



proserv

INGENIOUS SIMPLICITY

 DECOM  
North Sea

# Subsea Services Overview Well Severance Case Study

March 18<sup>th</sup> 2015  
Craig Walker

## KEY FIGURES

### Employees:

Over 2,100

### Global Footprint:

5 Regions

11 Countries

29 Sites



**Proserv is an international energy services company specialising in the provision of life-of-field solutions.**

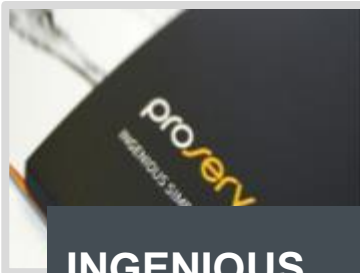
We have the ingenuity, expertise and proven track record to look at complex challenges and provide simple, yet outstanding, service-based solutions.

### Business Divisions:

- Drilling Control Systems
- Production Equipment Systems
- Subsea Systems & Services



# Company Highlights



## INGENIOUS SIMPLICITY

it's our **culture** and **brand philosophy** that continues to have the biggest impact on our business.



## GEOGRAPHIES

Since **2010**, Proserv has expanded into **29** locations in **11** countries



## GROWTH

Since **2011**, our turnover has increased by **172%** from **£97million** to **£265million**.



## ACQUISITIONS

**4** Acquisitions completed within **2** years



## PEOPLE

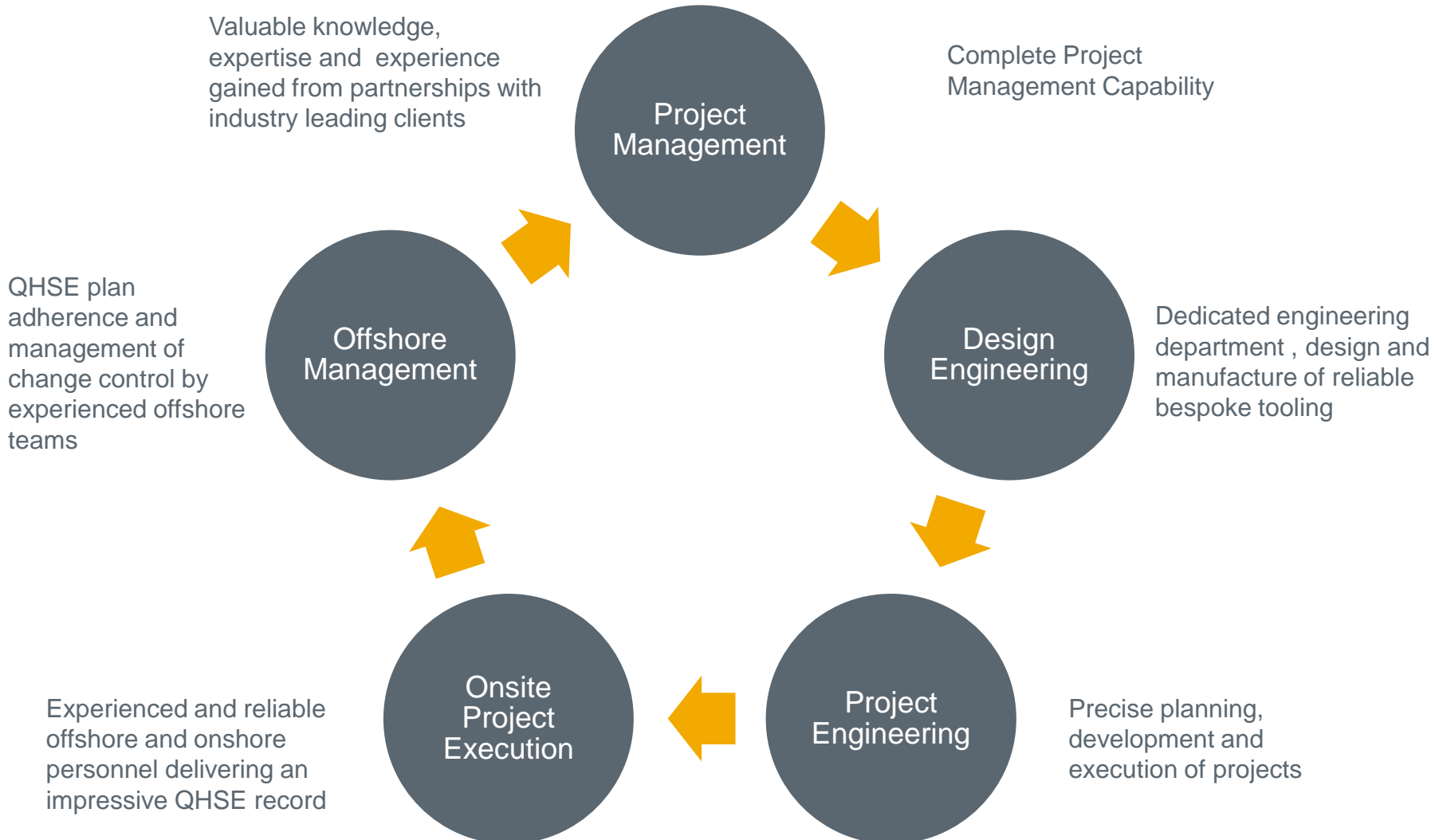
Over the past **3** years, our workforce has grown from **800** to more than **2,100**.



