Total Life Cycle Management of Your Drillstring – TracID (RFID Solution)

Adam Huss
16/2/17
Life Cycle Management

Tracking and monitoring the performance of Individual assets throughout the drill stem life cycle. This provides accurate insight to inventory management, lower repair and maintenance cost and improved operational efficiencies to assure maximum asset use and allocation throughout the drilling cycle.

TracTag™

Radio Frequency Identification (RFID) tag that is installed on drill stem components to provide a highly accurate means of identifying a drill pipe, HWDP, drill collar or drilling sub’s individual serial number.

TruData™

An application system used for reporting the results of inspection and repair services on individual serialized drill stem components.
Industry Needs

A tubular management system

- Inventory control
- Track & monitor inspection and repair intervals
- True asset condition
- Remaining asset life

Challenges

NOV Solution

Complete drill stem lifecycle management

- Design and manufacturing
- TracTag™ RFID enabled drill stem
- Inventory management – full traceability
- IRM
- TruData™ Inspection and repair history, and trend analysis
**Process Change**

**Standard Pipe Process**
- Pipe comes in
- Inspection and repair completed
- Pipe goes out

**Managed Pipe Process**
- Pipe comes in
- Inspection and repairs completed
- Inventory and pipe condition is updated
- Pipe goes out
- Data is analyzed
- Trends are identified
- Data is reviewed with asset owner
- Implement corrective action
- Verify
RFID Enabled Drill Stem — Benefits

- Equipment Manufacturing Documentation Retention
- Inventory Tracking and Traceability
- Post Well Analysis and Reporting
- Inspection, Repair and Maintenance Traceability
- Wellbore Condition Monitoring and Usage Traceability
- Pre-Well Planning

TracID™
RFID Enabled Drill Stem
LCM Components

- Drill Stem Design & Manufacturing
- TracID™ TracTag™
- Inventory Management
- Inspection, Repair & Maintenance
- TruData™ Reporting
- Reporting & Analytics
- Recommendations, Training & Educational Programs
- Technical Support & Online Resources
- AutoTally™

Lifecycle Management - 07/13/16
LCM Components

Drill Stem Design & Manufacturing

- Drill Stem Design & Manufacturing
- TracID™ TracTag™
- Inventory Management
- Inspection, Repair & Maintenance
- Reporting & Analytics
- Recommendations, Training & Educational Programs
- Technical Support & Online Resources
- AutoTally™
- TruData™ Reporting
- Recommendations, Training & Educational Programs
Drill Stem Design and Manufacturing

- Fully staffed engineering and metallurgical departments with decades of combined experience

- Teams of experts create custom designs according to specific Customer requests, by modifying standard products, designing custom tool joints or formulating special metallurgy

- Designs are monitored and thoroughly tested and verified before delivery to the rig site

> Most drilling conditions can be simulated at the Grant Prideco Engineering Technology Center, a full-scale, state-of-the-art tubular testing facility in Houston, Texas
LCM Components

TracID™ TracTag™

Drill Stem Design & Manufacturing

TruData™ Reporting

Reporting & Analytics

Recommendations, Training & Educational Programs

Technical Support & Online Resources

Inventory Management

Inspection, Repair & Maintenance

AutoTally™
TracID™ (TracTag™)

- TracTag™ is the only reliable RFID tag in the market for downhole drilling environments
  - Withstands extreme conditions
  - Up to 400°F (202°C)
  - Pressure rated to 22,500 PSI (1550 Bar)
  - Service life greater than 10 years
  - Ex Certification: Zone 1

- Enables efficient and reliable asset tracking for the life of the pipe

- Qualified in real operations and recognized by market leaders

- Enables the TruData system to accurately track and trace the drill stem and record history

- Small physical dimensions enable mounting without jeopardizing equipment integrity

- M24 x 10mm (also available in smaller versions)

- TracTag’s can be installed in new drill pipe, HWDP and drill collars during the manufacturing process, or retrofitted onto used assets that are already in service
TracTag™ — RFID Drill Stem Asset Control

- M24 is the recommended tag
- M25 & M26 are oversized tags
- M16 used for smaller tools — Not AutoTally™ compatible
Inventory Management

TruData is a software system used to track and trace drill stem inventory, movement and location throughout the drill stem lifecycle process.

