)</p>	<p>6.1.2 Identification of Threats: Gas pipeline incident data analyzed and classified by Pipeline Research Council International (PRCI) represents 22 root causes for threat to pipeline integrity. One of the causes reported by the operator is “unknown”. The remaining threats including electric arching, joint failures and AC/ DC interference have been grouped into three groups based on time dependency and further in to nine categories of related failure types according to their nature and growth characteristic as below:</p>
14	SCHEDULE 6	<p>6.1.4 Risk Management and Risk Assessment</p> <p>Consequence rating – Consequence rating may be determined similarly by</p> <p>In the same way, business loss may be characterized in terms of increasing monetary impact. The rating shall be ascending for increasing impact.</p>	<p>6.1.4 Risk Management and Risk Assessment</p> <p>Consequence rating – Consequence rating may be determined similarly by</p> <p>In the same way, business loss may be characterized in terms of increasing monetary impact. The rating shall be ascending for increasing impact. An illustrative 6*6 matrix attached as Appendix IV may be used to carry out the risk assessment. A typical risk register is attached as Appendix V.</p>	<p>GAIL:</p> <p>Word ‘Business’ may be replaced with the word ‘Operational’.</p> <p>The Matrix as proposed seems to evaluate Enterprise Risk Assessment which is a holistic approach to identify the Business Risk. The methodology adopted through Risk Matrix does not represent the Pipeline Threats, which necessitate the development of Integrity Management System.</p> <p>This methodology may not be depicted as Prescriptive and Performance based type of Integrity Management System.</p> <p>Entity may be given freedom to adopt one of the methodology as suggested for Risk Assessment (Refer ASME 31.8 S). Such example may lead to confusion.</p> <p>GGL:</p> <p>6.1.3 It is proposed to add paragraph on additional measures for “potential impact areas” like Enhancing safety awareness and Do’s and Don’ts in case of gas smell and their role in prevention of damage to the pipeline network.</p> <p>Increasing the frequency of odorant smell check, leak detection, patrolling in potential impact areas etc.</p>	<p>No change.</p>

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15	SCHEDULE 6	<p>6.1.4 Risk Management and Risk Assessment A company should carry out the following activities as part of risk assessment - (a) Carry out Cathodic Protection system and CP adequacy survey for distribution pipelines and categorize the anomalies detected on the basis of risk levels; (b) Carry out periodic analysis to determine the level of risks to assets (as an input to asset replacement activity); (c) Risk analysis and assessment for all reported asset-related incidents and findings (including incidental steel pipeline and MDPE exposures, or excavation); (d) Prepare, maintain and update a register of known risks to assets, including their risk rating.</p> <p>Prioritization usually involves sorting risk ratings in decreasing order. For initial efforts and screening purposes, risk results could be evaluated simply on a “high–medium-low” basis or as a numerical value. When segments being compared have similar risk values, the failure probability and consequences shall be considered separately. Factors including line availability (flow stoppage options) and system throughput requirements can also influence prioritization.</p>	<p>6.1.4 Risk Management and Risk Assessment Entity to Prepare, maintain and update a register of known risks to assets, including their risk rating. (a) For Stable threats (b) For Time Dependent and time Independent threats,</p> <p>Stable threats are normally threats which have fixed mitigation measures mostly are policy and procedural based and mostly global/generic in nature where as Time dependent and time independent are dynamic in nature also they are specific to a section of pipeline or to the specific equipment. A typical risk register is attached as Appendix IV.</p> <p>Prioritization involves sorting risk ratings in decreasing order. For initial efforts and screening purposes, risk results could be evaluated simply on a “high–medium-low” basis or as a numerical value. Identified high risk activities may be taken up as part of Annual improvement plan (Also called asset integrity improvement plan) for close monitoring.</p>	<p>GAIL:</p> <p>Proposed to be reviewed in accordance with comments given at Reference Sr. 14.</p>	No change.
16	SCHEDULE 6	<p>A plan shall be developed to address the most significant threats/risks as per previous section and determine appropriate integrity assessment methods to assess the integrity of the CGD Network. The following methods can be used for Integrity Assessment -</p> <p>(a) Hydro testing at test pressure as per T4S standards; (b) External Corrosion Direct Assessment(ECDA); (c) Cathodic protection system surveys etc.</p> <p>Brief description of various Integrity Assessment methods has been also provided in Schedule 5 of these regulations.</p>	<p>6.1.5.1 Integrity Assessment Tools Some of the tools for Integrity assessment are provided below. The operator may use either of the methods a or b for integrity assessment techniques and and as many monitoring tools support systems necessary from c to h to achieve the Integrity Management Plan for CGD networks, maintaining the compliance with PNGRB T4S regulations It may be noted that the baseline data for specific measurement should be available with the operator as a ready-reckoner:</p> <p>(a) Direct assessment and evaluation</p> <p>Direct assessment is an integrity assessment method utilizing a structured process through which the operator is able to integrate knowledge of the physical characteristics and operating history of a pipeline system or segment with the results of inspection, examination, and evaluation, in order to determine the integrity.</p>	<p>AGL:</p> <ul style="list-style-type: none"> • It is suggested to add the remarks mentioned below, at the end of the para 1 after (“It may be noted that the baseline data for specific measurement should be available with the operator as a ready-reckoner.....”) - If baseline data is not available, operators need to use opportunities that arise, such as the pipeline being excavated for operation, maintenance, or any other reason, to collect the required or any additional information. • May please add the points in italics after end of 6.1.5.1 A as given below. • Direct assessment and evaluation: While implementing External Corrosion Direct Assessment and when the pipe is exposed, the company is advised to conduct examinations for threats other than that for external corrosion also (like internal corrosion, stress corrosion cracking, MIC, coating condition etc.) when such threats are identified relevant inspection is recommended. • Since Direct Assessment is one of the major Integrity Assessment Tools, it is recommended to consider the frequency of the reassessment interval to be every 10 years. Reason for selecting 10 years: Typically, CFR considers 7 years for transmission pipelines. However, 10 years is considered since the distribution pipelines are not subject to the same pressures as transmission 	No change.

