

Well Operations from a Monohull Vessel – The Complete Solution



**Talisman Energy – Case Study
A Multi-Service Campaign**

**MSV Seawell
December to February 2012**

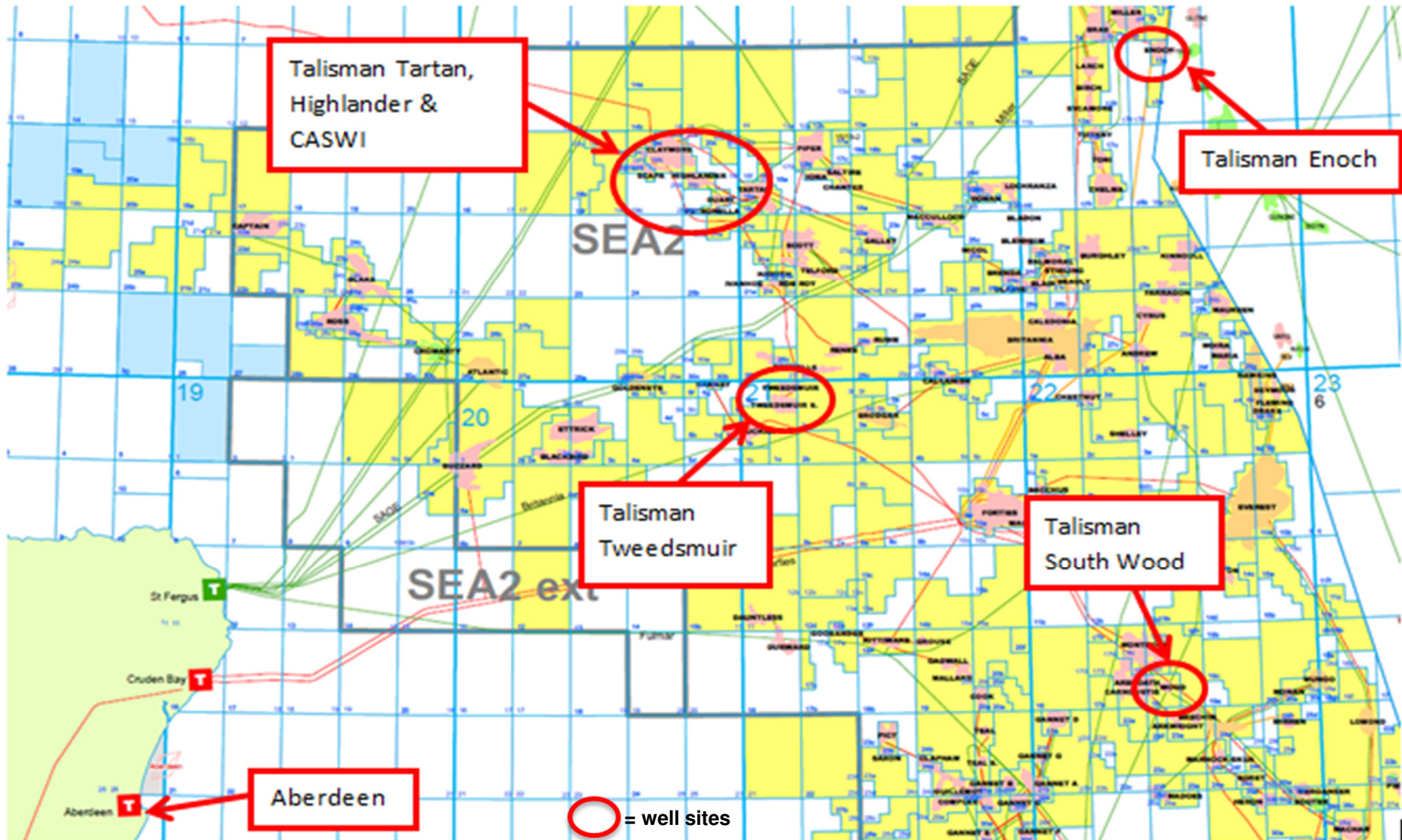
Over a period of 68 days, mob to de-mob, from December to February 2012, Well Ops was contracted by Talisman Energy to undertake a multitude of subsea worksopes on the UKCS of the North Sea

