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BERLIN, GERMANY • SEPT 26-29, 2016

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The PI System for a Deepwater Oil & Gas Field

Presented by **Mark Whitehouse**

TEN TAPS Project Manager

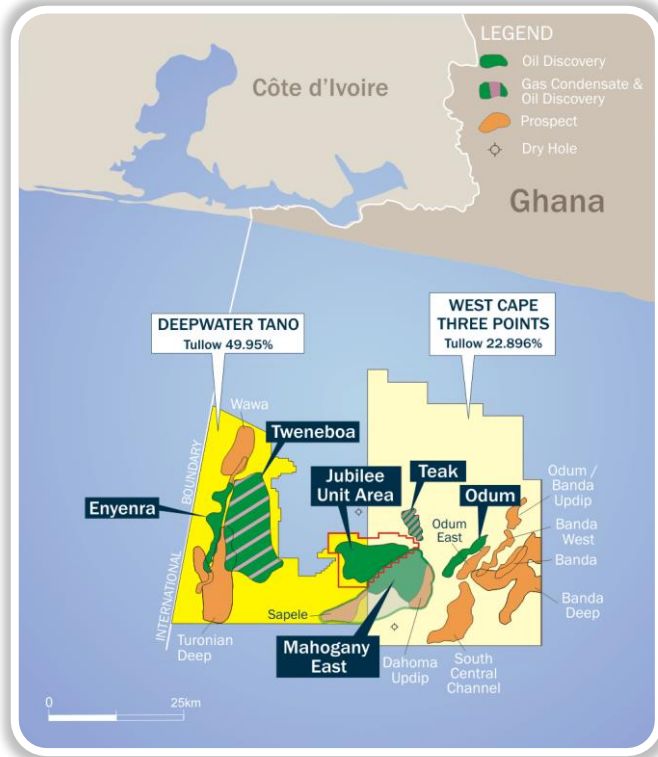# About Tullow Oil

- Founded 1986

- Africa focus

- 1400 people

- ≈ 75,000 boepd production

- Revenue $1.6bn

Africa's leading
independent oil company

The Jubilee Project

June 2007 – Jubilee field discovered

June 2010 – FPSO arrived in Ghana

Nov 2010 – Production commenced
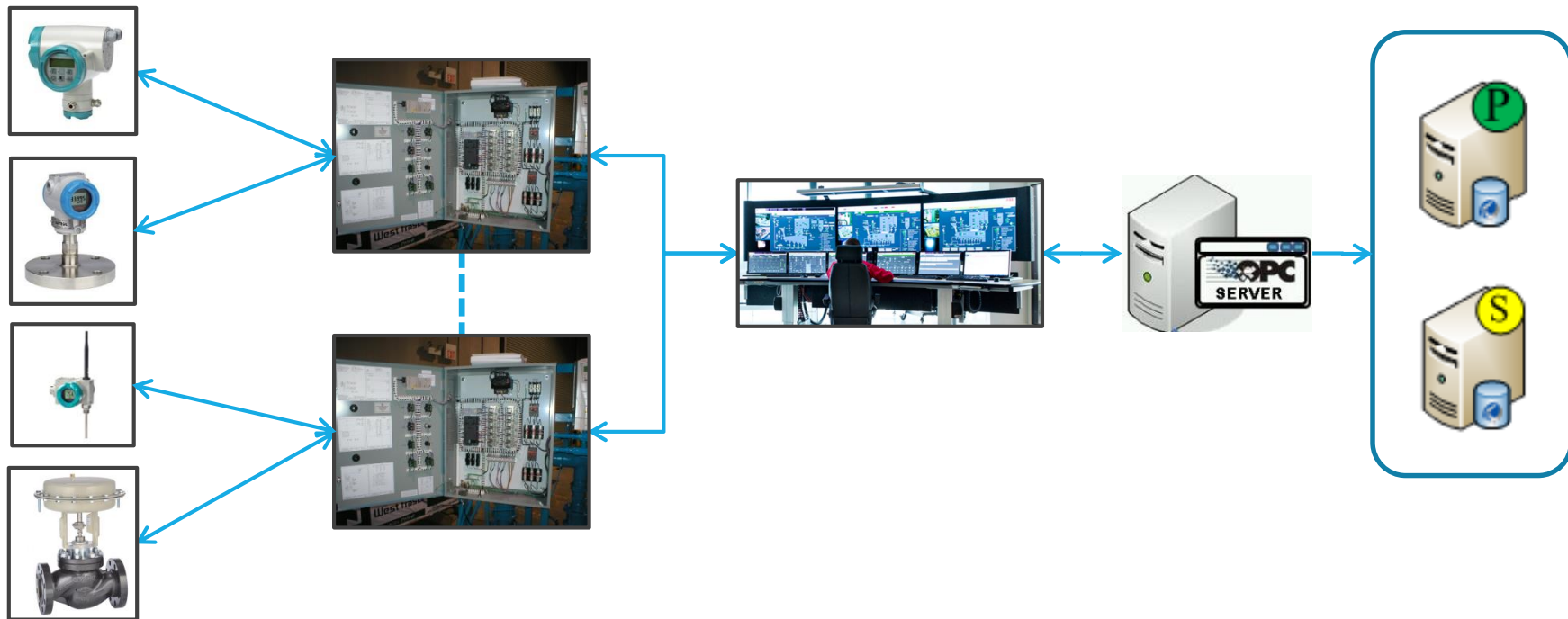
Digital Oilfield Concepts

