

SLOT JET ISOLATE

SPE ABERDEEN, 20 – 21 APRIL 2022

Keith Gaskin, Titan Torque Services Limited

Alex Lucas, TotalEnergies Upstream Danmark A/S

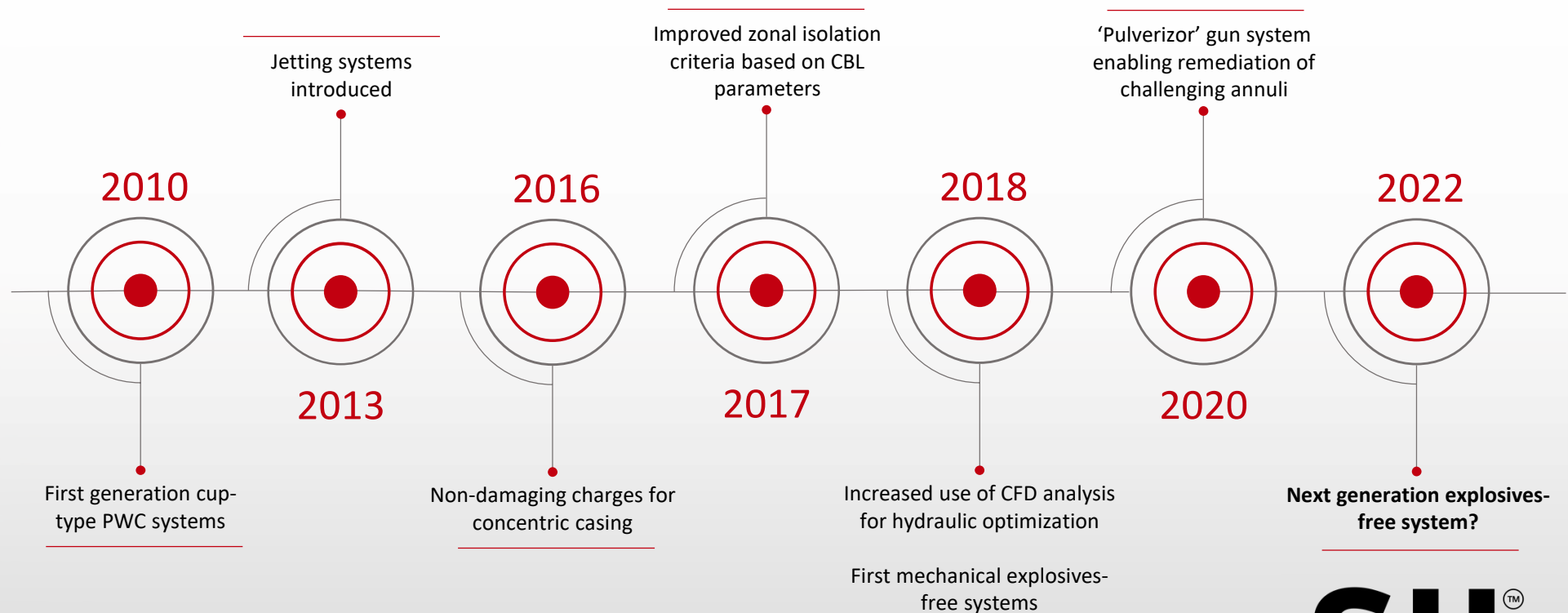
a novel, enhanced,
explosives-free and
low-carbon remedial
technology



