

## *The Structured Approach to Asset Management™*

The PIMS of London team founded their reputation in Pipeline Integrity Management, our consultants and key customers pioneered modern Pipeline Integrity practice. Today PIMS has evolved these practices - we apply Management Processes, Continuous Improvement Methodologies and Operating Reliability Systems to define what we have termed as *The Structured Approach to Asset Management™*. Our game-changing services enable you to configure, apply and operate an effective and efficient Pipeline Integrity Management System.

We summarise our Pipeline Integrity Management Services as four Integrity Management Programme Components, described below; we complement these with Programme Support Elements described on the back cover of this brochure

### Strategic Planning

By helping oil & gas leaders to make their businesses better, we identified the Strategic Planning elements that you require to configure & apply the best-in-class Pipeline Integrity Management System. These elements are driven by your defined set of Pipeline Goals & Objectives.

Our approach empowers you to demonstrate the effectiveness of your configured Pipeline Integrity Management System and implement continuous improvement in Pipeline performance. By following this approach, you develop a stronger Pipeline Division - focused upon a common business strategy.

### Repair & Rehabilitation

It is important for you to maximise the return on the investments you have made to develop integrity management plans, programmes and initiatives; Effective, tracked execution ensures such a return. We offer a series of pipeline Repair & Rehabilitation elements that support you with the identification and integration of workflow, the supervision of task completion and the review of incremental progress toward your Pipeline Goals and Objectives.

These services demonstrate our commitment to the rhythm of a continuous improvement cycle and reflect our desire to implant this rhythm into your Pipeline Division with effective results - ensuring that your Pipeline expenditure is properly targeted with a maximum, measurable impact towards your Pipeline Goals and Objectives.

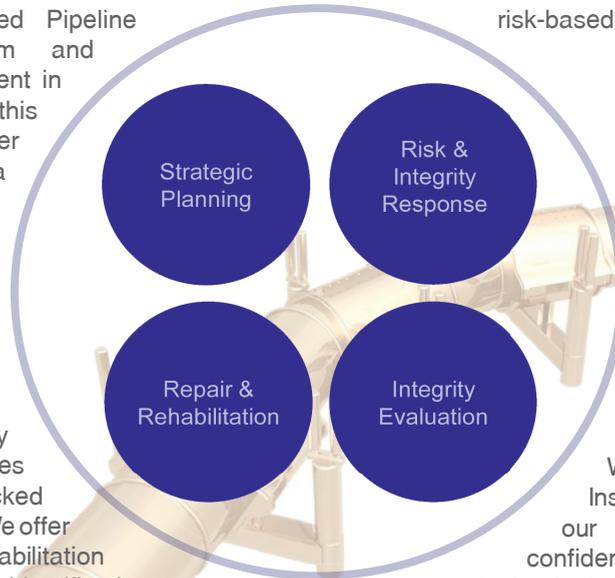
### Risk & Integrity Response

We developed elements to identify and quantify all of the obstacles to your Pipeline Goals & Objectives, then express the degree of this risk and develop the most robust Response Strategy that overcomes these obstacles. These elements can be applied in a prescriptive manner, supporting continuous improvement towards a risk-based methodology, or as a data-enabled risk-based programme from the outset.

Fully consistent with both ASME B31.8S and API Standard 1160, set within the context of our *Structured Approach to Asset Management™*, these elements ensure that your responses are effective, compliant and fully aligned with your business strategy.

### Integrity Evaluation

With a proven heritage in Pipeline Inspection and Integrity Evaluation, our engineers and consultants confidently deploy the appropriate skills, technologies and codes to execute and evaluate an inspection campaign properly within context of your Pipeline Integrity Management System. Our Integrity Evaluation elements minimise the expense and disruption associated with pipeline inspection - we identify locations and select technology on a segment-by-segment basis, following proper risk consideration; we also make sure that the information obtained is exploited to the full. By mapping the full picture of pipeline susceptibility, we distribute and utilise results in a manner that could radically reduce your future inspection liability.



The elements that comprise these four Integrity Management Programme Components are described overleaf.