Tullow's Approach – the TAPS Concept

Technology

Assisted

Production

System

OSIsoft.

Business Need

=$Ms

OSIsoft.

Offshore System Architecture

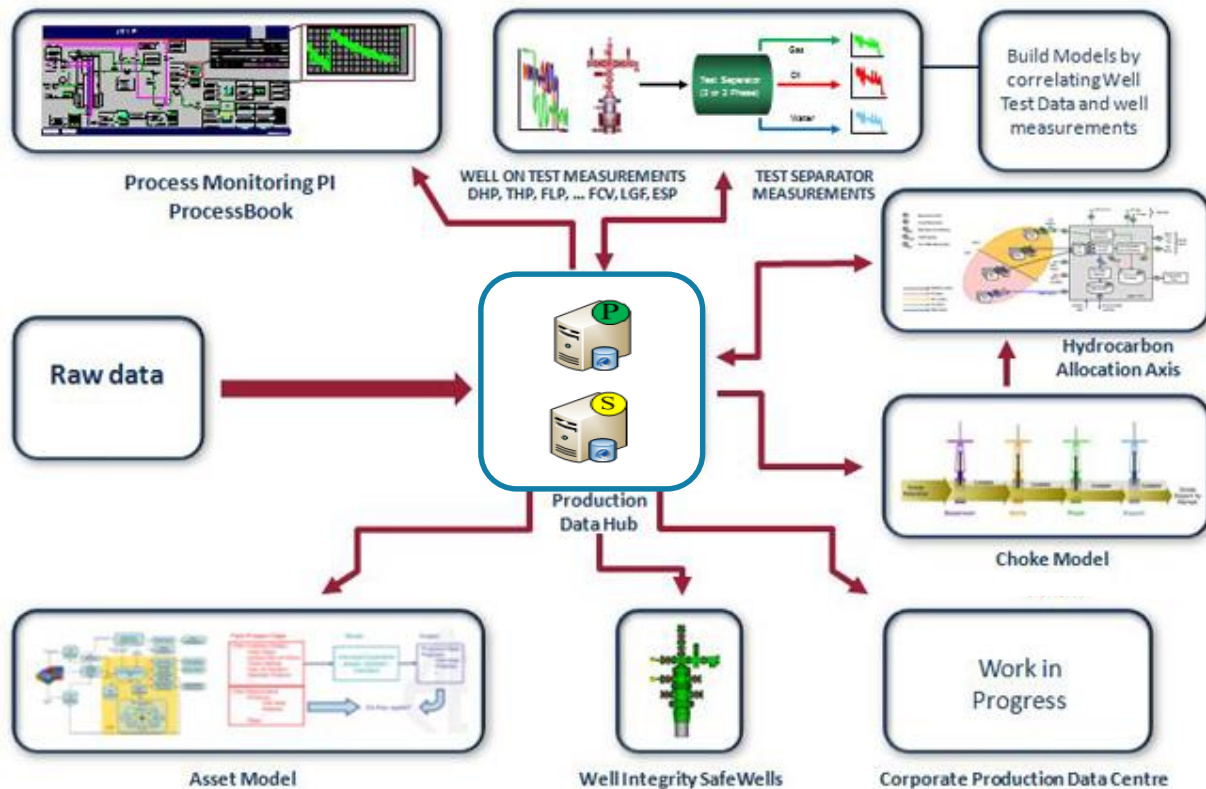| Instrumentation	PLCs Programmable Logic Controllers	DCS Distributed Control System	OPC Server	PI Collective