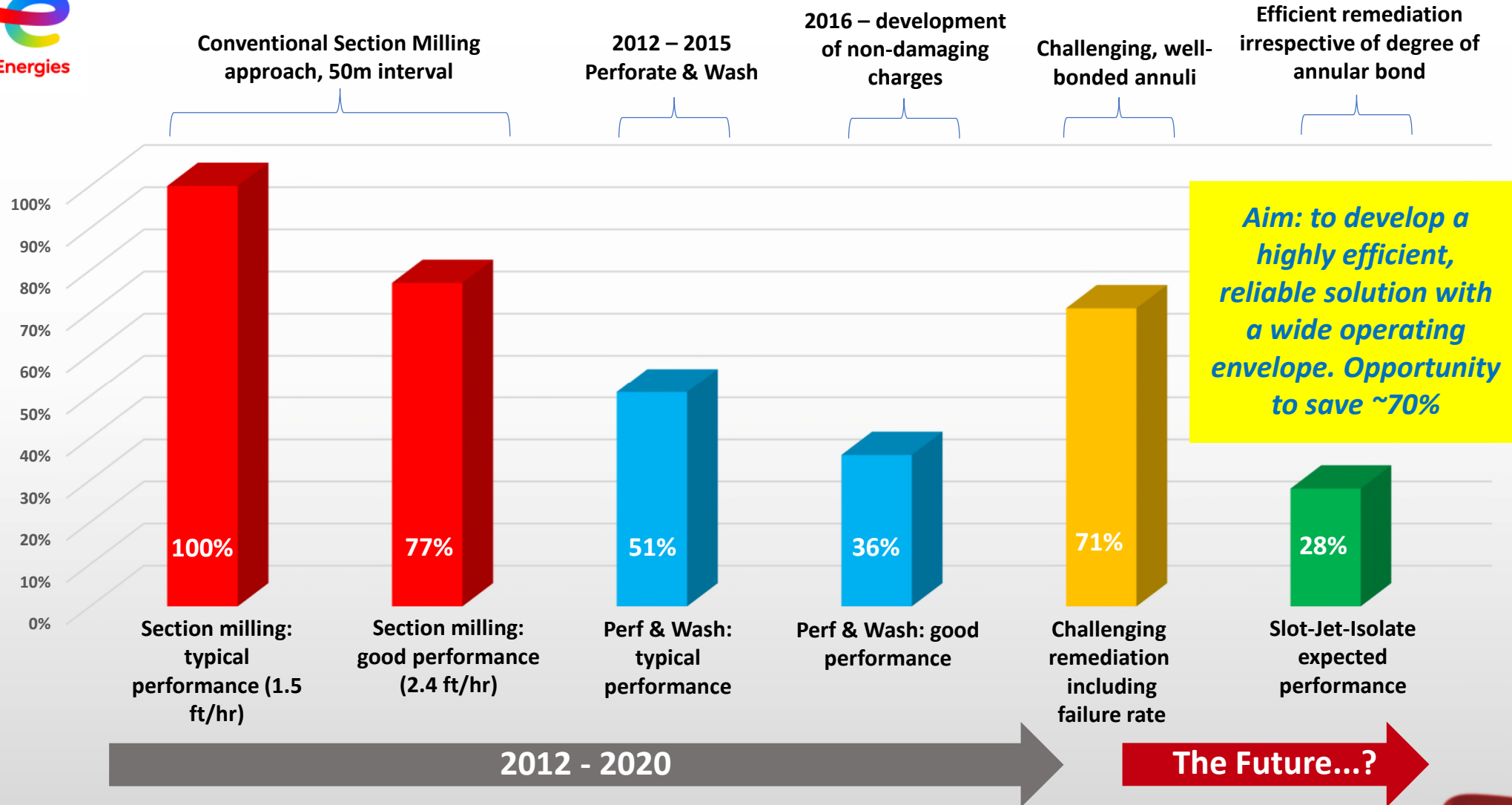
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WELL DECOMMISSIONING 2022
– THE FUTURE!**

P&J Live - 20-21 April 2022

THE EVOLUTION AND FUTURE OF ANNULAR CEMENT REMEDIATION



THE ANNULAR CEMENT REMEDIATION JOURNEY



TOTAL ENERGIES WISHLIST & CASE FOR EXPLOSIVES-FREE



- Safety - explosives free
- Multi-use, less waste
- Carbon footprint reduction
- Simple
- Rigorously tested
- Clear indication of hydraulic efficacy
- Proven to be effective on challenging annuli
- **Robust compliant barriers**
- Fast – install & verify 50m barrier in <72 hrs
- Low standby rate, quick turnaround
- Flexible – can be easily reconfigured
- No hidden charges
- **Cost reduction!**



THE PROPOSED SOLUTION: INTRODUCING THE SLOT-JET-ISOLATE SYSTEM

SJI™ *What is it?:*

Slot Jet Isolate is a Hydromechanical Tool that utilises pressure and Pull or Push forces to slot casing coupled with existing proven technology if required to create a permanent barrier.

SJI™ *Applications:*

- *Deep 200ft to 300ft full reservoir isolation*
- *Intermediate 200ft to 300ft isolation*
- *Formation integrity test and isolation*
- *Environmental isolation*
- *Workover re-entry*
- *Slotting production liner*



