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Shell's Diving Centre of Excellence *Space for Subsea*

KIVI/ DOT Symposium 18th May, 2016

Hans Out, TL DCoE

Hans (JMM) Out on LinkedIn

Project & Engineering Services,
Projects & Technology



Shell and Commercial Diving

- Commercial diving has 25 x Fatal Accident Rate (FAR) than average industrial activity (UK stat's, 2009):
 - *20 deaths per 100,000 divers (units?)*
 - *All workers 0.8/100,000 (1/25)*
 - *Construction 3.4/100,000 (1/6)*
 - *Agriculture 9.7/100,000 (1/2)*

Source: Chief Inspector of Diving UK Health & Safety Executive, SPE Paper 123805, 2009
- Shell have Diving Centre of Excellence (DCoE) with *Global remit* across all Shell business, incl.
 - Projects, Upstream, Downstream, Wells, Shipping etc.

Shell and Scope for Diving

■ Scope for Diving:

- *Construction*
- *Maintenance & Repair*
- *Inspection*



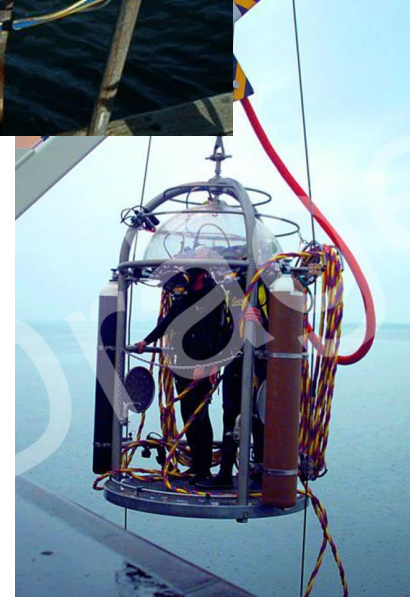
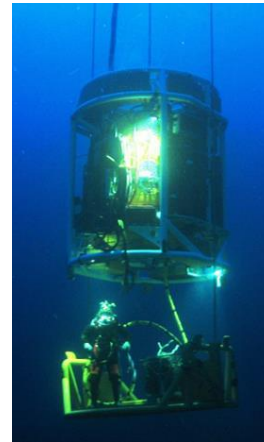
Uniqueness → challenge

■ Inshore vs offshore:

differences: *inshore is often more peripheral, involves often small companies v institutionalised ones, competency of divers / company supervision (emergency response, change management), cultural factors, physical factors (visibility), etc.*

Types of Diving

- Surface Supplied Air diving
- Surface Supplied mixed gas diving
- Saturation Diving
- SCUBA not allowed
- *5 man team: supervisor, 1st diver, standby diver, 2 x diver tender*



Diving Risk categories

- Diver physiological
 - *caisson illness ('the bends'); lung embolism; skin bend; nitrogen poisoning; oxygen toxicity*
- Direct effect from water
 - *low visibility, waves and currents, water viscosity, temperature, as well as marine wildlife*
- Industrial incidents occurring underwater
 - *oxy-arc cutting, working near lifted loads, as well as dynamic positioning drift-or drive-off*
- Diving equipment
 - *With diver, on vessel, platform or quayside, vessel itself*

Shell's HSSE & SP Control Framework

Personal Safety manual

- Business Travel
- Cleaning of Storage Tanks
- Company Sponsored Events
- Confined Space Work
- **Diving and Tunneling Operations**
- Electrical Safety
- **Excavation**
- Hot Work
- Ionising Radiation
- **Lifting and Hoisting**
- Personal Protective Equipment
- Safe Isolation – Lock Out Tag Out
- **Working at Height**

Often performed by 'independent' specialist contractor under their own Safety Management System, albeit bridged to permit/ emergency response system of the host location

Diving Operations Manual - Roles & Responsibilities (1)

- **Principal Technical Expert** for diving operations is *Responsible* for
 - *Define diving practices for the Company.*
 - *Approve specialist diving Contractors*
- **Manager** is *Accountable* for
 - *Challenging need for manned diving against following **Hierarchy Of Control**:*
 - a) *Eliminate the need for diving operations.*
 - b) *Use Remotely Operated Vehicles (ROVs) or Remote Intervention Techniques (RITs).*
 - c) *Use a manned diving technique*
 - *Identifying an **SME** when initially planning diving operations in consultation with the **Principal Technical Expert***

Diving Operations Manual - Roles & Responsibilities (2)

- Subject Matter Expert (SME) for diving operations is *Responsible* for
 - *Approve the diving operation plan against Company diving practices.*
- Manager delegates Diving Scope responsibility to engineer (Structural, Pipeline, Subsea, Wells etc.) – who interfaces with SME – *what versus how*

Diving Operations Manual - Standard

- Shell standard = external standard:

Diving Recommended Practice

IOGP Report 411, June 2008 (*being revised*)

- Supplements include:

- IOGP report 468: hyperbaric evacuation.
- IOGP report 478: Equipment auditing - expected benefit from same approach across operators.

Shell and Commercial Diving - summary

- Shell standard= external standard
- Shell's HSSE & SP Control Framework defines role of diving specialist versus manager/ discipline engineer
- Shell only use approved contractors
- Role of engineering in managing the Scope in view of hierarchy of control: avoid subsea work, use machines, manage diving well – ALARP criterion