## TECHNOLOGY




**Engineering** is our backbone. Since **2011**, we have commercialized over **16** new technologies.

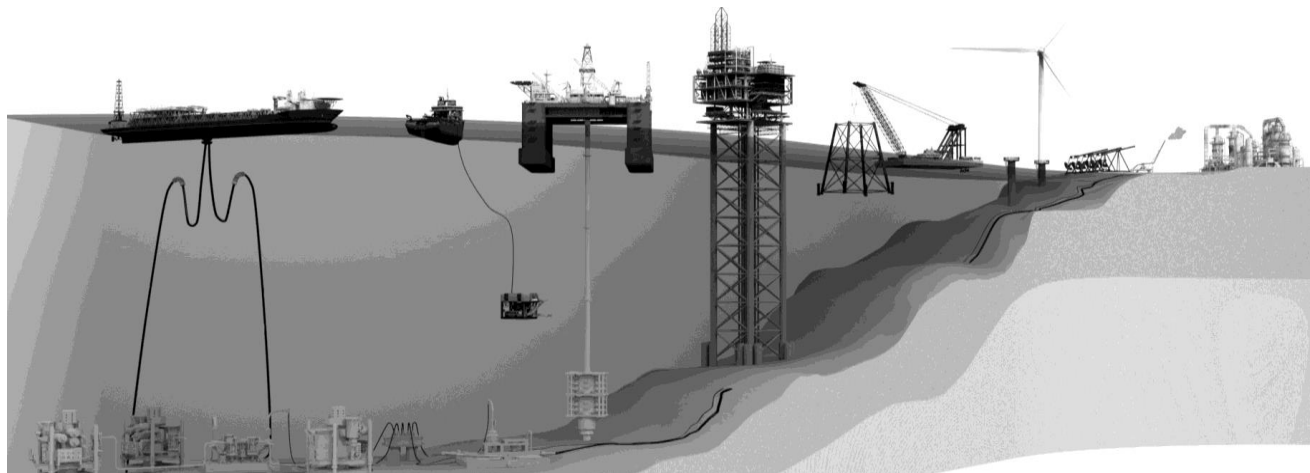
# Project Delivery Capabilities



# What We Do: Life of Field Services



Business Division	What We Offer	Solutions & Services
Drilling Control Systems 	Operational Assurance	<ul style="list-style-type: none"> <li>• BOP Services</li> <li>• Drilling Control Systems Assurance &amp; Performance</li> <li>• After-market &amp; Lifecycle Management</li> </ul>
Production Equipment Systems 	Production Optimisation	<ul style="list-style-type: none"> <li>• Flow Assurance &amp; Sampling Solutions</li> <li>• Production Control &amp; Safety Solutions</li> <li>• Asset Performance &amp; Operational Integrity</li> </ul>
Subsea Systems & Services 	Production Enhancement & Asset Integrity	<ul style="list-style-type: none"> <li>• Greenfield Development</li> <li>• Brownfield Extension, Upgrade &amp; Optimisation</li> <li>• Life-of-field Support</li> <li>• Asset Life Extension</li> </ul>