One of the many advantages to the Client in using Well Ops' monohull DP vessel MSV Seawell was its versatility in being able to transit from location to location quickly, and to support a variety of different work programmes. Many of the well-sites were Kilometres apart making an easily transitable Asset, with a multi-service offering, an attractive option for the Client

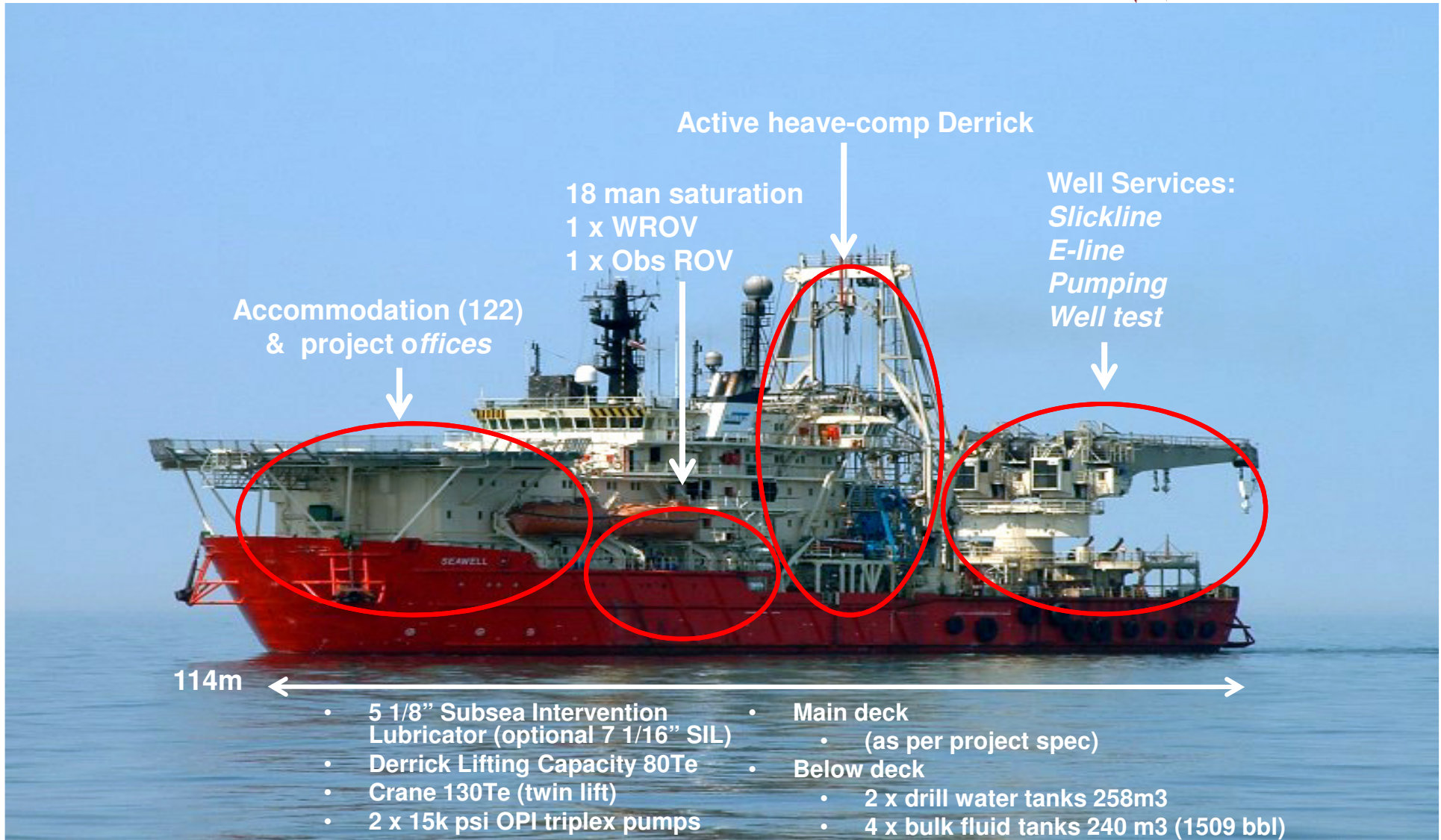
During the campaign the MSV Seawell undertook subsea well operations at the following locations:

- Highlander – Remedial sub-surface safety valve operations
- Tartan – well suspension/well integrity operations
- Enoch/South Wood – 3 x well P&A and wellhead removal
 - 2 x cat 1 & 1 x cat 2.1 wells & guide-bases
- Claymore – mechanical repair/well maintenance/integrity operations
- Tweedsmuir – pumping/scale-squeeze operations

North Sea – UKCS (CNS area)



Campaign vessel – MSV Seawell



Campaign – ‘Key’ intervention equipment

Initially, the Campaign was planned solely around utilising the 5 1/8" SIL for smaller bore conventional tree/well access. However, and during the project management/development phase, it was identified that there were integrity issues with the Tartan (TNT) well which required Addressing

The TNT well has a HXT and therefore required Intervened using the larger bore 7 1/16" SIL in order to plug and suspend the well

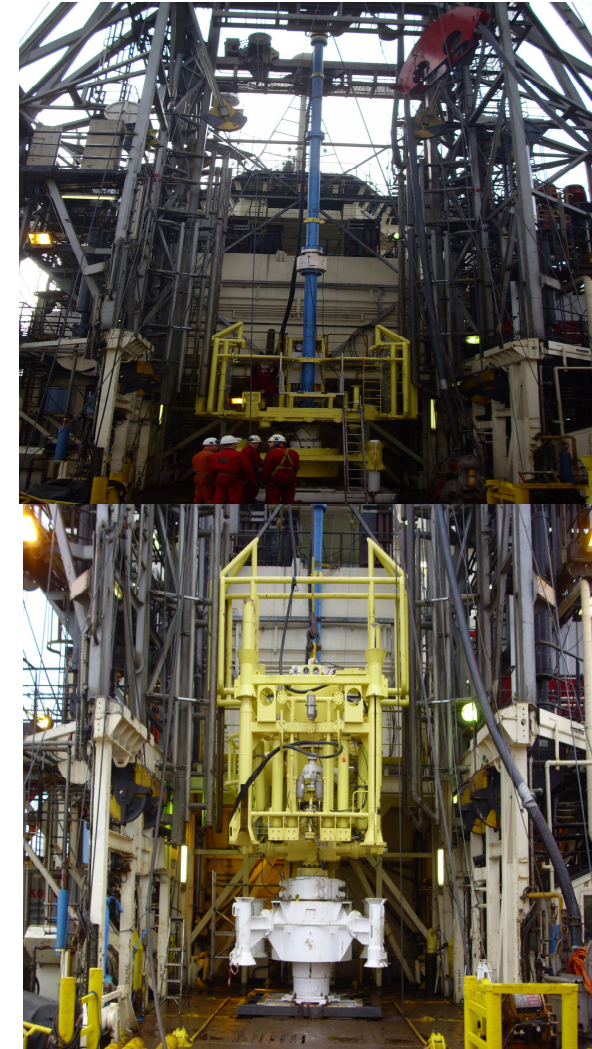
The 7 1/16" SIL was mobilised from Well Ops SEA and flown on a specially chartered flight (onboard an Antonov cargo plane (below)) from Australia to the UK, in order to meet the Client requirement...