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				<p><u>GAIL:</u></p> <p>Name of the tool may be modified as (a) Direct assessment</p> <p>(correction as per name of the tool)</p>	
				<p><u>MGL:</u></p> <p>More options may be added over & above (a) & (b) in view of the following constraints:</p> <p>(a) Direct Assessment (ECDA) is not always feasible in the CGD networks, especially for pipes laid below paved road surfaces, as per expert advice.</p> <p>(b) Pressure testing is not feasible for the pipelines already in service as it will lead to disruption of supply.</p> <p>As a suggestion the option of "Cathodic protection system surveys" as mentioned in the previous draft, may also be considered.</p> <p>(Also, where feasible, the frequency of ECDA may be clearly mentioned as different standards prescribe different frequencies ranging from 5 to 20 years)</p>	
				<p><u>TGPL:</u></p> <p>The Hon'ble Board may consider specifying the frequency of assessment interval. During the discussion of sub-committee meetings, it was clarified as 3 years which is very less compared with international standards. The minimum recommended interval is in between 7-10 years as per ASME B31.8S after considering various factors w.r.t standard requirements.</p>	

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			<p>External Corrosion Direct Assessment (ECDA) can be used for determining integrity for the external corrosion threat on CGD network segments. The entity may use NACE SP0502 to conduct ECDA. The ECDA process integrates facilities data, and current and historical field inspections and tests, with the physical characteristics of a pipeline. Nonintrusive (typically aboveground or indirect) inspections are used to estimate the success of the corrosion protection. The ECDA process requires direct examinations and evaluations. Direct examinations and evaluations confirm the ability of the indirect inspections to locate active and past corrosion locations on the pipeline. Post-assessment is required to determine a corrosion rate to set the reinspection interval, reassess the performance metrics and their current applicability, and ensure the assumptions made in the previous steps remain correct. The External Corrosion Direct Assessment process has the following four components :</p> <p>(a) Pre-assessment (b) Inspections (c) Examinations and evaluations (d) Post-assessment</p> <p>While implementing External Corrosion Direct Assessment and when the pipe is exposed, the company is advised to conduct examinations for threats other than that for external corrosion also (like mechanical and coating damages)</p>		
			<p>(b) Pressure testing Pressure testing is appropriate for integrity assessment when addressing certain threats, at the pre-commissioning stage and subsequent testing after a pipeline has been put in service. Pressure testing shall comply with the requirements of applicable Petroleum and Natural Gas Regulatory Board regulations.</p> <p>6.1.5.2 Monitoring Tools (O&M) (c) Thickness assessment and periodic review against baseline values Periodic thickness assessment for all CGD network skids, station piping and pressure vessels and comparison to baseline values shall be done once a year. In absence of baseline data first recorded data or design data shall be taken as baseline value with a sound engineering judgment to ensure that the data are within the specified limits as per the design.</p>	<p>AGL:</p> <p>• May please consider removing the comments: “subsequent testing after a pipeline has been put in service”, as It is difficult to carryout pressure test (hydro / pneumatic) of in-service gas pipelines.</p> <p>TGPL:</p> <p>It is submitted that Pressure Testing of the CGD network is not feasible after commissioning as it will affect gas supplies to PNG and CNG consumers. Further, most of the domestic and commercial PNG consumers do not have LPG connections. Network Shutdown for Pressure testing will put domestic and commercial PNG consumers as well as Industrial and CNG consumers to inconvenience. The Hon’ble Board may consider prescribing alternate technique under integrity assessment tool for the same.</p>	No change.

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				<p><u>CEIL:</u></p> <p>d) In-line inspection Refer annexure B</p> <p>e) Other Integrity Assessment Methodology Other proven integrity assessment methods for pipeline/CGD network may exist for use in managing the integrity of CGD network. For the purpose of these regulations, it is acceptable for an operator to use these inspections as an alternative to pressure testing or direct assessment (and due to operational or other constraints)</p> <p>6.1.5.1 Monitoring Tools (O&M) & Inspection</p> <p>(b) Thickness assessment and periodic review against baseline values In this "Pipeline Segment (Segment Data: Line 1, Segment 3) of ASME B31.8S."</p> <p>Following to be added Also in above ground section connecting with instrument tubing and fitting leakage from instruments joints periodic monitoring and logging of such record to be done .</p>	
				<p>d) Indirect Monitoring and Inspection periodically may be considered for (Above ground /buried pipe section) of CGD network :</p> <p>i) Corrosion coupon (External / Internal) – Quarterly</p> <p>ii) ER Probe – Quarterly</p> <p>iii) Analysis of corrosion products (viz. black powder, ferrous debris, liquid) received during maintenance Filter, CGS, PRS/MRS Skid</p> <p>iv) For Polyethylene pipeline – Cut pipe section for metallographic analysis for conformance to original material properties to identify affect of polymerization-as perceived</p> <p>v) Periodic monitoring at odor injection points where high concentration of sulphur leading corrosion</p>	

