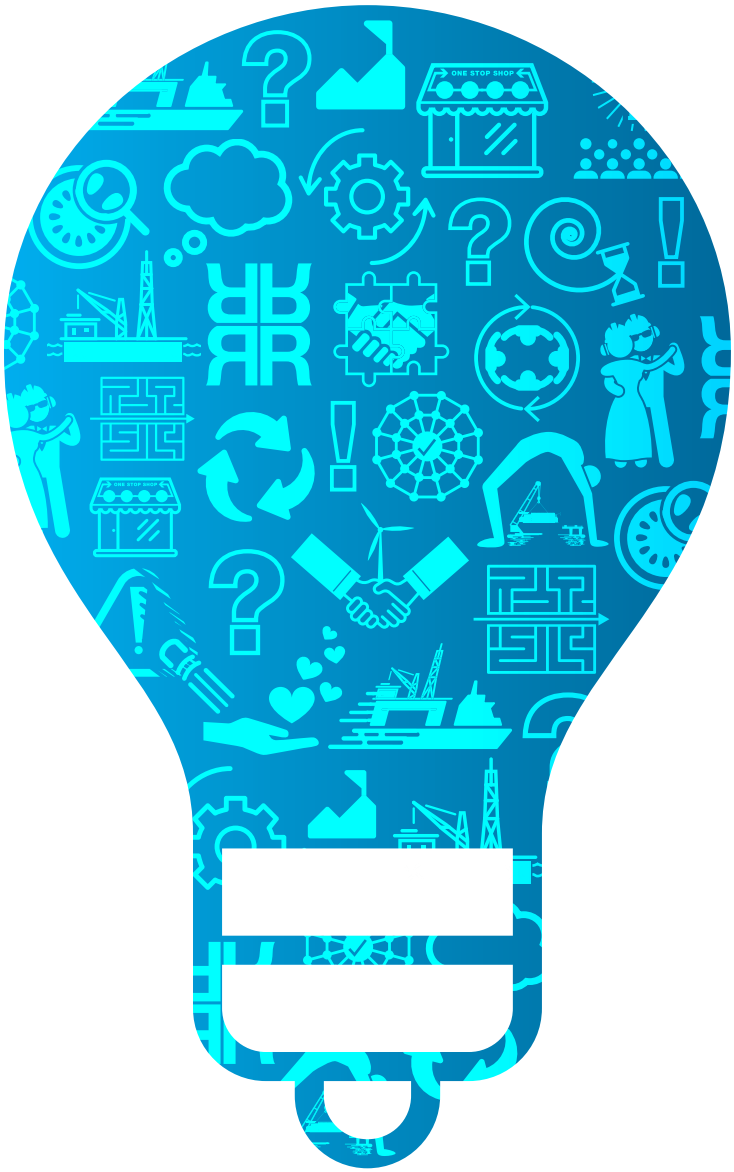
Oil & Gas Authority

UK/Netherlands SNS Hackathon

Output Report



April 2019

Contents

Foreword

The Southern North Sea has similar water depths and sea conditions across an invisible median line between the UK and Netherlands. We also have common hydrocarbon extraction industries with many assets entering a mature stage of production where planning for, and removal of infrastructure is upon us. There are a range of innovative supply companies in both countries albeit with some specific expertise attributable to Holland and the UK. There is therefore a compelling case for a more collaborative relationship where we can leverage the best solutions and approaches from our combined supply chain irrespective of location.

With most innovation being developed within the service sector, it is important we create an effective channel of communication between operators and suppliers, ensuring visibility of future project activity together with project challenges. "Hackathons" have proved to be an effective vehicle to bridge this gap and there is evidence they can really unlock cost saving solutions. By extending the reach of this concept across the boundary of our two countries we have introduced a multiplication factor, engaging a wider range of expertise. This collaborative approach will accelerate our common goal to reduce the financial burden of decommissioning our hydrocarbon infrastructure as it comes to the end of economic production.

Bill Cattanach OBE, Oil and Gas Authority

This event represents a milestone for the Late Life and Decommissioning Special Interest Group. We have been working for several years to get the Dutch Sector and UK SNS Operators and Service Companies to work closer together. The Hackathon event provided an ideal forum to share challenges, ideas and experiences to reduce the overall cost of decommissioning in shallow water in a relaxed but constructive environment.