5 1/8" SIL in the MSV Seawell Derrick



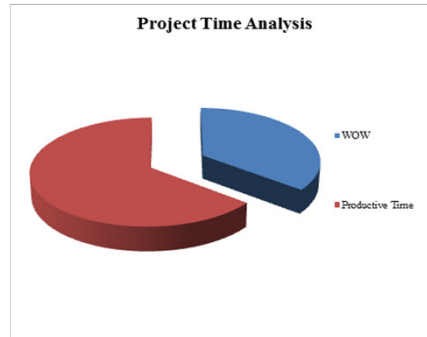
7 1/16" SIL in the MSV Seawell Derrick



Highlander



- 13.4 days in-Field
 - 8.8 days Operational
 - General NPT 0%
 - Vessel NPT 0.4%
 - WOW 33.6%
 - Uptime 66%



Key Contractors:

Schlumberger – Slickline & E-line
Aker Qserv – Pumping
Petrowell – Plugs
Baker Hughes – Packer
Hydropower – Umbilicals & Downlines
Cameron – Tree Rep

Intervention overview:

Tartan platform was on extended shutdown. The plan was to intervene one of the production wells on the Highlander Template (HS-13). Planned to drift to the Tubing Retrievable Surface Controlled Subsurface Safety Valve (TRSCSSV) and insert a Baker Hughes hold open sleeve

Following this, drift below the perforations with Omega gauges and complete various logging operations. The results of the logging activities would determine whether to re-perforate the production interval

Scope:

- Barrier testing completed, removed production bore crown plug
- Deployed Installed SIL/SWLRT and conducted LWI
- 3.85” fluted drift ran & hung up at 521ft
- 3.325” fluted drift ran to 610ft (20ft above TRSCSSV)
- 3.824” gauge cutter ran to 620ft
- Ran contingency Petrowell packer on E-line (set at 613ft –mid element)
- Decision made to run smaller contingency packer – remainder of work scope curtailed

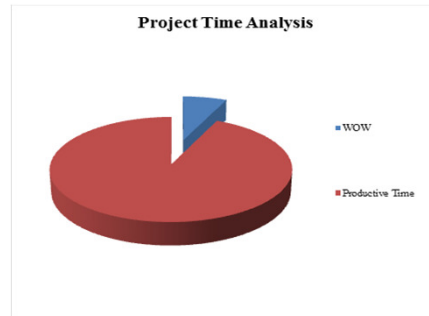
Outcome:

The primary objective of setting a sleeve to hold-open the TRSCSSV was successfully completed. However, due to an obstruction in the well, the secondary objective of logging and re-perforating was aborted

Tartan (TNT)



- 15.4 days in-Field
 - 12.7 days Operational
 - General NPT 9.7%
 - Vessel NPT 1.3%
 - WOW 6.7%
 - Uptime 82.3%



Key Contractors:

Schlumberger – Slickline & E-line
Aker Qserv – Pumping
Halliburton – Plugs/Packer
Baker Hughes – Packer
Hydropower – Umbilicals & Downlines
FMC – Tree Rep

Intervention overview:

The objective was to set plugs in the well and suspend the well

Scope:

Plug and suspend and set the following barriers in the well. Well kill followed by;

- Slickline set plug and prong in the tailpipe nipple at 13,499ft
- Pump a column of seawater in completion tubing
- Slickline set plug and prong in the TRSCSSV nipple at 662ft
- E-Line set 'environmental' Retrieval Bridge Plug (RBP) below the tubing hanger at 450ft

Outcome:

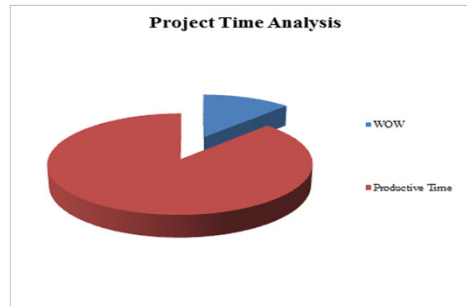
All operations were completed successfully