## WHAT WE OFFER:

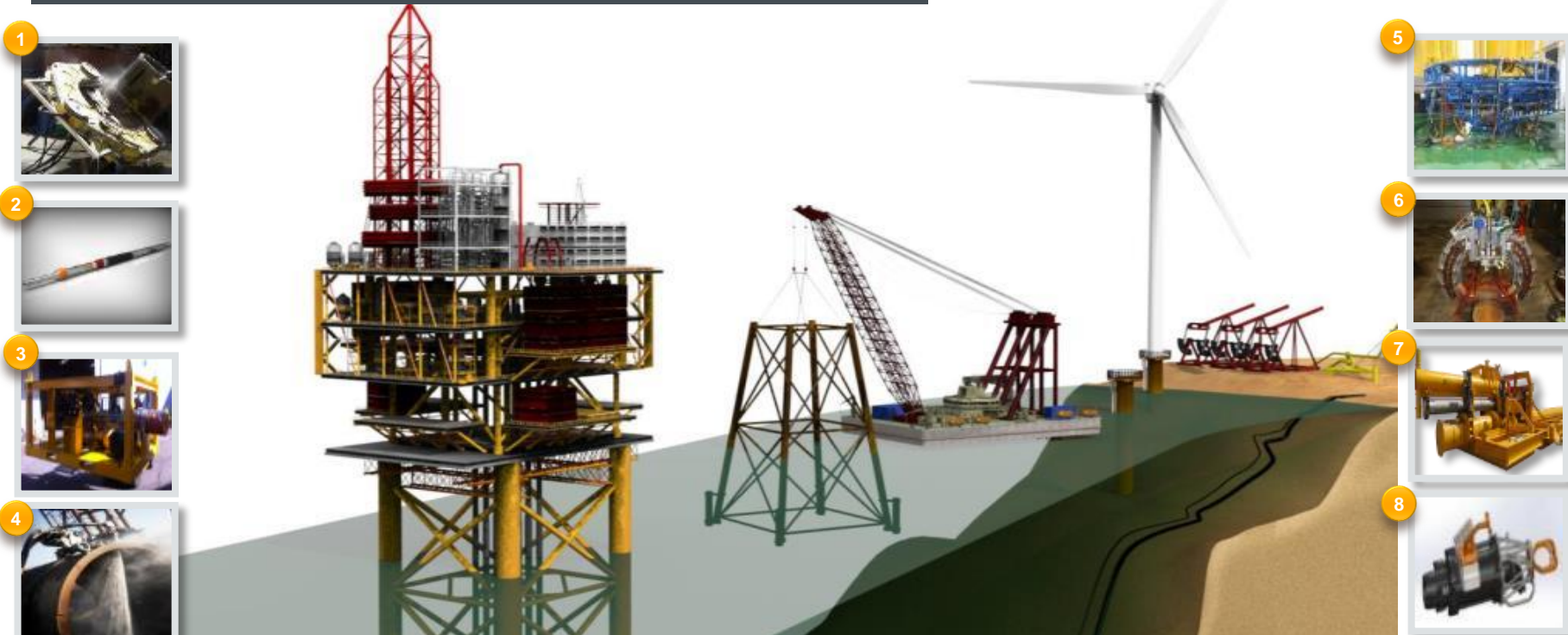
### Asset Integrity and Decommissioning

#### SOLUTIONS:

- Subsea Infrastructure/Repair & Maintenance
- Emergency Pipeline Repair
- Diverless Intervention
- Wellhead Abandonment & Decommissioning
- Retrofit Cathodic Protection