SJI™



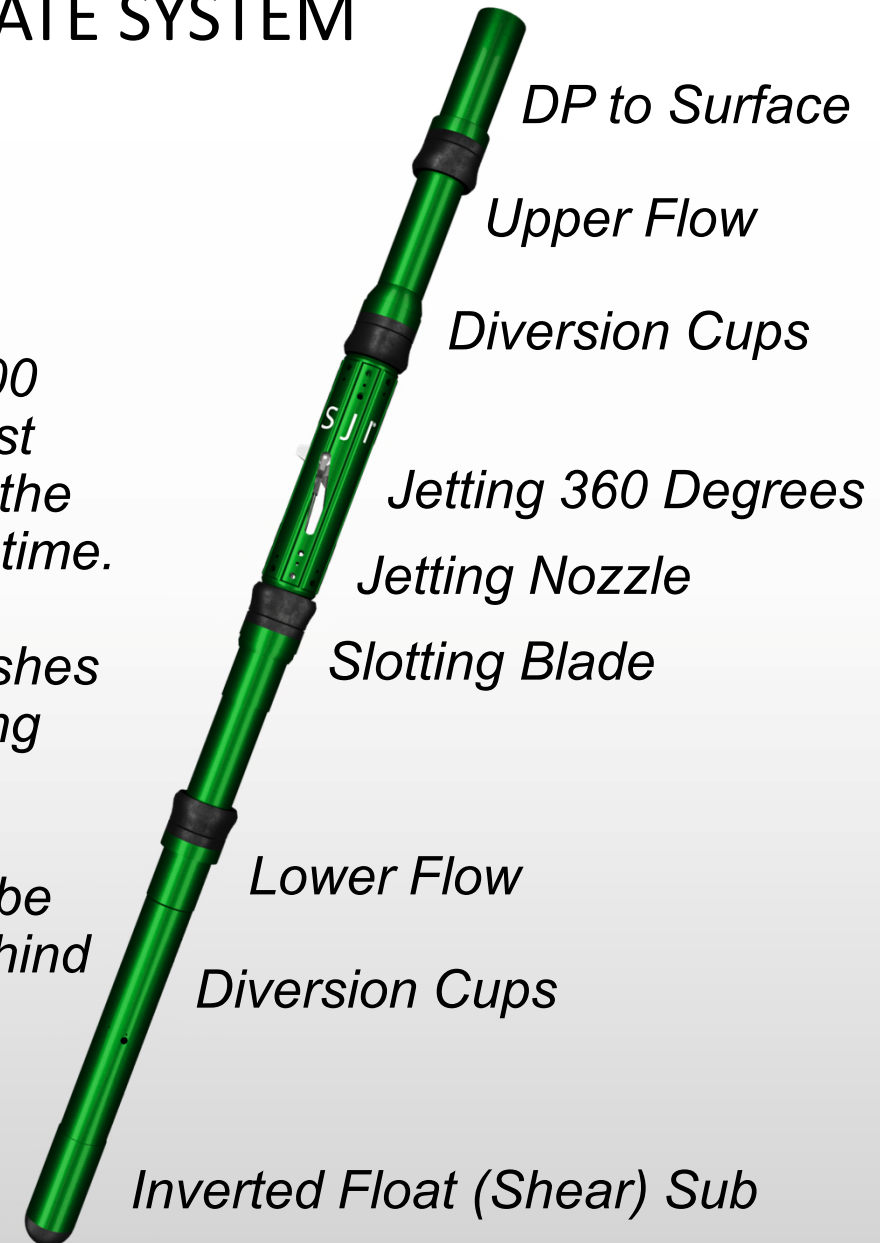
THE PROPOSED SOLUTION: INTRODUCING THE SLOT-JET-ISOLATE SYSTEM

SJI™ *Comprises of 3 Main components:*

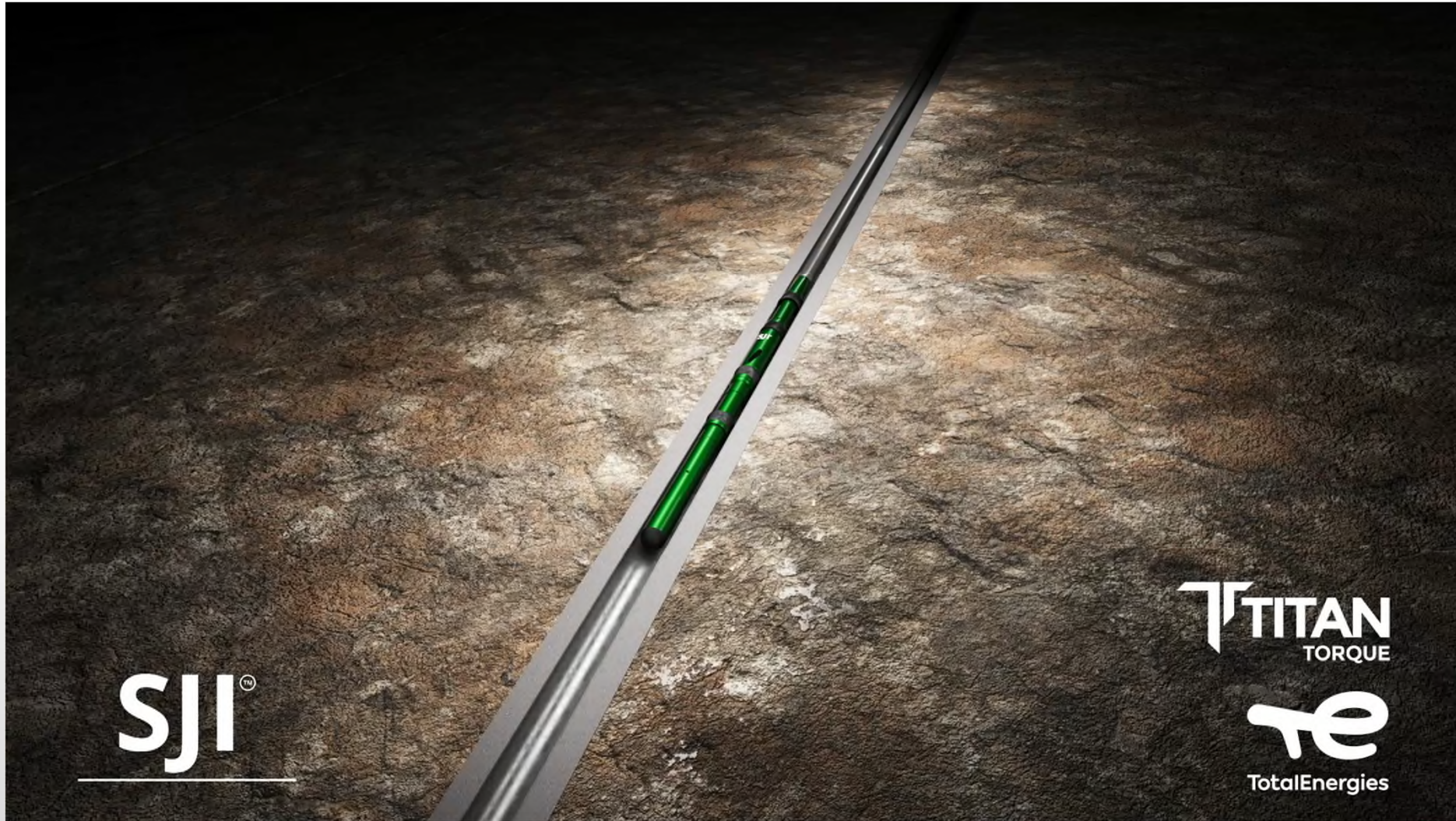
Slotting Tool – *Pierces the casing over 4000 times per 200ft section whilst jetting the slots and rattling the casing/cement at the same time.*