- Yard management
- Rig Site management
- Track and trace movement from IRM to rig site
- Easy-to-use scanner and data gathering
- User-friendly interface allows for easy navigation
Drill String Lifecycle Management — Traceability

- Decommissioning
  - 07

- Manufacturing
  - 01
    - Yard Management

- Yard
  - 02
    - Yard Management

- Rig
  - 03
    - Rig Management

- Well
  - 04
    - AutoTally

- Maintenance
  - 06
    - Inspection and Maintenance

- Inspection
  - 05
    - Inspection and Maintenance
Inspection, Repair & Maintenance

Inspection

Coating

Machining

Hardbanding
New Drill Pipe Inspection

Truscope A/S™, our high-speed, combination UT/EMI inspection system detects and classifies defects in a single pass.

• **Drill Pipe size** 2 3/8” – 6 5/8”

• **Defect Orientations**
  - Long, Trans, Wall
  - Oblique inspection 11°22°45°

• **State-of-the-art**
  - Software, Instruments, Mechanics are all Tuboscope designed, engineered and maintained

• **Individual channel reporting**
  - Excellent ID/OD discrimination
  - Accurate flaw location
  - Time compensated gain technology

• **Wall dimensions**
  - Real time wall measurement
  - True 95% remaining wall thickness
  - TruMap™ wall data package
  - Minimum, Maximum, Average
Mobile and fixed site services

Tube Body Ultrasonic (UT) – TruSpec™
  ▶️ Tube body wall thickness

End Area (UT) – Endsonic™
  ▶️ Fatigue cracks and internal pits
  ▶️ Changes in wall thickness

Tube body (EMI) – Sonoscope™
  ▶️ Detects tube body cracks and other service related defects

Multiple Dimensional tool joint checks (Box and Pin)
  ▶️ Outside and inside diameter
  ▶️ Shoulder width
  ▶️ Tong space
  ▶️ Bevel diameter
  ▶️ Counter bore diameter

Tuboscope’s tool joint and tube body inspection services are carried out in accordance with industry standards such as API, DS-1 and DS-2

Real time wall measurement

Used Drill Pipe Inspection
Drill Pipe Coating

The most common causes of premature failure or downgrading of drill pipe is fatigue, wear, and corrosion.

Tuboscope’s proprietary Tube-Kote™ (TK™) drill pipe coatings address today’s challenging drilling environments by providing increased flexibility, greater abrasion resistance and chemical resistance.

Enhance tubular performance and extend service life by:

• Reducing corrosion and wear

• Preventing scale deposits

• Improving hydraulic efficiency
Machining Services

- **Thread Repair**
  - Premium connections such as Grant Prideco
  - API Rotary shoulder connections
  - Two-step connections
  - Full traceability of all threaded connections

- **Tool Joint Rebuilding**
  - Restore worn tool joints to original specifications
Hardbanding Services

TCS™ Hardbanding extends tool joint life and protects casing during drilling operations.

Casing Friendly Hardbanding

• TCS Titanium (new and used)
• TCS 8000 (new and used)
• TCS XL (used)

Benefits:

• Low casing wear properties
• Excellent wear resistance
• Longer tool joint life
• Crack-free
• Unlimited reapplications
LCM Components

TruData™ Reporting

Drill Stem Design & Manufacturing

TracID™
TracTag™

Inventory Management

Inspection, Repair & Maintenance

Recommendations, Training & Educational Programs

Technical Support & Online Resources

AutoTally™

TruData™ Reporting

Reporting & Analytics
TruData™

A comprehensive reporting and data management system for the classification, inspection, and repair of rotary shoulder drill stem components.

TruData mitigates risk by identifying operational problems, improper care and handling, as well as helps ensure the pipe is fit-for-purpose for the specific drilling application.

- Full documentation & Traceability
- Complete History by Serial Number
- Detailed Summary reports
- Condition Monitoring
- Remaining Life Analysis
### Reporting Module — Repair Summary

Displays counts for:
- Joint class
- Ready for immediate use
- Workshop repair
- Field refaces, etc.

#### Drillpipe Summary Report with repair of Hardbanding

<table>
<thead>
<tr>
<th>Customer: Test Customer</th>
<th>Work Location: Tananger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer P.O: 158297NOR</td>
<td>Customer Ref: B. Reid</td>
</tr>
<tr>
<td>Date: 27.08.2015</td>
<td>Tuboscope W.O: 1046137</td>
</tr>
<tr>
<td></td>
<td>Report No.: 9113583</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size: 4&quot;</th>
<th>Nom. Weight: 14.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade: S-135</td>
<td>Nom. Wall: 8.400</td>
</tr>
<tr>
<td>Nom. Tool Jnt OD: 4 7/8&quot;</td>
<td>Nom. Tool Jnt ID: 2 11/16&quot;</td>
</tr>
<tr>
<td>Range:</td>
<td>Conn.: XT-39</td>
</tr>
</tbody>
</table>