## Pipeline Goals & Objective

To enable you to manage the expectations of your stakeholders & to demonstrate continuous improvement, we work with you to define Pipeline Goals & Objectives. These include relevant Key Performance Indicators to form a scale with which you can measure the impact of each specific actionable task over a given timescale — in this respect, the Goals & Objectives we develop are SMART.



## Pipeline Performance Evaluation

As a baseline, we benchmark the efficiency and effectiveness of your operation prior to the implementation of your Pipeline Integrity Management Programme. We then track incremental progress in your performance and measure the real impact of your Programme, as it evolves, against a scale established by your defined Pipeline Goals & Objectives.



## Repair & Rehabilitation Execution

We support you to enable your Pipeline Goals & Objectives, by assembling the finest world-class talent, best-practice processes and leading-edge technology. Our industry position enables us to select and procure the most appropriate external resources to complement our in-house team — we can even integrate your own staff into our team throughout the Programme, ensuring that they sustain your path to continual improvement after our participation is complete. We have proven capability in every element of the complete Integrity Management Programme — call us in if you have a Programme task that is incremental to the capabilities of your Pipeline Division. From procurement through to final handover, we execute the works and supervise task completion with a continual focus on the progress toward your Pipeline Goals and Objectives.

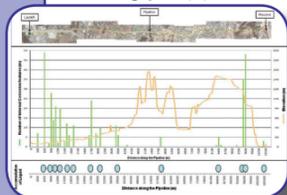


## Repair & Rehabilitation Planning

Integration is key to the success of your Pipeline Integrity Management System - we integrate FFP outputs with both the outstanding IMP outputs and those routine, scheduled activities that remain valid during the application of your Pipeline Integrity Management System. We ensure that your plans reflect a well-defined pipeline repair and rehabilitation strategy, that we can formalise for you. When implementing progressive integrated maintenance contracts, the integrity management process drives your programme forward; a disciplined & structured approach is therefore critical. This is the approach that PIMS applies, as an integrity management company focused of the achievement of your Pipeline Goals & Objectives.

## Fitness for Purpose (FFP) Evaluations

We perform Post Inspection Evaluation works upon ILI data to demonstrate whether your pipeline is fit-for-purpose. Should your pipeline fall short of a fit-for-purpose condition, we identify the corrective actions required to restore condition. Additionally, we schedule the future repair & remediation strategies, re-inspection programmes and other actions required to sustain your pipeline's fitness-for-purpose over its intended life. We are proud of the breadth and depth of engineering disciplines that we apply when validating your pipeline as compliant with its appropriate and intended function — we can even precisely articulate this appropriate and intended function as a Pipeline Goals & Objective-setting exercise. This gives you the means to accurately and consistently measure pipeline performance across your network.



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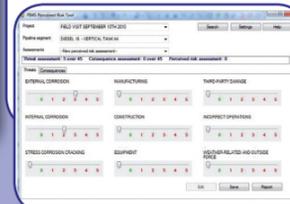
## Pipeline Integrity Management System (PIMS) Design

We configure Integrity Management Cycles that align the operation of your Pipeline Division with that of your Business. We also define the interfaces and identify the Programme Support elements that enable you to apply these cycles in a compliant manner. We design the processes, specify the technology and identify the skills-sets required to operate the System in a manner that is tailored to suit your Pipeline Division. Our System design shows you how each clearly defined & executable task integrates to ensure that you meet your Pipeline Goals & Objectives on time.



## Segmentation & Susceptibility

Using our own software, or in conjunction with established risk assessment modules, we segment your Pipeline Asset dynamically. By assembling and overlaying segments according to common properties & characteristics, including relevant threats & consequence classes, we can generate comparable regions across your pipeline network. This work establishes the building blocks and tools from which direct assessment programmes and susceptibility studies can be constructed. Our work is not automated — our subject matter experts (SME's) work with you to make sure that clear and consistent criteria are used to determine which factors will obstruct your Pipeline Goals & Objectives, where and when. We then identify the subsequent information that is required to validate these susceptibility conclusions and properly quantify the probability of failure due to these threats.