It is clear both sides have their independent strengths, particularly Well P&A in the UK and Reuse concepts in the Netherlands. By sharing learnings on these strengths and working closer together it is inevitable longer-term savings and better decisions will be made. We look forward to further engagement with both sides of the water in generating initiatives to strengthen the joint capability in this phase of operation. I would like to thank the OGA and Nexstep for their contributions along with all the facilitators and EEEGR team for making the event a success. The event has since been repeated in the Netherlands using the same challenges and was also well received by the participants.

Julian Manning, Chair SNS SIG

"The hackathon we organised on both sides of the Southern North Sea Basin provided a unique opportunity to get familiar with our neighbours by working together. We are looking forward to organise the hackathon again next year."

Jacqueline Vaessen
General Manager at Nexstep

Executive summary

The exploitation of new and novel ideas from supply chain is a key enabler for cost reduction in both the UK and Dutch sectors of the North Sea. To commence identifying and addressing challenges in this area a hackathon event was held to extract expert knowledge and potential solutions that can contribute to the continuing activity in the region.

During the event, a number of novel ideas were generated in 5 operator challenge areas, centred around solving technical challenges faced in late life production and decommissioning in the Southern North Sea.

It emerged there were a number of consistent ideas across many of the challenge areas, with participants recognizing the need for early engagement, collaboration, sharing of experience and data, as well as implementing new ideas and work patterns both inside and outside the traditional O&G sector.

These will now be considered by the engaged operators in collaboration with OGA, Nexstep and wider industry to develop the ideas into delivery programmes which will include working with the OGTC and TNO (or relevant organisation) in the Netherlands.

Introduction

In October 2018, two hackathon events were held. The first, and the basis of this report, was arranged by the OGA in conjunction with SNS Special Interest Group and held at the Norwich City Football Club on the 9th October 2018. The second, arranged by Nexstep & IRO, was held during Offshore Energy 2018, on 24th October 2018 in Amsterdam. This second event is subject to its own report, but it is advised both are read together as there are synergies to be seen between the two.

The event in Norwich was intended as the kick-off event, with five operators invited to present on their SNS challenges with respect to late life operations and decommissioning. The five that presented were partly chosen as they have assets both in the UK and Dutch sector, so their input to the challenges of the SNS could be judged across the whole basin.

The operators that presented were Shell, Oranje Nassau Energie B.V., Spirit Energy, Neptune Energy and Perenco UK Ltd. In addition to the five presenting companies, there were representatives from other operators with assets in the SNS in the audience.

Each of the five operators gave a short presentation in the morning to outline 2 to 3 challenges they faced and which they wished to debate. The presentations were then followed by four hackathon sessions each lasting 40 minutes, where the audience were split into groups of 20, to run through and debate the challenges as a group.

The findings from the debates were then recapped at the end of the hackathon sessions to the wider audience, before one to ones were held to allow supply chain representatives to engage with operators at a deeper level as required.

How does a hackathon event work?

A hackathon event is undertaken to draw together operators in the target area (this case SNS – UK and Netherlands), and the supply chain, in order to find creative solutions to challenges identified by operators in the region to help them with the issues they are facing, ultimately to reduce costs and increase efficiency. In this case the hackathon looked at between 2 and 3 challenges identified by each of five operators with assets in both countries, across the SNS.

Hackathons started in Silicon Valley as a way to inspire new ideas, and were held internally by large software companies to promote new product innovation from its staff. It's reported that the Facebook like button was the output of a Facebook Hackathon event. Spirit Energy has utilised the idea and used it internally for many of its business units.

The underlying idea behind generating new ideas at Hackathons is based on:

One of the key aspects of a hackathon is for participants to stay expansive, offering new possibilities and opinions and to try to restrict reductive thinking (immediately judging ideas negatively). Any idea generated is developed and discussed in a figurative "Greenhouse of Ideas" where all ideas are understood and nurtured. While it is accepted that some of these seedling ideas may turn out to be weeds, equally there will be some seedling ideas that can flower.

The agenda for the day was based on a series of specific challenges from 5 operators, the first four operate in both the UK and the Netherlands.