Enoch/South Wood



- 15 days in-Field
 - 11.4 days Operational
 - General NPT 12.7%
 - Vessel NPT 0%
 - WOW 11.3%
 - Uptime 76%



Key Contractors:

- Baker Hughes – WASP tooling
- Baker Hughes – Cementing
- Baker Hughes – Explosives
- Baker Hughes – Fluid Handling (including onshore post job analysis & disposal)
- Oceaneering (NCA) – Abrasive Cutting tool
- Hydropower – Umbilicals

P&A overview:

The objective was the permanent abandonment of 3 wells; 2 x category 1.0 & 1 x category 2.1. Baker Hughes' Well Abandonment Straddle Packer (WASP) was used, on this occasion, for the 2.1 well-work. Scope also included the recovery of the temporary & permanent guide-bases on both Enoch wellheads

Scope:

Cat 2.1 Operations: Enoch 16/13a-4

- Complete ROV 'as found' survey
- Remove debris cap and clean tree cap hub
- Rig up & deploy WASP tool c/w perforating guns
- Set upper & lower tool packers and test
- Perforate 9.625" Casing at 700ft & 500ft MDBRT into "A" Annulus
- Circulate "A" Annulus clean taking OBM returns to deck tanks
- Mix and pump cement plug into "A" Annulus & 9.625" Casing
- Recover WASP tool
- Rig up, deploy & land Cutting tool on Wellhead
- Sever Wellhead c.10ft below seabed
- Recover cutting tool
- Pull & recover Wellhead to vessel

Outcome:

3 wells successfully abandoned (P&A'd) c/w guide-bases recovered

Cat 1.0 Operations: Enoch 16/13a-3 & South Wood 20/18-06

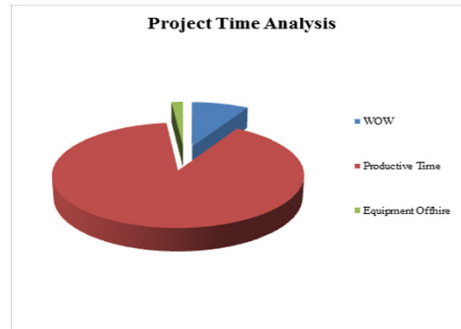
- Complete ROV 'as found' survey
- Remove debris cap and clean tree cap hub
- Rig up & deploy cutting tool on main winch
- Land cutting tool on Wellhead
- Sever Wellhead c.10ft below seabed
- Recover Cutting tool on main winch
- Pull & recover Wellhead to vessel



Claymore (CASWI)



- 14.9 days in-Field
 - 10.4 days Operational
 - General NPT 18.9%
 - Vessel NPT 1.9%
 - WOW 9.3%
 - Uptime 69.9%



Key Contractors:

- Schlumberger – Slickline & E-line
- Aker Qserv – Pumping
- Halliburton – Straddle Packer
- Archer – Detection Tools
- Baker Hughes – Packer
- Hydropower – Umbilicals & Downlines
- GE (Vetco) – Tree Rep

Intervention overview:

The objective was to intervene one of the water injection wells. Plan was to set plugs to temporarily suspend the well in order to allow a XT change-out operation

Additional spools would be installed to tie the new XT back into the ring main. The objective was to reinstate water injection to the well to aid production at Claymore. There was an additional objective of recovering redundant spool pieces from Slot 5

Scope:

- Intervened well & confirmed well was sub-hydrostatic
- RIH with leak detection kit – could not confirm if there were any leaks – no differential
- Q-Serv pumped into annulus confirming communication between annulus and production tubing
- E-line & Archer Calliper RIH to obstruction / parted tubing @ 4250ft – tubing integrity above HUD appeared intact
- Could not pass obstruction, so RIH with Lead Impression Block (LIB); this indicated parted tubing
- RIH with Slickline 1.8” Bullnose drift toolstring (HUD 4266ft) unable to work past this
- Recovered redundant spool pieces