Transfer of Data Onshore
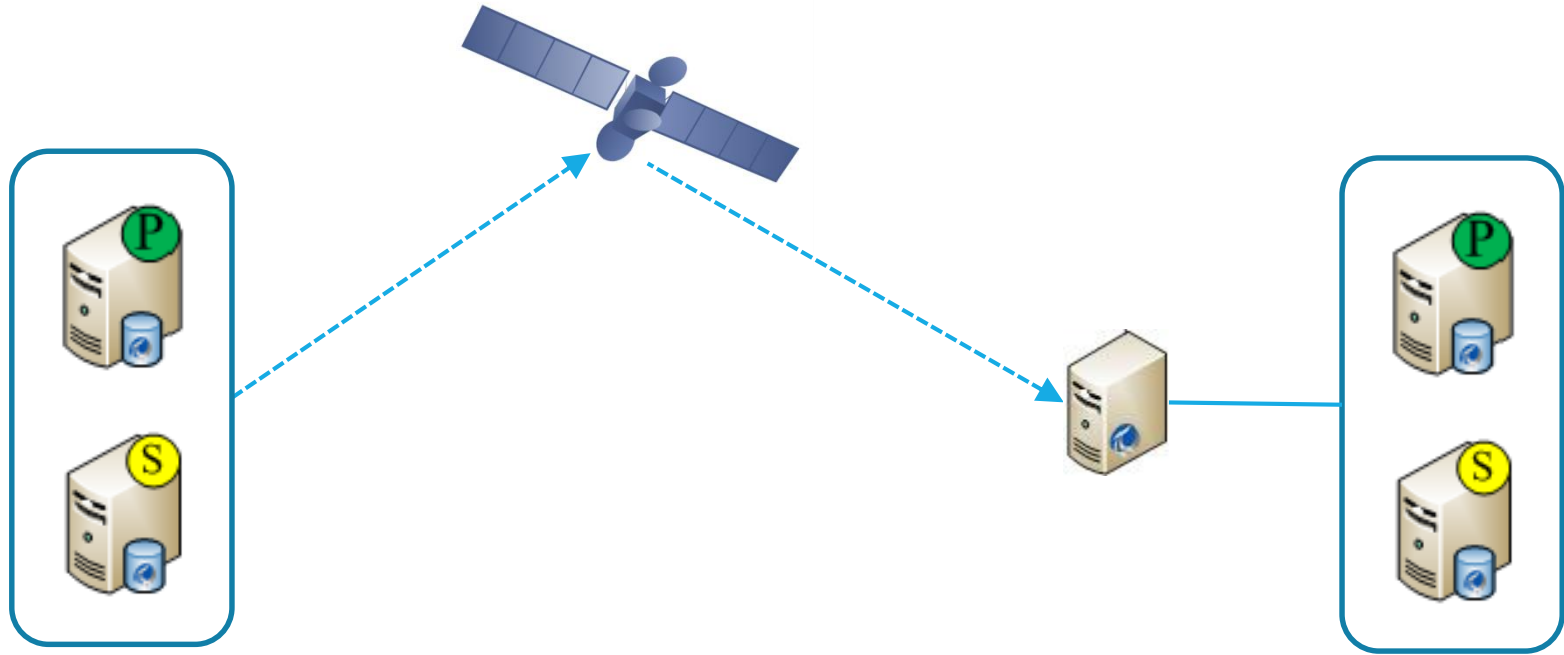
FPSO (offshore)

Accra (onshore)

Onshore System Architecture

Collaborative Working

Automation of Repetitive Tasks

Field Present State

- Field Conditions (Reality)
  - Wells Status
  - Surface Network Status
  - Choke Settings
  - Gas Lift Allocation
  - Separator Pressure
  - …

- Field Measurements
  - Pressures
    - Well Head
    - Pipelines
    - …
  - Rates