1. Shell
2. Oranje Nassau Energie B.V.
3. Spirit Energy
4. Neptune Energy
5. Perenco UK Ltd

Findings

The top ten findings/recommendations from the audience at the workshops;

1. Time – allow time for planning of decommissioning, with earlier and increased engagement across all tiers
2. Project time line - Show the entire project pipeline at a far earlier stage
3. Sharing of data - share better, more detailed information with supply chain in order to provide a fuller picture of the project and to better assess risk
4. Initiatives - Revisit previous initiatives/workshops, in order to avoid re-inventing the process.
5. UK/NL - Encourage sharing or UK/NL regulatory process for a greater understanding of the challenge and how to address scope
6. Rulebook - Investigate the adoption of a common UK/NL rulebook
7. Collaborate - with other industries in solutions and work scopes, such as offshore wind
8. Research – explore the 20 most successful projects known to date in O&G to understand why they were successful, and then learn from them
9. Project integrator - Investigate the role of the project integrator
10. Workload - Share forecast work patterns from multiple clients (E&P and OW) to build viable campaigns

The top ten themes from the five operators to be taken forward;

1. Partnering - How to choose the right partner for decommissioning with the right cultural fit? And can we get to a position with a certain degree of devolvement of responsibility?
2. Contracting - how do we balance risk and cost? Can we get to a guaranteed maximum price with incentivisation? To do this further work is needed to investigate appetite for risk sharing. How do we build trust?
3. Early engagement, would be an advantage to include all supply chain tiers
4. Lessons learned - More focus should be on Lessons learned from previous projects, to include failures as well as success stories
5. Commercial discussions - avoid until later in the process, so solutions can be discussed more freely
6. Project Integration - Investigate the role of a project integrator/interface management
7. Support vessels - more work to be done on the role of and options around W2W multi use vessels. Especially around standardisation of platform interfacing, crane and helideck concerns, and the value of a coordination role between operators
8. Subsea infrastructure – can we create an asset map across the basin to get a better understanding of the challenges and also to look for synergies across E&P workload
9. Tax and regulation - Understanding the complexities
10. Disposal yards - Investigation into the option of multisite disposal yards to keep HLV window options open

Operator challenges

Prior to the event each operator provided a short list of the current challenges they are experiencing within maximising late-life production and decommissioning across the SNS. The challenges listed below were shared with participants before the event and formed the framework for the idea generating sessions.

Operator 1: Shell

Challenge 1: Removal of facilities traditional oil and gas approach

Challenge: How to place smart (technical) splits in the abandonment scope, so that Operators can let go while remaining to be the responsible owner and contractors can safely take over the job.

Background;

- During decommissioning the plant could be transformed from and oil and gas factory to a sugar factory and then to a new energy hub or complete removal
- Traditional approach is a very stringent HSE ruleset, based on high risks in oil and gas industry from a process safety perspective (not applicable from a personal safety or marine perspective)
- Based on risk, oil and gas firms can select a more hands-on or hands-off approach. Expertise of the E&P companies is managing oil and gas related risks – demolition offers a different expertise area
- How can abandonment be split in different phases where in every phase the appropriate risk management and expertise are maximised.

Challenge 2: Differentiation of contractor landscape

Challenge: What new alliances can be formed and who should be in the lead for what?

Background;

- The same companies who are involved in construction and maintenance are players in the abandonment world
- This impacts the opportunity to go different about it and often leads to reverse construction
- The opportunities are to see waste as value, maximise the re-use content and to use available time to the advantage
- Expertise outside of the traditional oil and gas industry is rarely included (e.g. water well industry, abandonment outside the oil and gas)
- What can service providers offer and which role can they play in a more differentiated landscape of contractors with external expertise?

Challenge 3: The Watermelon model

Challenge: Which commercial models are best suited to cater for surprises in execution in P&A while maintaining a win-win situation? What is the best risk distribution between operator and contractors?

Background;

- P&A of wells are like opening a water melon – although they look green on the outside, one only knows how red they are when opening them
- With P&A of wells you need to expect the unexpected due to lack of data and well integrity issues
- Traditional commercial models are difficult to incentivise contractors due to these risks. With day-rate models more scope is in principle good news for contractors and bad news for operators, alternatives to transfer risk to the contractors
- When transferring risk – what control can be given and how to prevent risk cost escalation
- What commercial models are very well suited to cater for unknown scope, while maintaining a shared incentive to reduce overall cost.

Operator 1 – Shell, their wrap up and findings back to the audience;

- Early engagement to include all supply chain tiers, to encourage innovation and fresh ideas
- More focus on lessons learned from previous projects
- Avoid commercial discussions until later in the process, so solutions can be discussed more freely
- Investigate the role of a project integrator
- Improvements on amount and quality of well data
- Contracting - how do we build trust to get to more of an open book arrangement.