## PRODUCTS & SERVICES

1. Mechanical & Diamond Wire Cutting
2. Multi-String Abrasive Cutting
3. Dredging Equipment and Services
4. Water Jet Cutting
5. Marine Growth Removal
6. Pipeline Coating Removal
7. ROV Tooling & Services
8. Friction Stud Welding



# Well Abandonment Tooling and Case Study

# Abandonment & Decommissioning Services



- Topside and Jacket Removal
- Subsea Infrastructure Removal
- Rigless Abandonment
- Platform Well Abandonment - Multi String Well Severance
- Subsea wellhead Cut and Retrieval (One trip)
- Asset Life Extension

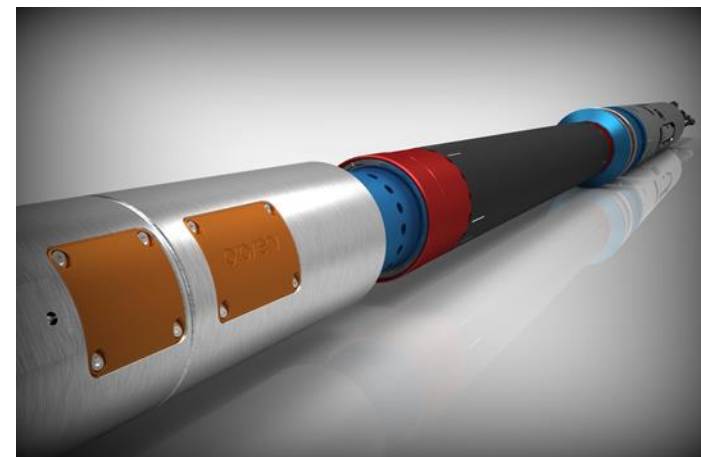




# Multi String Cutting Tool (MSC)



- The MSC tool is designed to cut multi-string well casings and conductors internally below mudline
- Can be set in 7" to 20" casing can cut through any number of internal casing strings up to 36" OD
- Rigless intervention when a mechanical cutter can not be used, DSV/MSV, Lift Barge or Platform
- Applications - Abandonment and Decommission Services
  - Well Severance
  - Slot Recovery
- Stand alone equipment spread
  - MSC Tool
  - Well Head Retrieval Tool (WHR)
  - MSC/JetCut Control Cabin, Workshop and Containers
  - 15,000psi High Pressure pump
  - Compressor
  - Hose Spoolers