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			<p>Whenever a pipeline is exposed, the entity shall take opportunity to examine the coating and pipe condition by conducting Visual examination, thickness testing and other NDT methods as suitable which can be recorded in GIS/SAP or as suitable. The examination may not be repeated for a similar pipeline segment (but after long time gap, if opportunity exist on same segment then examination can be repeated) . The preparation of segments may be carried out as per Table 5 Example of Integrity Management Plan for Hypothetical Pipeline Segment (Segment Data: Line 1, Segment 3) of ASME B31.8S.</p> <p>(d) Patrolling Patrolling along the Right of Use which includes valve locations and other pipeline facilities, helps to observe pipeline markers, surface conditions, construction activity performed by external agencies, encroachments, soil washouts and any other factors affecting the safety and operation of the pipeline and other specific indication marks along the pipeline</p>		
			<p>(e) Leakage Surveys Operating company must have an effective method to identify and locate leakages in the system. Any one or combination of methods described in ASME B 31.8, Appendix M can be adopted based on their effectiveness for the specific areas Leakage Surveys using gas detectors shall be done in accordance with the requirements of ASME B 31.8. Gas detectors, duly calibrated, shall be available at all times in ready use conditions for emergency surveys and use.</p> <p>(f) Cathodic protection system surveys Cathodic Protection adequacy survey shall be carried out so as to cover the entire steel network of pipelines so as to detect insufficient Cathodic Protection levels and other irregularities and anomalies in the steel pipeline. Suitable procedures shall be established by the operator to account for adequate Cathodic Protection levels to pipeline extensions and new projects.</p>	<p>MGL: Leakage Surveys using gas detectors shall be done in accordance with the requirements of ASME B 31.8. Gas detectors, duly calibrated, shall be available at all times in ready to use condition for emergency surveys and use.</p>	No change.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
			<p>(g) Annual maintenance plan covering the following activities</p> <p>PNG maintenance</p> <ul style="list-style-type: none"> • Service regulators • Domestic connections • GI Riser maintenance <p>CNG/LNG/ LCNG Maintenance</p> <ul style="list-style-type: none"> • Compressors • Pumps • Dispensers • Cascade cylinder testing (inline with gas cylinder rule) 	<p>GGL:</p> <p>(g) Annual operation & maintenance plan covering the following activities</p> <p>PNG maintenance</p> <ul style="list-style-type: none"> • Service regulators • Domestic/Commercial/Industrial connections as per defined battery limit • GI Riser maintenance <p>CNG/LNG/ LCNG Maintenance</p> <ul style="list-style-type: none"> • Compressors • Pumps • Dispensers • Cascade cylinder testing (inline with gas cylinder rule) 	<p>Sub-committee recommended as under:</p> <p>(g) Annual operation & maintenance plan covering the following activities</p> <p>PNG maintenance</p> <ul style="list-style-type: none"> • Service regulators • Domestic • MRS of Commercial/Industrial connections • GI Riser maintenance <p>CNG/LNG/ LCNG Maintenance</p> <ul style="list-style-type: none"> • Compressors • Pumps • Dispensers • Cascade leakage checking • Cascade cylinder testing (inline with gas cylinder rule)
			<p>Network Maintenance</p> <ul style="list-style-type: none"> • Functional testing of CPRS/DPRS/DRS (Periodic stream changeover) • Calibrations of critical inspection, measuring and test instruments (Entity to identify a set of their own safety critical equipment's) • Valve chamber Maintenance • Greasing and operations of valves • Operation and maintenance of Odorant system • Cathodic protection monitoring • Inspection of casings at crossings • Monitoring of Anode Junction box, cathode junction box, Transformer rectifier unit, Insulation Joint • Monitoring of HT crossing, river crossing, foreign pipeline crossing • On/Off PSP monitoring of the CP 	<p>GGL:</p> <p>Network Maintenance</p> <ul style="list-style-type: none"> • Functional testing of CPRS/DPRS/DRS / IPRS (Periodic stream changeover) • Calibrations of critical inspection, measuring and test instruments (Entity to identify a set of their own safety critical equipment's) • Valve & valve chamber Maintenance • Greasing and operations of valves • Operation and maintenance of Odorant system • Cathodic protection monitoring & maintenance • Inspection of casings at crossings • Monitoring of Anode Junction box, cathode junction box, Transformer rectifier unit, Insulation Joint • Monitoring of HT crossing, river crossing, foreign pipeline crossing • On/Off PSP monitoring of the CP 	<p>Modify as under:</p> <p>Network Maintenance</p> <ul style="list-style-type: none"> • Functional testing of CPRS/DPRS/DRS / IPRS (Periodic stream changeover) • Calibrations of critical inspection, measuring and test instruments (Entity to identify a set of their own safety critical equipment's) • Valve & valve chamber Maintenance • Greasing and operations of valves • Operation and maintenance of Odorant system • Cathodic protection monitoring & maintenance • Inspection of casings at crossings • Monitoring of Anode Junction box, cathode junction box, Transformer rectifier unit, Insulation Joint • Monitoring of HT crossing, river crossing, foreign pipeline crossing • On/Off PSP monitoring of the CP

