

Amendments in NGPL IMS Regulations					
Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
1	2. Definitions	1.(e) "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;	1.(e) "risk" means the measure of potential loss in terms of both the incident probability (likelihood) of occurrence and the magnitude of the consequences.		
2	2. Definitions	1 (f) "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;			
3	2. Definitions	1.(g) "risk assessment" means the risk assessment analysis as defined under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP) Regulations, 2010;	1.(g) "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		
4	2. Definitions	1.(h) "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;	1.(h) "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.		
5	2. Definitions		"transmission pipeline " means one or more segments of pipeline usually interconnected to form a network that transports gas from a gathering system, the outlet of a gas processing plant or a storage field to a high, medium or low-pressure pipeline system, a large-volume customer or another storage field; "sub transmission pipeline" means a high pressure pipeline connecting the main natural gas pipeline to the city gate station	IOCL: in addition to gas petroleum and petroleum product shall be mentioned GGL: "transmission pipeline " means one or more segments of pipeline usually interconnected to form a network that transports natural gas from a gathering system, the outlet of a gas processing plant, LNG regasification plant or a storage field to a high, medium or low-pressure pipeline system, a large-volume customer or another storage field; "sub transmission pipeline" means a high pressure pipeline connecting the main natural gas pipeline to the city gate station	The IMS is for NG, hence no change is required.
6	2. Definitions	1.(k) "right of use (ROU) or right of way (ROW)" means the area or portion of land within which the pipeline operator or owner has acquired the right through the relevant provisions of law or in accordance with the agreement with the land owner or agency having jurisdiction over the land to lay and operate the natural gas pipelines;	1.(k) "right of user (ROU) " means the area or portion of land within which the pipeline operator or owner has acquired the right through the relevant provisions of law or in accordance with the agreement with the land owner or agency having jurisdiction over the land to lay and operate the natural gas pipelines;	GGL: 1.(k) "right of user (ROU) " means the area or portion of land within which the pipeline operator or owner has acquired the right through the relevant provisions of law or in accordance with the agreement with the land owner or agency having jurisdiction over the land to lay and operate the natural gas pipelines;	No change.

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7	2. Definitions		<p>(o) "Shall" indicates that the provision in which it occurs is mandatory;</p> <p>(p) "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>		
8	4. Scope.	These regulations shall cover all the existing and new natural gas transmission pipelines, spur lines, sub-transmission pipelines (STPL) and dedicated pipelines. This includes the associated facilities required for transportation of natural gas through pipelines that is terminals, intermediate pigging facilities, compressor stations, sectionalizing valves etc.	These regulations shall cover all the existing and new natural gas transmission pipelines, spur lines, sub-transmission pipelines (STPL) and dedicated pipelines. This includes the associated facilities required for transportation of natural gas through pipelines such as terminals, intermediate pigging facilities, compressor stations, sectionalizing valves etc.	<p>GGL: These regulations shall cover all the existing and new natural gas transmission pipelines, spur lines, and dedicated pipelines. This includes the associated facilities required for transportation of natural gas through pipelines such as terminals, intermediate pigging facilities, compressor stations, sectionalizing valves etc. Comments - Sub-transmission pipelines are already covered under scope of IMS CGD. It is proposed to remove the same from IMS NGPL scope to avoid duplication.</p>	No change.
9	7.Default and consequences	2 (i) the entity shall be 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. If the entity fails to complete activities within the specified time limit by the Board, relevant penal provisions of the Act shall apply;	2 (i) the entity shall be 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 for acceptance of the Board and make good all short comings within the time agreed by the Board. If the entity fails to complete activities within the specified time limit by the Board, relevant penal provisions of the Act shall apply;	<p>IOCL: .time limits specified by the board</p> <p>GGL: 2 (i) the entity shall be 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 for acceptance of the Board and make good all short comings within the time agreed with the Board. If the entity fails to complete activities within the specified time limit agreed by the Board, relevant penal provisions of the Act shall apply;</p>	<p>Changes may be proposed. Mentioned in main document.</p> <p>2 (i) the entity shall be 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 schedule, relevant penal provisions of the Act shall apply;</p>

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10	9. Miscellaneous	<p>(1) Through these regulations the uniform application of Integrity Management System is to be ensured for all natural gas pipelines.</p> <p>(2) Entity operating and maintaining natural gas pipelines shall have the qualified manpower as per three tier structure as indicated in Appendix-IV.</p> <p>(3) These regulations either on suo-motu basis or on the recommendation of concerned sub-committee of natural gas pipelines shall be reviewed by the Board.</p>	<p>(1) Through these regulations the uniform application of Integrity Management System is to be ensured for all natural gas pipelines.</p> <p>(2) Entity operating and maintaining natural gas pipelines shall have a written plan / philosophy of deploying qualified and trained manpower at the installations based on activities required for compliance to this regulation.</p> <p>(3) These regulations either on suo-motu basis or on the recommendation of concerned sub-committee of natural gas pipelines shall be reviewed by the Board from time to time.</p>	<p>IOCL:</p> <p>natural gas / petroleum / petroleum product</p> <p>GGL:</p> <p>(1) Through these regulations the uniform application of Integrity Management System is to be ensured for all natural gas pipelines.</p> <p>(2) Entity operating and maintaining natural gas pipelines shall have a written plan / philosophy of deploying qualified and trained manpower at the installations based on activities performed for compliance to this regulation.</p> <p>(3) These regulations either on suo-motu basis or on the recommendation of concerned sub-committee of natural gas pipelines shall be reviewed by the Board from time to time.</p>	<p>The IMS is for NG, hence no change is required.</p>
11	SCHEDULE-1	<p>OBJECTIVE</p> <p>The objective of Pipeline Integrity Management System is to maintain integrity of natural gas pipelines at all times to ensure public safety, protect environment and ensure availability of pipeline to transport gas without interruptions and also minimize business risks associated with accidents and losses.</p> <p>.....</p> <p>.....</p>	<p>OBJECTIVE</p> <p>The objective of Pipeline Integrity Management System is to maintain integrity of natural gas pipelines at all times to ensure public safety, protect environment and ensure availability of pipeline to transport gas without interruptions and minimize risk associated with accidents and losses.</p> <p>.....</p> <p>..</p> <p>.....</p>	<p>GGL:</p> <p>The objective of Pipeline Integrity Management System is to maintain integrity of natural gas pipelines at all times to ensure public safety, protect environment and ensure availability of pipeline to transport gas without interruptions and to minimize risk associated with accidents and losses</p> <p>The Integrity Management System will enable the natural gas pipeline operator / transporter to select an identified system for implementation such that the framework of Integrity Management System will be uniform for all natural gas pipeline entities within the country.</p> <p>.....</p> <p>.....</p> <p>•Enhance the life of the natural gas pipeline with the inbuilt incident / failure investigation and data collection including review by the entity.</p>	<p>Clause finalized as under:</p> <p>The objective of Pipeline Integrity Management System is to maintain integrity of natural gas pipelines at all times to ensure public safety, protect environment and ensure availability of pipeline to transport gas without interruptions and minimize risk associated with accidents and losses.</p> <p>The Integrity Management System will enable the natural gas pipeline operator or transporter to select an identified system for implementation such that the framework of Integrity Management System will be uniform for all natural gas pipeline entities within the country.</p>

