



CONTENT

PAGE

- 2 WELLTEC® E-line
intelligent fishing
solutions – innovative
robotic technology
- 8 Managing Non-Technical
Risks Made Practical
and Value-driven
- 10 SPE Student News

WHILE THINGS ARE LOOKING GOOD, OIL PRICES FLOAT IN A “FRAGILE EQUILIBRIUM”

I hope all of you had a great start of the year and are ready the second half of the 2018-2019 SPE Copenhagen season.

We kicked off the year in early February with the event sponsored by Maersk Drilling where we enjoyed two very interesting presentations. SPE DL John Hedengren made us aware of the potential of automation by using physics-based models and its application to drilling, and Jacob Odgaard shared how he and his team approached the challenge of developing a self-sustained innovation function in Maersk Drilling.

As we approach the mid-point of the season, another set of great events are in front of us: after Total sponsors their first SPE Cph event at the end of February, covering their success story in one of the largest and most complex LNG projects in the world: the Yamal LNG project. In March, Welltec will sponsor the SPE event on Electric Line Fishing Services, followed by the event in April sponsored by Hess where the SPE Cph section will have the pleasure of hosting the third SPE DL of the season (Christiaan Luca) on managing non-technical risks. The last SPE event of the season will be hosted by Shell where they will talk about energy transition.

Turning the attention to a macro industry level, I mentioned in my October 2018 newsletter that oil price was approaching \$80/bbl

and since then it has dropped some 20%, and it will continue to be a very volatile landscape due to the tricky equation of global supply and demand. On supply, key factors are the US shale and its meteoric growth, the OPEC/non-OPEC agreed production cuts and the restoration of the US sanctions on Iran. On demand, key factors are the trade tensions between the US and China, as well as the potential slower growth of China's economy impacting global oil demand. As quoted by the President of the US Federal Reserve Bank of Dallas (Robert S. Kaplan) the consequence is that oil prices float in a “fragile equilibrium” where any slight change in supply/demand will move the balance causing significant oil price swings. Zooming into the North Sea, activity seems to be picking up and in Denmark let's hope some calm after the M&A storm from the last 2-3 years.

Finally, I would like to emphasize how good is the value for money you get from the SPE membership. It is a great vehicle to expand your knowledge, growth your network, and increase your skills via training materials in the SPE website and workshops.

I, along with the entire SPE Copenhagen Board, would like to wish you and yours a great second half of the 2018-2019 season. We are looking forward to seeing you in the remaining SPE events before the summer break.

Thanks

Jaime Casaus-Bribian
SPE Copenhagen
Section Chairman

FUTURE MEETINGS

FOR MORE INFORMATION REGARDING
THE PROGRAMME SEE PAGE 6

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WELLTEC® E-LINE FISHING SOLUTIONS

– INNOVATIVE ROBOTIC

Replacing heavy, conventional fishing methods with light but robust, precision robotic fishing tools. By engineering controllable and intelligent BHAs suited to a variety of different types of fish that could be lost or stuck in a well. Welltec's Fishing Solutions can be used to assist recovering dropped, lost or stuck; wire / cable, toolstrings, BHA's, lock mandrels, permanent or retrievable bridge plugs and many more...

DEPLOYMENT WITHOUT CONSTRAINTS

With the increase of extended reach and unconventional wells around the world, traditional fishing methods with slickline and braided line may no longer be enough to retrieve a fish downhole.

In these challenging trajectories, coil tubing was often seen as the answer but also faces challenges in terms of limited available over pull on depth and the resultant impact forces that can be generated due to the associated drag factors across the length of the coil.

Welltec's portfolio of intervention tools are designed to work in any deviation and trajectories. This combination results in the ability to perform heavy duty interventions with an unrivaled level of control and accuracy without constraints – words not normally associated with braided line or coil tubing deployed fishing operations.

DIRECT BI-DIRECTIONAL AXIAL FORCE

Rule of thumb calculations are typically used for estimating the “applied” jarring impact forces downhole, but does not give a true reflection of the actual forces being applied with peak jarring impact delivered over a very short time span with low force. This demonstrates why peak impacts higher than the yield (or even tensile) strength of a target do not in-turn break or free the fish. The Well Stroker® is at the core of Welltec's E-line fishing solutions, and can apply up to 100,000lbs of finely controlled bi-directional direct true axial force. The built-in Surface-Read-Out (SRO) features allow for adjustable fine-tuned surface controlled force and precision positioning during fishing operations and removes the error band inherent with calculations for stretch factors of wire or coiled tubing.

