



Shear Anything | Seal Instantly | Ultimate Reliability

K-BOS[®] Innovation

**Technology enabler for North Sea
Operations with a DP MODU in water
depths >350' (107m)**

Colin Moir

Regional Director – North Sea, Europe, West Africa

colin@shearanything.com

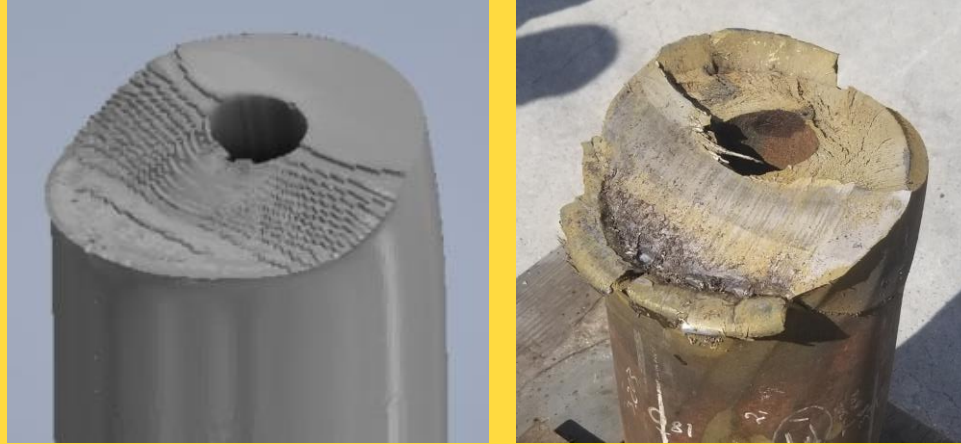


**KINETIC
PRESSURE
CONTROL**

18-3/4" 15,000 psi K-BOS Overview

K-BOS Summary

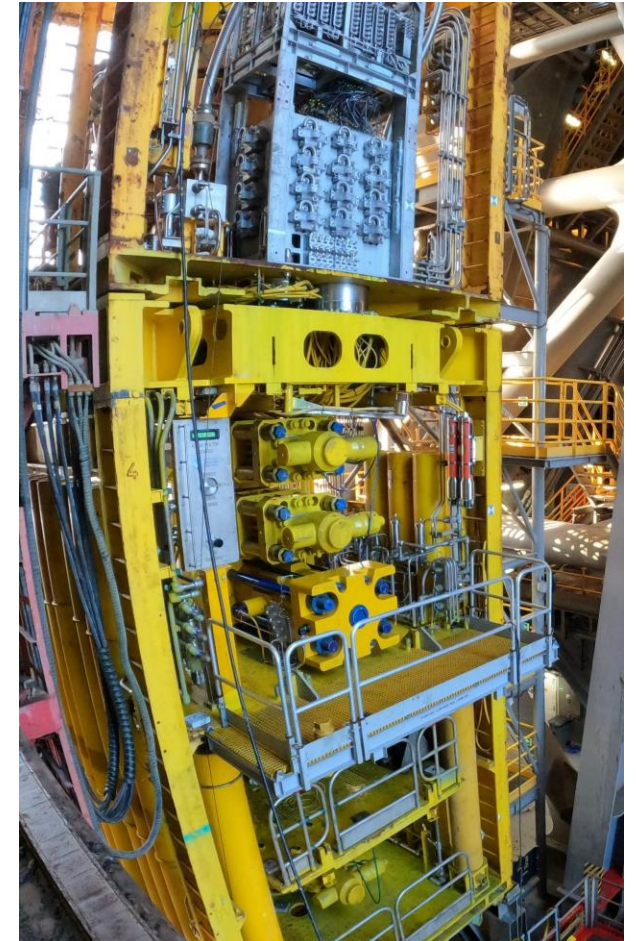
- Shear and Seal in <<1 second
'Todays focus point'
- 0 psi to 15,000 psi RWP
- Rated from 0F to 350F
(Higher rating can be provided)
- Rated to 12,500 ft water depth
- Available in 3 retrofit variants:
Cameron TL, Hydril & NOV NXT
(or as E-SID)
- Compatible with Sour Fluids
up to 500 psi p.p. H2S