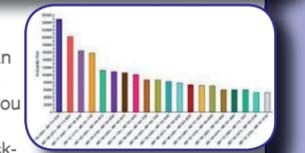
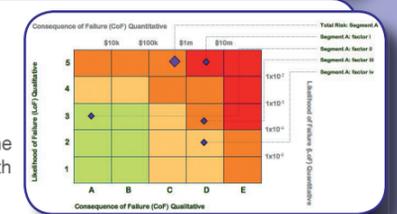


## Data Gathering & Integration

Once the factors that could obstruct your Pipeline Goals & Objectives have been identified, we gather the data to quantify the odds. We organise all the available information, enabling us to determine threat susceptibility, probability of failure and the consequence of failure at any given location. We are comfortable to digitise physical information and integrate electronic data sources. We review each data element to ensure that it is valid; we then apply our alignment tools to ensure data sets have a common linear reference. Finally, we organise this information for you: arranging uploading templates for subsequent risk assessment works, setting data management protocols, file hierarchies, updating procedures, storage & collaborative access arrangements. This gives you a powerful PIMS Database, one that enables you to maintain and sustain the value of your information over the lifetime of your pipeline.

## Risk Assessment

To safeguard the performance of your Pipelines you need the clarity to see which actions will have the greatest impact in meeting your defined Pipeline Goals & Objectives. Our Risk Assessment elements provide this clarity. We consistently evaluate all the organised and available data to produce credible and validated Risk Assessments. We rank all your Pipeline segments according to their risk profile, supporting each ranked position with information regarding the type, mix and severity of threat and consequence considerations. This enables you to see the impact of a variety of response actions across your Pipeline network. Our Risk Assessment offerings range from efficient Perceived Risk tools, operated by our subject matter experts (SME's), through to full probabilistic models configured with risk-algorithms to suit your Business. You can choose to have us operate specialist risk-assessment software on your behalf, feeding the outputs into your PIMS Programme, or install software as a PIMS component that you sustain thereafter. Risk-assessments are crucial in shaping your integrity management decisions, so we ensure that results are validated. You can be sure that our Pipeline risk-assessment results provide robust and appropriate drivers for your Integrity Management Plans.



## Integrity Management Plans (IMP's)

We use Risk Assessment outputs, evaluated in the context of your Pipeline Goals & Objectives, to support the selection & scheduling of appropriate response actions in an Integrity Management Plan (IMP).

- These responses include:
- Inspection Programmes** to confirm, locate & characterise anomalies before they cause failure. Following our structured approach, we examine Risk & Susceptibility to determine what segments of pipeline require inspection using which technique. We consider our Inspection Programmes to be the most targeted and cost-effective programmes in the industry.
  - Corrective Actions** to address identified critical threats within a pre-determined discovery period. Additionally, we also schedule works to correct acknowledged, non-critical threats and design "decision-tree" processes to correct additional threats that will be exposed during your Inspection Programme.
  - Preventative Maintenance** to remove the conditions that may give rise to a threat or a potential consequence. All our recommendations are supported by strong business-cases that we develop according to your circumstance.
  - Contingency Planning** to validate your "last line of defence" and consider how your organisation can respond to a failure and successfully limit consequence. We can also offer Emergency Response Planning (ERP) as a Programme Support element

Within the context of a Pipeline Integrity Management System, IMP tasks and their intended impact upon your Pipeline Goals & Objectives are tracked as part of our Performance Evaluation service.

## In-line Inspection (ILI)

We can manage your inspection programme - as a turn-key execution service, following-on from an IMP that we have developed, or as a standalone service. Key team members, in PIMS, have countless man-years experience in managing ILI campaigns with the full spectrum of fleets: geometry, metal loss and crack detection runs using mechanical, magnetic & ultrasonic tools, either standalone or in combo with Inertial Mapping Units (IMU). We have a proven pedigree and an established network throughout both the traditional and contemporary ILI industry — our experience in ILI is underlined when we supply specialist data analysts to accurately characterise unusual features and anomalies. Couple this experience with our unique ability to frame your inspection programme within the context of a Pipeline Integrity Management System and you will understand why PIMS is the intelligent choice for outsourced ILI management.