Jetting Sub – *Closed system that jets, flushes and cleans behind the casing circumferentially.*

Isolation Sub – *Allows isolation material to be forced into the slots and behind the casing providing a permanent barrier.*



SLOT-JET-ISOLATE: HOW IT WORKS



TESTING PROGRAMME: PART 1: WORKSHOP TESTING



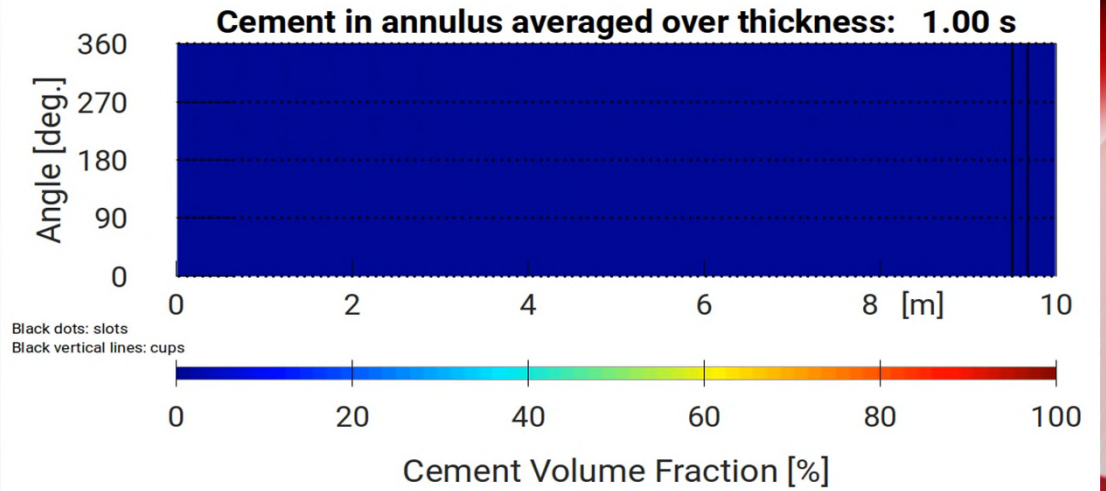
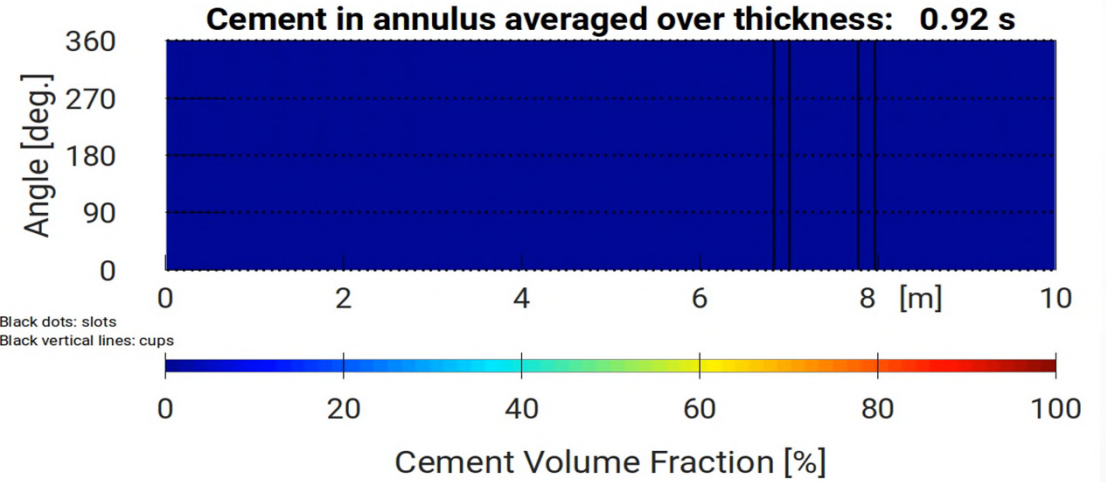
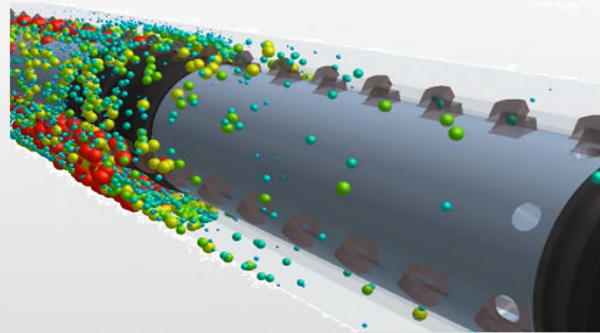
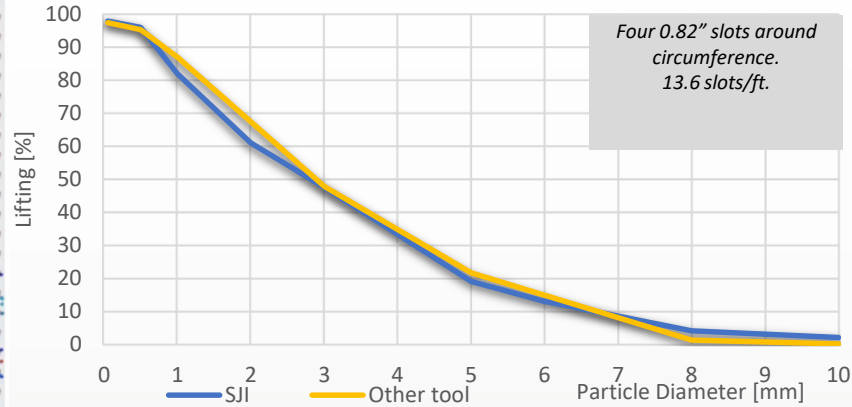
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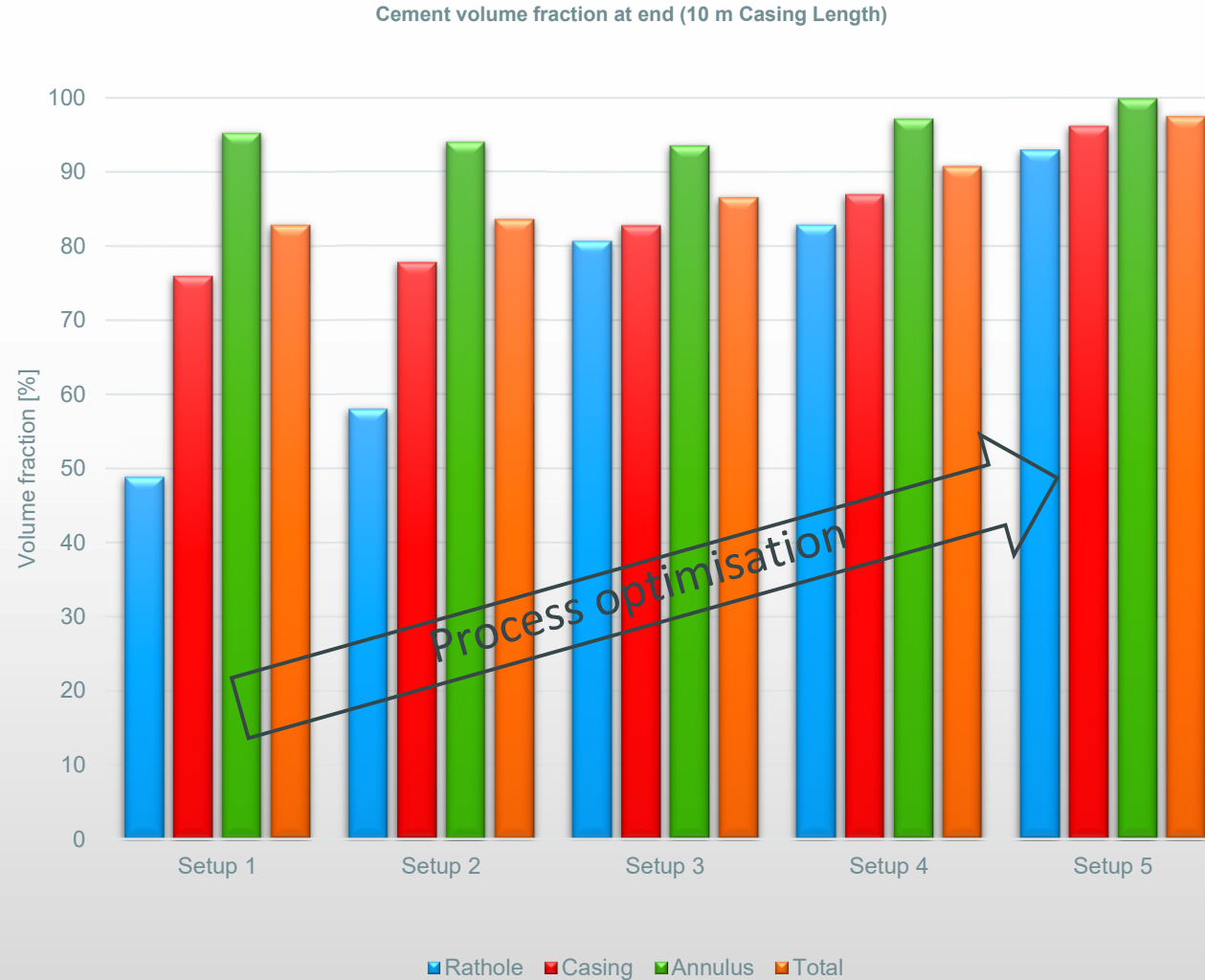
TESTING PROGRAMME: PART 2: CFD HYDRAULIC OPTIMISATION



