Engineering For A Safer World

VAIL-Plant
ASSET INTEGRITY MANAGEMENT SOFTWARE

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VAIL-Plant Certifications

VAIL-Plant Software has been certified to meet the requirement of Industry Standards API 580, ASME B31.8S and IEC 61508 Software Development requirement that ensures the integrity of Software. VAIL-Plant is also SAP-certified for integration with SAP ERP System.
VAIL-PLANT DASHBOARD

VAIL-Plant Asset Integrity Management Software

PIPELINE INTEGRITY MANAGEMENT SYSTEM ONSHORE

VAIL-PLANT DASHBOARD

VAIL-PLANT MODULES

Asset Performance Management System
Pressurized Equipment Management System
Pipeline Integrity Management System
Electrical, Instrumental & Rotors Management System
Pressure Safety Valve & Relief Valve Management System
Pipeline Integrity Management System Onshore
Civil Integrity Management System
Lifting Equipment Management System
Cathodic Protection Management System
Pipeline Integrity Management System Offshore
Well Integrity Management System
Flexible Pipeline Integrity Management System
Structure Integrity Management System
Inspection Scheduling Management System
Flexible Pipeline Integrity Management System
Computerized Maintenance Management System
Inspection Scheduling Management System
Enterprise Resource Planning Interface
Flexible Pipeline Integrity Management System
Control Panel
Touch Points:

- Modular Approach – different modules specific to user requirements.
- Hierarchy Recording and Management
- Asset Performance Management – Graphical Dashboard overview.
- Equipment Condition Monitoring
- Covers a wide range of equipment types i.e. Pressure Vessels, Columns, Drums, Process Piping, Steel Structures, Pipelines, Lifting Equipment, Electrical Systems, Instrumentation/Control Systems, Rotating Equipment, Hull/FPSO, Wellheads, Cathodic Protection, etc.

Root Cause Analysis to handle the analysis of different types of failures.

- Equipment Inspection, Maintenance, Failure, Replacement History management.
- Identification and Evaluation of Integrity KPIs (Inspection and Maintenance).
- Risk Matrix Configuration.

- Equipment Condition Monitoring
- Equipment Inspection, Maintenance, Failure, Replacement History management.

VAIL-PLANT ESSENTIALS

Following features of VAIL-Plant application are available for each module:

**Inspection/Maintenance**
- Workflow configuration for Inspections.
- Customizable inspection / maintenance business process.
- Inspection management with identified user roles.

**Integration**
- ERP Integration with SAP, MAXIMO, Infor EAM, Oracle ERP, Epicor ERP, etc.
- Integrated with ArcGIS to display Geographical Data.
- Interface with Inspection Data logger, Outlook, AutoCAD, Third party RBI software and Active Directory.

**Reporting**
- Reporting Trends (Risk Levels, Leaks, Failures, Remnant Life, Corrosion Rates, Replacements, etc.)
- Standard Reporting.
- Ad-hoc Reporting.
- User list View with Graphical Representation.

**Search and Custom Query**
- Flexible Form Based search functionality with full text and wildcard Search.
- Custom Query functionality with user defined criteria on an ad-hoc basis.

**Document Interface**
- Reference Libraries (P&ID’s, PFD’s, Sketches, SOP’s, Manuals, Isometrics, etc.)
- Interface with Document Controllers (SharePoint, Envision, OMNIDOCs, etc.)
- Drawings Management (Sample Sketch, Isometrics, GA Drawings, PFD Drawings, etc.)

**Data Reliability**
- Overall Management Dashboards
- Bulk Loading
- Data Importing/Exporting Templates
- Data Security, Role-based Security
RBI ASSESSMENT PROCESS

1. Collection of Engineering Data for each component.
2. Allocate Damage Mechanisms for every component.
3. Assessment of Probability of Failure (PoF) based on questionnaires specific to each damage mechanism.
4. Assessment of Consequence of Failure (CoF) based on questionnaires for each of the consequence categories: Business, Safety, Reputation, and Environment.
5. Assessment of Risk for each component by looking up the PoF and maximum CoF on the Risk Matrix.
6. Assignment of Inspection Effectiveness score and rating to each component based on a questionnaire.
7. Calculation of Next Inspection Date from Equipment Risk, Inspection Effectiveness, Historical Corrosion Rates, and the remnant life.