Above: Predicted Model (left) vs Actual Result (right)

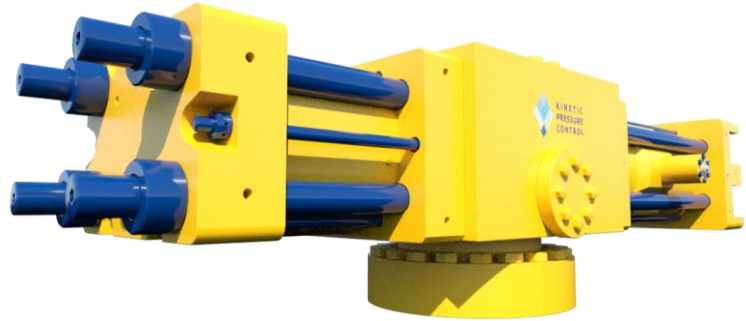


The K-BOS is rated to shear and seal on a 9.5" BHA
API 16A PR2 shear test results shown above: 9.5"
OD Drill Collar 214ppf, MYS 120

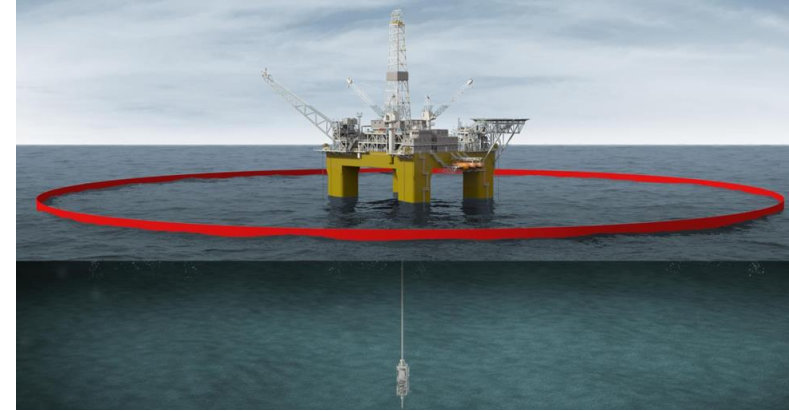


Shown Above:
18-15M K-BOS Installed
into a CSR BOP Cavity

K-BOS Value Case – DP Ops Enabler Stage 1– North Sea



*K-BOS Enables
9-Second EDS*



K-BOS Secures the Well in Milliseconds

- Rated to shear and seal “Anything”
- Well Control Certainty
- SIL3 Reliability

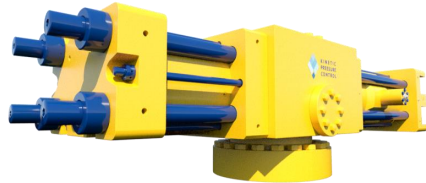
9-Second EDS

- Enables DP Ops in North Sea 107m to 500m water
- Cost savings (AHTS/MPV vessels & systems)
- Faster Transit Time between locations
- Ops Gains + Reduced CO2

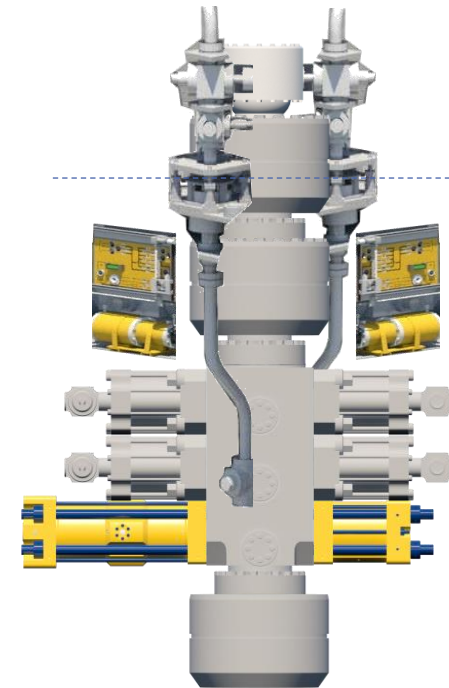
Assumptions: Kinetic K-BOS Enabling Innovation