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12	SCHEDULE-1	<p>An effective Integrity Management System shall be:</p> <ul style="list-style-type: none"> Ensuring the quality of natural gas pipeline integrity in all areas which have potential for adverse consequences. Promoting a more rigorous and systematic management of natural gas pipeline integrity and mitigating the risk; Increasing the general confidence of the public in the operation of natural gas pipeline. Optimizing the life of the natural gas pipeline with the inbuilt incident investigation and data collection including review by the entity. 	<p>An effective Integrity Management System shall aim to :</p> <ul style="list-style-type: none"> Ensure natural gas pipeline integrity in all areas which have potential for adverse consequences. Promote a more rigorous and systematic management of natural gas pipeline integrity and mitigating the risk; Enhance the general confidence of the public in the operation of natural gas pipeline. Enhance the life of the natural gas pipeline with the inbuilt incident investigation and data collection including review by the entity. 	<p>IOCL: word "Enhance" needs to be discussed</p>	<p>Changes may be proposed. Mentioned in main document.</p> <p>An effective Integrity Management System shall aim to :</p> <ul style="list-style-type: none"> Ensure natural gas pipeline integrity in all areas which have potential for adverse consequences. Promote a more rigorous and systematic management of natural gas pipeline integrity and mitigating the risk; Enhance the general confidence of the public in the operation of natural gas pipeline. Enhance the life of the natural gas pipeline with the inbuilt incident investigation and data collection including review by the entity.
13	SCHEDULE-2	<p>2.3</p> <p>.....</p> <ul style="list-style-type: none"> Quality Control: <p>.....</p>	<p>2.3</p> <p>.....</p> <ul style="list-style-type: none"> Quality Plan : <p>.....</p>	<p>IOCL: an over all Apex Integrity Management manual describing the Integrity Management System (IMS) of an entity may be necessary. The 5 points given here shall flow out of IMS Manual , this matter can be further discussed</p> <p>Quality Plan needs to be discussed</p>	<p>No change is required (entity may develop their own document).</p>
14	SCHEDULE-3	<p>3.1 PHYSICAL DESCRIPTION: Description of natural gas pipeline should include specific description of the pipelines, compressors, valves with respect to design specifications, length, major installations details such as:</p> <p>3.1.1 Trunk Pipeline</p> <p>3.1.2 Spur-pipelines</p> <p>3.1.3 Sectionalizing Valve Stations</p> <p>3.1.4 Intermediate Pigging Stations</p> <p>3.1.5 Tap-Off Stations</p> <p>3.1.6 Compressor Stations</p> <p>3.1.7 Control Stations</p> <p>3.1.8 Electrical System depending upon Captive power generation or Grid-power.</p> <p>3.1.9 Cathodic Protection System</p> <p>3.1.10 SCADA</p> <p>3.1.11 Safety Equipments</p> <p>3.1.12 Delivery Stations</p>	<p>3.1 PHYSICAL DESCRIPTION: Description of natural gas pipeline should include specific description of the pipelines, compressor stations, valve stations and major installations details such as:</p> <p>3.1.1 Transmission Pipeline</p> <p>3.1.2 Spur-pipelines</p> <p>3.1.3 Sectionalizing Valve Stations</p> <p>3.1.4 Pigging Stations</p> <p>3.1.5 Tap-Off Stations</p> <p>3.1.6 Compressor Stations</p> <p>3.1.7 Control Rooms</p> <p>3.1.8 Electrical System</p> <p>3.1.9 Cathodic Protection System</p> <p>3.1.10 Telecome or SCADA or Data Transfer System</p> <p>3.1.11 Safety Equipments</p> <p>3.1.12 Dispatch Terminal or Receiving Terminal</p>	<p>CEIL:</p> <p>3.1.13 LNG Tank trucks</p> <p>GGL:</p> <p>3.1 PHYSICAL DESCRIPTION: Description of natural gas pipeline should include specific description of the pipelines, compressor stations, valve stations and major installations details such as:</p> <p>3.1.1 Transmission Pipeline</p> <p>3.1.2 Spur-pipelines</p> <p>3.1.3 Sectionalizing Valve Stations</p> <p>3.1.4 Pigging Stations</p> <p>3.1.5 Tap-Off Stations</p> <p>3.1.6 Compressor Stations</p> <p>3.1.7 Control Rooms</p> <p>3.1.8 Electrical System</p> <p>3.1.9 Cathodic Protection System</p> <p>3.1.10 Telecome / SCADA / Data Transfer System</p> <p>3.1.11 Safety Equipments</p> <p>3.1.12 Dispatch Terminal / Receiving Terminal</p>	<p>No change is required (List is only indicative, entity may include items based on requirement / applicability)</p>

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15	SCHEDULE-3	<p>3.2 OTHER DESCRIPTION:</p> <p>3.2.1 ROU Details-ROU width and constraints, if any</p> <p>3.2.2 Interfaces with other operators' facilities or pipelines, if any;</p> <p>3.2.3 Historical background of the natural gas pipeline and major modifications and additions carried out in the system, if any;</p> <p>3.2.4 List of the consumers served by the pipelines;</p> <p>3.2.5 Inspection updates;</p> <p>3.2.6 Incident reporting;</p> <p>3.2.7 Statement of compliance with Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Natural Gas Pipeline) Regulations, 2009;</p> <p>3.2.8 Statutory compliances.</p>	<p>3.2 OTHER DESCRIPTION:</p> <p>3.2.1 ROU Details-ROU width and constraints, if any</p> <p>3.2.2 Interfaces with other operators' facilities or pipelines, if any;</p> <p>3.2.3 Historical background of the natural gas pipeline and major modifications and additions carried out in the system, if any;</p> <p>3.2.4 List of the consumers served by the pipelines;</p>		
16	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 and Management of Change pertaining to technical aspects. Based on the development of gas pipeline industry in India till date, the preparation of prescriptive type Integrity Management System has been considered for implementation to all natural gas pipelines in India. Further, as the natural gas pipeline industry matures and gathers sufficient records or data as per the requirements prescribed in the Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications Including Safety Standards for Natural gas pipelines) Regulations, 2009, a review mechanism may be considered by the Board for recommending a Performance Based Integrity Management System for Natural gas pipeline.</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 pertaining process pertaining to technical aspects. However, Entity may adopt more rigorous IMP within a prescriptive IMP based on their in-house assessment.</p>	<p>IOCL:</p> <p>quantification of failure probability and consequence is an important task for risk measurement in a quantified manner, which would be difficult in performance based system, therefore, in this standard at least directionally a mechanism is to be specified for qualification of risk in case some entity prefers performance bases IMS</p> <p>GGL:</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>	<p>No change is required (IMS is specifying only prescriptive type IMS)</p>
				<p>Further, as the natural gas pipeline industry matures and gathers sufficient records or data as per the requirements prescribed in the Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications Including Safety Standards for Natural gas pipelines) Regulations, 2009, the Board may consider allowing a performance based IMP during subsequent revisions of IMS document for a network.</p>	

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17	SCHEDULE-5	<p>INTEGRITY ASSESSMENT TOOLS Some of the tools for Integrity assessment are provided below. The operator should use as many tools necessary to achieve the IMS for natural gas pipeline. It may be noted that the baseline data for specific measurement should be available with the operator as a ready-reckoner:</p>	<p>INTEGRITY ASSESSMENT, MONITORING AND SURVEYS Some of the tools for Integrity assessment, surveys, monitoring & surveillance are provided below. The operator shall employ at least one integrity assessment tool and should use all applicable surveys, monitoring & surveillance tools necessary for the integrity management of natural gas pipeline. It may be noted that the baseline data for specific measurement should be available with the operator.</p>	<p>Public: If the baseline data is not available, the operator shall gather the missing data during the integrity assessment phase of the project. For example, if the operator don't have information such as pipe diameter, joint coating type, wall thickness, grade etc, these can be collected during the step 3 (direct examination) phase of Direct Assessment and records shall be updated for subsequent assessment. Even if ILI is used as an assessment, data shall be gathered during the validation dig.</p> <p>Baseline data may not be a pre requisite to start any assessment.</p> <p>GGL: Some of the tools for Integrity assessment, surveys, monitoring & surveillance are provided below. The operator shall employ at least one integrity assessment tool and should use all applicable surveys, monitoring & surveillance tools necessary to achieve the integrity of natural gas pipeline. It may be noted that the baseline data for specific measurement should be available with the operator.</p>	No change is required (These data are required to be available)
18	SCHEDULE-5	<p>Second Para from 5.6 Thickness assessment and periodic review against baseline values The operator of a pipeline system shall develop a chart of most suited integrity assessment tool or method and assessment interval for each threat/risk and further develop appropriate specifications and quality control plan for such assessment. After establishing effectiveness of assessment, the interval of assessment may be further modified subject to any other code requirement such as Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for natural gas pipelines) Regulations, 2009. A suggested chart is placed at APPENDIX –III</p>	<p>INTEGRITY ASSESSMENT, MONITORING AND SURVEYS (continued) The operator of a pipeline system shall develop a chart of most suited integrity assessment tool, surveys, monitoring & surveillance and interval for each threat/risk and further develop appropriate specifications and quality control plan for such assessment. After establishing effectiveness of assessment, the interval of assessment may be further modified subject to any other code requirement such as Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for natural gas pipelines) Regulations, 2009. A suggested chart is placed at APPENDIX –III</p>	<p>GGL: The operator of a pipeline system shall develop a chart of most suited integrity assessment tool, surveys, monitoring & surveillance and interval for each threat/risk assessment and further develop appropriate specifications and risk/quality control plan for such assessment. After establishing effectiveness of assessment, the interval of assessment may be further modified subject to any other code requirement such as Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for natural gas pipelines) Regulations, 2009. A suggested chart is placed at APPENDIX –III</p>	
19	SCHEDULE-5		5.1 INTEGRITY ASSESMENT TOOLS (New Heading)		
20	SCHEDULE-5	<p>5.1 In-Line Inspection In-line inspection (ILI) is an integrity assessment method used to locate and preliminarily characterize indications, such as, metal loss or deformation, as well as external and internal corrosion in a pipeline. ASME B31.8 S “Managing System Integrity for Natural gas pipelines” provides additional guidance on pipeline in-line inspection. Internal inspection tools shall</p>	<p>5.1.1 In-Line Inspection In-line inspection (ILI) is an integrity assessment method used to locate and characterize indications, such as, metal loss due to internal / external corrosion & other mechanical damage or deformation. Internal inspection tools shall</p>		