Operator 2: Oranje-Nassau (One B.V.)

Challenge 1: How can a small operator de-risk its abandonment?

Background:

- ONE's core business is oil and gas production and exploration, not abandonment
- Can we, without compromising integrity, outsource abandonment completely
- How can we control costs?
- How can we control future liabilities?

Challenge 2: Can we make decommissioning a MER UK business case?

Background;

- After an assets useful oil/gas producing life, is there a re-use option?
- Can abandonment and production complement each other?
- How can we incorporate the energy transition into abandonment?

Operator 2 - Oranje Nassau Energie B.V. – their wrap up and findings back to the audience;

- Investigate the value of rigless P&A versus traditional methods – is there really a saving to be had
- The need to out more focus onto early, quality engagement
- Contracting – can we get to guaranteed maximum price with incentivisation?

Operator 3: Spirit Energy

Challenge 1: Underwater cutting equipment for pipes and external cutting of large diameter piles

Background;

- This is a key activity with a large scope, as such trialing will be key to ensure project success
- How can we ensure underwater cutting is more reliable?

Challenge 2: Underwater dredging including pile clean out equipment

Background;

- As above, underwater dredging is a key activity, and as such how can this become more reliable?

Challenge 3: Seabed recovery of concrete protection mattresses

Background;

- Over 600 pieces of debris and 330 mattresses will need to be recovered
- A large number of weighted sacks were deployed to combat seabed scour, these will be challenging to recover
- Efficiency on diving operations need to be improved.

Challenge 4: A multi operator campaign approach to Walk to Work (W2W) operations

Background;

- W2W commenced on this project summer 2018, with 40 construction crew onboard
- Is there potential to share W2W campaigns with other E&P or other industry?
- There are interface issues between vessel and host platforms, as each platform is different, how can this be overcome?
- Can we use smaller vessels, is big always best?
- Can asset clusters be identified to minimize transit times?

Operator 3 - Spirit Energy – their wrap up and findings back to the audience;

- More focus on options around W2W. Especially around standardisation of platform interfacing, crane and helideck concerns, and the value of a coordination role between operators
- Subsea removals, especially mattresses – focus on nets, and an asset map across the basin
- Understanding the complexities of tax and regulation.

Operator 4: Neptune Energy

Challenge 1: Cost certainty and reduction

Background:

- Require multiple campaigns using expensive, in demand assets such as DSVs, Jack up rigs and LWIV
- Schedule constraints due to platform operations usually dictate when the vessels are due onsite
- Vessel costs are high due to a captive market, available time slots
- Almost impossible to lumpsum works due to the nature of the operations and the degree of change that is encountered, even with a young asset
- The cost to mobilise a DSV for a small flushing scope or a jack up for an individual P&A is almost cost prohibitive
- Missed opportunity to conduct works in the downturn
- Inability to reliably estimate the volume and cost of the work to be undertaken – uncertainty range can be as high as 40%.

Challenge 2: Decommissioning delivery capability

Background:

- Opportunities to tie in with larger field decommissioning scopes being undertaken by larger operators makes economic sense
- Lack of lessons learned. Execution efficiency and continuous improvement is reduced due to small work scopes
- No set UK or global strategy as we are a new company with limited assets requiring decommissioning. Not enough work to create a portfolio plan
- Cost assessments are not based on analysis of actual technical data but initial project estimates using industry rules of thumb
- Decommissioning competes with other, more exiting activities such as exploration, development, and even late-life asset operation. MER.

Challenge 3: Scope, guidance and stakeholders

Background:

- Due to the long drawn out nature of decommissioning a team is sometimes required for a long duration for what is a relatively simple scope
- Large amount of regulatory paperwork needed by specialist 3rd party companies. Not particularly value adding
- Time taken to get partner approval and also methodology buy-in from Stakeholders such as the NFFO and public
- Document approval times
- Cost for decommissioning licenses – flat fee
- Spending with no return so management and stakeholder approach can be restrictive.

Operator 4 - Neptune Energy – their wrap up and findings back to the audience;

- How to choose the right partner for decommissioning with the right cultural fit?
- Further work to be done on risk sharing between E&P and supply chain, how can this be improved
- More focus on the value of Interface management between the different aspects of the project, and the participants, especially the service companies, in order to deliver an integrated, successful project
- Can we get to a position where the E&P can move forward on a project with a certain degree of devolvement of responsibility?