# Subsea Well Severance and Recovery



# Subsea Well Head Retrieval Tool



## One Trip WHR System with 18.3/4" H4 Profile

Cuts and recovers Subsea well  
heads in one trip

Cut verification

150t Rating

Adaptable to all wellhead profiles

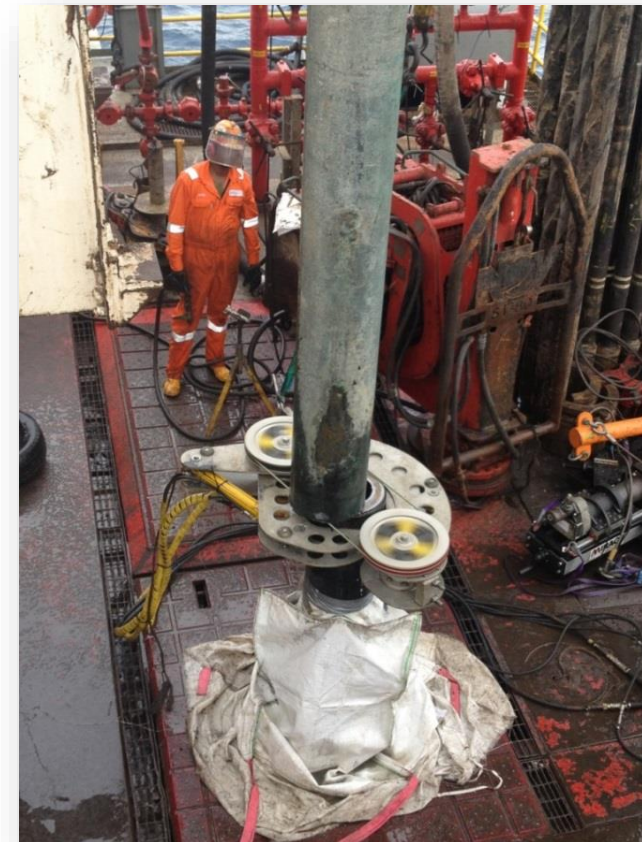


# Platform Slot Recovery



- Dual Drill Pinning tool for the installation of 4", 6", 8" and 12" pins in well casings up to 36"OD
- Hydraulic bandsaw, Guillotine saws or diamond wire saws used to carry out topside severance

- Existing draw works or portable casing jacks used to pull casing in 30ft sections
- Each section is drilled, pinned and cut until the full length from the subsea severance is recovered



# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES

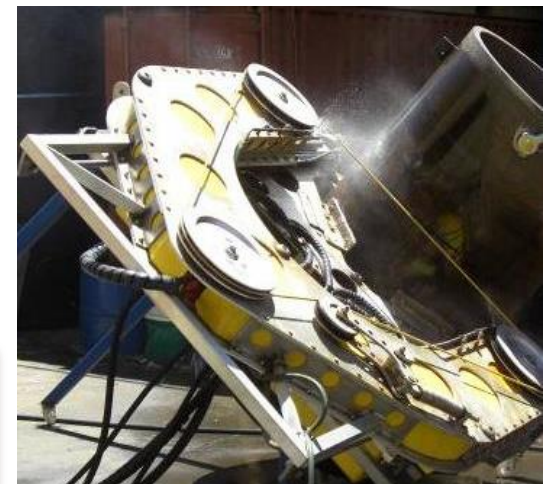


**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

Well stub containing stuck cementing tool following P&A, severed in one operation with our proprietary Diamond Wire Saw.