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21	SCHEDULE-5	<p>5.4 HYDROTESTING Hydro testing is appropriate for integrity assessment when addressing certain threats at the pre-commissioning stage itself at test pressure specified in the Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Natural gas pipelines) Regulations, 2009.</p>	<p>5.1.2 Hydro / Pressure Testing of In-service Pipelines Hydro / Pressure testing is appropriate for integrity assessment when addressing certain threats at the pre-commissioning stage itself at test pressure specified in the Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Natural gas pipelines) Regulations, 2009. Hydro Testing / Pressure testing can also be employed as an integrity assessment tool during service life.</p>	<p>IOCL: Wherever feasible Hydro testing / pressure testing</p>	No change is required (already implied)
22	SCHEDULE-5	<p>5.5 Direct Assessment AND EVALUATION 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. Direct assessment methods that include visual Non-Destructive Testing (NDT) examination to reinforce and validate findings from in-line inspection and other incidental findings, like during incidental pipeline exposure, pipeline damages and other maintenance activities may also be employed as an Integrity Assessment tools.</p>	<p>5.1.3 Direct Assessment 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. External Corrosion Direct Assessment (ECDA), Internal Corrosion Direct Assessment (ICDA) and Stress Corrosion Cracking Direct Assessment (SCCDA) are the available tools for direct assessment and evaluation.</p>		
23	SCHEDULE-5	<p>5.5.1 External Corrosion Direct Assessment (ECDA) can be used for determining integrity for the external corrosion threat on pipeline segments. The ECDA process has the following four components: Sub paragraphs (a), (b), (c) & (d) While implementing External Corrosion Direct Assessment if the pipe is exposed, the operator is advised to conduct examinations for threats other than that for external corrosion also (like mechanical and coating damages).</p>	<p>External Corrosion Direct Assessment (ECDA) can be used for determining integrity for the external corrosion threat on pipeline segments. While implementing External Corrosion Direct Assessment if the pipe is exposed, the operator is advised to conduct examinations for threats other than that for external corrosion also (like mechanical and coating damages). Sub paragraphs (a), (b), (c) & (d) are slightly modified and moved at bottom of '5.1.3 Direct Assessment'</p>	<p>Public: Section 5.1.3: While implementing External Corrosion Direct Assessment if the pipe is exposed, the operator is advised to conduct examinations for threats other than that for external corrosion also (like mechanical and coating damages). Comments: Please remove coating damages from the section, it is related to external corrosion. ECDA may detect other pipeline integrity threats such as internal corrosion, mechanical damage, stress corrosion, microbiologically influence corrosion, when such threats are identified, additional relevant inspections must be performed.</p>	No change is required (ECDA is meant for external corrosion assessment).
24	SCHEDULE-5	<p>5.5.2 Internal Corrosion Direct Assessment (ICDA) can be used for determining integrity for the internal corrosion threat on pipeline segments. The ICDA process has the following four components. (a) Pre-assessment (b) Identifications (c) Examinations and evaluations (d) Post-assessment</p>	<p>Internal Corrosion Direct Assessment (ICDA) can be used for determining integrity for the internal corrosion threat on pipeline segments.</p>		

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25	SCHEDULE-5	5.5.3 Stress Corrosion Cracking Direct Assessment (SCCDA) can be used for determining integrity for the stress corrosion threat on pipeline segments. The SCCDA process has the following four components. a) Pre-assessment b) Identification c) Examinations and evaluations d) Post-assessment	Stress Corrosion Cracking Direct Assessment (SCCDA) can be used for determining integrity for the stress corrosion threat on pipeline segments.		
26	SCHEDULE-5	5.5.1 sub-paras (a), (b), (c) & (d) (a) Pre-assessment- incorporating various data gathering, database integration and analysis (b) Identification - using either tools or calculations to flag possible corrosion sites, or calls, based on the evaluation or extrapolation of the database (c) Examinations and evaluations - excavation and direct assessment to confirm corrosion at the identified sites and remediation as provided in Schedule 6 of these regulations. (d) Post-assessment - to determine if dig call decision are taken on a pipeline segment. However, Call decisions are driven by various tools, technologies, or engineering evaluations, but are highly dependent on the level of experience and expertise utilized.	Each of these assessments are carried out in four steps as below- (a) Pre-assessment- incorporating various data gathering, database integration and analysis (b) Indirect Inspection- using either tools or calculations to flag possible corrosion sites, or calls, based on the evaluation or extrapolation of the database (c) Direct/Detailed Examination- excavation and examination to confirm corrosion at the identified sites and remediation as provided in Schedule 6 of these regulations. (d) Post-assessment - to determine the fitness for service of pipeline, re-assessment interval and effectiveness of Direct Assessment.	Public: Determining the feasibility of performing direct assessment is a major step during the pre-assessment phase. Please include “determining Direct Assessment feasibility” in this section. GGL: Each of these assessments are carried out in four steps as below- (a) Pre-assessment- incorporating various data gathering, database integration, feasibility check and analysis (b) Indirect Inspection- using either tools or calculations to flag possible corrosion sites, or calls, based on the evaluation or extrapolation of the database (c) Direct/Detailed Examination- excavation and examination to confirm corrosion at the identified sites and remediation as provided in Schedule 6 of these regulations. (d) Post-assessment - to determine the fitness for service of pipeline, re-assessment interval and effectiveness of Direct Assessment.	Changes may be proposed. Mentioned in main document. (a) Pre-assessment- determining feasibility of Direct Assessment, incorporating various data gathering, database integration and analysis (b) Indirect Inspection- using either tools or calculations to flag possible corrosion sites, or calls, based on the evaluation or extrapolation of the database (c) Direct/Detailed Examination- excavation and examination to confirm corrosion at the identified sites and remediation as provided in Schedule 6 of these regulations. (d) Post-assessment - to determine the fitness for service of pipeline, re-assessment interval and effectiveness of Direct Assessment.
27	SCHEDULE-5	New Clause	5.1.4 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 (and where ILI is not feasible due to operational or other constraints)		
28	SCHEDULE-5		5.2 MONITORING AND SURVEYS (new heading)		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
29	SCHEDULE-5	<p>5.2 Cathodic Protection (CP) Monitoring Following cathodic protection monitoring methods are available:</p> <p>(i) Pipe to Soil Potential Survey / Closed Interval Potential Logging Survey.</p> <p>(ii) Transformer Rectifier Unit / Cathodic Protection Power Supply Module - current and voltage monitoring method</p> <p>(iii) Coating Health Surveys (Current Attenuation Test, Direct Current Voltage Gradient survey and Pearson)</p> <p>(iv) Pipeline Interference Survey</p>	<p>5.2.1 Cathodic Protection (CP) Monitoring Following cathodic protection monitoring methods are available:</p> <p>(i) Pipe to Soil Potential Survey</p> <p>(ii) Transformer Rectifier Unit / Cathodic Protection Power Supply Module - current and voltage monitoring method</p> <p>(iii) Closed Interval Potential Logging Survey</p> <p>(iv) Coating Health Surveys (Current Attenuation Test, Direct Current Voltage Gradient survey and)</p> <p>(v) Pipeline AC/DC Interference Survey* including survey at Foreign Pipeline Crossings, Power Transmission line crossings / parallelism and other Stray current sources</p> <p>* It shall be mandatory on all the entities involved to facilitate conduct studies / surveys and take mitigation measures</p>	<p>GGL: Following cathodic protection monitoring methods are available:</p> <p>(i) Pipe to Soil Potential Survey</p> <p>(ii) Transformer Rectifier Unit / Cathodic Protection Power Supply Module - current and voltage monitoring method</p> <p>(iii) Closed Interval Potential Logging Survey</p> <p>(iv) Coating Health Surveys (Current Attenuation Test, Direct Current Voltage Gradient survey and)</p> <p>(v) Pipeline AC/DC Interference Survey* including survey at Foreign Pipeline Crossings, Power Transmission line crossings / parallelism and other Stray current sources</p> <p>* It shall be mandatory on all the entities involved to facilitate other entities in conducting studies / surveys and take in implementation of mitigation measures</p>	<p>Finalized as under:</p> <p>5.2.1 Cathodic Protection (CP) System Monitoring Following cathodic protection monitoring methods are available:</p> <p>(i) Pipe to Soil Potential Survey</p> <p>(ii) Transformer Rectifier Unit or Cathodic Protection Power Supply Module - current and voltage monitoring method</p> <p>(iii) Closed Interval Potential Logging Survey</p> <p>(iv) Coating Health Surveys (Current Attenuation Test, Direct Current Voltage Gradient survey and Alternating Current Voltage Gradient Survey)</p> <p>(v) Pipeline AC & DC Interference Survey* including survey at Foreign Pipeline Crossings, Power Transmission line crossings or parallelism and other Stray current sources</p> <p>* It shall be obligatory for all the entities involved to facilitate other entities to conduct studies or surveys and in implementation of mitigation measures.</p>
30	SCHEDULE-5	<p>5.6 Thickness assessment and periodic review against baseline values For all sections of the pipelines above ground, all pipeline skids and pressure vessels, a periodic thickness assessment and comparison with baseline values may be done and employed as Integrity Assessment tool.</p> <p>The operator of a pipelineA suggested chart is placed at APPENDIX –III</p>	<p>5.2.2 Thickness assessment and periodic review against baseline values For all sections of the pipelines above ground, all pipeline skids and pressure vessels, a periodic thickness assessment and comparison with baseline values may be done and employed as Integrity Assessment tool.</p> <p>The Paragraph moved at the start of schedule 5</p>	<p>Public: Implementation API 570 methodology would be beneficial for the above grade pipe assessment and establishing reasonable reassessment interval. Soil to air interface need to be considered</p> <p>IOCL: Whenever an underground pipeline is exposed for any reason, feasibility for conducting thickness survey to be assessed and if found feasible such thickness survey shall be conducted.</p>	<p>Public: No change required (entity may select their own methodology based on applicable standards).</p> <p>IOCL: Changes may be proposed. Mentioned in main document.</p> <p>For all sections of the pipelines above ground, all pipeline skids and pressure vessels, a periodic thickness assessment and comparison with baseline values may be done and employed as Integrity Assessment tool. Possibility of thickness survey shall be explored whenever underground portion of the pipeline is exposed for whatsoever reasons.</p>

