Agenda

1. Introduction to EV
2. Introduction to Visual Analytics
3. Challenges of the North Sea
4. Solutions to North Sea challenges
5. Case studies
6. Q&A
About EV

Why we exist
The Leader in Downhole Visual Analytics

EV provides market leading 4D visual well diagnostic solutions to the oilfield.

We enable:

– Clarity of understanding
– Confident decision making
– Decisive, effective action

Quantified visual information delivers life of well diagnostic solutions for well integrity and well performance.
"A Picture Says A Thousand Words…"

Over 7000 successful surveys globally
EVolution of Downhole Imaging

1937

Still trailblazing!
Cutting Edge Technology

Features
- High definition
- High frame-rate
- Full colour video
- All conveyance types

Benefits
- Clear understanding
- Confident decision making
- Decisive, effective action
Advanced Answers

The Application of Visual Analytics
Clarity of understanding
- Quantified visual inspection

Real-time decisions
- Instant answers provided at the well site

Simplify the complex
- Integration of quantified video and log data
UKCS in Numbers

Integrity
- Planned well life ≈ 25 years
- Average well age = 19 years
- Oldest live well = 52 years

Production
- Average water cut ≈ 80%
- TOP10_{min} water cut = 4.9%
- TOP10_{max} water cut = 93.0%

Complexity
- Average well length ≈ 4km
- Average water depth ≈ 140m
- Well components > 1,000
UKCS Diagnostic Solutions

Integrity

Corrosion

Leaks

Production

Water

Restrictions

Complexity

Fish

Valves
Video Applications

- Water Shut Off
- Well Integrity
- Fishing Assistance
- Wellbore Restrictions
- Plug and Abandonment
- Sand Screen Inspection
Video Applications

- Leak Detection
- SSSV / Valve inspection
- Milling Inspection
- Corrosion Evaluation
- Sand / Solids Entry
- Production Optimisation
## Contact Information

<table>
<thead>
<tr>
<th>Region</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td><a href="mailto:justin.bell@evcam.com">justin.bell@evcam.com</a></td>
</tr>
<tr>
<td>West Africa</td>
<td><a href="mailto:victor.musa@evcam.com">victor.musa@evcam.com</a></td>
</tr>
<tr>
<td>MENA</td>
<td><a href="mailto:mark.wiltosz@evcam.com">mark.wiltosz@evcam.com</a></td>
</tr>
<tr>
<td>South East Asia</td>
<td><a href="mailto:steve.burger@evcam.com">steve.burger@evcam.com</a></td>
</tr>
<tr>
<td>Australasia</td>
<td><a href="mailto:dylan.gray@evcam.com">dylan.gray@evcam.com</a></td>
</tr>
<tr>
<td>United States</td>
<td><a href="mailto:jeff.whittaker@evcam.com">jeff.whittaker@evcam.com</a></td>
</tr>
<tr>
<td>Canada</td>
<td><a href="mailto:frank.salverda@evcam.com">frank.salverda@evcam.com</a></td>
</tr>
<tr>
<td>South America</td>
<td><a href="mailto:ivo.foianini@evcam.com">ivo.foianini@evcam.com</a></td>
</tr>
</tbody>
</table>
The application of advanced diagnostic services:
- High value information
- Cost effective service
- Highly efficient operations

Stop guessing...
See what is happening.
Seeing in the Dark
Preparation and Process
Pre-Job Testing

Water (1.60 NTU)  Cola (3.96 NTU)

- Turbidity accounts for level of particulates suspended within a sample
- Fluid colour plays just as big a part as to whether we will get usable pictures
EV Case Study – Sub Sea Abandonments

Key Learnings:
- Detailed program for bull heading and displacing well to kill weight brine

![Images of NTU readings: 0-1 NTU, 30 NTU, 40 NTU]
EV Case Study – Sub Sea Abandonments

Key Learnings:
Implemented and tested dissolvable bags for initial well entry
EV Expertise

Origins and Capabilities
EV - The best downhole camera solution

1990-2010 world leaders in extreme specialist cameras for world wide TV including:

- Formula 1
- World Rally Championship
- Round the World yacht racing
- Offshore power boat racing
- Top Gear
- JCB Dieselmax WR
In-house R&D and Engineering

>150 years combined experience

Leader in innovation & technology

Bespoke in-house research and engineering

>$2M annual investment in product development
EV-Epidote Capability

>140 years combined experience

Experts
Well integrity analysis
Production log analysis
Pipe Deformation
Perf Dimensioning
Software development
Algorithm development
Seismic processing
Software management
3D visual systems
Software development

Leaders
in well integrity analysis
software development
and simulation
# In-house R&D and Engineering

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Applications</th>
<th># Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Line HD Camera</td>
<td>High definition, high frame rate (&lt;25 fps), side view and down view cameras with surface read-out capability enabled by bespoke telemetry operating at up to 300 kbps</td>
<td>Completion inspection, Fish/restriction inspection, Leak Detection, Gas/Water entry</td>
<td>&gt;1500</td>
</tr>
<tr>
<td>Memory HD Camera</td>
<td>Up to 6 hours of high definition, high frame rate (30 fps) down view camera footage</td>
<td>Completion inspection, Fish/restriction inspection, Leak Detection, Gas/Water entry</td>
<td>&gt;2500</td>
</tr>
<tr>
<td>Video While Tractoring</td>
<td>Full E-Line HD camera capability simultaneous to tracting</td>
<td>Intelligent Drift, Obstruction Avoidance, Fluid Entry, Sleeve status and manipulation</td>
<td>&gt;25</td>
</tr>
<tr>
<td>Dimensioning</td>
<td>Linear and area measurements of items captured from side view or down view images from various camera products</td>
<td>Perforation Analysis, Completion Damage, Fish size, Sand Screen Analysis</td>
<td>7</td>
</tr>
<tr>
<td>Passive Acoustic</td>
<td>Passive leak detection tool to locate depth of tubing to annulus or casing leak. Combinable with EV E-Line HD camera and auxiliary logging sensors (P/T/GR/CCL/MFC)</td>
<td>Locate tubing to annulus communication, Gas Lift Valve Operation, Plug/packer/straddle leak detection, Locate flow behind pipe, Cement channelling</td>
<td>1st job Jan 17</td>
</tr>
</tbody>
</table>