Model

Individual Equipments already Validated / Calibrated

Output

- Production Rates
- Pressures
  - Well Head
  - Pipelines
  - …

Do they agree?
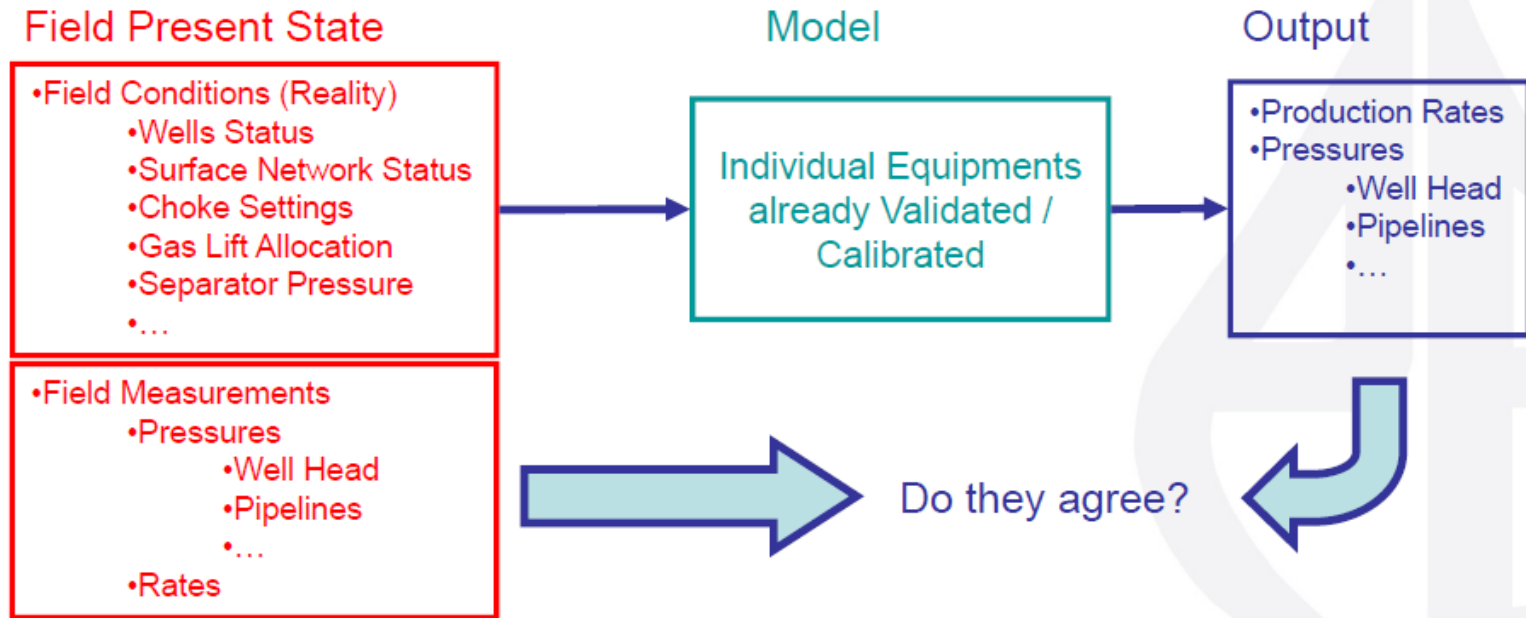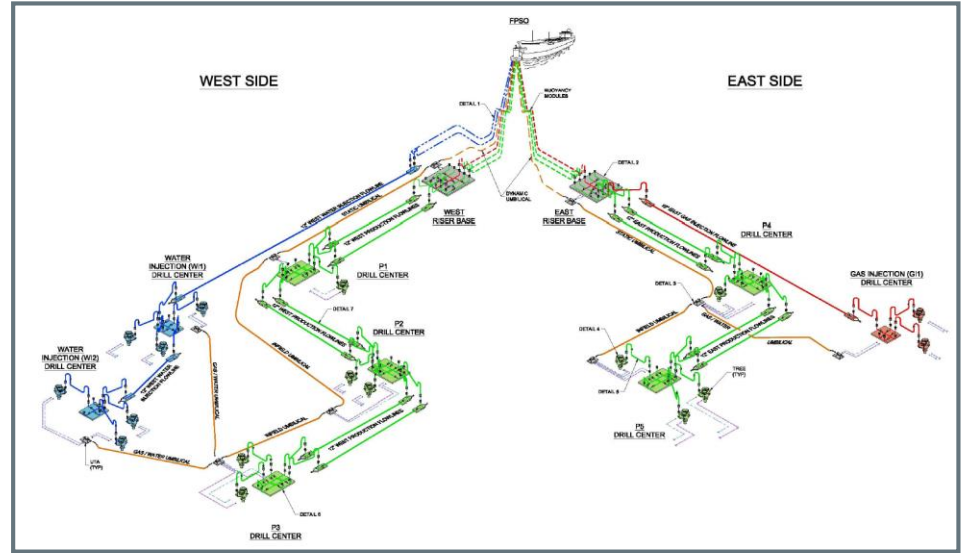
Productivity Impairment

