IGU WOC3 Meeting (Houston, Texas, USA)
SPS and Uptime Solution Presentation
October 3, 2013
Agenda

- Introduction to GL Noble Denton
- Stoner Pipeline Simulator Overview
- Uptime Integrity Management Solution Overview
- Questions and Discussion

Jim Short – Senior Consultant
Geoff Craig – Senior Consultant
GL Noble Denton’s Oil and Gas Business

Assurance
- Certification
- Verification
- Inspection and quality assurance

Advanced Engineering & Consulting
- Analysis and engineering consulting
- Field development planning
- Testing services
- Asset integrity management
- Asset optimisation
- Safety and risk
- Transmission and distribution

Software Solutions
- Regulatory compliance
- Asset optimisation
- Control room management
- Simulation
- Leak Detection
- Asset Integrity Management

Marine Operations
- Marine warranty
- Marine consulting
- Marine casualty investigations
- Marine operations
- Dynamic positioning

Project Execution
- Project management
- Design
- Transportation and installation
- Due diligence
- Construction monitoring

... Full range of planning, operations and decision support products
GL Noble Denton
A Trusted Solution Provider

• SOFTWARE*, family of Integrated Products and Solutions
• Commitment to Client Services and Satisfaction
• Dedication to Energy Industry – Quality Products and Services
• Continued Product Growth and Evolution
• Pipeline Industry Participation
  • American Petroleum Institute (API)
  • International Pipeline Conference (IPC)
  • Pipeline Simulation Interest Group (PSIG)
  • Gas Technology Institute (GTI)
  • Pipeline Research Council International (PRCI)
  • International Gas Union (IGU)
A Trusted Advisor

A Broad Range of Oil & Gas, Water and Power Clients

Utilities (Gas, Water & Power)
National Oil & Gas Companies
International Oil & Gas Companies
Independent Oil & Gas Companies
Gas Pipeline Simulation Offerings

- SynerGEE
- Gas Transient Optimization (GTO)
- Stoner Pipeline Simulator (SPS)
The Building Blocks of SPS

- Statefinder
- Trainer
- Predictor
- Leakfinder
Typical SPS Offline Applications

• Pipeline and control system design
• Capacity studies
• Analyzing startup and shutdown procedures
• Studying economics of design / operating strategies
• Surge analysis / Relief systems
• Pipeline expansion / De-bottlenecking
• Studying survival time for gas delivery systems
• Leak Simulation
Typical SPS Control Room Applications

- Leak Detection
- Linepack analysis
- Maintenance and short-term planning (planning predictor model - PPM)
- Survival time calculations (automatic look-ahead - ALAM)
- Short-term planning
- Long-term planning
Native "Engineering" GUI

- Simulation Time: 20:10:47
- Time Step: 00:00:01

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Graphs and views of the GUI showcasing various simulations and data.
Case History - Sasol Gas

"Sasol Gas has decided to implement a Pipeline Management System utilizing simulation software to benefit the operation, planning and management of their gas networks"
Real-time Simulation Capabilities (SPS)

- Operations support (Real-time, Predictor, and Survival Time)
- Linepack calculations; planning tools
- “Virtual SCADA” flow and pressure calculations
- Leak detection
Offline Simulation Capabilities (SynerGEE)

- Network planning; regulator sizing; de-bottlenecking
- Users
  - Marketing department
  - Engineering
  - Sastech
- GIS based interface
Control Room Displays
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GL Noble Denton

Uptime Integrity Management Solution

Geoff Craig, Senior Consultant
Part of the family of Integrated Products and Solutions.