**Inspection According to: NSZ**

**Type of inspection:**

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lengths inspected: 96</td>
</tr>
<tr>
<td>Premium: 96</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lengths for immediate Drilling Service (w/ HB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections for Workshop Repair: 0 0 0 0</td>
</tr>
<tr>
<td>Crn. f Workshop Refacing/Rebeveling: 5 2 3</td>
</tr>
<tr>
<td>Connections Field Refaced: 0 0 0</td>
</tr>
<tr>
<td>Class 2: 0</td>
</tr>
<tr>
<td>Class 3: 0</td>
</tr>
</tbody>
</table>

**Hardbanding result on pipe:**

<table>
<thead>
<tr>
<th>Premium</th>
<th>Class 2</th>
<th>Class 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Box</td>
<td>Pin</td>
</tr>
<tr>
<td>None</td>
<td>65</td>
<td>0</td>
</tr>
<tr>
<td>Flush</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Raised</td>
<td>11</td>
<td>96</td>
</tr>
<tr>
<td>Damaged</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Worn</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Statistics Module

The Statistics module provide analysis for 4 material types:

- Drill pipe
- Heavyweight
- Drill collars
- Casing

- Search for statistics by Date, Connection Type, Spec, Rig, Result Type Group and Order number.
- The Result Type group will determine what appears in the graph and chart – Connections, Recut, Hardbanding or Coating
- View statistics for all pipe types in the TruData system or drill-down by pipe size and connection
- Ability to generate a report with repair condition analytics per Rig
Once you click on a pipe size or connection type, the graph and chart will update to display the connection count as shown below.

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reface 18373</td>
<td>8.48%</td>
</tr>
<tr>
<td>Field Reface 11623</td>
<td>5.37%</td>
</tr>
<tr>
<td>Recut 25117</td>
<td>11.60%</td>
</tr>
<tr>
<td>OK 161481</td>
<td>74.55%</td>
</tr>
</tbody>
</table>

Number of connections inspected:

<table>
<thead>
<tr>
<th>Number of connections inspected</th>
<th>Pin</th>
<th>Box</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>108297</td>
<td>108297</td>
<td>216594</td>
<td></td>
</tr>
</tbody>
</table>

Connection summary:

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Pin</th>
<th>Box</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recut</td>
<td>12303</td>
<td>12814</td>
<td>25117</td>
</tr>
<tr>
<td>OK</td>
<td>81738</td>
<td>79743</td>
<td>161481</td>
</tr>
<tr>
<td>Reface</td>
<td>8754</td>
<td>9619</td>
<td>18373</td>
</tr>
<tr>
<td>FieldReface</td>
<td>5502</td>
<td>6121</td>
<td>11623</td>
</tr>
</tbody>
</table>
The repair module classifies each repair, and assists in identifying why that occurred.

- Multiple classifications
- Breakdown by percentages
- Detailed Summary
- User friendly dashboard
- Root cause analysis
Users have the ability to generate a report from the statistics module which displays the repair statistics per rig.

**Statistics Module — Overall Repair**

- **Department:** USA
- **Customer:** Test Customer
- **From date:** 29.12.2015
- **To date:** 29.12.2017

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**Connectors**

- **Legend**
  - OK 2972 (55.78%)
  - Recut 2121 (39.91%)
  - Field recess 231 (4.34%)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Box</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>1641</td>
<td>1331</td>
</tr>
<tr>
<td>Recut</td>
<td>1015</td>
<td>1106</td>
</tr>
<tr>
<td>FieldRecess</td>
<td>7</td>
<td>224</td>
</tr>
<tr>
<td>FieldRecess connections #</td>
<td>2664</td>
<td>2664</td>
</tr>
</tbody>
</table>

**Hardbanding**

- **Legend**
  - None 2185 (37.1%)
  - Raised 2788 (47.33%)
  - Flush 47 (0.8%)
  - Damaged 10 (0.17%)
  - F/E/W 6 (0.1%)
  - Worn 854 (14.5%)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Box</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1371</td>
<td>814</td>
</tr>
<tr>
<td>Raised</td>
<td>1075</td>
<td>1713</td>
</tr>
<tr>
<td>Flush</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>Damaged</td>
<td>474</td>
<td>380</td>
</tr>
<tr>
<td>F/E/W</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

**Internal Condition**

- **Legend**
  - NA 83 (2.42%)
  - A or 1 2101 (71.34%)
  - B or 2 615 (20.88%)
  - C or 3 81 (2.75%)
  - D or 4 65 (2.21%)