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
31	SCHEDULE-5	5.7 Pipeline equipment Health Monitoring	5.2.3 Pipeline equipment Health Monitoring	<p>CELL:</p> <p>5.2.3 Pipeline equipment Health Monitoring Pipeline equipment such as main line sectionalizing valves, other valves, pig launching and receiving facilities etc. may be checked periodically for their operation. 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>5.2.4 Indirect Monitoring and Inspection periodically may be considered for (Above ground /buried pipe section) of Cross country gas pipeline :</p> <p>i) Corrosion coupon (External / Internal) – Quarterly ii) ER Probe – Quarterly iii) Analysis of corrosion products (viz. black powder, ferrous debris, liquid) received during cleaning pigging, maintenance of Filter, Condensate collecting tank etc.</p> <p>IOCL:</p> <p>for suitability of their operation</p>	<p>CELL: Changes may be proposed. Mentioned in main document.</p> <p>IOCL: No change is required (implied)</p> <p>5.2.3 Pipeline equipment Health Monitoring Pipeline equipment such as main line sectionalizing valves, other valves, pig launching and receiving facilities etc. may be checked periodically for their operation.</p> <p>5.3 Surveillance of pipelines Various effective surveillance methods are being used as direct integrity assessment tools. Based upon the experience and resource management, one or multiple tools may be followed by the operator; some of them are detailed as under: 5.3.1 Patrolling / Ground Survey of the Right of User which includes Line Walk for ensuring clear visibility of Right of User, access to maintenance crew along the Right of User, valve locations and other pipeline facilities. This also helps to observe surface conditions, leakage, construction activity performed by external agencies, encroachments, washouts and any other factors affecting the safety and operation of the pipeline. Also, patrolling ground survey may be done for maintenance of all pipeline markers, kilometer posts and other specific indication marks along the pipeline.</p> <p>This may also include: (i) Night patrolling by Line walkers or alternative security surveillance system where the pipeline location is vulnerable from security point of view (ii) Right of User tracking through satellite imaging methods for critical stretches of natural gas pipeline system (iii) Aerial survey of Right of User at critical and in-accessible stretches e.g. hilly regions and Ghat sections etc.</p>

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
32	SCHEDULE-5	<p>5.3 Surveillance</p> <p>I. Patrolling / Ground Survey</p> <p>II. Integrated Surveillance System for critical stretches :</p> <p>III. Awareness Programme:</p>	<p>5.3 Surveillance</p> <p>5.3.1 Patrolling / Ground Survey</p> <p>5.3.2 Integrated Surveillance System for critical stretches :</p> <p>5.3.4 Awareness Programme: (only changes in heading numbers)</p>	<p>IOCL:</p> <p>on selective basis</p> <p>Any other system having similar capability can also be used subject to its acceptability by the Board</p>	<p>Changes may be proposed. Mentioned in main document.</p> <p>5.3.1 Patrolling / Ground Survey of the Right of User which includes Line Walk for ensuring clear visibility of Right of User, access to maintenance crew along the Right of User, valve locations and other pipeline facilities. This also helps to observe surface conditions, leakage, construction activity performed by external agencies, encroachments, washouts and any other factors affecting the safety and operation of the pipeline. Also, patrolling ground survey may be done for maintenance of all pipeline markers, kilometer posts and other specific indication marks along the pipeline. This may also include:</p> <p>(i) Night patrolling by Line walkers or alternative security surveillance system where the pipeline location is vulnerable from security point of view</p> <p>(ii) Right of User tracking through satellite imaging methods for critical stretches of natural gas pipeline system</p> <p>(iii) Aerial survey of Right of User at critical and in-accessible stretches e.g. hilly regions and Ghat sections etc.</p> <p>5.3.2 Integrated Surveillance System for critical stretches: The above system may use various types of detection systems such as</p> <ol style="list-style-type: none"> 1. Fiber Optics System, 2. Ground Sensor System, 3. Radar based detection system 4. Fence secure data access system: <p>5.3.3 Awareness Programme</p>
33	SCHEDULE-5	<p>5.8 Review of existing pipeline Class Locations: Whole Section</p>	Moved and modified at Section 6.1.6 (C)		
34	SCHEDULE-6	<p>6.1 Pipeline integrity management Plan Figure 1: Pipeline Integrity Management Plan - Flow Diagram</p>	<p>6.1 Pipeline integrity management Plan ASME B31.8S-2018, Figure 2.1-2 Integrity Management Plan Process Flow Diagram</p>	<p>GGL: Flow (Yes/No) from decision box not mentioned.</p>	
35	SCHEDULE-6	<p>6.1.2 (I) Time Dependent Threats:</p> <ol style="list-style-type: none"> 1) External Corrosion 2) Internal Corrosion • Internal corrosion due to off spec. gas* also to be considered 3) Stress Corrosion Cracking <p>*Refer the Petroleum and Natural Gas Regulatory Board (Access Code for Common Carrier or Contract Carrier Natural gas pipelines) Regulations, 2008.</p>	<p>6.1.2 (I) Time Dependent Threats:</p> <ol style="list-style-type: none"> 1) External Corrosion 2) Internal Corrosion 3) Stress Corrosion Cracking 		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
36	SCHEDULE-6	<p>6.1.2 (III) 9)Weather related and outside force: i.Weather related ii.Lightening iii.Heavy Rains or Floods iv.Earth Movements</p> <p>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</p>	<p>6.1.2 (III) 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</p>	<p>CEIL: iv. Joint failures (particularly in PE Low pressure)</p>	No change is required (Implied).
37	SCHEDULE-6	<p>6.1.3 Consequence and Impact Analysis: Once the hazardous events are identified, the next step in the risk analysis is to analyse their consequences, that is, estimate the magnitude of damage to the public, property and environment of all the identified threats. These consequence may include leak, fire, explosion, gas cloud etc. Consequence estimation can be accomplished by using mathematical models e.g. consequence modelling. Identification of High-consequence area (HCA): Locations along the pipeline 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 of 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>6.1.3 Consequence and Impact Analysis: Once the hazardous events are identified, the next step in the risk analysis is to analyse their consequences, that is, estimate the magnitude of damage to the public, property and environment of all the identified threats. These consequence may include leak, fire, explosion, gas cloud etc. 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 of worship, office buildings, or fields).</p>	<p>Public: There should be a definition for potential impact area, either we need to establish class location based method or we need to determine the potential impact radius using the pipeline operating pressure. Pressure plays a major role in determining impact. GGL: Paragraph should be added suggesting 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 of people. Enhancing coordination with other utilities for activities in potential impact areas Increasing the frequency of leak detection, patrolling of pipeline section / network in potential impact areas etc.</p>	No change is required (Mentioned in ASME B 31.8S).
38	SCHEDULE-6	6.1.4.1 Developing a Risk Assessment Model:	6.1.4.1 Developing a Risk Assessment Approach:	<p>GGL: It is proposed to add explanation on below assessment approach in brief a) Utilizing the services of Subject Matter Experts (SMEs) b) Relative Assessment Model c) Scenario –Based Model d) Probabilistic Models</p>	No change.
39	SCHEDULE-6	6.1.4.2 Risk Assessment for the pipeline system: The risk assessment is continuous and repetitive process. System wide risk assessment shall be carried out at least every year by pipeline operators	6.1.4.2 Risk Assessment for the pipeline system: The risk assessment is continuous and repetitive process. System wide risk assessment shall be carried out every year by pipeline operators	<p>GGL: It is proposed to add as Appendix “an illustrative / Typical risk matrix for risk assessment”.</p>	No change.