FMECA ASSESSMENT PROCESS

1. Collection of Engineering Data for each component.
2. Allocate Failure Modes for every joint.
3. Assessment Probability of Failure (PoF) to shortlist the failure modes to be considered in the FMECA ability and consequence assessment is carried out.
4. Every failure mode is analyzed with respect to its effects and consequences. Subsequently, it is assigned Problem code, damage code, PMR and recommendations are given.
5. Every failure mode is assigned a Probability of Failure (PoF).
6. Every failure mode is assigned a consequence value for safety, business, environment, and capital aspects. Subsequently, it is assigned a maximum Consequence of Failure (CoF).
7. A Risk Rank is calculated for each failure mode and subsequently for the equipment.
VAIL-Plant APMS module is an operator’s single window specifically designed to equip oil and gas organizations to monitor the overall status of System Integrity parameters such as Remnant Life, Inspection Activities, Leaks/Failures, Risk Ranking, Corrosion Rate, and Replacements via the dashboard. It allows the operator to perform extensive filtering to preview the desired output in form of graphs and reports for data analysis.

Module contains following main features:

- Single dashboard for RBI, RCM, Pipeline, Structure and Process Information Historian studies.
- View overall status of VAIL-Plant modules individually and altogether.
- Filter out the graphs with respect to the area and modules on the navigation tree.
- User defined graphical charts and data.
- View Total Tag Counts, Total number of completed RBI studies and Total number of completed FMECA studies on the screen.
- View the relevant details of the metric by clicking any graph or reported figure.
- Redirect to the modules to view the particular metric details.

Module contains main features:

- Engineering data capturing along with Hierarchy Management and capturing of Drawings, Isometrics, PFD’s and P&ID’s.
- Inspection History Recording with respect to multiple positions and TML’s.
- Semi quantitative RBI methodology for risk evaluation and inspection planning against identified damage mechanisms compliance with API 580.
- Estimated Corrosion Rate Models based on API 581.
- KPI’s identifications & calculation/evaluations.
- Short/Long Term Corrosion Rate and Remnant Life Calculations.
- Estimated Corrosion Rate Models based on API 581.
- KPI’s identifications & calculation/evaluations.
- Short/Long Term Corrosion Rate and Remnant Life Calculations.
- Plant Inspection Requirements (PIR’s) generation.
- Root Cause Analysis (RCA) against failures.
- Time, Cost & Resources (CTR) Management.
- Data importing from excel workspace templates.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.

VAIL-Plant PEMS module contains a comprehensive database for Piping and Pressurized Equipment such as Vessels, Tanks, Heat Exchangers, etc. It covers complete Risk Assessment Process and Facilitates Inspection Planning to predict the asset remaining life and next inspection data.

Module contains following main features:

- Engineering data capturing along with Hierarchy Management and capturing of Drawings, Isometrics, PFD’s and P&ID’s.
- Inspection History Recording with respect to multiple positions and TML’s.
VAIL-Plant PIMS modules for Onshore and Offshore pipeline is capable of managing and monitoring semi-qualitative Risk Assessment and Inspection planning for pipelines. Based on API 580, this module can be integrated with GIS to display data on geographical maps (e.g. pipeline route, equipment location, pipeline sections, etc).

Module contains following main features:
- Pipeline Profile Recording & Plotting.
- Probability of Failure (PoF) calculation and plotting along the pipeline (PoF Vs TIME) against applicable damage mechanism.
- Consequence of Failure (CoF) calculation against applicable damage mechanism.
- Risk Assessment against Stress Corrosion Cracking (SCC).
- External and Internal Corrosion Direct Assessment (ECDA & ICDA).
- Risk Assessment against third party damages.
- Corrosion calculation (NORSOK M-506).
- Scheduling of Integrity Management and Inspection.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.