<table>
<thead>
<tr>
<th>Premium</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Scrap</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>70</td>
<td>1</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>A or 1</td>
<td>1976</td>
<td>125</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C or 3</td>
<td>59</td>
<td>4</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>D or 4</td>
<td>53</td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>B or 2</td>
<td>605</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

**Recut**

- **Legend**
  - SD 57 (2.68%)
  - RF 3 (0.14%)
  - TD 1991 (93.74%)
  - TG 4 (0.19%)
  - TC 39 (1.84%)
  - RB 1 (0.05%)
  - SG 17 (0.8%)
  - SC 2 (0.1%)
  - EW 1 (0.05%)
  - NB 1 (0.05%)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Box</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>32</td>
<td>25</td>
</tr>
<tr>
<td>RF</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TD</td>
<td>944</td>
<td>1047</td>
</tr>
<tr>
<td>TG</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>TC</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>RB</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SG</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>SC</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NB</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TW</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Corr</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>EW</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Number of ends**

- Total: 2945
- Total: 2945
- Total: 5890

**Disclaimers:**
- This report and the results contained in it are only the good faith opinions of Tuboscope. They should not be construed as warranties or guarantees, express or implied, of the quality, classification, merchantability or fitness of purpose of the items inspected.

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Report generated from Tuboscope Customer Web: 11.01.2017

Page 1 of 2
The Wall Thickness report breaks down the joints by percentage of Remaining Body Wall (RBW). This report also displays a tally of the string of pipe in feet and meters, the average, percentage and count for each coating condition.

The following pages of this report will also show which serial numbers fall into each percentage range.

<table>
<thead>
<tr>
<th># of JNT</th>
<th>RBW Unit of Measures:</th>
<th>% of Pipe Tally</th>
<th>Pipe Tally FEET</th>
<th>Pipe Tally Meter</th>
<th>ANG RW</th>
<th>% R.B.W.</th>
<th>Coating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A/1</td>
</tr>
<tr>
<td>303</td>
<td>0.343 to 0.364</td>
<td>99 %</td>
<td>12,910.735</td>
<td>3,935.240</td>
<td>0.411</td>
<td>114 %</td>
<td>303</td>
</tr>
<tr>
<td>0</td>
<td>0.329 to 0.343</td>
<td>0 %</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0 %</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0.310 to 0.328</td>
<td>0 %</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0 %</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0.292 to 0.309</td>
<td>0 %</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0 %</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.001 to 0.291</td>
<td>1 %</td>
<td>85.399</td>
<td>26.030</td>
<td>0.059</td>
<td>16 %</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
<td>0.000 to 0.000</td>
<td>0 %</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0 %</td>
<td>0</td>
</tr>
<tr>
<td>305</td>
<td>Total Lengths Inspected</td>
<td>100 %</td>
<td>12,996.135</td>
<td>3,961.270</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tong Space Statistics

The Tong Space statistics incrementally breaks down the joints by remaining tong space per inch. This can be used to estimate the amount of life left on the Tong Space. Once the min box and pin are entered, the report will display the serial number, the tong space of the pin and box, as well as the latest order number and inspection date.
LCM Components

AutoTally™

- Drill Stem Design & Manufacturing
- TracID™ TracTag™
- Inventory Management
- Inspection, Repair & Maintenance
- Reporting & Analytics
- Recommendations, Training & Educational Programs
- Technical Support & Online Resources
- AutoTally™
We maintain a detailed cradle-to-grave record of each drill stem component with the ability to provide you complete asset history, customizable reports, trend analysis of maintenance, repairs and future replacement of drill stem components.
LCM Components

Reporting & Analytics

TracID™
TracTag™

Inventory Management

Inspection, Repair & Maintenance

TruData™
Reporting

Reporting & Analytics

Recommendations, Training & Educational Programs

Technical Support & Online Resources

AutoTally™

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Recommendations & Training

Proper Care & Handling

- Proper Care & Handling
- Trouble Shooting Guide for Corrective Action
- Drill String Optimization Design
Recommendations & Training

Trouble Shooting Guide for Corrective Action

- Proper Care & Handling
- Trouble Shooting Guide for Corrective Action
- Drill String Optimization Design

Tuboscope recognized early on that the results of Inspection, Repair and Maintenance contributes to the total life cycle management of drill pipe and drill string components. Tuboscope has been working with drilling contractors and rental companies for more than 75 years to deliver a better understanding of drill pipe issues for both the Tool Joint and the Tube Body.