Particle size vs lifting from annulus at low flow (1500 lpm) and high inclination (60 deg)



TESTING PROGRAMME: PART 2: CFD HYDRAULIC OPTIMISATION

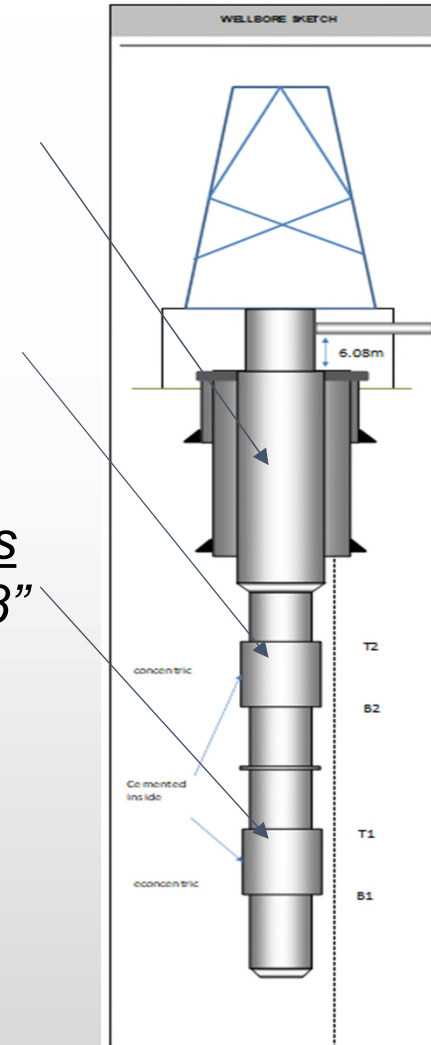


TESTING PROGRAMME: PART 3: FULL-SCALE "WORST CASE" RIG-BASED TESTING

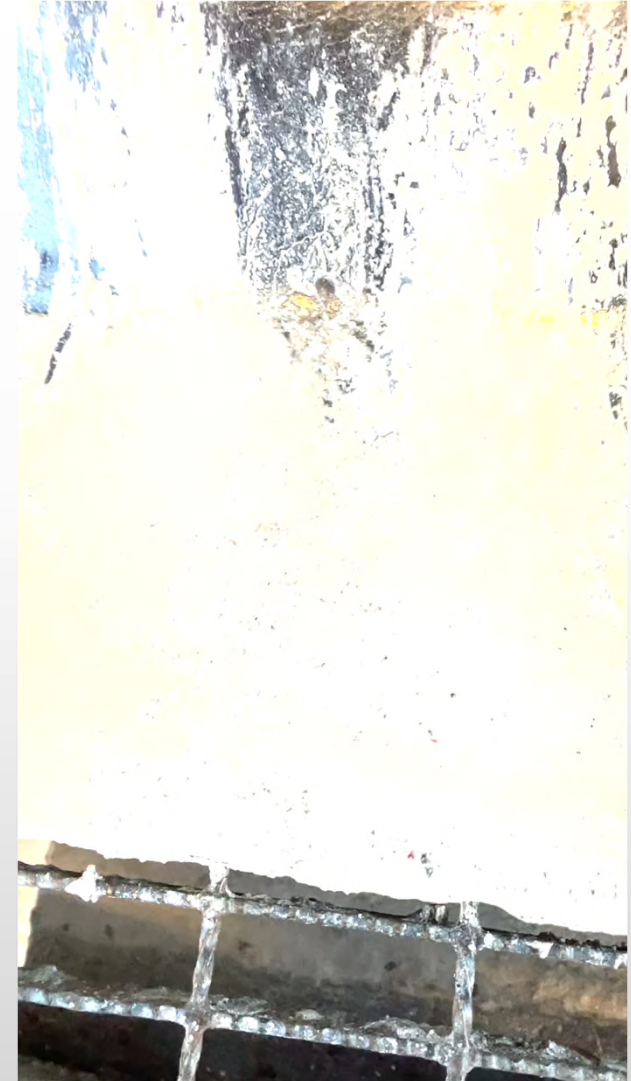
Wellbore fluid – 1.7sg WBM

*Concentric – Slotting Upwards
Fully cement between the 9-5/8" and 13-3/8"*

*Eccentric – Slotting Downwards
Fully cement between the 9-5/8" and 13-3/8"*



TESTING PROGRAMME: PART 3: FULL-SCALE "WORST CASE" RIG-BASED TESTING