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
40	SCHEDULE-6	<p>6.1.5 Integrity Assessment: A plan shall be developed to address the most significant threats and risks as per previous section and determine appropriate integrity assessment methods to assess the integrity of the pipeline segment. The following methods can be used for Integrity Assessment:</p> <ul style="list-style-type: none"> •Hydro testing before commissioning at test pressure as per T4S standard • Inline inspection (ILI) • External & Internal Corrosion Direct Assessment(ECDA/ICDA) •Various forms of pipeline surveillance and monitoring e.g. patrolling Integrated Surveillance System (ISS) etc 	<p>6.1.5 Integrity Assessment: A plan shall be developed to address the most significant threats and risks as per previous section and determine appropriate integrity assessment methods to assess the integrity of the pipeline segment. The following methods can be used for Integrity Assessment:</p> <ul style="list-style-type: none"> •Pressure testing • Inline inspection (ILI) • Direct Assessment (ECDA, ICDA & SCCDA) • Any other Integrity Assessment methodology 		
41	SCHEDULE-6	<p>6.1.5 Integrity Assessment: <i>Para starting with</i> The operator of a pipeline system shall develop a chart of most suited integrity assessment method and assessment interval for each threat and risk. The operator shall</p>	<p>6.1.5 Integrity Assessment: <i>Para starting with</i> The operator of a pipeline system shall develop a chart of most suited integrity assessment method and assessment interval, prevention and mitigation measures for each threat and risk. The operator shall</p>	<p>IOCL: any one or combination of the following method may be used to assess and establish integrity of a pipeline</p>	No change is required (already covered).
42	SCHEDULE-6	<p>6.1.6 Mitigation and Response (Repair and Prevention) After the completion of assessment like inline inspection, and coating health surveys etc., the results shall be evaluated and the necessary repairs and preventive actions shall be undertaken to eliminate the threat to pipeline integrity.</p>	<p>6.1.6 Mitigation and Response (Repair and Prevention) After the completion of Integrity assessment like inline inspection, coating health surveys etc., the results shall be evaluated and the necessary repairs and preventive actions shall be undertaken to eliminate the threat to pipeline integrity.</p>	<p>Public: Suggest to remove Coating health surveys since it is a part of integrity assessment, needs to be ILI, DA and Hydro testing It would be beneficial if we could provide predict burst pressure ranges for scheduled and monitored indications also. IOCL: and anomalies identified as threat to the pipeline integrity shall be categorized with corresponding repair schedule as per Integrity Management Manual GGL: 6.1.6 Mitigation and Response (Repair and Prevention) After the completion of Integrity assessment like inline inspection, coating health surveys etc., the results shall be evaluated and the necessary repairs and preventive actions shall be undertaken to eliminate or reduce the threat to pipeline integrity.</p>	<p>Public: Changes may be proposed. Mentioned in main document. IOCL: No change is required (already covered) After the completion of Integrity assessment and monitoring / surveys, like inline inspection, Direct Assessment, coating health surveys etc., the results shall be evaluated and the necessary repairs and preventive actions shall be undertaken to eliminate or reduce the threat to pipeline integrity. Immediately upon completion of integrity assessment, a comprehensive schedule of repair shall be prepared. All anomalous conditions discovered through the integrity assessment shall be evaluated and classified under the following three categories based on severity of defect. Mitigation action (repair and prevention) shall be undertaken to eliminate an unsafe condition to the integrity of a pipeline or to ensure that the condition is unlikely to pose a threat to the integrity of the pipeline until the next reassessment. The entity shall have a plan for ensuring safety of personnel and pipelines by suitable means such as pressure reduction, wherever warranted.</p>
43	SCHEDULE-6	<p>6.1.6 (A) (a) iii) Metal loss indication affecting a detected longitudinal seam, if that seam was formed by direct current or low frequency electric resistance welding or by electric flash welding.</p>	<p>6.1.6 (A) (a) iii) Metal loss indication affecting longitudinal seam, if that seam was formed by direct current or low frequency electric resistance welding or by electric flash welding.</p>	<p>GGL: It is proposed to define criteria for gouge also as defined for 'dent' under 6.1.6 (b) Schedule conditions.</p>	No change.

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
44	SCHEDULE-6	<p>5.8 Review of existing pipeline Class Locations:</p> <p>If class location changes are perceived due to demographic changes along the existing pipelines, population density survey may be carried out to ascertain the changes in class location.</p> <p>To address the changes in class location of a pipeline from lower to higher class, the provisions mentioned in Technical Standards and Specifications including Safety Standards /ASME B31.8 shall be considered. The one or multiple following mitigation measures may also be considered till same is mitigated as per Technical Standards and Specifications including Safety Standards /ASME B 31.8 requirements -</p>	<p>6.1.6 (C) Review of existing pipeline Class Locations:</p> <p>If class location changes are perceived due to demographic changes along the existing pipelines, population density survey may be carried out to ascertain the changes in class location.</p> <p>The change in Location Class shall be evaluated in accordance with relevant provisions of ASME B31.8 and where action is indicated on account of such change, risk assessment of the impacted pipeline section shall be carried out considering the increase in population density and appropriate mitigation actions shall be taken if required. The mitigation actions should include as many of the following but as a minimum shall include those indicated in the table given underneath the list of actions:</p>	<p>IOCL:</p> <p>... shall be declared as sensitive (in place of vulnerable).</p> <p>Also due to change in population density possibility of third party damage increases therefore only measure a),b),c) d)(once in 3 years) and h) should be enough.</p> <p>f) frequency of gauge pigging survey once in a year, caliper survey once in 3 years and ILI once in 5 years</p> <p>other measures may be similar to other normal sections of the pipeline</p> <p>It may be noted that this criteria is not applicable for pipelines designed as per ASME B31.4 , thus shall not be applicable for Petroleum and Petroleum and petroleum product pipeline</p>	<p>Changes may be proposed. Mentioned in main document.</p> <p>6.1.6 (C) Review of existing pipeline Class Locations: If class location changes are perceived due to demographic changes along the existing pipelines, population density survey may be carried out to ascertain the changes in class location.</p> <p>The change in Location Class shall be evaluated in accordance with relevant provisions of ASME B31.8 and where action is indicated on account of such change, risk assessment of the impacted pipeline section shall be carried out considering the increase in population density and appropriate mitigation actions shall be taken if required. The mitigation actions should include as many of the following but as a minimum shall include those indicated in the table given underneath the list of actions:</p>
45		<p>5.8 Review of existing pipeline Class Locations: (continued)</p> <p>a) Section to be declared as vulnerable and frequency of patrolling to be increased as per new class location.</p> <p>b) Intelligent pigging/ Direct Assessment frequencies to be increased.</p> <p>c) CP monitoring frequencies to be increased including provision of continuous data/PSP logging at the location.</p> <p>d) Corrosion monitoring probes to be installed to monitor the corrosion rate.</p> <p>e) Provision of carbon fiber wrapping/ composite sleeves/ concrete slabs.</p>	<p>6.1.6 (C) Continued</p> <p>(a) The concerned pipeline section shall be declared as vulnerable and frequency of patrolling to be increased as per new Location Class.</p> <p>(b) Awareness program among local populace.</p> <p>(c) Warning Markers shall be installed at lesser interval of distances (minimum every 100 m)</p> <p>(d) Pipeline cover survey and Mitigation (min every 5 years)</p> <p>(e) CP monitoring and surveys shall be carried out more rigorously (PSP Off survey – every 6 months)</p> <p>(f) Frequency of Integrity Assessment shall be increased to a minimum of once in 7 (seven) years or as indicated by risk assessment whichever is more frequent.</p> <p>(g) Engineering Critical Assessment of the impacted section and mitigation of identified vulnerabilities.</p> <p>(h) Pipeline barrier protection shall be provided by installing concrete slabs / concrete coating / composite wraps / sleeves etc.</p>	<p>GGL:</p> <p>6.1.6 (C) Continued</p> <p>(a) The concerned pipeline section shall be declared as vulnerable and frequency of patrolling to be increased as per new Location Class.</p> <p>(b) Awareness program among local populace.</p> <p>(c) Warning Markers/boards shall be installed at lesser interval of distances (minimum every 100 m in location Class 4, 400 m in location Class 3 and 700 m in location class 2)</p> <p>(d) Pipeline cover survey and Mitigation (min every 5 years)</p> <p>(e) CP monitoring and surveys shall be carried out more rigorously (PSP Off survey – every 6 months) – Suggest to be implemented if location class changes to Class 4</p> <p>(f) Frequency of Integrity Assessment shall be increased to a minimum of once in 7 (seven) years or as indicated by risk assessment whichever is more frequent. - Suggest to be implemented if location class changes to Class 4</p> <p>(g) Engineering Critical Assessment of the impacted section and mitigation of identified vulnerabilities.</p> <p>Pipeline barrier protection shall be provided by installing concrete slabs / concrete coating / composite wraps / sleeves etc.</p>	<p>(a) The concerned pipeline section shall be declared as vulnerable and frequency of patrolling to be increased as per new Location Class.</p> <p>(b) Awareness program among local populace.</p> <p>(c) Warning Markers shall be installed at lesser interval of distances</p> <p>(d) Pipeline earth cover survey and Mitigation at closer intervals</p> <p>(e) CP monitoring and surveys shall be carried out more rigorously</p> <p>(f) Frequency of Integrity Assessment shall be increased to a minimum of once in 7 (seven) years or as indicated by risk assessment whichever is more frequent.</p> <p>(g) Engineering Assessment of the impacted section and mitigation of identified vulnerabilities.</p> <p>(h) Pipeline barrier protection shall be provided by installing concrete slabs / concrete coating / composite wraps / sleeves etc.</p>