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
			<p>(h) Incident Investigations and Root cause analysis Entity shall record high potential asset damage and failures to identify repetitive failures leading to initiation of investigation/RCA such failures can be recorded in GIS/SAP or as suitable. Performance indicators can be used as a source to identify these failures Other proven integrity assessment methods for pipeline may exist for use in managing the integrity of pipeline. For the purpose of these regulations, it is acceptable for an operator to use these inspections as an alternative to pressure testing or direct assessment.</p> <p>Such other methods for integrity assessment may be also adopted by the CGD entity as it thinks fit, apart from the above mentioned ones.</p>	<p>GAIL:</p> <p>The para “Other proven as an alternative to pressure testing or direct assessment” may be moved under 6.1.5.1 as below:</p> <p>(c) Other Integrity Assessment Methodology: Other proven integrity assessment methods for pipeline may exist for use in managing the integrity of pipeline. For the purpose of these regulations, it is acceptable for an operator to use these inspections as an alternative to pressure testing or direct assessment.</p>	<p>To be included.</p> <p>(c) Other Integrity Assessment Methodology: Other proven integrity assessment methods for pipeline may exist for use in managing the integrity of pipeline. For the purpose of these regulations, it is acceptable for an operator to use these inspections as an alternative to pressure testing or direct assessment.</p>
17	SCHEDULE 6	<p>6.1.6 Responses and Mitigation.</p> <p>This section covers the schedule of responses to the indications obtained by inspection, repair activities that can be affected to remedy or eliminate an unsafe condition, preventive actions that can be taken to reduce or eliminate a threat to the integrity of a CGD Network, and establishment of the future inspection intervals. Such responses may be immediately implemented, scheduled over a period of time or the system may be simply monitored based on the inspection outcome.</p> <p>Some of the mitigation actions are listed below - (a)..... (b)..... (c).....</p>	<p>6.1.6 Responses and Mitigation.</p> <p>This section covers the schedule of responses to the abnormalities identified during inspections and maintenance activities as defined in the schedule 6.1.5. A tracker sheet may be developed to capture the abnormalities, response plan and schedule for the closures remedy or eliminate an unsafe condition, and establishment of the future inspection intervals. Such responses may be classified into the following categories</p> <ul style="list-style-type: none"> • Immediately implemented • Scheduled over a period of time • Simply monitored based on the inspection outcome. <p>Some of the mitigation actions are listed below - (a)..... (b)..... (c).....</p> <p>A typical tracking sheet is attached as Appendix V.</p>	<p>GAIL:</p> <p>The existing Para “A Tracker following categories” may be modified as:</p> <p>A procedure should be developed to capture the abnormalities, response plan and schedule for the closures remedy or eliminate an unsafe condition, and establishment of the future inspection intervals. Such responses may be classified into the following categories.</p> <p>A procedure for Responses and Mitigation is mandatory which requires capturing the abnormalities, repose plan, actions etc. It may be in form of Tracker Sheet.</p> <p>MGL: A tracker sheet may be developed to capture the abnormalities.....</p>	No change.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
18	SCHEDULE 6	<p>6.2 Performance Plan. A list of items is provided below in developing a company integrity management and performance evaluation programme - 9) Periodic internal audits shall be used to provide an effective basis for evaluation of the integrity management program.</p>	<p>6.2 Performance Plan A list of items is provided below in developing a company integrity management and performance evaluation programme - 9) Periodic internal audits shall be conducted to evaluate the effectiveness of the integrity management plan . The findings of this audit shall be used to further upgrade the integrity management plan to enhance its effectiveness.</p>	<p>AGL:</p> <ul style="list-style-type: none"> • The Board may please recommend list of minimum KPIs. • Some of leading indicators can be – Maintenance backlog %, Network CP healthiness (voltage/current); no. of alarms/ trips; etc. • Lagging indicators – no. of LOPC incidents greater than 500 kg, Leak from corrosion, Third party damage per 100 km, no of Major fire events, coating defects etc. <p>GAIL:</p> <p>Para may be modified as:</p> <p>9) Periodic internal audits shall be conducted to evaluate the effectiveness of the integrity management plan and identify the improvement areas, if any. The compliance of internal audits recommendations should be ensured in time bound manner.</p> <p>GGL:</p> <p>Suggestive list of performance indicators may be provided.</p>	No change.
19	SCHEDULE 6	<p>6.4 Management of Change Plan. Formal management of change procedures shall be developed in order to identify and consider the impact of changes to CGD network systems and their integrity.</p>	<p>6.4 Management of Change Plan. Formal management of change procedures shall be developed in order to identify and consider the impact of changes to CGD network systems and their integrity. Change should also include the changes in specification of materials used for either network or equipment's.</p>	<p>AGL:</p> <ul style="list-style-type: none"> • Following points may be added as part of Management of Change Plan. • Management of change shall address technical, physical, procedural, and organizational changes to the system, whether permanent or temporary. • In order to ensure the integrity of a system, a documented record of changes can be developed and maintained at one location in SAP / GIS / or any other application. This information will provide a better understanding of the system and possible threats to its integrity. <p>GAIL:</p> <p>Para may be modified as:</p> <p>6.4 Management of Change Plan. Formal management of change procedures shall be developed in order to identify and consider the impact of changes to CGD network systems and their integrity. This documented procedure should include systemic management of</p> <ul style="list-style-type: none"> • Change of process / technologies, • Changes of personnel, • Change of operating procedures, 	No change.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
20	SCHEDULE 6	6.5 Quality Control Plan (3) Prepare standard operation procedures and guidelines for critical processes (e.g. operation, maintenance, projects etc);	6.5 DOCUMENTATION, RECORDS AND CONTROL (3) Prepare standard operation procedures and guidelines for critical processes including Non-routine operating processes (e.g. operation, maintenance, projects etc);	GAIL: Para may be modified as : (3) Prepare standard operating procedures and guidelines for critical processes including Non-routine, maintenance, projects etc.;	To accept GAIL comment. (3) Prepare standard operating procedures and guidelines for critical processes including Non-routine, maintenance, projects etc.;
21	SCHEDULE 7	Approval of Integrity Management System (IMS) A CGD networks Integrity Management System is a management plan in the form of a document that explains to operator's employees, customers, regulatory authorities, etc., how the operator and its assets are managed, by stating: (a)..... (e)..... The document shall be agreed at Board level of the entity, constantly and systematically reviewed and updated.....	Approval of Integrity Management System (IMS) A CGD networks Integrity Management System is a management plan in the form of a document that explains to operator's employees, customers, regulatory authorities and all those who will be directly or indirectly affected by our activities, how the operator and its assets are managed, by stating: (a)..... (e)..... The document shall be agreed at Board level of the entity, periodically reviewed and updated.....		No change.
22	SCHEDULE 7	7.1 Management Approval. • Step#3: Provisionally approved by Head of Operation team of the entity • Step#4: Conformity of Integrity Management System document with the Regulation by Third Party Inspection Agency (TPIA) and duly approved by CEO or Full time Director of the Entity 7.2 Acceptance by Petroleum and Natural Gas Regulatory Board. • Step#5: Acceptance by Petroleum and Natural Gas Regulatory Board	7.1 Management Approval. • Step#3: Provisionally approved by Head of Operation /Maintenance team of the entity • Step#4: Verification of Conformity of Integrity Management System document with the Regulation by Third Party Inspection Agency (TPIA) and duly approved by CEO or Full time Director of the Entity • Step#5: Approval of Integrity Management System document for implementation by the Board of the entity for the first time and approval of subsequent periodic review by CEO or Full-time Director of the entity	GGL: 7.1 Management Approval. • Step#3: Provisionally approved by Head of Operation /Maintenance team of the entity • Step#4: Verification of Conformity of Integrity Management System document with the Regulation by Third Party Inspection Agency (TPIA) and duly approved by Head-Operations, CEO or Full time Director of the Entity Step#5: Approval of Integrity Management System document for implementation by the Board of the entity for the first time and approval of subsequent periodic review by CEO or Full-time Director of the entity	No change.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
23	SCHEDULE 7	<p>7.3 Approval for Implementation.</p> <ul style="list-style-type: none"> Step#6: Approval of integrity management system document for implementation by the Board of the entity for the first time and approval of subsequent periodic review by CEO or Full time Director of the entity. <p>Note: A certificate regarding the approval of integrity management system document duly approved as specified at clause no. 7.1 above shall be submitted to the Petroleum and Natural Gas Regulatory Board that the CGD network integrity management system is in line with the requirements of the various regulations issued by the Petroleum and Natural Gas Regulatory Board from time to time and has been approved by the CEO or Full time Director of the company.</p>	<p>Step#6: Submission of approved IMS document along with confirmation from entity of its implementation to PNGRB.</p>		<p>Modified as:</p> <p>Approved IMS document along with confirmation from entity of its implementation shall be submitted to the Board.</p>
24	SCHEDULE 8	<p>2 Preparation of Integrity Management System document and approval by Head of Operation team of the entity.</p> <p>1 year from date of notification of the Petroleum and Natural Gas Regulatory Board (Integrity Management System for City or Local Natural Gas Distribution Networks) Regulations, 2013</p>	<p>2 Preparation of Integrity Management System document and approval by Head of Operation team of the entity.</p> <p>1 year from the date of first gas commissioning of the GA*</p>		
25	SCHEDULE 8	<p>3 Conformity of Integrity Management System document with regulation by TPIA authorized by Petroleum and Natural Gas Regulatory Board.</p> <p>3 months from the approval by Head of Operation team of the entity.</p>	<p>3 Conformity of Integrity Management System document with regulation by TPIA authorized by Petroleum and Natural Gas Regulatory Board.</p> <p>3 months from the approval by Head of Operation/ Maintenance of the entity.</p>		
26	SCHEDULE 8	<p>4 Submission of Integrity Management System document to Petroleum and Natural Gas Regulatory Board with timelines for the actions</p> <p>1 month from the conformity of Integrity Management System by TPIA</p>			
27	SCHEDULE 8	<p>5 Approval by Petroleum and Natural Gas Regulatory Board for implementation by the entity</p> <p>Within 3 months from submission of Integrity Management System document to Petroleum and Natural Gas Regulatory Board</p>	<p>4 Approval for implementation by the Board of the entity for the first time and approval of subsequent periodic review by CEO or Full-time Director of the entity</p> <p>Within 3 months from the conformity assessment by Third Party Inspection Agency (TPIA).</p>	<p>AGL:</p> <ul style="list-style-type: none"> In Point # 5: May please consider replacing "approval of subsequent periodic review by CEO or Full-time Director of the entity" by "Key management personal designated by CEO / entity Board for subsequent periodic review" <p>GGL:</p> <p>4 Approval for implementation by Board the entity for the first time and approval of subsequent periodic review by Head-Operations, CEO or Full-time Director of the entity</p> <p>Within 3 months from the conformity assessment by Third Party Inspection Agency (TPIA).</p>	<p>No change.</p>