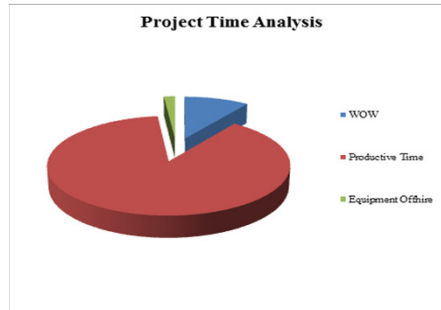
Outcome:

Due to un-anticipated downhole problems, it was not possible to install barriers to allow the removal of the old XT. HOWEVER, in-hole work gathered essential information on the obstruction/parted tubing (unexpected integrity issues) to allow Talisman to plan future operations. All spools were successfully recovered

Tweedsmuir



- 7.5 days in-Field
 - 6.2 days Operational
 - General NPT 5.3%
 - Vessel NPT 0%
 - WOW 12.2%
 - Uptime 82.5%



Key Contractors:

- Aker Qserv – Pumping
- Argon – Isotank Chemical Storage
- Hydropower – Subsea Failsafe Skids, Umbilicals & Downlines
- Schlumberger (MI Swaco) – Chemicals
- Baker Hughes – Chemicals

Intervention overview:

The objective was to conduct a scale squeeze operation at the TP1 well. In addition, a chemical dissolver soak of the Tweedsmuir Production Manifold Multi-Phase Flow Meter (MPFM) was undertaken along with general survey work of the manifold, by the saturation diving team on the Seawell

Scope:

- Barriers were achieved
- Successfully spotted 1st stage of Chemical Dissolver soak
- Conducted survey work of Manifold during 1st stage soak period
- Flush 1st stage and spot 2nd stage of Chemical Dissolver
- Pump Scale Squeeze treatment
- Flush 2nd stage of Chemical Dissolver

Outcome:

All operations were completed successfully



Campaign Summary – Operations

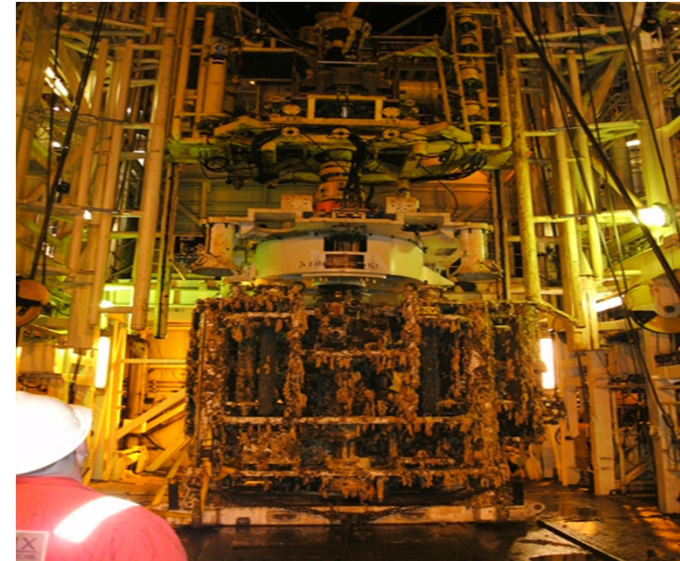


- North Sea: UKCS
- Client: Talisman Energy
- Number of well locations: 6
- CNS water depth range: 90 – 141m

- Number of mobilisations through campaign = 5 including;
 - Full demobilisation of 5 1/8" SIL in order to mobilise 7 1/16" SIL for Tartan well
 - P&A phase included full vessel demobilisation of equipment to accommodate key equipment for well abandonment
 - A variety of Trees intervened through during the campaign: Cameron; FMC and GE (Vetco)
 - GE (Vetco) and Drill-Quip wellheads during P&A well-work