E INTELLIGENT ONS TIC TECHNOLOGY

UltraPak Packer Retrieval Tool – junk catcher full of debris, top of milled packer ratchet assembly recovered on tool.

Direct axial force mitigates the risks of premature shock shearing of fishing BHA shear pins that are sometimes seen with impact jarring. Anchoring the Well Stroker® to the tubing on depth, mitigates the surface requirement of large pulls and associated heavy rig ups. All the applied force travels down the toolstring and through to the fish and reaching the stuck point, exactly where it needs to be applied and is an accurate measurable true force on depth. It does not dissipate, nor is it absorbed on a soft target and can be maintained on a moving target.

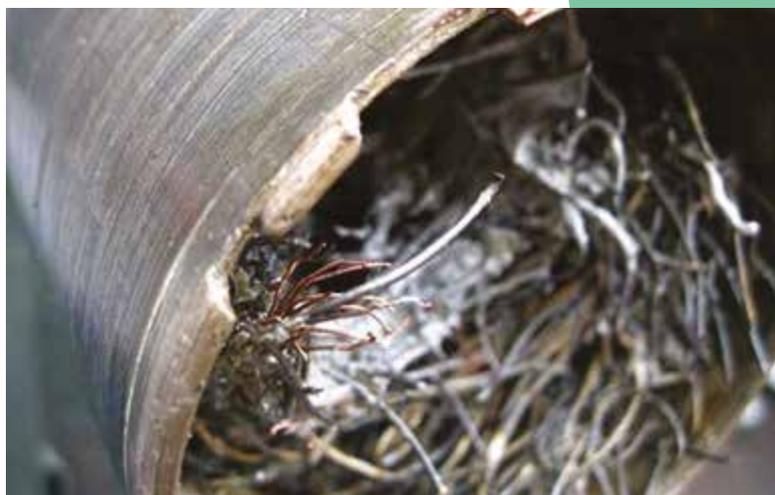
BACK-UP RELEASE DEVICE

During fishing operations, it is critical to have a secondary means of release as close to the primary fishing BHA as possible, so that if the fish cannot be recovered and the fishing BHA released (e.g. due to debris around or damage to the catch area), it still provides a means of release allowing recovery of the toolstring and / or cable to surface.

The Welltec Release Device® (WRD) allows for this, with a built-in failsafe activation should the unexpected occur. Multiple WRD's can be placed strategically with options not only to release from the fishing BHA, but also at further pre-selected points in the toolstring. On activation it leaves a clean standard external fish neck for subsequent retrieval. The WRD has a SWL of up to 100,000lbs which makes it ideal for use in conjunction with the Well Stroker. As a final fail safe, the WRD also has a timer release enabling the WRD to release even if all communication to the toolstring from surface is lost. Surface commands can be issued to either force the WRD to release, or to reset the countdown timer as required.

INTELLIGENT FISHING BHA'S

The final piece of the puzzle is an ability to control newly engineering adjustable fishing BHAs which will further enhance precision robotic fishing capabilities via real-time communication to the fishing tools. Having the option for release activation on command also allows for releasing the fishing assembly and to re-engage the fish



Monoconductor cable recovered inside mill bit.



Ball of slickline recovered with wire spear.



Small lengths of slickline and parts of an Universal Pulling Tool recovered inside AFH plug.

again if necessary. Keys or slips on the tool can be retracted to aid in engaging the fishing tool onto the fish and an independent built-in fail-safe release device provides reassurance should communication to the toolstring be lost.

Such an approach means moving away from mechanical shear pin activated release mechanisms and so preventing premature shear when trying to bait on to a fish, or while working hard on a fish.

A wide range of interchangeable BHA's are available to cover both external and internal catch sizes and fishing necks and with an adjustable reach and the ability to release from a fish completely independent to BHA movements. This mitigates against the inherent risks during normal wireline operations of not being able to engage or release from a fish.

The tools can also be configured as an Adjustable Wire Finder Grab / Spear with a real-time surface controlled adjustable finder. This can then be closed and opened on command to the required size, mitigating the need for multiple runs to change the wire finder size.

ENGINEERING AND APPLICATION OF E-LINE FISHING SERVICES

Fishing operations require a thought process that acknowledges each run dictates what the subsequent run requires, where the unexpected may happen with a high number of possible scenarios. Such operations require real-time diagnosis and flexibility and by using an intelligent electronic fishing platform it is possible to tractor, cut, mill, rotate, clean, latch and stroke, or any combination thereof to reach and recover a fish. This mitigates the need to have multiple service companies on location as contingency, no matter which direction the fishing operation takes. ◀





Ralph Macaulay
Global Eline Fishing Solutions
Advisor – Welltec

Ralph started his oil and gas career in May 1994 and has over 24 years industry experience, the last ten of which have been supervising and managing heavy duty fishing operations.