- Retrofit use of K-BOS to MODU BOP as ultimate shearing device & 9sec EDS enabler
- Optional upgrade K-POD controls (closed loop hydraulics) No discharge of fluid to sea. Facilitates removal of Subsea accumulators and existing pod system. Significant reduction in BOP COG and wellhead fatigue loading.
- Realise multi well abandonment campaign project savings from 5% – 7%

K-BOS Value Case – DP Ops Enabler Stage 2 – North Sea



K-BOS Capability Enables Further Optimization



- Ball Joint
- EDP Connector
- 5k FSVs
- 5k Annular
- K-POD (B/Y)
- BSR or K-SGV (18-3/4", 5ksi)
- VBR (18-3/4", 5ksi)
- K-BOS (18-3/4", 5ksi)
- WH Connector

Optimized Well Control System for Subsea P&A
(See K-LITE Summary)

Kinetic “K-LITE” Stack Enabling Innovation

*Purpose Built Well Control System: Class 4 BOP (R2,A1,SGV1) 5000psi rated;
< 80mT air weight w/ < 7m Height extremely low COG*

Minimal fatigue loading similar to LKWIV w/ EDP/LRP (No BOP tethering)

Enable Lower and & Upper Abandonment w/ the same system

Optimized multi well abandonment campaign savings from 10% – 15%

‘Plan your Campaign based on what your well needs, not what is available in the marketplace’

K-BOS Value Case – ‘Plan your Campaign’– North Sea

PLAN YOUR CAMPAIGN: K-LITE Stack - Enhanced Efficiency Solutions (EES)

Please Note: All costs and savings are Campaign specific

	CAMPAIGN 1	CAMPAIGN 2	CAMPAIGN 3
Planned Number of Wells	64		
Days per well	18		
Total Original Campaign Planned Days	1152		
Estimated Cost per well	£ 10,000,000		
Original estimated Total Project Cost	£ 640,000,000		
Pro rata Overall Project Day rate	£ 555,556		
Total EES Estimated saved Days per well with K-LITE	2		
Revised EES savings Campaign Planned Days	1024		
Revised EES Estimated Cost per well	£ 8,888,889		
Revised EES Sub Total Project Campaign	£ 568,888,889		
DP vs Moored Pre lay Saving Sub Total	£ 11,146,455		
BOP Tethering Savings Sub Total	£ 38,811,110		
Revised Total Project Cost with Total Savings	£ 518,931,323		
Less K-LITE Stack rental cost for Campaign	£ TBD		
Insert other Kongsberg technology cost per Campaign			
Projected K-BOS - K-LITE Stack EES Cost per campaign	£ 535,427,240		
Estimated Total Project Cost Savings (£)	£ 104,572,760		
Estimated Savings on Project (%)	16%		
NET ZERO Fuel Savings on this Campaign (Tonnes of CO2)	-38244		

Example Only

- Limited numbers of Moored units available for North Sea well operations or for P & A campaigns! **Need for other options ?**
- Extensive Risk vs Reward model when planning multi – location campaigns whether development or abandonment operations: Enabling Factors
 - < 9 second EDS allows for reduced stress on wellhead while maintaining comparable RWC
 - Potential to replace DMAS system with K-BOS or K-BOS + K-POD on existing rig BOP for reduced COG of around 7’- 10’ (2.1 – 3m).
 - Utilise KPC K-LITE Stack with K-BOS as containment device. 13 5/8” or 18 3/4” variants
- Utilise KPC ‘Plan you Campaign’ calculator
 - Provide Enhanced Efficiency Solutions (EES)
 - Significant Cost / Time savings
 - Reduction in NET Zero CO2 emissions

Questions?



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