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
28	SCHEDULE 8		5 Start of Implementation Immediately after approval at Sr. No. 4 above		
29	SCHEDULE 8		6 Submission of Integrity Management System document to Petroleum and Natural Gas Regulatory Board 1 month from the approval as mentioned at Sr. No. 4 above		
30	SCHEDULE 8	6 Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Immediately after approval at Sr. No. 4 above	7 Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Shall be submitted every year to Petroleum and Natural Gas Regulatory Board	<u>AGL:</u> • In Point #7: Submission of compliance report to PNGRB every year till all the observation are complied.	No change.
31	SCHEDULE 8	Note: Steps for implementation to be followed as described in Schedule 7			
32	SCHEDULE 9	9.2 Review of Internal and External Audit (a) Internal Audit as per the checklist for CGD Networks provided by Petroleum and Natural Gas Regulatory Board shall be carried out by the CGD entity every year; (b) External Audit (EA) by third party, approved by the Board, as per the methodology specified by the Petroleum and Natural Gas Regulatory Board once every 3 years.	9.2 Review of Internal and External Audit (a) Internal Audit shall be carried out by the CGD entity every year; (b) External Audit (EA) shall be carried out though PNGRB empaneled third party agency once in every 3 years.		
33	APPENDIX I		References 9) ASME B16.34 - Valves - Flanged, Threaded, and Welding End 10) API 6D – Specification for Pipeline valves 11) Gas Cylinders Rules, 2016 12) NACE requirements for Direct Assessment – a. SP0206-2016-SG, Internal Corrosion Direct Assessment Methodology for Pipelines Carrying Normally Dry Natural Gas (DG-ICDA) b. SP0502-2010, Pipeline External Corrosion Direct Assessment Methodology 13) OISD 179 – Safety requirements in compression, storage, handling & refueling of natural gas (CNG) for use in automotive sector 14) OISD 226 – Natural gas transmission pipelines and city gas distribution networks 15) ISO 11120 - Gas cylinders - Refillable seamless steel tubes of water capacity between 150 l and 3000 l - Design, construction and testing 16) ISO 4437 – Buried Polyethylene (PE) pipes for the supply of gaseous fuels 17) ISO 1239 – Steel tubes, tubulars and other steel fittings - specification		