Hydrates Formation
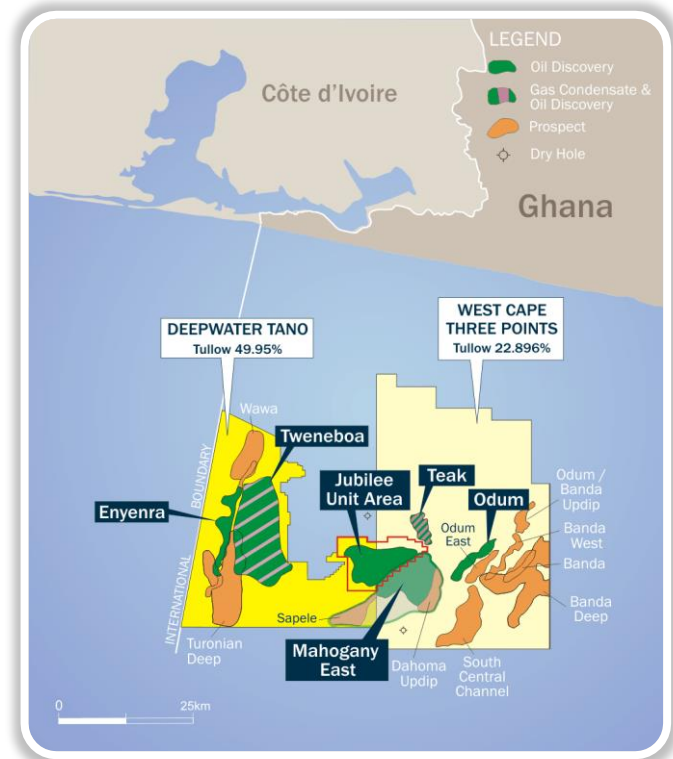
Business Benefits

"Without the real-time data and analysis tools provided by TAPS it would not have been possible to optimise the Jubilee wells and carry out continuous effective well and reservoir management."
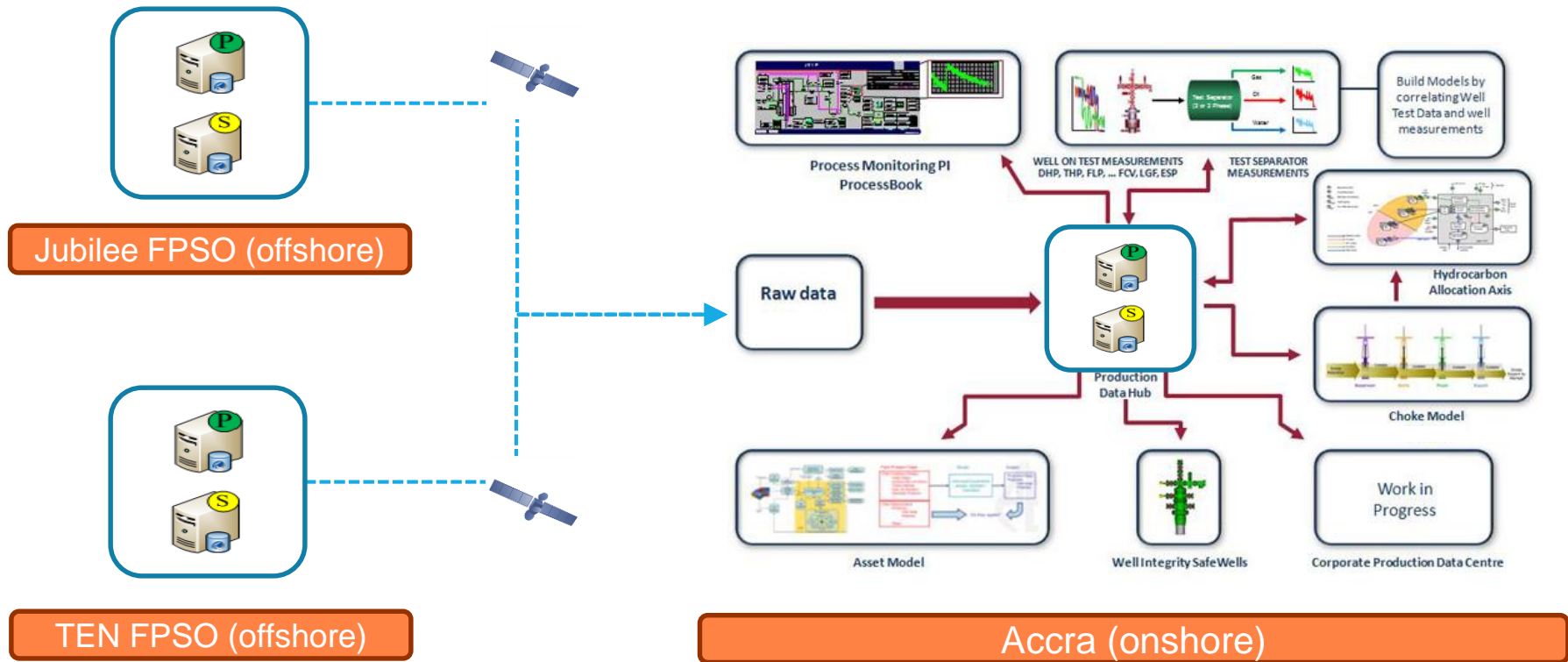
Head of Jubilee Operations

The TEN Project

Feb 2016 – FPSO arrived in Ghana

Aug 2016 – Production commenced

PI System Changes for TEN

Jubilee FPSO (offshore)

TEN FPSO (offshore)

Raw data

Process Monitoring PI ProcessBook

WELL ON TEST MEASUREMENTS DHP, THP, FLP, ... FCV, LGF, ESP

TEST SEPARATOR MEASUREMENTS

Build Models by correlating Well Test Data and well measurements

Production Data Hub

Hydrocarbon Allocation Axis

Choke Model

Asset Model

Well Integrity SafeWells

Work in Progress

Corporate Production Data Centre

Accra (onshore)
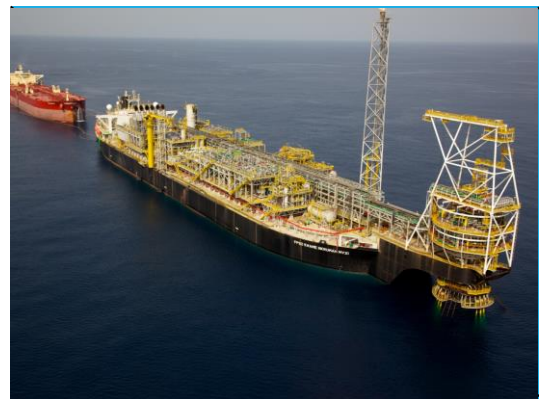
Future Options

The PI System for a Deepwater Oil & Gas Field

COMPANY and GOAL

Africa's leading independent oil company

Deriving value from a digital oilfield solution for a deepwater oil and gas field

CHALLENGE

Designing and building a digital oilfield solution with no previous experience

- Short timescale – 12 months
- Remote – 50km from shore
- Deep water – 1200m

SOLUTION

Use of the PI System as the core data repository and feed into other systems

- Cross-functional team
- Integration of key business applications via PI System

RESULTS

Optimisation of production that would otherwise not have been possible

- Real-time well models – saving $M's on MPFM maintenance
- Automated workflows saving time and effort
- Problem investigation and resolution

Contact Information

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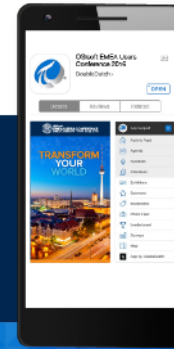
Tullow Oil

Questions

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State your **name & company**

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谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado

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