Operator 5: Perenco UK Ltd

Challenge 1: SNS platforms are small

Challenge: How can we reduce the critical path without increasing resources and increasing the safety risk?

Background;

- Platforms are small, e.g. simple 4-leg steel platforms with max POB typically 12
- Size of platform limits what operations can be completed at the same time
- Max. POB limits how many people we can put on the platform at any time.

How can you help?

- Multi-skilled workforce
- Reducing the number of people required to complete an operation
- Innovative tools that speed up time required to complete operations
- Ways that we can increase the POB (cost effectively) without increasing the safety risk.

Challenge 2: Making time work for us

Challenge: How can we make the most of the fact that we have some flexibility on when we complete dismantlement operations? i.e. we can wait until the time/cost is right for us

Background;

- Depending on the integrity of the topsides/jackets, it can be left in lighthouse mode for a number of years until we are ready to remove it
- Removal of topsides and jackets does not have to be done at the same time
- We can ‘harvest’ the topsides and jackets at a time that’s right for us, i.e. coordinate with other fields, when unit costs are cheaper etc.

How can you help?

- What can be done to maximise the time we can leave the platforms in lighthouse?
- What can we learn from other industries? E.g. wind industry – surveys to confirm integrity of a structure
- What can be done to ‘weather proof’ operations to maximise the windows of opportunity for completing work
- What can you do to optimize prices for times that are typically low periods for you.

Challenge 3: Share the pain, share the gain

Challenge: Suppliers want to get involved in Decom but are unwilling to take on any ownership of risks or optimize their prices if we take all the risk

Background;

- With P&A of wells in particular there are a lot of unknowns' due to lack of data and well integrity issues
- Similarly, with Dismantlement – things never go quite as planned either due to weather or 'surprises' from the original installation
- We see a large variation in prices for work that is tendered, with many at the top end not willing to take on any risk.

How can you help?

- Look at innovative ways of reducing the unknowns. making the unknowns known
- Look for innovative ways of lessening the impact if the worst-case scenario happens
- Propose commercial models that cater for an unknown scope with a shared incentive to reduce overall cost
- Be willing to take on more commercial risk or optimize your prices for a lower share of the risk.

Operator 5 – Perenco – their wrap up and findings back to the audience;

- More work to be done on the role of and options around W2W multi use vessels
- Need to investigate the benefits of remote integrity and monitoring, especially with late life assets placed in lighthouse mode, ahead of their final removal
- There is value in further investigation into the option of multiple disposal yards being available for projects, whereby the HLV window options remain open.

Hackathon in numbers

1
Location

752
Person hours

11
T-Bar sheet ideas across

2
Countries attending

6
Trade associations attending

54
Supply chain and consultancy companies in attendance

7
Operators present, 5 of which presented

Appendix: List of attendees

Thanks to the following persons, for organisation of the event and facilitating the work stations:

Bill Cattanach	Oil and Gas Authority	Head of Supply Chain
Sylvia Buchan	Oil and Gas Authority	Supply Chain Development Manager
Simon Gray	EEEGR	CEO
EEEGR admin team		
Julian Manning	EEEGR/DNS SIG	Chair
Stuart Wordsworth	EEEGR/DNS SIG	Vice Chair
Jacqueline Vaessen	Nexstep	GM
Fleur Duel	Nexstep	Communications Manager

Workshop champions from Spirit Energy;

Jessica Thomson
Richard Newby
Kosta Nazaruk
Will Black

Thanks also to the representatives from the 5 operators who ran the 5 challenge stations and provided expert feedback to participants in each working session.

Rip Boudewijn	Shell
Martijn Hoefsloot	Oranje Nassau Energie B.V.
Richard Newby	Spirit Energy
Kosta Nazaruk	Spirit Energy
David Hunt	Neptune
Julie Summerell	Perenco