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
34	APPENDIX II	List of Critical Activities In CGD Network 6 Integrity inspection system for Galvanized Iron and copper piping forming part of tertiary network and the Last Mile Connectivity 6 months	List of Critical Activities In CGD Network Integrity inspection system for Galvanized Iron and copper piping forming part of tertiary network and the Last Mile Connectivity for domestic customers 6 months		
35	APPENDIX II		7 Integrity inspection system for IP line Connectivity for Commercial and Industrial customers to identify unsafe installation and communicate customers for taking necessary action to make the installation good for carrying gas Once in a year	AGL: • In Point #7: May please consider the Inspection interval of 3 year as part of operator responsibility (instead of every year) and with some aging criteria of the installation. • The activities like leakage surveys, patrolling surveys, direct assessment, time period for application of cathodic protection from the date of pipe installation can be included in annexure II. GGL: 7 Integrity inspection system for IP line Connectivity for Commercial and Industrial customers to identify unsafe installation and communicate customers for taking necessary action to make the installation good for carrying gas MGL: As previously suggested & discussed during the sub-committee meeting held on 14th July 2020: Time period for the Implementation of the activity may be mentioned as 12 months as in line with the title of the column of the table i.e. Time period for implementation	MGL comment accepted. 7 Integrity inspection system for IP line Connectivity for Commercial and Industrial customers to identify unsafe installation and communicate customers for taking necessary action to make the installation good for carrying gas Once in 12 months
36	APPENDIX IV		An illustrative 6*6 matrix is attached as Annexure-II.		placed at Appendix-III.
37	APPENDIX V		A typical risk register is attached as Annexure-III.	AGL: • May please add a separate column of risk level “high–medium-low” basis or as a numerical value.	placed at Appendix-IV.
38	APPENDIX VI		A typical tracking sheet is attached as Annexure-IV.		placed at Appendix-V.

Other Comments

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
39	2. Definition	(d) "risk" means the risk as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010;		<p>GAIL:</p> <p>May be modified as:</p> <p>(d) "risk" means the measure of potential loss in terms of both the incident probability (likelihood) of occurrence and the magnitude of the consequences;</p> <p>In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/(1)/2019 dated 14.07.2020.</p> <p>GGL:</p> <p>Definitions for "risk", "risk assessment" and "risk management" to be aligned in line with the definitions in proposed amendment of IMS NGPL</p>	<p>modified as:</p> <p>(d) "risk" means the measure of potential loss in terms of both the incident probability (likelihood) of occurrence and the magnitude of the consequences;</p>
40	2. Definition	(e) "risk analysis" means the risk analysis as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010;		<p>GAIL:</p> <p>Proposed to be deleted</p> <p>In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/(1)/2019 dated 14.07.2020.</p>	<p>Deleted.</p> <p>(e) "risk analysis" means the risk analysis as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010;</p>
41	2. Definition	(f) "risk assessment" means the risk assessment as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010;		<p>GAIL:</p> <p>May be modified as:</p> <p>(f) "risk assessment" means a systematic process in which potential hazards from facility operation are identified, and the likelihood and consequences of potential adverse events are estimated. Risk assessments can have varying scopes, and can be performed at varying levels of detail depending on the operator's objectives;</p> <p>In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.</p>	<p>Modified as:</p> <p>(f) "risk assessment" means a systematic process in which potential hazards from facility operation are identified, and the likelihood and consequences of potential adverse events are estimated. Risk assessments can have varying scopes, and can be performed at varying levels of detail depending on the operator's objectives;</p>

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
42	2. Definition	(g) "risk management" means the risk management as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010;		GAIL: May be modified as: (g) "risk management" means an overall program consisting of identifying potential threats to an area or equipment; assessing the risk associated with those threats in terms of incident likelihood and consequences; mitigating risk by reducing the likelihood, the consequences, or both; and measuring the risk reduction results achieved; In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.	Modified as: (g) "risk management" means an overall program consisting of identifying potential threats to an area or equipment; assessing the risk associated with those threats in terms of incident likelihood and consequences; mitigating risk by reducing the likelihood, the consequences, or both; and measuring the risk reduction results achieved;
43	2. Definition			GAIL: A new definition is proposed to be added: (h) "sub transmission pipeline" means a high pressure pipeline connecting the main natural gas pipeline to the city gate station but is owned by the CGD entity;	No change.
44	4. Scope.	These regulations shall cover all existing and new city gas distribution networks including sub-transmission pipelines, city gas station,		TGPL: The term "city gas station" may be replaced with "city gate station" for the sake of clarity.	corrected as under: These regulations shall cover all existing and new city gas distribution networks including sub-transmission pipelines, city gate station,
45	6. Integrity Management System	Entity operating and maintaining CGD networks shall have the qualified manpower as indicated in Appendix III.		GAIL: May be modified as: Entity operating and maintaining CGD network shall have a written plan / philosophy of deploying qualified and trained manpower at the installations based on activities required for compliance to this regulation. In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.	Covered in Schedule-10.
46	SCHEDULES -1	1.3. An effective Integrity Management System shall be - (c) Increasing the general confidence of the public in operation of CGD network;		TGPL: (c) Instilling the confidence of the general public in operation of CGD network;	Modified as: (c) enhance the general confidence of the public in operation of CGD network;
47	2.1 (Schedule 2)	It is, therefore, essential that a system is introduced which ensures maximum availability of the network with minimum disruption and damages.		MGL: It is, therefore, essential that a system is introduced which ensures optimal availability of the network with minimum disruption and damages.	Modified as: It is, therefore, essential that a system is introduced which ensures optimal availability of the network with minimum disruption and damages.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
48	Schedule 4	4.3 "Based on the development of CGD industry in India till date, the preparation of Prescriptive type Integrity Management System has been considered for implementation to all CGD networks in India." ... "a review mechanism may be considered by the Board for recommending a Performance Based Integrity Management System for CGD Networks."		GAIL: Existing sentences within quotations may be modified as: "However, Entity may adopt more rigorous IMP within a prescriptive IMP based on their in-house assessment." .. "the Board may consider allowing a performance based IMP during subsequent revisions of IMS document for a network." In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.	Modified as: 4.3 A prescriptive type of Integrity Management System mandates the implementation of an established process for addressing the risks, their consequences and proven methods for mitigation. It also mandates the in-house development of Integrity Management Plan and Management of Change process pertaining to technical aspects. However, Entity may adopt more rigorous IMP within a prescriptive IMP based on their in-house assessment.
49		It also mandates the in-house development of Integrity Management Plan, Management of Change pertaining to technical aspects.		MGL: It also mandates the in-house development of Integrity Management Plan and Management of Change pertaining to technical aspects.	Modified as: It also mandates the in-house development of Integrity Management Plan and Management of Change pertaining to technical aspects.
50	Schedule 6	Besides the above, certain other threats may be applicable based upon the land pattern: i. Creek area effects ii. Muddy land effects iii. River bed movements		GAIL: can be clubbed with clause-9 as under: 9) Weather related and outside force i. Weather related ii. Lightening iii. Hydro technical: water-related threats including, but not limited to, liquefactions, flooding, channeling, scouring, erosions, floatation, breaches, surges, inundations, tsunamis, ice jams, frost heaves, and avalanches, creek area effects, river meandering, river bed / bank movement iv. Geotechnical: earth movement threats including, but not limited to, subsidence, extreme surface loads, seismicity, earthquakes, fault movements, mining, and mud and landslides, muddy land effects v. High wind In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.	Modified as: 9) Weather related and outside force i. Weather related ii. Lightening iii. Hydro technical: water-related threats including, but not limited to, liquefactions, flooding, channeling, scouring, erosions, floatation, breaches, surges, inundations, tsunamis, ice jams, frost heaves, and avalanches, creek area effects, river meandering, river bed / bank movement iv. Geotechnical: earth movement threats including, but not limited to, subsidence, extreme surface loads, seismicity, earthquakes, fault movements, mining, and mud and landslides, muddy land effects v. High wind