PIPELINE INTEGRITY MANAGEMENT SYSTEM ONSHORE AND OFFSHORE (PIMS)

VAIL-Plant EIRMS module facilitates Reliability Centered Maintenance (RCM) and is capable of maintaining and organizing maintenance records and details of equipment such as Engine, Generators, Transmitter and Pressure Gauge etc.

Module contains following main features:
- Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) calculations.
- Failure Mode, Effect and Criticality Analysis and their Criticality Matrix.
- Reliability Operator and Reliability Generic Data Recording.
- Hierarchy Recording and Management.
- Design / Operational Data Capturing.
- Functional Data Recording.

ELECTRICAL, INSTRUMENT AND ROTARY MANAGEMENT SYSTEM (EIRMS)
PRESSURE SAFETY VALVE MANAGEMENT SYSTEM (PSVMS)

VAIL-Plant PSVMS module is based on API 576 technology. It facilitates FMECA Assessment of different PSVs/PRVs and is capable of maintaining and organizing Maintenance records, Datasheets, Drawings, Specification and Inspection Plan of Safety Relief Devices. Module contains following main features:

- Integrity Management Dashboard to view overall Inspection Status for all the assets.
- Structural Hierarchy Management.
- Design Engineering Data Management.
- RBI Analysis for PSVs.
- Identification of Failure Mode.
- Failure Modes Effects Criticality Assessment.
- Failure Effects.
- Development of Risk Matrix for Safety, Environment and Economy.
- Influencing factors/causes/maintainable items.
- Generic Failure Data.
- Risk Evaluation for each Identified Scenario.
- Inspection Planning and Risk Management.
- Determination of PoF & CoF.
- Inspection History Recording.
- Failure and Replacement History Recording.
- Cost, Time & Resource management.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.

STRUCTURE INTEGRITY MANAGEMENT SYSTEM (SIMS)

VAIL-Plant SIMS module facilitates the Risk Based Inspection and Inspection Planning of structures like Onshore and Offshore steel structures. It enables the operator to perform Risk Based Inspection and Inspection Planning of Structures.

Module contains following main features:

- Maintains the hierarchical tree to provide better understanding of the structure’s components according to their levels.
- Complete history recording of previously done inspections.
- Plant Maintenance Routines and Logistics Requirements.
- Facility Information.
- RBI Assessment.
- FMECA Analysis.
- Inspection Management.
- Inspection Flow Management.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.
WELL INTEGRITY MANAGEMENT SYSTEM (WIMS)

VAIL-Plant WIMS module equips the organizations with the facility to manage the risk of loss of good containment over the well lifecycle. It enables the operator to perform FMECA Analysis and Inspection Planning of various wellhead equipment.

Module contains following main features:
- Assumptions of equipment Operator historical data vs Generic Reliability Data comparison.
- Generation of PRR (Preventive Maintenance Routines).
- Production of maintenance & inspection recommendations to reduce the possibility of occurrence.
- Comprehensive checklists for most types of lifting equipment to facilitate Inspections.
- History Maintenance and calculation of MTBF & MTTR based on failures and replacements.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.
- Failure Mode, Effect and Criticality Analysis and their Criticality Matrix.
- Plant Maintenance Routines (PMR) generation.
- Work Order and Work Packs Generation.
- Inspection History Recording.
- KPI Calculator.
- Maintenance History Recording.
- Failures and Replacements Recording.
- Mean Time between Failures (MTBF) and Mean Time to Repair (MTTR) calculation.

LIFTING EQUIPMENT MANAGEMENT SYSTEM (LEMS)

VAIL-Plant LEMS module has been developed to inspect the status of Lifting Equipment e.g. Crane, Clamps, Forklifts, Hoists etc. in Oil and Gas Industry. It provides a lifting gear inspection checklist thus making it easier for the operator to carry out lifting equipment testing.