Attendees UK

	Name	Company
1	Julian Rickards	3D at Depth
2	Lex Bragg	Aggreko UK Ltd
3	Ben Cannell	Aquaterra Energy Ltd
4	Glenn Hurren	ASCO UK Ltd
5	Simon Turner	ASCO UK Ltd
6	Justin Faraday-Drake	ATI Tank Hire Ltd
7	Tina Gordon	ATI Tank Hire Ltd
89	Andrew Sannick	Baker Hughes UK
9	John Best	Best Proactive
10	Gerry McNulty	BHR Group
11	Anne Gourlay	Bilfinger Salamis UK Ltd
12	Steve Haylett	Bilfinger Salamis UK Ltd
13	Chris Hudson	Blaze Manufacturing Solutions Ltd
14	Jason Moyles	Claxton Engineering Services Ltd
15	Matt Marcantonio	Claxton Engineering Services Ltd
16	Morten Basse	Creadis UK Ltd
17	Julian Holloway	Creadis UK Ltd
18	Nick Oliver	Dave Oliver Hydrographic Services Ltd
19	Stuart Wordsworth	Decom North Sea
20	Mark Hayward	DNV GL
21	Alison Lucas Collier	EEEGR
22	Kerry Carter	EEEGR
23	Rachel Gould	EEEGR
24	Simon Gray	EEEGR
25	Siofra Driver	EEEGR
26	Lionel Gapper	Electro-Tech Plus
27	Richard Innes	ENI UK
28	Darrel Axten	ENI UK
29	Ian Littlewood	EPIC International Ltd
30	Aart Linterink	Eversea NV
31	Iain Scott	Exceed Energy
32	Kevin Freeman	Expro North Sea
33	Iain Pittman	GA Drilling
34	Lucinda McCombe	Gardline
35	Samantha Lines	Gardline
36	Mark Hewett	Hewett Petroleum Services
37	Terry Eglinton	Hexcam Ltd
38	Colin Pearce	Houlder Ltd
39	Donald Mackay	INEOS Oil and Gas UK
40	Chris Barrett	INEOS Oil and Gas UK
41	Roy Greig	ION
42	John Brocklehurst	Kaefer Ltd
43	Rosie Roberts	Kew Green Hotels

44	Philip Durrant	Marine Space Ltd
45	Marco Clementi	MCICM
46	Angus Cooper	Modus Seabed Intervention
47	Paul Wright	National Grid
48	David Hunt	Neptune
49	David Windscheffel	N-Ergise
50	Jacqueline Vassen	Nexstep
51	Fleur Deul	Nexstep
52	Brendan Kelly	NRX Assethub (HubHead Corp)
53	Kevin Broadbent	NRX Assethub (HubHead Corp)
54	Elliott Shilling	N-Sea Offshore Ltd
55	Paul Chilvers	ODE
56	Bill Cattanach	OGA
57	Sylvia Buchan	OGA
90	Russell Stevenson	OGTC
58	Joe Leask	O&G UK
59	Theo Bergers	Oranje Nassau Energie B.V.
60	Martijn Hoefsloot	Oranje Nassau Energie B.V.
61	Robert Bush	OrbisEnergy
62	Simon Hudson	OSL Consulting
63	Elvis Hernandez	OSL Consulting
64	Julian Manning	Paradigm Group BV
65	Julie Summerell	Perenco UK Ltd
66	Ricky Woods	Peterson (UK) Ltd
67	Paul Smith	Peterson (UK) Ltd
68	Simon Warren	Petrofac
69	Stuart Nuttall	Petrofac
70	Hanna Darwish Davies	Pharos Marine Automatic Power Ltd
71	Matthew Byatt	Pinnacle Consulting Engineers
72	Gilmar de Souza	Prisma Components Ltd
73	Paul Cook	Proserv
74	Sophie Wilson	Rhenus Offshore Logistics UK
75	Andy Briggs	Rhenus Offshore Logistics UK
76	Ian Bonser	Ripblast
77	Jeremy Howes	Ripblast
78	Brett Laurenson	Rovco
79	Alan Welton	Seaward Safety Ltd
80	Rip Boudewijn	Shell
81	Laszlo Koszaghy	SMS Alderley
82	Joe Carter	SMS Group
83	Neil Pickess	SMS Group
84	Jessica Thomson	Spirit Energy
85	Richard Newby	Spirit Energy
86	Kosta Nazaruk	Spirit Energy
87	Denise Hone	Stowen Ltd
88	Nick Tompkins	Subsea Initiatives Ltd
89	Kevin Buttle	Technicus Consulting
91	Darin Scales	Tullow Oil Ltd
92	Mike Burton	Veolia-Peterson
93	Jim Christie	Well Safe Solutions
94	Stephen Brown	Worley Parsons

Oil & Gas Authority

Oil and Gas Authority is a limited company registered in England and Wales with registered number 09666504 and
VAT registered number 249433979. Our registered office is at 21 Bloomsbury Street, London, United Kingdom, WC1B 3HF

www.ogauthority.co.uk