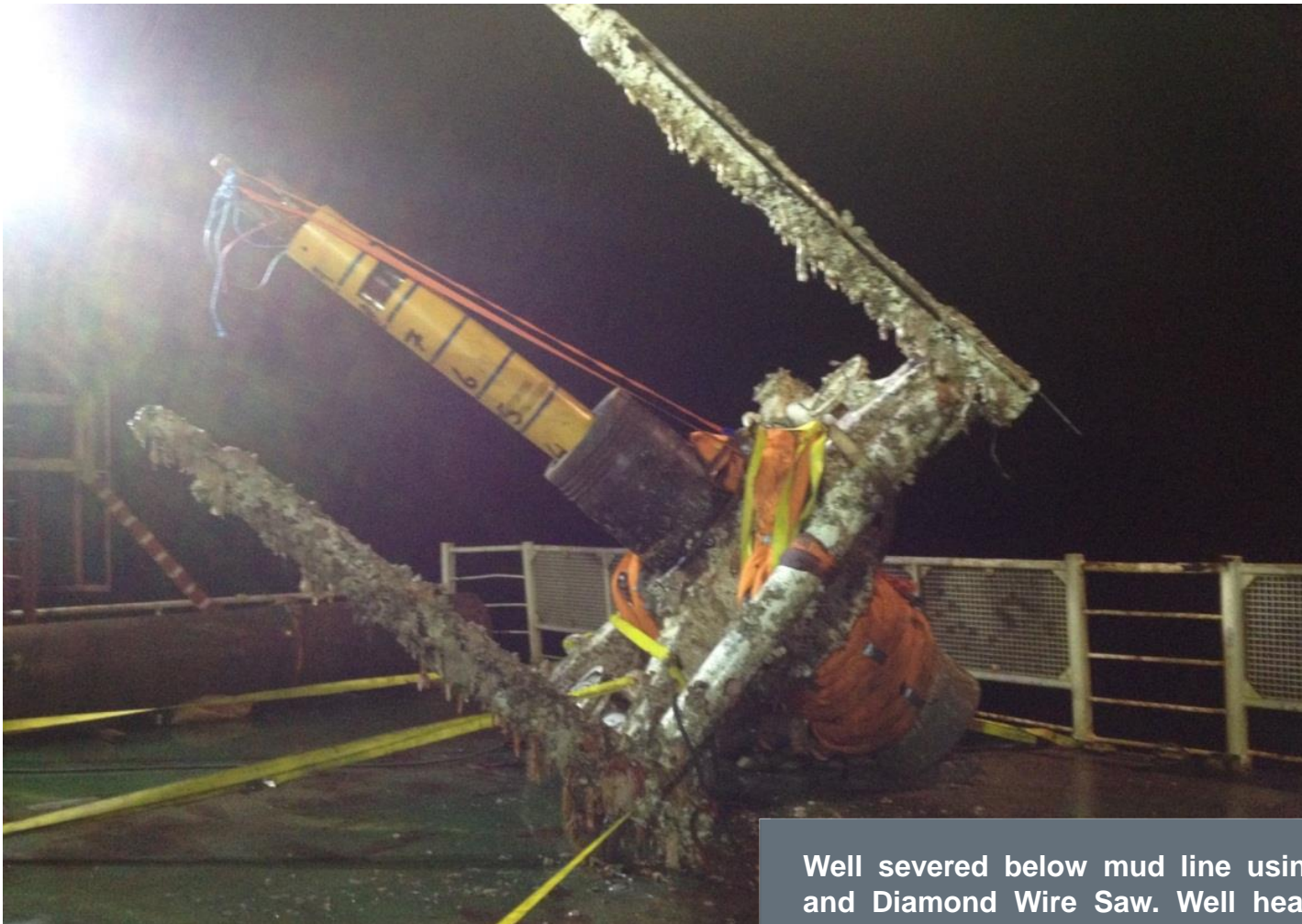


# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

Well severed below mud line using Proserv R300 dredge and Diamond Wire Saw. Well head, guide-base and stub recovered to deck.

# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



MSC tool c/w safety clamp being deployed into the Witches hat in the vessel moon-pool.



MSC tool being recovered following successful deployment and severance operation.

**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

MSC tool being rigged up for deployment via the vessel derrick and moon pool



# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

Wellhead successfully severed 10ft below mud-line and recovered to deck.

# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



**Client:**  
Helix Well Ops

**Location:**  
UK

**Equipment:**  
Proserv MSC & DWS  
Subsea Cutting Tools  
c/w topside equipment

Severance profile.

# Case Study: North Sea, Subsea Wells, 2014



DECOMMISSIONING

SUBSEA SERVICES



**Client:**

Helix Well Ops

**Location:**

UK

**Equipment:**

Proserv MSC & DWS Subsea Cutting  
Tools c/w topside equipment



Severance profile with unpredicted spacers.

# Thank You and Questions



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INGENIOUS SIMPLICITY

# Jacket Removal Overview

# Alternative Method to Internal Jacket Leg Severance



An **engineered solution** was required on a project where the jacket leg OD was 80" and no existing tooling in the Proserv inventory capable of size and ROV delivered, operated at the cutting location



Client required contingency in the cutting technique, both external OD water abrasive and diamond wire cutting tools were engineered and utilised on the project

# Engineered Tooling Solution with Side Entry Chute



**Small diameter tool  
required for entry**

**Existing tool capability  
was 9 5/8" to 13 3/8"**

**Tool required to  
centralise and cut inside  
of a 24" jacket leg pile**

**Side entry chute required  
as a guide for tool during  
deployment**

**Extensive and  
successful FAT**



- **Marine Technology Business Unit** comprises of the following products/services lines:
  - Water Abrasive Cutting Systems
  - Multi String Cutting
  - Mechanical Cutting systems
  - Pipeline Coating Removal Systems
  - Marine Growth Removal
  - Dredging Systems
  - Friction Welding
  - ROV Tooling
  - Production Systems Hardware / Products
  - Rental Assets – HPU's Power packs, Small Tooling
- **Rapid Engineering Capability**
- **Manufacture, Assembly and Test Facilities**
- **After Sales Service**
- **Bespoke Solutions**
- **Future Technology**





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