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
46			<p>6.1.6 (c) continued Minimum Required Action after Risk Assessment Changes from lower to higher location class 2: (a) to (d) Changes from lower to higher location class 3: (a) to (g) Changes from lower to higher location class 4: (a) to (h)</p> <p>In addition to above, any other actions indicated by risk assessment shall be taken.</p>		<p>Minimum Required Action after Risk Assessment Change from lower class to Minimum action from list above Location Class 2 (a) to (d) Location Class 3 (a) to (g) Location Class 4 (a) to (h)</p> <p>In addition to above, any other actions indicated by risk assessment shall be taken.</p>
47	SCHEDULE-6	<p>6.2 Performance Evaluation Plan: Every pipeline operator shall define suitable performance indicators which can be monitored to give a picture of the integrity levels of various aspects of the operator's pipeline assets. Refer ASME B 31.8S table no 8 and 9 for finalizing performance measures and performance matrix respectively. Monitoring of these indicators on a periodic basis</p>	<p>6.2 Performance Evaluation Plan: Every pipeline operator shall define suitable performance indicators which can be monitored to give a picture of the integrity levels of various aspects of the operator's pipeline assets. Monitoring of these indicators on a periodic basis</p>		
48	SCHEDULE-6	<p>6.3.1 External Communication: (II) General Public near pipeline route</p>	<p>6.3.1 External Communication: (II) General Public / Public institutions like schools, hospitals etc. near pipeline route</p>		
49	SCHEDULE-6	<p>6.5 Quality Control All the entities shall prepare and maintain documented procedure and records as per the requirement of this standard which can also be made part of existing Quality programme (e.g. ISO-9001-2001) maintained by the entities. The following activities shall be made part of quality control programme:</p>	<p>6.5 Quality Plan All the entities shall prepare and maintain documented procedure and records as per the requirement of this standard which can also be made part of existing Quality Management programme (e.g. ISO-9001) maintained by the entities. The following activities shall be made part of quality control programme:</p>	<p>GGL: All the entities shall prepare and maintain documented procedure and records as per the requirement of this standard which can also be made part of existing Quality Management programme (e.g. ISO-9001), Environment Management system (ISO 14001) and Occupational Health and Safety Management System standard (ISO 45001) maintained by the entities. The following activities shall be made part of quality control programme:</p>	No change.
50	SCHEDULE-6	<p>Clause 6.5 <i>Text start</i> Internal Audits of the Pipeline Integrity, Prevention, mitigation and repair criteria have been established, met and documented. <i>Text End</i></p>	Moved and modified at Section 9.2		
51	SCHEDULE-7	<p>7.1 MANAGEMENT APPROVAL: • Step#1: Prepared by In-house team or Consultant • Step#2: Checked by In-house team Head or Consultant head • Step#3: Provisionally approved by Head of Operation team of the entity • Step#4: Conformity of IMS document with the Regulation by Third Party Inspection Agency (TPIA)</p>	<p>7.1 MANAGEMENT APPROVAL: • Step#1: Prepared by In-house team or Consultant • Step#2: Checked by In-house team Head or Consultant head • Step#3: Provisionally approved by Head of Operation / Maintenance of the entity • Step#4: Verification of conformity of IMS document with the Regulation by Third Party Inspection Agency (TPIA)</p>		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
52	SCHEDULE-7	7.2 ACCEPTANCE BY PETROLEUM AND NATURAL GAS REGULATORY BOARD (PNGRB) • Step#5: Acceptance by the Board	Deleted		
53	SCHEDULE-7	7.3 APPROVAL FOR IMPLEMENTATION • Step#6: Approval of Integrity Management System document for implementation by the Board for the first time and approval of subsequent periodic review 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.	IOCL: Director in place of Board GGL: 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 Head – Operations, CEO or Full-time Director of the entity.	No change proposed.
54	SCHEDULE-7	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 Board that the Pipeline Integrity Management system is in line with the requirements of the various regulations issued by the Board from time to time and has been approved by the CEO or full time Director of the company.	• Step#6: Approved IMS document along with confirmation from entity of its implementation shall be submitted to the Board.		
55	SCHEDULE-8	Conformity of Integrity Management System document with regulation by Third Party Inspection Agency. 3 months from the approval by Head of Operation team of the entity.	Conformity of Integrity Management System document with regulation by Third Party Inspection Agency. 3 months from the approval by the Head of Operation or Maintenance of the entity.		
56	SCHEDULE-8	4 Submission of Integrity Management System document to Petroleum and Natural Gas Regulatory Board 1 month from the conformity of Integrity Management System by Third Party Inspection Agency	Deleted		
57	SCHEDULE-8	5 Approval for implementation by the entity Within 3 months from the acceptance of Integrity Management System document by Petroleum and Natural Gas Regulatory Board	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 Within 3 months from the conformity assessment by Third Party Inspection Agency (TPIA)	GGL: 4 Approval for implementation by the Board of the entity for the first time and approval of subsequent periodic review by Head – Operations, CEO or Full-time Director of the entity Within 3 months from the conformity assessment by Third Party Inspection Agency (TPIA)	No change
58	SCHEDULE-8	6 Start of Implementation Immediately after approval at Sr. No. 5 above	5 Start of Implementation Immediately after approval at Sr. No. 4 above		
59	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		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
60	SCHEDULE-8	7 Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Shall be submitted within 1 year to Petroleum and Natural Gas Regulatory Board	7 Submission of Compliance Statement to Petroleum and Natural Gas Regulatory Board Shall be submitted every year to Petroleum and Natural Gas Regulatory Board		
61	SCHEDULE-8	Note: Steps for implementation to be followed as described in Schedule-7	Note: Steps for implementation to be followed as described in Schedule-7 *For new pipelines, the above shall be complied within one year of date of commissioning		
62	SCHEDULE-9	REVIEW OF THE INTEGRITY MANAGEMENT SYSTEM 9.1 Periodicity of review of Integrity Management System Entities shall review their existing Integrity Management System every 3 years based upon the: (i) Revised Baseline data (ii) Critical Inputs from various departments	REVIEW OF THE INTEGRITY MANAGEMENT SYSTEM 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		
63	SCHEDULE-9	From clause 6.5 Internal Audits of the Pipeline 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 Pipeline Integrity Management System. Internal audits are conducted by the audit group nominated by Head of the Operations Team of the entity at least once in a year. Internal audits aim to ensure that the Integrity Management System's framework is being followed. The following essential items will be focused for any internal and external audit of the entire Integrity Management System: • Ensure that the Baseline Plan is being updated and followed and that the baseline inspections are carried out. • Verify qualifications of O&M personnel and contractors based on education qualification (Appendix-IV), formal training received through in-house or external programme, demonstrated practical skills, and experience records in the relevant areas. Refer ASME B31Q for guidance. • Ensure adequate documentation is available to support decisions made.	9.2 Integrity Management System Audit Audit of the Pipeline 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 Pipeline Integrity Management System. The following essential items will be focused for any internal and external audit of the entire Integrity Management System: • 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.		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
64	SCHEDULE-9	9.2 Review of Internal and External Audit There shall be a system for ensuring compliance to the provisions of these regulations by conducting following audits during operation phase: (a) Internal Audit as per the checklist for natural gas pipelines provided by Petroleum and Natural Gas Regulatory Board shall be carried out by the management of operator 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 every 3 years.	9.3 Frequency of Internal and External Audit There shall be a system for ensuring compliance to the provisions of these regulations by conducting following audits during operation phase: (a) Internal Audit - Every year. (b) External Audit - Every 3 years in-line with the approved IMS by third party empaneled by the Board	IOCL: Minimum once in year	No change is required (already mentioned in 9.3)
65	SCHEDULE-10	Entity will have to address the requirement of manpower for different stages of project, namely: Design, construction, commissioning, operation and maintenance. The entity which is preparing Integrity Management System should address the manpower requirement for its present and future operations. The qualification of such manpower shall conform to Appendix-IV.	Entity shall have a written plan / philosophy of manning the installations based on activities required for compliance to this regulation. Entity shall address the requirement of manpower for different stages of project, namely: Design, construction, commissioning, operation and maintenance in the above plan.		
66	Appendix-II	GIS Mapping Implementation 2 years	GIS Mapping Implementation 2 years from the commissioning of pipeline		
67	Appendix-III	SUGGESTIVE CHART FOR SELECTION OF INTEGRITY ASSESSMENT METHOD* WITH RESPECT TO SPECIFIC THREAT	SUGGESTIVE CHART FOR SELECTION OF INTEGRITY ASSESSMENT or MANAGEMENT METHODS* WITH RESPECT TO SPECIFIC THREAT		
68	Appendix-III	Column Heading Threat Group Threat Integrity Assessment Method* Assessment interval	Column Heading Threat Group Threat Integrity Assessment or Management Methods* Interval		
69	Appendix-III	External Corrosion Inline inspection, External Corrosion Direct Assessment	External Corrosion Inline inspection / External Corrosion Direct Assessment (ECDA) / Pressure Testing / Any other Integrity Assessment Methodology	Public: It sounds like the maximum 10 years interval is for the reassessment purpose. We also need to consider the reassessment interval predicted using the remaining life calculation. If the reassessment interval from remaining life is less than 10 years then that should be considered as an interval. In United States CFR they used to consider 7 years reassessment interval.	No change is required (Maximum interval is 10 years, entity can take call in such situations).
70	Appendix-III	Internal Corrosion Inline inspection, Internal Corrosion Direct Assessment	Internal Corrosion Inline inspection / Internal Corrosion Direct Assessment (ICDA) / Pressure Testing / Any other Integrity Assessment Methodology	(1) What is the baseline requirement for the newly constructed infrastructure, typically this used to 10 years for natural gas pipelines in United States	
71	Appendix-III	Stress Corrosion Cracking Inline inspection, Stress Corrosion Cracking Direct Assessment	Stress Corrosion Cracking Inline inspection / Stress Corrosion Cracking Direct Assessment (SCCDA) / Pressure Testing / Any other Integrity Assessment Methodology		
72	Appendix-III	(B) Stable Defective Pipe Seam, Pipe, Girth Weld, fabrication Weld Hydro-test (Post Construction), Inline inspection	Defective Pipe Seam, Pipe, Girth Weld, fabrication Weld Inline inspection / Pressure Testing / Any other Integrity Assessment Methodology	CEIL: For pipeline in operation with design life completed Frequency may be Max. 8 years	No change proposed.
73	Appendix-III	(C)Time-Independent Lightning Surge diverters	Lightning Inspection of Surge diverters		
74	Appendix-III	Heavy rains or floods Anti-buoyancy Inspection, Surveillance	Heavy rains or floods Inspection, Surveillance		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
75	Appendix-III	Creek Area Effects Surveillance, Pipe to Soil Potential surveys near creek, Leakage survey, Anti-Buoyancy Inspection, Integrated Surveillance System	Creek Area Effects Surveillance, Leakage survey, Inspection		
76	Appendix-III	Muddy/Marshy area effects Surveillance, Pipe to Soil Potential surveys, Leakage survey, Cathodic Protection monitoring, Integrated Surveillance System	Muddy/Marshy area effects Surveillance, Leakage survey, Cathodic Protection monitoring		
77	Appendix-III	River Bed Movements Surveillance, Pipe to Soil Potential surveys, Leakage survey, Cathodic Protection monitoring, Anti-Buoyancy Inspection, Integrated Surveillance System	River Bed Movements Surveillance, Leakage survey, Inspection		
78	Appendix-III	* Some of the important Integrity Assessment Methods have been briefed in Schedule-5 of these regulations	* Some of the important Integrity Assessment/ Management Methods have been mentioned in Schedule-5 of these regulations.		
79	Appendix-IV	Minimum Qualification and Experience for Field Personnel in Project Phase as well as O&M Stage	Appendix - IV Deleted		
Other comments					
80	5. Objective.	These regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for natural gas pipeline system.		IOCL: .. natural gas/ petroleum/ petroleum product	The IMS is for NG, hence no change is required.
81	SCHEDULE-6	DESIGNING APPLICABLE INTEGRITY MANAGEMENT SYSTEM FOR THE NATURAL GAS PIPELINE: All operators of existing and new natural gas transmission and distribution pipelines shall develop an integrity management programme comprising the necessary plans, implementation schedule and assessment of its effectiveness in order to ensure safe and reliable operation of the pipelines.		IOCL: new lines may be given 6 to 9 months to develop their Pipeline Integrity Management Scheme	No change is required (01 year already mentioned)
82	SCHEDULE 6	6.1.6 Mitigation and Response (Repair and Prevention) Immediately upon completion of integrity assessment, a comprehensive schedule of repair shall be prepared. All anomalous conditions discovered through the integrity assessment shall be evaluated and classified under the following three categories based on severity of defect. Mitigation action (repair and prevention) shall be undertaken to eliminate an unsafe condition to the integrity of a pipeline or to ensure that the condition is unlikely to pose a threat to the integrity of the pipeline until the next reassessment.	6.1.6 Mitigation and Response (Repair and Prevention) Immediately upon completion of integrity assessment, a comprehensive schedule of repair shall be prepared. All anomalous conditions discovered through the integrity assessment shall be evaluated and classified under the following three categories based on severity of defect. Mitigation action (repair and prevention) shall be undertaken to eliminate an unsafe condition to the integrity of a pipeline or to ensure that the condition is unlikely to pose a threat to the integrity of the pipeline until the next reassessment.	IOCL: Wherever repair action within the schedule time is not feasible, the operating pressure of the pipeline shall be reduced in a manner to ensure that pipeline safety margin remains the same as in the case of defect free pipe.	Changes may be proposed. Mentioned in main document. Immediately upon completion of integrity assessment, a comprehensive schedule of repair shall be prepared. All anomalous conditions discovered through the integrity assessment shall be evaluated and classified under the following three categories based on severity of defect. Mitigation action (repair and prevention) shall be undertaken to eliminate an unsafe condition to the integrity of a pipeline or to ensure that the condition is unlikely to pose a threat to the integrity of the pipeline until the next reassessment. The entity shall have a plan for ensuring safety of personnel and pipelines by suitable means such as pressure reduction, wherever warranted.