Module contains following main features:
- Organization of a systematic hierarchy using two approaches – Plant wise as well as Discipline wise.
- Maintenance of reliability model to estimate the failure frequency and trends of lifting equipment.
- FMECA Assessment which focuses on:
  - Primary and Secondary Functions.
  - Total or Partial Functional Failures.
  - Failure Modes.
  - Failure Effects.
  - Failure Characteristics (age or not age related failures).
  - Failure Classification (Hidden or evident).
  - Influencing Factors (root causes).
  - Failure Criticality on Safety, Environment, Production and Capital.
  - Operator Historical Data vs Generic Reliability Data comparison.
- Production of PMR (Preventive Maintenance Routines).
- Comprehensive checklists for most types of lifting equipment to facilitate Inspections.
- History Maintenance and calculation of MTBF & MTTR based on failures and replacements.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.
- Generation of PMR (Preventive Maintenance Routines).
- Failure Mode, Effect and Criticality Analysis and their Criticality Matrix.
- Plant Maintenance Routines (PMR) generation.
CIVIL INTEGRITY MANAGEMENT SYSTEM (CIMS)

Module contains following main features:

- Engineering and layout information of all civil nature.
- Maintains the hierarchical tree to provide better understanding of the civils’ components according to their levels.
- Defect Assessment, Risk Ranking and recommended repairs.
- Calculation of total defected area, estimated man days & their cost and overall cost for the recommended repairs.
- Inspection Planning & logistics requirements.
- Complete History recording of previously done inspections.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.

CATHODIC PROTECTION MANAGEMENT SYSTEM (CPMS)

VAIL-Plant CPMS module maintains the Engineering Data and allows the operator to perform Risk Assessment and Inspection Management for different types of CP equipment such as Transformer-Rectifiers, Ground Beds, Anode Junction Boxes, Test Points, and Coupons, etc.

Module contains following main features:

- Inspection and Maintenance history recording.
- Hierarchy recording and management by Equipment type as well as Plant Number.
- Capturing Design, Operational and Functional data based on Equipment type.
- Failure mode, effect and criticality analysis and their criticality matrix.
- Plant Maintenance Routines (PMR) generation.
- Capturing Test and Monitoring data based on Equipment type.
- Graphical trending of parameters such as efficiency level.
- Drawings Management.
- Graphical Trends.
- Effective Reporting.
- Custom Query.
FLEXIBLE PIPELINE INTEGRITY MANAGEMENT SYSTEM (FPIMS)

- Division of Flexible Pipeline into subsystems and degradation loops.
- Probability of failure and consequences for each equipment.
- Evaluation of the impact of changes in process conditions and materials on installation risk and inspection program.
- Risk Analysis for each degradation mechanism.

Module contains following main features:
- Identification of Degradation Mechanisms with reference to API 17B for exhaustive list of failure modes and possible defects for flexible risers.
- Risk Analysis of Flexible Pipeline.
- Determination of Confidence Grading.
- Development of detailed inspection plan.
- Graphical Trends.
- Effective Reporting.
- Custom Query.

HULL INTEGRITY MANAGEMENT SYSTEM (HIMS)

- VAIL-Plant HIMS module provides a rationalized approach to perform inspections of Hull structure and identifies the general and critical area for inspection activities.
- Six inspection criteria (Coating Condition, General Condition, Pitting/Grooving, Deformation Fractures and Cleanliness) have been identified for each compartment & these are inspected for each zone.
- Compartments are divided into zones for inspection and grading of inspection criteria.
- Identification of Critical structural areas for a compartment based on engineering analysis and in-service experience.
- The inspection criteria are graded with a score (rating) from 0 to 5. The scores are added for each zone and rolled up to get a normalized score for the compartment.
- Capability to identify the general inspection activities and inspection activities for critical areas.
- Identification of Critical structural areas for a compartment/zone based on engineering analysis and in-service experience.
- The inspection criteria are graded with a score (rating) from 0 to 5. The scores are added for each zone and rolled up to get a normalized score for the compartment.
- Capability to identify the general inspection activities and inspection activities for critical areas.

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- Six inspection criteria (Coating Condition, General Condition, Pitting/Grooving, Deformation Fractures and Cleanliness) have been identified for each compartment & these are inspected for each zone.
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- Capability to identify the general inspection activities and inspection activities for critical areas.
Enterprise Resource Planning Interface (ERPI)

VAIL-Plant ERPI module allows the organizations to interface with other ERP software systems that they use to manage their business. VAIL-Plant CMMS System provides an interface to link with external applications very easily allowing the operator to exchange data, update and share information.