- Campaign summary:
 - 66.2 days in-Field (December – February)
 - General NPT 10% (6.61 days)
 - Vessel NPT 0.8% (0.54 days)
 - WOW 14.4% (9.53 days)
 - **Uptime 74.8% (49.56 days)**

- **All well-work completed:**
 - 3 LWI (Well Maintenance & Production Enhancement)
 - 3 wells P&A'd (Decommissioning)
 - 1 well scale-squeeze treatment (Production Enhancement)



The above worksopes were supported with Saturation Diving operations

Campaign project management was executed and delivered on successfully by Well Ops project engineers and project management, both onshore and offshore

Procedures, Documentation, 3rd Party Management, Legislation/Regulatory and Equipment procurement was overseen, developed, executed and then closed-out in accordance with the Client requirements and expectations

Client Feedback Assessment – FPAL



FPAL <small>empowered by Achilles</small>	SUPPLIER PERFORMANCE	REPORT 1										
PRODUCT / SERVICE DETAILS												
Product / Service Codes for this feedback (Supplier must be registered for these codes) 3-04-3R 3-04-24 3-05-09												
Product/Service Description: TALISMAN - HIGHLANDER, TNT, CASNI + TWEENSMOIR TREE OPS - LIGHT WELL INTERVENTION - PUMPING - SATURATION DIVING OPERA												
Delivery Date or Review Period Start Date: 21-12-11 Review Period End Date (if applicable): 29-2-12												
Order/Contract No (Optional for own use): TLM-0349 Value for period: <input type="checkbox"/> Under £50,000 <input type="checkbox"/> £50,000-£300,000 <input type="checkbox"/> £300,000-£1 million <input checked="" type="checkbox"/> Over £1 million												
SCORES												
ELEMENT	SCORE										N/A Applicable	Disagree
	POOR	MEDIocre		ADEQUATE		GOOD		EXCELLENT				
	1	2	3	4	5	6	7	8	9	10		
1. Product Quality							✓					
2. Service Quality							✓					
3. Project Management - <i>Proas Eng</i>							✓		✓			
4. Documentation							✓		✓			
5. Planning and Delivery - <i>7" SIL</i>							✓		✓			
6. Supplier Management							✓		✓			
7. Installation and Commissioning							✓		✓			
8. Health and Safety - <i>6/7</i>							✓		✓			
9. Environment							✓		✓			
10. Competence and Training							✓		✓			
11. Innovation and Improvement							✓		✓			
12. Organisation							✓		✓			
13. Facilities							✓		✓			
14. Commercial Management							✓		✓			
15. Customer Interfaces							✓		✓			
JOINT AGREEMENT												
Feedback Agreed by Purchaser / Client*						Feedback agreed by Supplier						
*If client is not an FPAL Registered Subscriber tick box <input type="checkbox"/>												
Client Name: TALISMAN ENERGY UK						Company Name: WELL OPS UK						
Installation/Location: SEAWELL - AS ABOVE.						FPAL Supplier Number: 10049017						
Representative's Name: GRAHAM PATON						Representative's Name: JAIN W. MORRIS						
Position: LEAD SUBSEA ENGINEER						Position: BUSINESS ACQUISITION MANAGER.						
Signature: <i>[Signature]</i>						Signature: <i>[Signature]</i>						
Date: 01/03/2012						Date: 27/3/2012						
E-mail: gpaton@Talisman-Penergy.com						E-mail: imorris@helixeng.com						
Tel No: 01224 362581						Tel No: 01224 361990						
Completed Reports should be returned to FPAL: By Fax: 01234 337544 By email to: pf@fpal.com By Post to: First Point Assessment (FPAL), Assessment Services, 7 Burnbank Business Centre, Southhead Road, Albion, Aberdeen AB12 3LP						For Office Use Only PF Index: _____ Initials and Date Entered: _____						