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
83	SCHEDULE 6	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (a) Immediate repair conditions:	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (a) Immediate repair conditions:	IOCL: We can give a term PR-U, Priority Urgent, which shall be repaired at the earliest or operating pressure to be reduced (to keep safety margin equal to design safety margin)	Changes not required (entity to decide)
84	SCHEDULE 6	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (a) Immediate repair conditions: Predicted failure pressure less than equal to 1.1 times the maximum allowable operating pressure (MAOP) as determined by ASME B31G or equivalent.	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (a) Immediate repair conditions: Predicted failure pressure less than equal to 1.1 times the maximum allowable operating pressure (MAOP) as determined by ASME B31G or equivalent.	IOCL: suggested as 1 not 1.1to maintain the same safety margin as envisaged in the design stage/ first day of operation. Till such time the anomaly is not repaired the operation pressure of the pipeline shall be reduced to ensure that Estimated Repair Factor (ERF) ,a ratio of design pressure or MAOP to Defect Pressure (as per ASME B 31G), is less than or equal to 1.	Changes not required.
85	SCHEDULE 6	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (b) Scheduled conditions: Such indication shows that defect is significant but not at failure point. Following indications shall be examined within one year of discovery: i) A plain dent that exceeds 6% of nominal pipeline diameter for pipeline operating at or above 30% of Specified Minimum Yield Strength (SMYS). ii) Mechanical damage with or without concurrent visible indentation of the pipe. iii) Dent with cracks. iv) Dent that affect ductile girth or seam welds if the depth is in excess of 2% of the nominal pipe diameter. v) Dents of any depth that affect non ductile welds.	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (b) Scheduled conditions: Such indication shows that defect is significant but not at failure point. Following indications shall be examined within one year of discovery: i) A plain dent that exceeds 6% of nominal pipeline diameter for pipeline operating at or above 30% of Specified Minimum Yield Strength (SMYS). ii) Mechanical damage with or without concurrent visible indentation of the pipe. iii) Dent with cracks. iv) Dent that affect ductile girth or seam welds if the depth is in excess of 2% of the nominal pipe diameter. v) Dents of any depth that affect non ductile welds.	IOCL: In IOCL we are categorizing such anomalies as PR-1 or Priority 1 and PR-2 with a repair target of 3 months to 6 months from date of reporting/identification	Changes not required (entity to decide)
86	SCHEDULE 6	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (c) Monitored conditions: Monitored conditions show that defect will not fail before next inspection. Such indications are the least severe and will not require examination and evaluation until next scheduled integrity assessment interval provided that they are not expected to grow to critical level prior to the next scheduled assessment.	6.1.6 Mitigation and Response (Repair and Prevention) (A) Mitigation through Repair Actions: (c) Monitored conditions: Monitored conditions show that defect will not fail before next inspection. Such indications are the least severe and will not require examination and evaluation until next scheduled integrity assessment interval provided that they are not expected to grow to critical level prior to the next scheduled assessment.	IOCL: This is termed as PR-3 (Priority -3) with a schedule for repair within next 12 months or can be retained till next inspection depending upon the risk posed by the anomaly	Changes not required (entity to decide)
87	SCHEDULE 6	6.2.2 Continuous Improvement Based on results of the internal reviews, integrity assessment and mitigation programme shall be improved and documented.	6.2.2 Continuous Improvement Based on results of the internal reviews, integrity assessment and mitigation programme shall be improved and documented.	IOCL: Can we consider meeting requirement of Pipeline Safety Management System (PSMS) as per API RP 1173 as all the above points are covered in a more concise manner in API RP 1173	No change is required (entity to decide)