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
51	Schedule 6	<p>6.1.4 Probability rating – Probability rating may be determined by assigning appropriate scalable values for the probability of occurrence, based on industry experience and company’s past experience.</p> <p>For example, a probability rating of scale 1 to 4, 1 to 5 or 1 to 6 may be applied, and probabilities may be characterized as weekly, monthly, half-yearly, yearly, etc. The rating shall be ascending for increasing probability of occurrence.</p>		<p>GAIL: The existing para reproduced below is proposed to be deleted: ‘For example, a probability rating of scale 1 to 4, 1 to 5 or 1 to 6 may be applied, and probabilities may be characterized as weekly, monthly, half-yearly, yearly, etc. The rating shall be ascending for increasing probability of occurrence’</p> <p>Entity may be given freedom to adopt one of the methodologies as suggested for Risk Assessment (Refer ASME 31.8 S). Such example may lead to confusion.</p>	No change.
52	Schedule 9	Review of The Integrity Management System		<p>GAIL: Existing Schedule 9 may be adopted in line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.</p>	<p>Modified as:</p> <p>9.1 Periodicity of review of Integrity Management System. Entities may review their existing Integrity Management System from time to time but not exceeding an interval of every 3 years and update the same if required in accordance with the provisions of Schedule 7 based on the performance of Integrity Management Program and /or changes if any in the statutory / regulatory requirements. However, changes of dynamic nature such as addition, deletion, modification of assets, key personnel, interfaces with other utilities etc. may not require revision in the IMS and the same can be kept updated periodically by the concern entity.</p>

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
53					<p>9.2 Integrity Management System Audit</p> <p>Audit of the CGD network Integrity Management System shall be performed on a regular basis. The purpose of the audits is to ensure compliance with the policies and procedures as outlined in these regulations. Recommendations and corrective actions taken shall be documented and incorporated into the CGD network Integrity Management System.</p> <p>The following essential items will be focused for any internal and external audit of the entire Integrity Management System:</p> <ul style="list-style-type: none"> • IMS document is developed, approved and is valid. • Activities are performed in accordance with the Integrity Management System. • Verify if annual performance measures have been evaluated • All action items or non-conformances are closed in a timely manner. • The risk criteria used have been reviewed and documented. • Prevention, mitigation and repair criteria have been established, met and documented.
54					<p>9.3 Integrity Management System Audit</p> <p>There shall be a system for ensuring compliance to the provisions of these regulations by conducting following audits during operation phase:</p> <p>(a) Internal Audit - Every year.</p> <p>(b) External Audit – Every 3 years in-line with the approved IMS by third party empaneled by the Board.</p>
55	Schedule 10	Adequacy of Manpower positioned at different stage of project		<p>GAIL: Existing Schedule 10 may be adopted In line with the amendments proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020.</p>	<p>Modified as:</p> <p>Entity shall have a written plan / philosophy of manning the installations based on activities required for compliance to this regulation and shall address the requirement of manpower for different stages of project, namely: Design, construction, commissioning, operation and maintenance in the above plan.</p>
56	Appendix			<p>GAIL: An Appendix for “SUGGESTIVE CHART FOR SELECTION OF INTEGRITY ASSESSMENT / MANAGEMENT METHODS* WITH RESPECT TO SPECIFIC THREAT” (only those applicable for CGD network) may be added similar to the one proposed by PNGRB in IMS for NG Pipelines, Regulations 2012, vide Public Notice no.: PNGRB/Tech/14-IMSNGPL/ (1)/2019 dated 14.07.2020</p>	No change.