## Direct Assessment (DA)

Direct Assessment (DA), applied by PIMS, is a powerful tool to evaluate your Pipeline's susceptibility to time dependant threats - external corrosion, internal corrosion and stress-corrosion cracking. Effective DA is assured by our *Structured Approach to Asset Management™* - in line with recommended practice (NACE SP0502 2008, SP0206 2006 & ASME B31.8S), we only apply 4-Stage DA. Post-assessment works are therefore included in our service - you benefit from a robust Integrity Evaluation that concludes the approach. You can consider our DA as an accepted alternative to In-line Inspection (ILI) or Hydrotesting, even covering those regions where Integrity Evaluations are required by Regulation. By elaborating the segmentation & susceptibility elements that we complete, our DA can even be integrated with ILI results to improve your confidence levels, system-wide and reduce your future inspection liability. When it comes to DA, only the progressive, structured approach, as applied by PIMS, will do.



The four components of Integrity Management and their constituent elements are complemented by our Programme Support Elements. These enable you to successfully apply and sustain a Pipeline Integrity Management System, in the spirit of Continuous Improvement, and:

- ✓ Develop the vision to anticipate and manage change
- ✓ Provide direction with clear performance objectives
- ✓ Commit to the quality improvements that your PIMS will deliver
- ✓ Manage the interfaces that allow information to flow across Divisions
- ✓ Develop your personnel and build a vibrant skills mix
- ✓ Make the appropriate provision to deal with emergencies
- ✓ Build a dependable repository of effective Procedures
- ✓ Exploit and sustain the full value from your Pipeline Data

These Programme Support Elements collectively form three Components:



## Management Systems

Management System elements optimise the effectiveness of your Integrity Management Plan (IMP), making it more effective. Transparent and accessible *Performance Plans* are developed for your Pipeline Division; the expectations of your Stakeholders are managed by effective *Communications Plan* and a compliant *Quality Plan* ensures that your progress is demonstrable with a clear audit path.

These Programme Support elements comply to B31.8S, as does our pre-evaluation work, undertaken to smoothly facilitate the management of change. Moreover, as your Pipeline Division team members and stakeholders are key to successful programme implementation, we identify and execute *Change Management Plans* with you. These ensure that you are operating in an environment that embraces, the introduction of a new Management System.

## Operational Effectiveness

Your Operational Effectiveness governs the sustainability of your Pipeline Integrity Management System (PIMS). We ensure that your Pipeline Division has the *Organisational Effectiveness* to facilitate sustainable, continuous pipeline integrity improvement. Additionally, we develop the *Training & Competency* programmes that equip your team with the skills to sustain the applied PIMS. We then support you with compliance tools - our *Procedures Development* element ensures that you are properly resourced for consistent and compliant PIMS implementation. To complement this, we provide *Emergency Response Planning* to ensure that your last line of defence is in place to contain the consequence of pipeline failure in a prepared, rehearsed and compliant manner.

## Data Management

PIMS offer integrated, collaborative Data Management services that enable you to access and maintain information - liberating data to support informed choices regarding the Performance of your Pipelines.

Effective data management is central to the efficient implementation of your Pipeline Integrity Management System. We develop PIMS Databases that facilitate tools to provide:

- Alignment of Data, along a common linear reference
- Dynamic Segmentation of your Pipeline
- Validated templates for Risk Assessment works
- Probabilistic Risk Modelling, with appropriate algorithms
- Collaborative workflow management with tracking of progress
- Progressive, structured Susceptibility & Integrity Evaluations
- Performance Evaluation dashboards and report generators

Our Integrity-led approach, supported by our Business Management experience, enables us to correctly position Data Management within your Pipeline Integrity Management System. We insert those collaborative tools that improve compliance to process and eliminate redundancy in your Corporate Systems.



We apply the disciplined approach of New Technology Introduction (NTI). Applying our Structured Approach, we establish a robust business case to navigate the tollgates of detailed specification, design, build, test, launch and in-service validation. Our NTI missions are executed with clarity of vision, and of purpose, that ensures the completed deliverable meets your goals.

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