GE Oil & Gas

4D - Digital Fingerprinting

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Imagination at work.
How to Examine and Assess Condition?

• What if this was the only way to check our health?
Heavy Equipment Digital Imaging Technology

• Non-invasive inspections are common in many industries
• Examples using GE technology include:

Nuclear Reactors  Aircraft Engines  Gas Turbines
Digital Fingerprinting for CBM and In-situ Inspections

- Create a digital 3D model of interior part surfaces avoiding disassembly
- The ‘fingerprint’ becomes the baseline for equipment condition at any point of the life-cycle
- Current state can be digitally “compared” to fingerprint
- Changes are highlighted and mapped overtime (4D)

“If it ain’t broke (or doesn’t look different), don’t fix it!”

Imagination at work.
Bore/Flange Scanning System
- Automated scan/index control
- Automatic centering to bore axis
- Spans BOP segments
- Multiple NDT Modalities
- Light, visual & cleaning

Ultrasonic Probes & 3D Wide Area Laser

PTZ Camera, Lights, water & Cleaning

Early visibility & full digital traceability of indications

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Digital Imaging/Fingerprinting - Fasteners

PAUT
(Phased Array Ultrasound Testing)
- Bolt & Stud Inspection
- Full digital record in 18 sec
Digital Imaging/Fingerprinting - Wetted Surfaces

3D Laser Surface Mesh
- Bore Indication Mapping
- Riser (end of 2015)

Bore/Flange Scanning System
- Automated scan/index control
- Automatic centering to bore axis
- Spans BOP segments
Safer, faster, more accurate In-situ BOP Inspections

TODAY
Repair facility/tear down centric

- Pull
- Disassemble
- Tear-down & Inspect
- Repair & disposition
- Final re-assembly
- Back in Operation $$$!
- Ship back to Rig

~90 days

Cycle time

TOMORROW
Rig/Digital centric

- Pull
- Repair & disposition
- Back in Operation
- Monitor
- Inspect

40% reduction!