Module contains following main features:

- VAIL-Plant can be fully integrated with ERP softwares such as Oracle, SAP, InfoEAM and MAXIMO.
- VAIL-Plant has been certified for integration with SAP ECC 6.0 based on ICC integration assessment in SAP PLM.
- VAIL-Plant can be integrated with Document Management System to exchange data.
- VAIL-Plant can be integrated with any third party RBI software to compare RBI results.
- VAIL-Plant Pipelines is integrated with Arc GIS and has the capability to display geographical data.
- VAIL-Plant has the capability to be integrated with Inspection Data logger: ULTRASONIC THICKNESS GAUGE (38DL PLUS).
- VAIL-Plant supports full integration to MS Office - Excel, Word, Export/Import, and PDF Documents.

Inspection Scheduling Management System (ISMS)

VAIL-Plant ISMS module coordinates with other VAIL-Plant modules to facilitate their inspection planning and recordings. With ISMS, operator can schedule and execute inspection schedules generated while documenting the inspections to create work orders.

Module contains following main features:

- Allows users to plan, schedule and execute PIRs. It automatically extracts inspection plans from CMMS such as SAP.
- Allows users to create work scopes, work packages for execution of PIR on a tag or a set of tags (package like boilers, piping). Drawings, documents, specifications, previous history schedule data, previous readings, previous anomalies, etc. summarized in one document.
- Allows monitoring process of the PIR Plan.
- Allows Reviewers and Approvers to enter remarks and comments and preserves the history of these remarks.
- Allows users to plan, schedule and execute PIRs. It automatically extracts inspection plans from CMMS such as SAP.
- Allows users to create work scopes, work packages for execution of PIR on a tag or a set of tags (package like boilers, piping). Drawings, documents, specifications, previous history schedule data, previous readings, previous anomalies, etc. summarized in one document.
- Allows Reviewers and Approvers to enter remarks and comments and preserves the history of these remarks.
- Allows monitoring process of the PIR Plan.
- Allows review and approval of inspection plans.

- Color coding to have a one-look summary of the status of inspections.
- VAIL-Plant has the capability to be integrated with Inspection Data logger: ULTRASONIC THICKNESS GAUGE (38DL PLUS).
- VAIL-Plant supports full integration to MS Office - Excel, Word, Export/Import, and PDF Documents.
VAIL-Plant CMMS module addresses the work order creation and the preventive and corrective measure of tag along with its maintenance until inspection maintenance closeout. Using VAIL-Plant CMMS, it gets easier for operators to track work activities, parts usage, and asset lifecycle.

Module contains following main features:

- Improved planning and scheduling.
- Allows operator to plan, manage, schedule maintenance, and approve requests and work orders and continue to the next step.
- Proper Preventive Maintenance reduces equipment downtime.
- Protects and extends life of assets.
- Helps operations and maintenance staff be more productive.
- Maintaining asset/equipment inventory.
- Scheduling of “preventive” maintenance through a formal service and WO process.
- Tracking of “unscheduled” repairs.
- Tracking the cost of labour and materials.
- Managing parts and materials inventory.
- Budgeting for equipment maintenance and repair.
- Recording the equipment history from installation to replacement.
- Module contains following main features:
**DELIVERABLES**

Client: ADNOC LNG  
Location: Abu Dhabi, UAE  
Region: Middle East

**SERVICE(S):**
Software Services

**OBJECTIVE:**
ADNOC LNG intends to appoint a contractor to supply a customized Inspection Management System software package, assist the user department to migrate and clean up the existing inspection and other relevant data, train the user department on administering the system, operation of the system and provide post implementation maintenance and support of the system.