Initially based in the North Sea, Ralph began his career performing slickline operations in the field locally as well as on international assignments. He has held numerous roles including Slickline Supervisor and also offshore Well Services Supervisor. In 2008 he then took an onshore position as a Slickline Operations Supervisor.

In 2009, Ralph began focusing on fishing operations and was promoted to HD Fishing Global Operations Manager. In this role he was the technical focal point for all braided line deployed heavy duty wireline fishing operations performed around the world.

More recently in 2018, and after seeing the potential in electric line fishing operations, Ralph made a change in direction with his career joining Welltec as the Global Eline Fishing Solutions Advisor.

In this role, he is the subject matter expert and technical focal point for all operations relating to electric line deployed fishing. ◀



PROGRAMME

17:00 - 17:30
DRINKS

17:30 - 18:15
GUIDET TOUR THROUGH
MANUFACTURING

18:15 - 19:15
WELLTEC PRESENTATION

19:15
DINNER

LOCATION

WELLTEC
Gydevang 25
3450 Allerød

SPEAKER

Ralph Macaulay, Global Eline Fishing Solutions Advisor – Welltec

TOPIC

WELLTEC® E-line intelligent fishing solutions – innovative robotic technology

ENTRANCE FEE

None

REGISTRATION

Advanced registration is required due to access restrictions at the venue. Please sign up by Wednesday 13. March at www.spe-cph.dk.

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MARCH

September 25	MAIN SPEAKER	AFTER DINNER
TOPIC	Tracer Technologies in Reservoir Management	
SPEAKER	Troels Nielsen (DTI)	
LOCATION	DTU	
SPONSOR	SPE	
October 29	MAIN SPEAKER	AFTER DINNER
TOPIC	4D Seismic History Matching	
SPEAKER	Paul Mitchell (SPE DL, Taqa)	
LOCATION	GEUS	
SPONSOR	GEUS	
November 27	MAIN SPEAKER	AFTER DINNER
TOPIC	Natural Surfactants in Oil Production Smart Waterflooding: How it Works?	Things No One Tells About Fossil Fuels
SPEAKER	Simon Ivar Andersen (DHRTC) - DTU Alexander Shapiro, CERE - DTU	Hans Horikx (DHRTC) - DTU
LOCATION	DTU	
SPONSOR	DTU	
February 5	MAIN SPEAKER	AFTER DINNER
TOPIC	Drilling Automation and Downhole Monitoring with Physics-Based Models Maersk Drilling's Journey of Innovation, the Lessons Learnt and the Road to Becoming a Self-Standing Entity	
SPEAKER	John Hedengren, SPE Distinguished Lecturer Jacob Odgaard, Maersk Drilling	
LOCATION	Maersk Drilling	
SPONSOR	Maersk Drilling	
February 27	MAIN SPEAKER	AFTER DINNER
TOPIC	Yamal LNG: The Success story and what it means for Total's strategy in Russia	
SPEAKER	Michael Borrell, Senior Vice President, North Sea and Russia, Denmark Country Chair (Total)	
LOCATION	Total	
SPONSOR	Total	
March 20	MAIN SPEAKER	AFTER DINNER
TOPIC	WELLTEC® - E-Line Intelligent fishing solutions – in- novative robotic technology	
SPEAKER	Ralph Macaulay	
LOCATION	Welltec	
SPONSOR	Welltec	
April 9	MAIN SPEAKER	AFTER DINNER
TOPIC	Managing Non-Technical Risks Made Practical and Value-driven	
SPEAKER	Christiaan Luca (SPE DL)	
LOCATION	Moltkes Palæ	
SPONSOR	HESS	
May	MAIN SPEAKER	AFTER DINNER
TOPIC	Energy Transition	
SPEAKER	Lee Hodder, VP Denmark Shell	
LOCATION	Shell	
SPONSOR	Shell	



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●● ABSTRACT

Managing Non-Technical Risks Made Practical and Value-driven

Non-technical or external stakeholder risks have become a dominant factor in the upstream business. Especially capital projects may experience significant schedule delays or cost overruns due a variety of issues of governmental, social, environmental, security or other external nature. Delegating your response to External Affairs or hiding behind a Corporate Social Responsibility program is no longer good enough.

Adequate addressing of non-technical risks, both mitigating downsides and benefiting from upsides, can be done, but needs an advanced level of internal organization and a culture that accepts external stakeholder perspectives.