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
57	APPENDIX III	Minimum Qualifications and experience for personnel involved in various CGD activities		<p><u>GGL:</u></p> <p>2. b) i) Jointer/Technician – 10th standard with Internal Training (Training Modules) and practical assessment or at least 1 year relevant experience</p> <p>3. vi. Maintenance supervisor - Diploma in engineering (mechanical/ electrical)/ ITI Technician with minimum 3 years of relevant experience</p> <p>4. ii. Valve Maintenance – 1 fitter (ITI mechanical); 1 supervisor (internal trained having 1 year relevant experience); 2 helpers (internal trained)</p>	Deleted.
Other Amendments					
58	3. Applicability.	These regulations shall apply to all the entities laying, building, operating or expanding city or local natural gas distribution networks			These regulations shall apply to all the entities engaged in laying, building, operating or expanding city or local natural gas distribution networks.
59	6. Integrity Management System	Entity operating and maintaining CGD networks shall have the qualified manpower as indicated in Appendix III.			Deleted.
60	7. Default and consequences.	<p>(1) There shall be a system for ensuring compliance to the provisions of these regulations through implementation schedule as described in these regulations at Schedule 7 and Schedule 8 in conjunction to Appendix II.</p> <p>(2) In case of any deviation or shortfall in achieving the implementation of integrity management system as specified in these regulations, the entities shall be liable to face the following consequences, namely:-</p> <p>(i) the entity is required to complete each activity within the specified time limit and if there is any deficiency in achieving in one or more of the activities, the entity shall submit a mitigation plan within the time limit for acceptance of the Board and make good all short comings within the time agreed by the Board and if the entity fails to complete activities within the specified time limit by the Board, relevant penal provisions of the Act shall apply;</p>			<p>(1) There shall be a system for ensuring compliance to the provisions of these regulations through implementation schedule as described in these regulations at Schedule 7, Schedule 8 and Schedule 9 in conjunction to Appendix II.</p> <p>(2) In case of any deviation or shortfall in achieving the implementation schedule and compliance of integrity management system as specified in these regulations, the entities shall be liable to face the following consequences, namely:-</p> <p>(i) the entity is required to complete each activity within the specified time limit and if there is any deficiency in achieving in one or more of the activities, the entity shall submit a mitigation plan with time schedule and make good all short comings within the time schedule if the entity fails to complete activities within the specified time limit by the Board, relevant penal provisions of the Act shall apply;</p>
61	SCHEDULE 2 2.1	<p>.....</p> <p>It is, therefore, essential that a system is introduced which ensures maximum availability of the network with minimum disruption and damages.</p>			<p>.....</p> <p>It is, therefore, essential that a system is introduced which ensures optimal availability of the network with minimum disruption and damages.</p>

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
62	SCHEDULE 4	<p>4.3 A prescriptive type of Integrity Management System mandates the implementation of an established process for addressing the risks, their consequences and proven methods for mitigation. It also mandates the in-house development of Integrity Management Plan, Management of Change pertaining to technical aspects. Based on the development of CGD industry in India till date, the preparation of Prescriptive type Integrity Management System has been considered for implementation to all CGD networks in India. Further, as the CGD industry matures and gathers sufficient records or data as per the requirements prescribed in Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008, a review mechanism may be considered by the Board for recommending a Performance Based Integrity Management System for CGD Networks.</p>			<p>4.3 A prescriptive type of Integrity Management System mandates the implementation of an established process for addressing the risks, their consequences and proven methods for mitigation. It also mandates the in-house development of Integrity Management Plan and Management of Change process pertaining to technical aspects. However, Entity may adopt more rigorous IMP within a prescriptive IMP based on their in-house assessment.</p>
63	6.1.3 Consequence and Impact Analysis:	<p>Consequence and Impact Analysis: Once the hazardous events are identified, the next step in the risk analysis is to analyse their consequences, i.e., estimate the magnitude of damage to the public, property and environment of all the identified threats. These consequences may include leak, fire, explosion, gas cloud etc. Consequence estimation can be accomplished by using mathematical models e.g. consequence modelling.</p> <p>Identification of High Consequence Area (HCA) – Locations along the CGD Network system meeting the criteria for High-Consequence Areas are identified. Generally, these are high-population-density areas, difficult-to-evacuate facilities (such as hospitals or schools), and locations where people congregate (such as places and worship, office buildings, or fields). Clause no. 3.2 of ASME B 31.8 S may be referred for detailed information regarding potential impact area.</p>			<p>Consequence and Impact Analysis: Once the hazardous events are identified, the next step in the risk analysis is to analyse their consequences, i.e., estimate the magnitude of damage to the public, property and environment of all the identified threats. These consequences may include leak, fire, explosion, gas cloud etc.</p> <p>Potential Impact Area – Generally, these are high-population-density areas, difficult-to-evacuate facilities (such as hospitals or schools), and locations where people congregate (such as places and worship, office buildings, or fields).</p>

Sr. No.	Clause No.	Existing clause	Proposed clause	Comments Received	Sub-committee views
64	6.1.4 Risk Management and Risk Assessment	For example, a consequence rating of scale 1 to 4, 1 to 5 or 1 to 6 may be applied to each category (impact on people, environment, financial and business loss value and legal consequences), and from amongst these, the highest rating may be taken as the consequence rating under consideration. As an example, impact on people may be characterized as minor or major injury, single fatality, multiple fatalities etc. In the same way, business loss may be characterized in terms of increasing monetary impact. The rating shall be ascending for increasing impact.			For example, a consequence rating of scale 1 to 4, 1 to 5 or 1 to 6 may be applied to each category (impact on people, environment, financial and business loss value and legal consequences), and from amongst these, the highest rating may be taken as the consequence rating under consideration. As an example, impact on people may be characterized as minor or major injury, single fatality, multiple fatalities etc. In the same way, business loss may be characterized in terms of increasing monetary impact. The rating shall be ascending for increasing impact. An illustrative 6*6 matrix attached as Appendix III may be used to carry out the risk assessment. A typical risk register is attached as Appendix IV.
65	6.5 DOCUMENTATION, RECORDS AND CONTROL	(a) ensure that the Baseline Plan is being updated and followed and that the baseline inspections are carried out; (b) verify qualifications of Operation and Maintenance personnel and contractors based on education qualification (Appendix III), formal training received through in-house or external program, demonstrated practical skills, and experience records in the relevant areas. For guidance in this regard reference may be made to ASME B 31Q.			(a) Ensure that the Baseline Plan is being updated and followed and that the baseline inspections are carried out; (b) Verify qualifications of Operation and Maintenance personnel and contractors based on education qualification, formal training received through in-house or external program, demonstrated practical skills, and experience records in the relevant areas. For guidance in this regard reference may be made to ASME B 31Q.
66	SCHEDULE 8	1. Compliance with Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008 YES/NO confirmation within 1 month from date of notification of the Petroleum and Natural Gas Regulatory Board (Integrity Management System for City or Local Natural Gas Distribution Networks) Regulations, 2013			1. Compliance with Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008 Confirmation to be submitted to PNGRB along with submission of approved IMS document.
67	SCHEDULE 8	7. Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Immediately after approval at Sr. No. 4 above			7. Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Shall be submitted every year to Petroleum and Natural Gas Regulatory Board Note:... * - For new geographical areas, the above shall be complied within one year of date of commissioning.