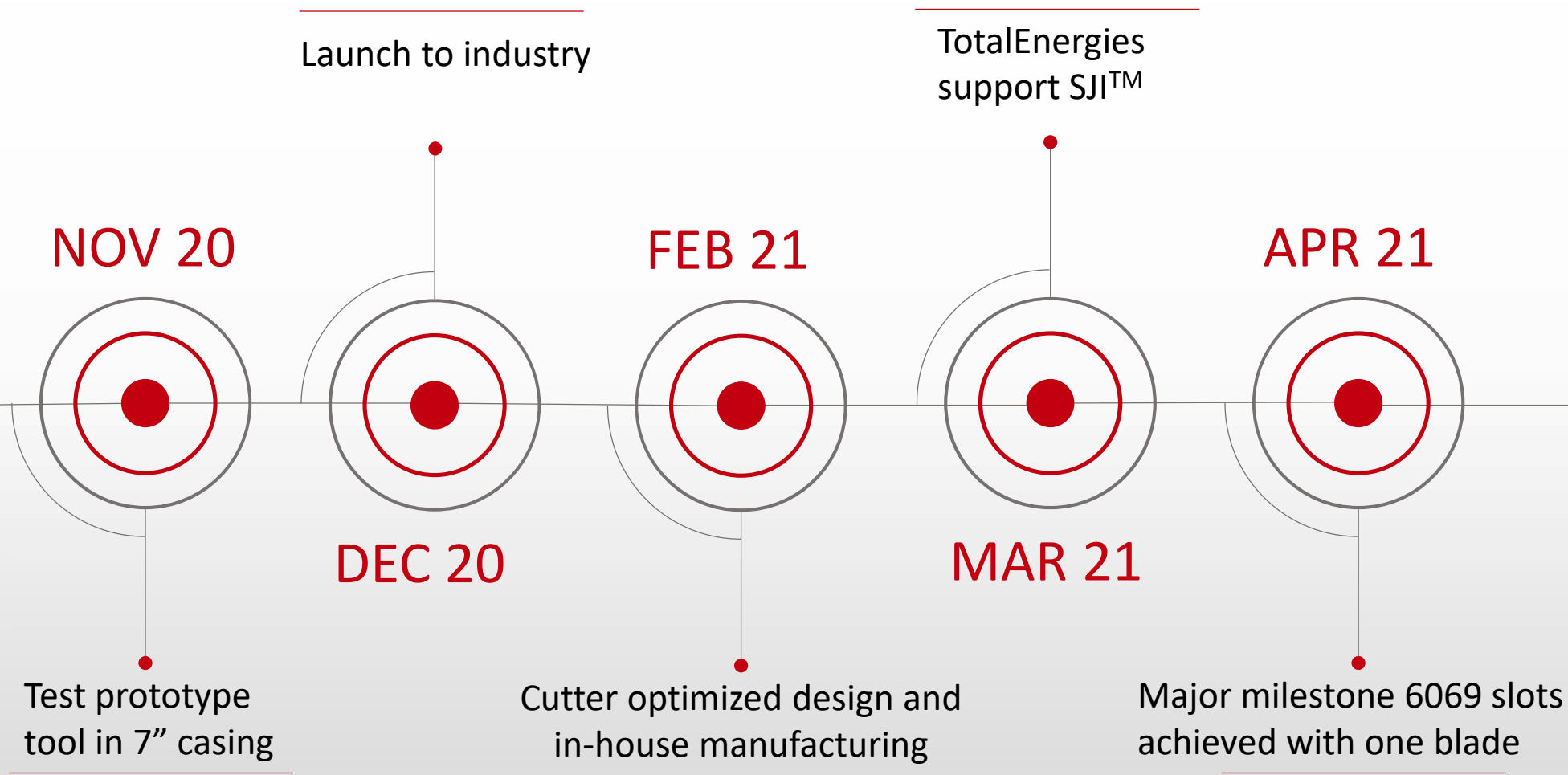


TESTING PROGRAMME: PART 3: FULL-SCALE "WORST CASE" RIG-BASED TESTING





COMPREHENSIVE TESTING PROGRAMME: DEVELOPED TIMELINE



COMPREHENSIVE TESTING PROGRAMME: DEVELOPED TIMELINE

8 ¼" SJI tools
manufacturing completed

Successful test at
NORCE rig Norway

MAY 21

AUG 21

APR 22

JUN 21

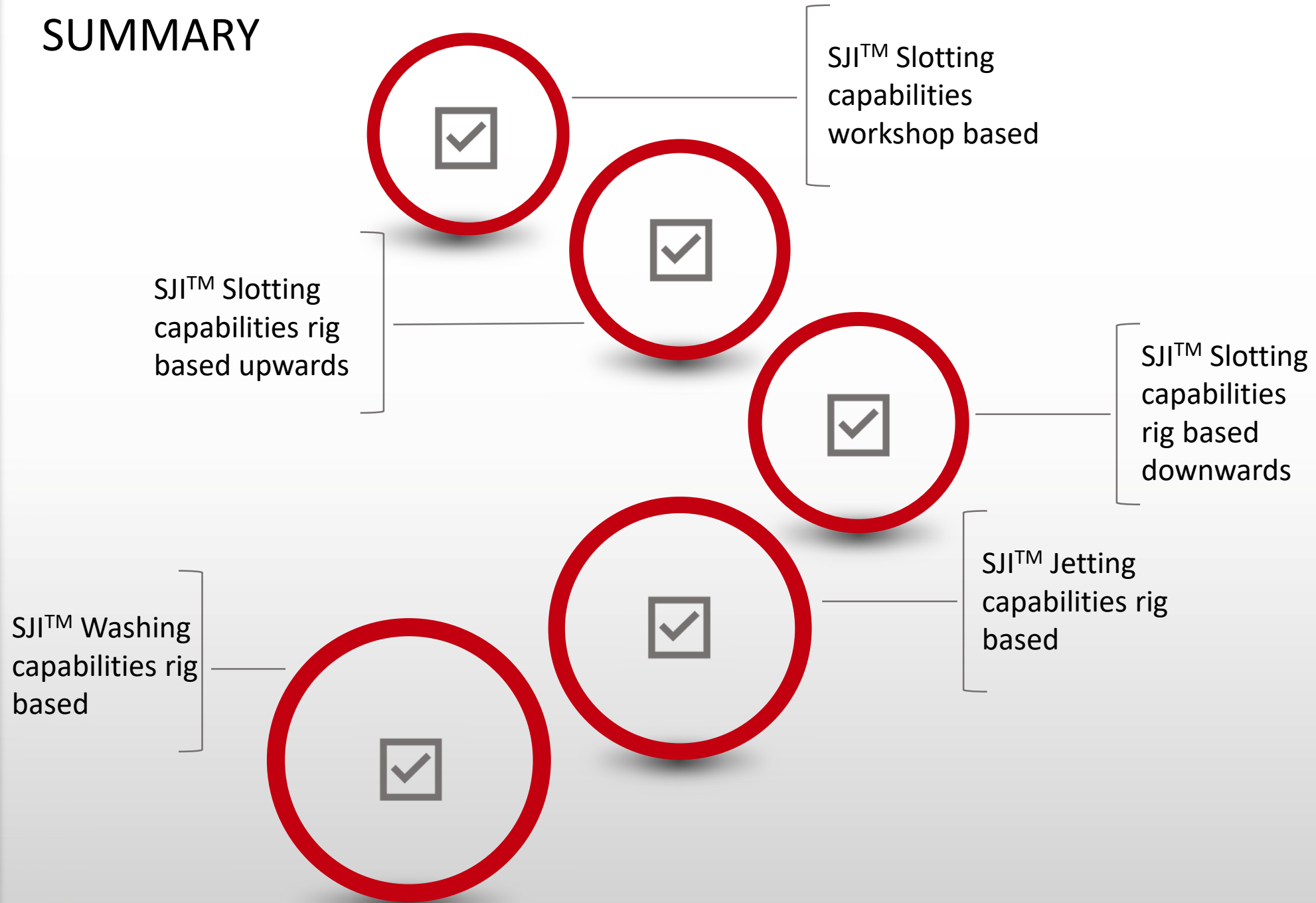
JAN 22

Major milestone achieved
slotting cemented casing with
no damage to outer casing

8 ¼" SJI tool slotting and
jetting simultaneously tested

Slot Jet Isolate application
North Sea on 9 well campaign

SUMMARY



SUMMARY

SJI™ Cementing capabilities CFD optimised



SJI™ Washing capabilities CFD optimised

SJI™ Cementing capabilities rig based

Launch CT development project?



SJI™ Flups verified



SJI™ rig verified North Sea



With thanks to:

Gary McWilliam, HRG Well Solutions Ltd.

The team @ TitanTorque

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Fraser McGaw, CNR International (UK) Ltd

Steve MacPherson, CNOOC International Aberdeen

Chris Collie, Zenith Energy



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