Technical functions need to take an active role and responsibility in addressing non-technical risks and need to work closely together with commercial and externally facing functions. Christiaan Luca will give you practical tips on how to organize internally for effective addressing of non-technical risks and how to minimize undesired surprises from external stakeholders.

The important role of management and the technical functions will be a key element of this lecture. A solid external response requires a solid internal organization. ◀

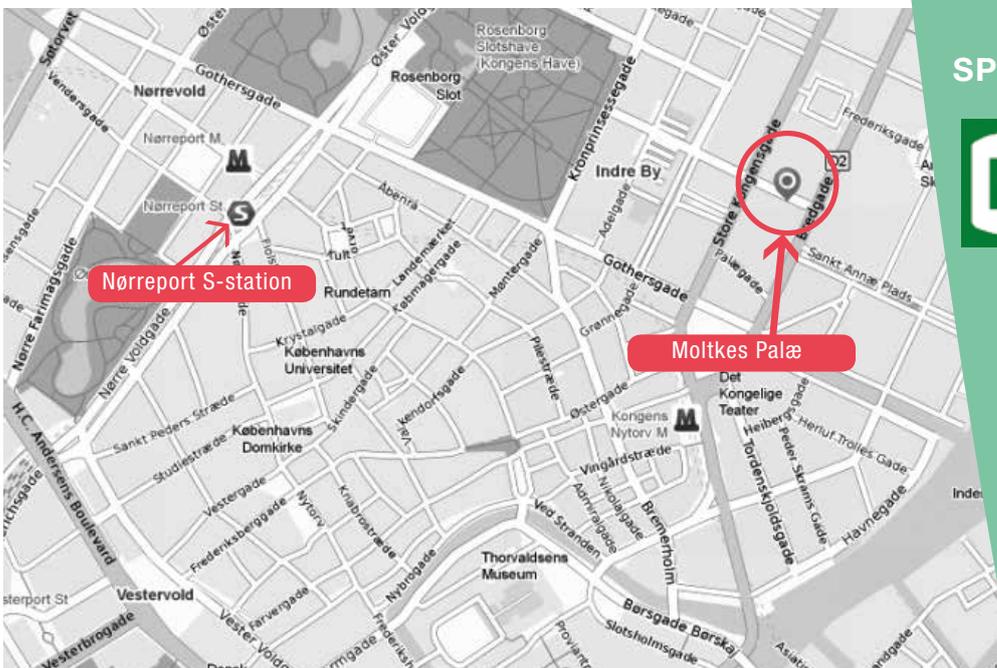




Christian Luca,
Community Wisdom Partners.

Graduated with a BSc in mining engineering and a MSc in petroleum engineering, both from Delft University, the Netherlands. The first 14 years of his 32-year career with Shell he spent overseas in a variety of petroleum engineering roles, including drilling, reservoir engineering, project planning and economics developing oil and gas fields in Thailand, Syria, Gabon and Nigeria.

Upon returning to Shells corporate offices in the Netherlands he held various management roles in technology and business strategy and planning. In these positions he was closely involved with externally challenged programs in CCS and Rigs-to-Reefs. Until end 2016, Christian was the head of Shells global practice in non-technical risk management. He now is an independent trainer, assessor and coach in this expertise area. ◀



PROGRAMME

17:00 - 18:00
DRINKS

18:00 - 19:00
PRESENTATION AND SPE NEWS

19:00 - 21:00
DINNER

LOCATION

MOLTKE PALÆ

SPEAKER

Christian Luca,
Community Wisdom Partners

TOPIC

Managing Non-Technical Risks
Made Practical and Value-driven

ENTRANCE FEE

None

REGISTRATION

Advanced registration is required due to access restrictions at the venue. Please sign up by Tuesday 2. April at www.spe-cph.dk.

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APRIL

SPE STUDENT SECTION

COMPANY VISIT Total Laboratory, Repro & Core Store

On 13th February 2019, SPE student chapter at Technical University of Denmark organized a visit to Total Laboratory, Repro & Core Store which turned out very successful. Students from different backgrounds showed interests and participated in the event.

The visit provided knowledge about reservoir core samples from the North Sea fields, and the link that geological, logging and reservoir engineering interpretations have with each other. Students became familiar with the differences in the pore system and rocks of the lower Cretaceous, upper Cretaceous and upper Jurassic. Lunch was provided to the students with the courtesy of TOTAL.

Further, a lab tour around the experimental setups was organized to provide more insight. Thomas Blume and Jonathan Hastings were the main coordinators from TOTAL. Overall it was a very insightful visit as per student's response. ◀





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