• Identifying the Problems
• Stating the Usual Effect
• Identifying the Probable Cause
• Recommending Possible Corrections

Trouble shooting guide on Tubo2Go mobile app
LCM Components

Recommendations, Training & Educational Programs

- Drill Stem Design & Manufacturing
- TracID™ TracTag™
- Inventory Management
- Inspection, Repair & Maintenance
- TruData™ Reporting
- Reporting & Analytics
- Recommendations, Training & Educational Programs
- Technical Support & Online Resources
- AutoTally™

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Technical Support & Online Resources

Technical Resources

- **Connection Library**
- **Performance Calculator**
- **Global product line support**
- **Field support**

- **TUBO2Go**
  - Browse and retrieve up-to-date information on drilling services, upcoming events, customer connection, facility locator, articles & technical papers, catalogues and brochures, production services, and Mill-NDT systems.

- **GP2Go**
  - Browse and retrieve up-to-date information on drilling products, catalogues and brochures, specifications on rotary shoulder connections, facilities and licensed repair shops, upcoming events, and technical papers.
LCM Components

Technical Support & Online Resources

Drill Stem Design & Manufacturing

TracID™ TracTag™

Inventory Management

Inspection, Repair & Maintenance

TruData™ Reporting

Reporting & Analytics

Recommendations, Training & Educational Programs

Technical Support & Online Resources

AutoTally™
AutoTally™

Rig installed system that detects individual assets as they pass through the rotary table producing accurate tally's and captures hours in well and rotating hours for every asset

- EX certified RFID transponders
- Onshore live monitoring
- 100% accurate drill string tally
- Alerts out-of-spec equipment and quarantined assets
- Track asset rotating hours and in-well position
Our AutoTally system eliminates tally errors for a 100% accurate drill bit depth and alerts you to out-of-spec equipment and quarantined assets, enabling smooth and safe drilling operations.

With our global technical support and 24/7 online resources, you have continuous access to the support you need.

- Simplifies tally management
- Eliminates tally errors
- Updates tally instantly
- 100% correct drill bit depth
- Alerts for out-of-spec equipment
- Alerts for quarantined assets
AutoTally™ — Animation
Every drill string is unique. To improve performance and extend product life, we help you design and customize your drill string based on application needs with features such as fatigue resistant connections, internal coating, and hardbanding.

Utilizing Tuboscope’s field-proven RFID technology, we give you complete asset history to optimize drill stem design and improve inventory programs.

- Drill string inventory control
- Complete asset history documentation
- Easy planning and master tally set up
- Optimized drill string design
- Asset usability review
We provide all-inclusive support for the life of your pipe.

TruData provides a complete record of asset history and condition for the entirety of the product’s life.

Condition-based inspection, repairs and trend analysis reduce costs and extend the life your investment.

Our best practices and engineered solutions protect your assets and increase performance for your next well.

• Accurate drill string documentation
• Asset history documentation
• Inspection advisory
• Enables condition based inspection and repairs
• Experience base for optimizing drill string design
Drill String Lifecycle Management

Customer Return Flow Chart

Decommissioning

07

Manufacturing
01
Yard Management

Yard
30%
Reduction in handling cost

Rig
35%
Reduction in handling cost

Well
15%
Utilization increase

Maintenance
15%
Increase in efficiency

Inspection
25%
Reduction in handling cost
By the Numbers

- Less than 1% failure rate.
- Managed pipe process can increase asset life by 22%.
- 30% reduction in NPT.
- Tag service life is greater than 10 years.
In Conclusion....

NOV recently conducted an extensive comparison of managed offshore pipe assets against their standard, non-managed counterparts in the North Sea. Final analysis showed a 55 percent reduction in connection damages for the managed assets, saving $2.7 million over 18 months.

Drill string fatigue failure is the most common and costly type of drilling failure, with an estimated $100,000 per failure. Monitoring the complete history of assets can detect repetitive issues – such as thread galling, pitted seals or disproportionate connection repairs – and take worn elements out of service before they fail.
A well-documented, current asset inventory can intercept drill pipe that should be repaired or retired. Without this information, fatigued assets can mistakenly become part of a drill string and later fail during drilling. Reliable inventory and quality control can reduce handling costs by up to 90 percent and lower thread repair costs by 44 percent. Drill stem troubleshooting can identify equipment that may be directly affecting pipe integrity. These trend lines lead to corrective actions that have been proven to extend the productive life of assets by as much as 22 percent, potentially reducing NPT by up to 30 percent.