**SCOPE OF WORK:**
The services included, but not limited to, the followings:
- Supply an off-the-shelf software package for the Inspection Management System.
- Customization of the software package to meet the user requirements.
- Assist users to clean up and migrate the existing inspection and other relevant data.
- Train the users in using/administering the system.
- Provision of services for installation of the system.
- Post implementation maintenance and support of the system.
- Documentation

**DELIVERABLES**

Velosi successfully submitted the following deliverables:
- **VAIL-Plant Inspection Management System following seven (07) modules:**
  - Pressurised Equipment Management System (PIMS)
  - Pressure Safety Valve Management System (PSVMS)
  - Structure Inspection Management System (SIMS)
  - Lifting Equipment Management System (LEMS)
  - Miscellaneous Equipment Management System (MEMS)
  - Cathodic Protection Management System (CPMS)
  - Inspection Scheduling Management System (ISMS)
- Hands on Training of VAIL-Plant Software.
- Annual Maintenance and Support.
- Submission of User and Admin Manuals.

**CASE STUDY**

**RISK BASED INSPECTION PROGRAM DEVELOPMENT FOR PETRONAS FLNG 1 (L) LTD. TOPSIDE STRUCTURE AND HULL**

Client: PETRONAS  
Location: Malaysia  
Region: Southeast Asia

**SERVICE(S):**
Implementation of FIMS (Facilities Integrity Management System)

**OBJECTIVE:**
Establish Risk Based Inspection (RBI) Program for Topside Structure Including Turret, Hull Structure including Cargo Tanks, Mooring System and Flexible Riser by carrying out comprehensive risk analysis.

Integration of recommended RBI IRP with class survey requirement including endorsement/approval from current Class Society.

**SCOPE OF WORK:**
The scope of work for the Risk Based Inspection Program Development for Petronas FLNG 1 (L) LTD Topside structure and Hull Structure:
- Topside Structure Including Turret
- Hull Structure Including Cargo Tanks
- Mooring System
- Flexible Riser
- RBI Software

**DELIVERABLES**

- Comprehensive RBI Study for Topside Structure.
- Tag Marked Drawings for SIMS and HIMS.
- Failure Rate and Risk Allocation.
- RBI Report with results and conclusions.
- Recommendation on additional safeguards and action(s) where required.
- Inspection plan comprising of inspection method, coverage and frequency.

**Threat Count**

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<th>Asset Description</th>
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<tr>
<td>Topside Structure</td>
<td>34 Modules</td>
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<tr>
<td>Hull</td>
<td>18 Tanks, foundations &amp; platforms</td>
</tr>
<tr>
<td>Flexible Riser</td>
<td>1 Flexible Riser</td>
</tr>
<tr>
<td>Mooring Chain</td>
<td>12 Mooring Chains</td>
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**OBJECTIVE:**
The development, implementation and support of RBI programs for field production facilities and pipelines during phase 1 and phase 2 development of the West Qurna-2 Field.

**SCOPE OF WORK:**
- Select cost effective and appropriate maintenance and inspection tasks.
- Development of Asset Integrity Management Systems.
- Development of Written Scheme of Examination.
- Development of RBI software with inspection data management capabilities.
- Integration of RBI Software with ERP system (SAP).
- Perform specific corrosion study for each equipment, piping & pipelines.
- Implement the RBI program for inspection data management and RBI analysis.
- Shift from a reactive to proactive maintenance regime.
- Produce an auditable system.
- Implement a risk management tool (VAIL-Plant).

**SERVICE(S):**
- Development, Implementation & Support of RBI Program for Full Production Facilities of West Qurna-2 Field

**CASE STUDY**

**DELIVERABLES**
Velosi submitted the following deliverables to Groupement Berkine:

**Asset Integrity Management System:**
- PEMS – Pressurized Equipment Management System.
- PIMSON – Pipeline Integrity Management System – Onshore.
- PSVMS – Pressure Safety Valve Management System.
- ISMS – Inspection Schedule Management System.
- Hands-on Training of VAIL-Plant Software.
- Risk Based Inspection (RBI) Study at GB HBNS and El-Merk Facilities along with Results and Conclusions for the following assets:
  - FMECA Study & Maintenance Plan for Wellheads and PSVs at HBNS and El-Merk Facilities along with Results and Conclusions.
  - Preparation of Standard Operating Procedures (SOPs).

**SCOPE OF WORK:**
- Development of Asset Integrity Management Systems.
- Perform specific corrosion study for each equipment, piping & pipelines.
- Implement the RBI program for inspection data management and RBI analysis.
- Development of Written Scheme of Examination.
- Development of RBI software with inspection data management capabilities.
- Integration of RBI Software with ERP system (SAP).

