

Technology-Based Asset Integrity Assurance

Introducing ARCUS





Schlumberger



Clients



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What is ARCUS Inspect?

- O Inspection, Management and Maintenance Framework
- O Utilises RFID to positively identify and record assets
- Provides auditable and consistent inspections
- O Cloud synchronisation for on-shore visibility
- Specifically developed for fragmented workforces in hostile work environments
- O Can operate with no Internet connectivity
- Flexible, bespoke features accurately fit your business





ARCUS Options – Enterprise Edition

- Very powerful and scaleable solution
- O Synchronisation to on-site server
- O Support multiple tablets and multiple applications per rig
- O Ability to simultaneously support all applications per tablet
- Available with with Zone 2 or Zone 1 tablet
- Integrates into 3rd party/social network or corporate network
- Can integrate into SAP, Oracle, JDE, Maximo and Infor M3
- O Local site reporting or cloud reporting
- > Very efficient use of bandwidth
 - Unlimited technical support



ARCUS Options – Lite Edition

- O Very cost-effective entry into ARCUS Suite
- Synchronisation direct to cloud using 3rd party or social network
- O Support for single tablet per rig
- Supports single application per tablet (DROPS, LGI, EX, Hose, BOLT, BOP or PRV)
- Supplied with Zone 2 tablet
- Supplied with 500 RFID tags
- Additional tags and Bluetooth wand also available
- Technical support (10 hours)





Products & Services Hardware

- O Local and Cloud Infrastructure
- O ATEX1 and Class1 Div1 Tablet & Handhelds
- O ATEX2 and Class1 Div2
- O RFID Scanning Hardware
 - O Fixed Gate Readers
 - Handheld readers for use with mobile devices

RFID Tags (LF/HF/UHF)



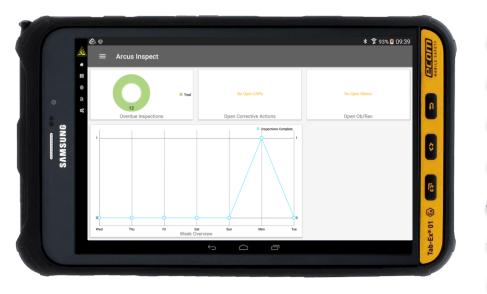












ARCUS-DROPS Highlights, Features & Benefits

- O Detailed recording of potential DROPS
- Analysis of safety securing and retention
- **C** Raises awareness of dropped objects
- Proven to reduce dropped object incidents
- Better rig efficiency and maximum uptime
- Safer working environment
- Management of corrective actions







O DROPS E-Learning









=	© * [*] 93% □ 09.41 SAVE
æ	SIVE SIVE
0	NewInspection
•	Check all bolts/retaining pins/retaining plates/lock wire is in place and secure.
	Ensure clamp is secure.
	Ensure nut and pin are free from corrosion.
	Ensure welds are free from damage, cracking and corrosion.
	Ensure all connections and fixings are fitted with secondary securing methods.
	Check motor for signs of damage, distortion and corrosion.
	Ensure hook is free from cracking, damage and corrosion
	Please Select FAIL PASS SKIP

ARCUS-LGI Highlights, Features & Benefits

- O Supports loose lifting gear, cranes, winches
- Precise and consistent inspection quality
- O Direct inspection input on-board
- Synchronises to cloud for total visibility
- Corrective action management
- Aligns to LEEA, LOLER, API, NSL etc.
- Certificate and report generation







	<u>a</u>	× New Inspection			常 1% @ 16:26 SAVE
		JUNCTION BOX	Check cover is free from dama	age, cracking or water ingress.	
	Ø	BOLTED [X1] TO BRACKET (+SPRING WASHER [X8])	Check cover fixings are secure		
	6	WELDED [X1] TO STRUCTURE	Ensure there is no damage to Please Select	cables, ground wires and connectors.	SKIP
SAMSUNG			Observation	Severity CRITICAL MAJOR Recommendation	MINOR
			Ensure unit is positioned to mi	nimize impacts from equipment/loads.	