- SynerGEE Model
  - Network Planning
  - Mains Replacement Planning
  - Field Collection

- Uptime Essentials
  - Gas Transmission Spatial Database
  - Uptime
  - Transmission Risk and Survey Analysis
  - On Going Posting of Gas Facilities

- Spatial Database
  - Custom Field Map Viewing and Sketching
  - Regulatory Compliance
    - Scheduling
    - Field Collection

- Gas Distribution Spatial Database
  - ArcGIS
  - CP Reads
  - Pipe Examination
  - External Systems, as required

- ArcEngine
  - ILL, Above Ground, etc.
  - Leaks

Intranet / Internet

GL Noble Denton
Uptime Integrity Management Solution

- Single platform for both transmission and distribution systems
- Open architecture analytical platform
- Functional support to meet integrity needs
  - Distribution: Risk Assessment, Replacement Planning, etc…
  - Transmission: Facility Maintenance, Class Location, HCA, Threat Assessment, Risk Assessment, Integrity tool-box, Bulk data alignment, Alignment sheets, MAOP, etc…
- Activity driven integrity tasks with audit trail
- Intuitive visual analysis
Single Solution for Pipeline and Distribution

Pipeline
- Class Location
- HCA
- ILI Analyzer
- DA Analyzer
- Excavation Manager
- Dynamic Segmentation
- Data Alignment
- Data Administrator
- Facility Editor
- Alignment Sheet Generator
- Asset Information Reporter
- Pipeline Navigator

Distribution
- Scenario Manager
- Indicator Manager
- Risk and Condition Mgr
- MRP Administrator

Pipeline Integrity Analysis
- Asset Intelligence Viewer
- Risk Analyzer
- Risk Model Manager
- Threat Assessment
- Report Manager
- Data Query Manager
- Document Manager
- Activity Manager

Information Administration
- Pipeline Navigator
- Geodatabase Asset Repository

Viewing & Reporting
- Single Solution for Pipeline and Distribution Asset Intelligence Viewer
- Distribution Assets
- Transmission Assets

Risk Assessment
- Core Components with Configuration for Pipelines or Gas Distribution Network Assets
- Mains Replacement Prioritization (MRP)

Industry Processes
- GL Noble Denton
Seamless Integration with GIS

- Document Mgr (T/D)
- Activity Mgr (T/D)
- Data Query Mgr (T/D)
- Pipeline Navigator (T)
- Data Viewer (T/D)
- Risk Mgr (T/D)
- MRP (T/D)
- Facility Editor (T)
- Bulk Data Loader (T)
- Integrity Mgr (T)
- Alignment Sheet (T)
- Integrity Scheduler (T/D)
Uptime For Pipeline Assets

- Class Location and HCA Calculator
  - CFER Circle, Sliding Mile, Clustering
- Develop and Execute Risk Models
  - Preconfigured NGA (Kiefner) Model
  - Others – Muhl Bauer, etc.
- Integrity Assessment Data Management
  - Multi-vendor support
  - Import, Align, Analyze
  - ILI, CIS, DCVG, ECDA, etc.
- Defect Analysis
  - B31G, RSTRENG
  - MAOP, Safe Op Pressure, etc.
- Productivity and Analysis Tools
  - Excavation Management, Dig Sheets, etc.
  - Interactive Alignment Sheet Generator
- MAOP Verification and Tracking
Uptime:
Pipeline Integrity Management
Uptime:

Pipeline Integrity Management

ILI Metal Loss and crack defects in HCA
Uptime: Pipeline Integrity Management

Interactive SME Dialog
Uptime:
Pipeline Integrity Management

Risk Assessment

Color coded Risk levels

Risk Source: External & Internal Corrosion

Risk level by segment
Uptime:
Pipeline Integrity Management

- Class Location
- HCA Determination
- Integrity Assessment
- Mitigation Actions
- Identify Threats
- Risk Assessment

Legend
- Immediate
- > 1 Year
- > 5 Years

Assess defects with configurable models

Cluster of Immediate repairs in area of high IC/EC risk – part in Class 4 area

Defect Distribution

Models to help identify segments

Map context shows indications close to structures in moderate Corrosion risk

Interactive charts to show indirect survey data

External Corrosion Direct Assessment

GL Noble Denton Confidential
Uptime: Pipeline Integrity Management
Uptime:
Worked Example
Uptime:
Worked Example
### Worked Example

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**Data source**

**Metal Loss**

[Visualize]
# Uptime:
## Worked Example

### Detect Depth vs Detect Length

#### Count

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Data source: Visualize
Questions