**CASE STUDY**

**DELIVERABLES**
Velosi successfully delivered following module of VAIL-Plant software:

**Asset Count**

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<td></td>
<td>Pipeline 4</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pipeline 5</td>
<td>6.3</td>
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<tr>
<td></td>
<td></td>
<td>Total</td>
<td>25.6</td>
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**Asset Integrity Management System:**
- Comprehensive RBI Program for Equipment, Piping & Pipelines, along with Results and Conclusions.
- Remnant Life Assessment.
- Inspection Plan.
- Failure Rate and Risk Allocation.
- Written Scheme of Examination.

**SERVICE(S):**
- RBI Implementation and Provision of Software
CASE STUDY
PIPELINE INTEGRITY MANAGEMENT PROGRAM FOR SNGPL

OBJECTIVE:
Development of Pipeline Integrity Management (PIMS) Software in accordance with ASME B31.8S.

SCOPE OF WORK:
SERVICE(S):
VAIL Plant Software: Development of customized software in accordance with ASME B31.8S for various modules.
Training: Comprehensive Training and hands on familiarization of SNGPL Engineers and IT Officer during development, implementation of PIM Manual and designated software.

PIMP:
Development of Pipeline Integrity Management Manual in line with ASME B31.8S. Implementation of PIM Program includes all the required field surveys & activities for 2 Buried Pipelines, Sales Metering Station & 1 Over Head Rover Crossing Line.

DELIVERABLES:
Velosi successfully submitted following deliverables to SNGPL:

- VAIL-Plant Software Modules: Asset Integrity Management System:
  - PIMS – Pressurized Equipment Management System.
  - PIMCON – Pipeline Integrity Management System - Onshore.
  - IMS – Inspection Schedule Management System.
  - EIRMS – Electrical Instrumentation Rotary Management System.
  - CPMS – Cathodic Protection Management System.
  - Implementation of PIM Program (PIMP).
  - PIM Manual (ASME B31.8S).
  - Comprehensive Training and hands on familiarization of VAIL-Plant.
  - Preparation of Standard Operating Procedures (SOPs).

CASE STUDY
ASSET INTEGRITY MANAGEMENT SYSTEM FOR ONSHORE AND OFFSHORE TANAP ASSETS

OBJECTIVE:
Development of an Asset Integrity Management Software to enable TANAP to schedule, prioritize and execute the inspection plan along with database management and data collection for Risk Assessment.

SCOPE OF WORK:
SERVICE(S):
VAIL-Plant Asset Integrity Management System (AIMS) Software Implementation & Management.

DELIVERABLES:
Velosi successfully submitted the following deliverables:

- VAIL-Plant Asset Integrity Management System Software Modules:
  - PEMS – Pressurized Equipment Management System.
  - FRASOFF – Pipeline Integrity Management System - Offshore.
  - FRASCON – Pipeline Integrity Management System - Onshore.
  - PFSIMS – Pressure Safety Valves Integrity Management System.
  - ISMS – Inspection Schedule Management System.
  - Control Panel.
  - Integration of VAIL-Plant system with SAP Plant Maintenance Module.
  - Integration of VAIL-Plant with ArcGIS for Geographical Interface.
  - Integration of VAIL-Plant with ollinoh Document Management System (EDMS).
  - GO LIVE of VAIL Plant Software.
  - Training of VAIL-Plant Software at client site.

- Provision and Implementation of VAIL-Plant Software modules to facilitate TANAP to ensure that all elements of the Risk Assessment are fully integrated and inspection data is part of the Asset Integrity Management System.
- Transfer of data to Computerized Maintenance Management System (CMMS) ensuring that inspection plans are fully implemented as planned during the Operations.
- Integration with Geographic Information system to view the Pipeline Locations in GIS.
- Interface with TANAP Document Management System to establish the related links between Client’s DCC, AIMS and CMMS.
- Detailed training courses to Client staff to ensure the program adoption and software usage is well understood by Client personnel and hands-on experience of AIMS software is transferred to TANAP staff.