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
88	SCHEDULE 6	<p>Integrity Management System shall be evaluated and reviewed as per the frequency described in Schedule-9 of these regulations. Issues that would typically be reviewed may include, but are not limited to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Performance measures. <p>Page 30 of 44</p> <ul style="list-style-type: none"> <input type="checkbox"/> Testing and inspection successes and failures. <input type="checkbox"/> New threat identification. <input type="checkbox"/> Root cause analysis of pipeline breakdowns and accidents. <input type="checkbox"/> Process enhancement / changes (Management of Change). <input type="checkbox"/> Recommended changes for the Integrity Management System. <input type="checkbox"/> Additional training requirements necessary to support Integrity Management System. 	<p>Integrity Management System shall be evaluated and reviewed as per the frequency described in Schedule-9 of these regulations. Issues that would typically be reviewed may include, but are not limited to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Performance measures. <p>Page 30 of 44</p> <ul style="list-style-type: none"> <input type="checkbox"/> Testing and inspection successes and failures. <input type="checkbox"/> New threat identification. <input type="checkbox"/> Root cause analysis of pipeline breakdowns and accidents. <input type="checkbox"/> Process enhancement / changes (Management of Change). <input type="checkbox"/> Recommended changes for the Integrity Management System. <input type="checkbox"/> Additional training requirements necessary to support Integrity Management System. 	<p>IOCL:</p> <p>Can we consider meeting requirement of Pipeline Safety Management System (PSMS) as per API RP 1173 as all the above points are covered in a more concise manner in API RP 1173</p>	No change is required (entity to decide)
		<ul style="list-style-type: none"> <input type="checkbox"/> Public awareness programme. <input type="checkbox"/> Inspection tool performance (whenever applicable). <input type="checkbox"/> Inspection tool vendor performance. <input type="checkbox"/> Alternative repair methods. <input type="checkbox"/> Staffing for inspections, testing and repairs. <input type="checkbox"/> Past and present assessment results. <input type="checkbox"/> Data integration and risk assessment information. <input type="checkbox"/> Additional preventive and mitigating actions. <input type="checkbox"/> Training needs of O&M personnel. <input type="checkbox"/> Additional items as necessary to aid in the success of the IMP programme. <p>Based on results of the internal reviews, integrity assessment and mitigation programme shall be improved and documented.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Public awareness programme. <input type="checkbox"/> Inspection tool performance (whenever applicable). <input type="checkbox"/> Inspection tool vendor performance. <input type="checkbox"/> Alternative repair methods. <input type="checkbox"/> Staffing for inspections, testing and repairs. <input type="checkbox"/> Past and present assessment results. <input type="checkbox"/> Data integration and risk assessment information. <input type="checkbox"/> Additional preventive and mitigating actions. <input type="checkbox"/> Training needs of O&M personnel. <input type="checkbox"/> Additional items as necessary to aid in the success of the IMP programme. <p>Based on results of the internal reviews, integrity assessment and mitigation programme shall be improved and documented.</p>		
89	SCHEDULE 7	<p>APPROVAL OF INTEGRITY MANAGEMENT SYSTEM (IMS):</p> <p>For the first time the approval of the IMS document shall be done by the Board of the entity.</p>	<p>APPROVAL OF INTEGRITY MANAGEMENT SYSTEM (IMS):</p> <p>For the first time the approval of the IMS document shall be done by the Board of the entity.</p>	<p>IOCL:</p> <p>This may be kept in the purview of respective Directors rather than Board</p>	No change proposed
Other Amendments					
90	3. Applicability	These regulations shall apply to all the entities laying, building, operating or expanding natural gas pipelines.	These regulations shall apply to all the entities engaged in laying, building, operating or expanding natural gas pipelines.		
91	4. Scope.	These regulations shall cover all the existing and new natural gas transmission pipelines, spur lines, sub-transmission pipelines (STPL) and dedicated pipelines. This includes the associated facilities required for transportation of natural gas through pipelines that is terminals, intermediate pigging facilities, compressor stations, sectionalizing valves etc.	These regulations shall cover all the existing and new natural gas transmission pipelines, spur lines, sub-transmission pipelines (STPL) and dedicated pipelines. This includes the associated facilities required for transportation of natural gas through pipelines such as terminals, intermediate pigging facilities, compressor stations, sectionalizing valves etc.		
92	5. Objective.	(1) These regulations outline the basic features and requirements for developing and implementing an effective and efficient integrity management plan for natural gas pipeline system.	These regulations outline the basic features and requirements for developing and implementing an effective and efficient Integrity Management Plan (IMP) for natural gas pipeline system.		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
93	7. Default and consequences.	(1) Compliance to the provisions of these regulations shall be done through implementation schedule as described in these regulations at Schedule-7 and Schedule-8 in conjunction with Appendix-II. (2) In case of any shortfall in achieving the implementation schedule of Integrity Management System as specified in these regulations, the entities shall be liable to face the following consequences, namely:-	(1) Compliance to the provisions of these regulations shall be done as described in these regulations at Schedule-7, Schedule-8 and Schedule-9 in conjunction with Appendix-II. (2) In case of any 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:-		
94	6.1.1 Initial Data gathering, review and integration:	Data related to design and engineering, construction, pre-commissioning and commissioning of pipeline assets, operation and maintenance shall be gathered and reviewed along with post-construction operational and integrity assessment data gathered to identify the potential threats along the pipeline system. Operational and integrity assessment data will be continuously updated while performing various activities along the pipeline such as patrolling, aerial surveillance, Cathodic Protection (CP) monitoring, monthly maintenance of equipments etc. and records maintained either hard or soft options.	Data related to design and engineering, construction, pre-commissioning and commissioning of pipeline assets, operation and maintenance shall be gathered and reviewed along with post-construction operational and integrity assessment data gathered to identify the potential threats along the pipeline system. Operational and integrity assessment data will be continuously updated while performing various activities along the pipeline such as patrolling, aerial surveillance, Cathodic Protection (CP) monitoring, monthly maintenance of equipment etc. and records maintained either hard or soft options.		
95	6.1.6 Mitigation and Response (Repair and Prevention)	(B) Mitigation through Preventive Actions: The monitoring scheme and frequency should be decided by the pipeline operator subject to compliance of Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Natural gas pipeline) Regulations, 2009. The few schemes are as follows: (a) Patrolling of pipelines and associated facilities (b) Maintenance of Right of Use and inspection of Crossings (c) Pipeline Cleaning / Pigging (d) Inspection of cathodic protection system (e) Coating Survey (Closed Potential Logging / Direct Current Voltage Gradient / Pearson/Current Attenuation Test)	(B) Mitigation through Preventive Actions: The monitoring scheme and frequency should be decided by the pipeline operator subject to compliance of Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for Natural gas pipeline) Regulations, 2009. Few schemes are as follows: (a) Patrolling of pipelines and associated facilities (b) Maintenance of Right of User and inspection of Crossings (c) Pipeline Cleaning, Pigging (d) Inspection of cathodic protection system (e) Coating Survey (Closed Potential Logging / Direct Current Voltage Gradient / Pearson/Current Attenuation Test)		

Sl.	Clause No.	Existing clause	Proposed clause	Comments received	Sub-committee views
96	6.2 Performance Evaluation Plan:	<p>Every pipeline operator shall define suitable performance indicators which can be monitored to give a picture of the integrity levels of various aspects of the operator's pipeline assets. Refer ASME B 31.8S table no 8 and 9 for finalizing performance measures and performance matrix respectively. Monitoring of these indicators on a periodic basis against pre-defined targets helps to assess the effectiveness of Integrity Management programme. Performance indicator measures should be selected carefully to ensure that they can reasonably indicate the effectiveness of programme and health of the assets.</p> <p>....</p> <p>(i) Process measures e.g. number of damages per excavation notification received</p> <p>(ii) Operational measures e.g. number of significant In-line Inspection anomalies</p> <p>(iii) Direct integrity measures e.g. number of damages per km. of pipeline length</p>	<p>Every pipeline operator shall define suitable performance indicators which can be monitored to give a picture of the integrity levels of various aspects of the operator's pipeline assets. Monitoring of these indicators on a periodic basis against pre-defined targets helps to assess the effectiveness of Integrity Management programme. Performance indicator measures should be selected carefully to ensure that they can reasonably indicate the effectiveness of programme and health of the assets.</p> <p>....</p> <p>(i) Process measures e.g. Number of damages per excavation notification received</p> <p>(ii) Operational measures e.g. Number of significant In-line Inspection anomalies</p> <p>(iii) Direct integrity measures e.g. Number of damages per km. of pipeline length</p>		
97	6.2.1 Performance Measures	<p>Goals Performance Measure</p> <p>To maintain pipeline Pipe-to-Soil Potential (PSP) within acceptable limits - PSP Level</p> <p>Execution of In-line Inspection pigging - As applicable</p> <p>Leakage and ruptures - Number</p> <p>Development, Training and Awareness programmes - Number of training and awareness programmes conducted in a year</p> <p>No Right of Use encroachments - Number of encroachments</p>	<p>Goals Performance Measure</p> <p>To maintain pipeline Pipe-to-Soil Potential (PSP) within acceptable limits - PSP Level</p> <p>Execution of In-line Inspection - As applicable</p> <p>Leakage and ruptures - Number</p> <p>Development, Training and Awareness program- Number of training and awareness program conducted in a year</p> <p>No Right of Use encroachments - Number of encroachments</p>		
98	SCHEDULE-8	<p>1. Compliance with Petroleum and Natural Gas Regulatory Board (Technical Standards and specifications including Safety Standards for Natural gas pipelines) Regulations, 2009</p> <p>- YES/NO confirmation within 1 month from date of notification of these regulations</p>	<p>1. Compliance with Petroleum and Natural Gas Regulatory Board (Technical Standards and specifications including Safety Standards for Natural gas pipelines) Regulations, 2009</p> <p>- Confirmation to be submitted to PNGRB along with submission of approved IMS document.</p>		
99	SCHEDULE-8	<p>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 these regulations</p>	<p>Preparation of Integrity Management System document and approval by Head of Operation or Maintenance team of the entity.</p> <p>- 1 year from date of notification of these regulations*</p>		
100	Shchedule-10	<p>The entity which is preparing Integrity Management System should address the manpower requirement for its present and future operations. The qualification of such manpower shall conform to Appendix-IV.</p>	Deleted		