ARCUS-EX Highlights, Features & Benefits

- O Detailed recording of EX Assets
 - Inspection compliance with EX-D,E,I,N & P
- O Uses RFID for positive identification
- Consistent inspection standards
-) Can be used in conjunction with IRT
-) Less chance of equipment failure
- **)** Photographic evidence









ARCUS-HOSE Highlights, Features & Benefits

- Full hose register
- Supplier and inspection history
- Supports multiple RFID tags per asset
- Dimension and flange specifications
- Manages pipe thickness and tolerances
-) Analytics allows predictive maintenance
-) Integration into ERP







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=	Item Inventory	₹				
	OVERDUE No tag associated with item Askaris	:				
	Item Type Lad-Saf Anchor Post & Wire Height (m) 1.5 Weight (kg) 10.0					
	Access Requirements N/A Inspection Frequency N/A Last Inspected 2015-12-08					
	OVERDUE No tag associated with item Askaris	:				
	Item Type Bracket Height (m) 60.0 Weight (kg) 3.0					
SAMSUNG	Access Requirements N/A Inspection Frequency N/A Last Inspected Never					
8 H	OVERDUE No tag associated with item Askaris	:				
	Item Type Strip Light Height (m) 2.0 Weight (kg) 4.0					
	Access Requirements N/A Inspection Frequency N/A Last Inspected 2015-12-08					
	OVERDUE No tag associated with item Askaris	:				
	Item Type Pipe Clamp Height (m) 100.0 Weight (kg) 2.5					
	Access Requirements N/A Inspection Frequency N/A Last Inspected 2015-12-08					

ARCUS-BOLT Highlights, Features & Benefits

- O Manages bolt inspections
- Single tag references bolt grouping
- Consistent inspection process
- > Photographic location evidence
- Colour code support
 - Supports visual, tap-test, torque etc.
- Supports up to 20%/5 year rolling review







= ↔	Item - E004035005695AB3			* 🕈 93% 🖬 09:40
		DETAILS	RETENTIONS	RISK ANALYSIS
° ° 🥑	1	Level Zone 2 / Monkey Board / Starboard Side		
SAMSUNG		Item Type Ladder (Bolted)	Access Requirements	
SAL SAL		Weight (kg)	Height (m)	
		23.0 Static drop risk?	5.0 Dynamic drop risk?	
44		static urop risk?	<	
		Can the item be moved?	Can the item be remove	d?

ARCUS-BOP Highlights, Features & Benefits

- O Detailed recording of BOP sub-assets
- LMRP sub-assemblies (hoses, valves etc)
- Very robust tagging requirements
- RFID Tags proven to 10,000ft
- > Full history traceability and audit
-) Integration into ERP
-) Tagging of manifold & shear rams etc.









ARCUS-TRACK Highlights, Features & Benefits

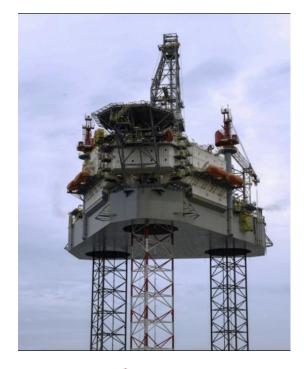
- O Tracking of Tools and Warehousing
- O ARCUS-TRACK pilot in Aberdeen
- O Ruggedised RFID tags
- Allows very rapid tool location
- **)** Faster turn-around of critical components
- Integrates into SAP/Oracle/JDE/Maximo/M3
- Complete tool history







Project Update – North Sea



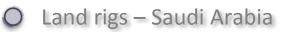
- O Jack up North Sea
- First ARCUS-DROPS deployment
- **2700** assets
- O Cloud-based system
- O Deployed September 2014
- No reported DROPS





Project Update – Saudi Arabia





- O ARCUS-DROPS
- Deployment on two land rigs
- In service for 12 months
-) Drops-free
- 22 rig deployment in negotiation
- **D** Expanding from Malaysia to Equador
- Full translation to Mandarin





Project Update – Gulf of Mexico





- O Drill Ship GoM (warm stacked)
- O ARCUS-DROPS
- O DROPS Scope Derrick
- **2700** assets
- > Expansion fleet-wide in negotiation
- Isolated system



Project Update – West Africa



- O Drillship
- ARCUS-DROPS
- Ran for 18 months then stacked
- Currently being recommissioned
-) Drops-free since deployment
- **O** Technical and cultural challenges





Project Update – Dubai



- D Land rig Dubai
- O ARCUS-DROPS
- O Final deployment stages





Project Update – West Africa



- O Drillship
- O ARCUS-EX Deployment
- O Deployed February 2015
- Fleet-wide negotiations to include full ARCUS suite





Project Update – North America/GoM



- O BOP Installations
- First ARCUS-BOP Deployment
- Custom development and integration
- **D** LMRP Valves Solenoids & Hoses
- First to use UHF technology



Questions?





A JOULON COMPANY