

Innovation in offshore H&S, from oil&gas to wind

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Who we are

- Technology driven energy company – 20.000 employees in 37 countries
- Equity oil and gas production – 1.85 million boe/d (2011)
- Operate 80% of all oil and gas production in Norway
- World's third largest crude oil seller
- Second largest gas exporter to Europe
- World's largest operator in waters deeper than 100 meters
- World leader – carbon storage and CO2 efficiency in oil and gas production

What we do – and how we do it

Our values



- A values-based performance culture
- Firm commitment to health, safety and environment (HSE)
- Promotion of individual accountability and personal integrity

Statoil Wind business – offshore wind



Sheringham Shoal: 316,8 MW,
50/50 Statoil & Statkraft

In Operation (2012)



Hywind Demo: 2,3 MW (Operation
since 2009)

Forewind – developing
Doggerbank

SSE, RWE, Statkraft, Statoil



HSE is an integrated part of the management structure

Comprises following main areas

HSE expertise

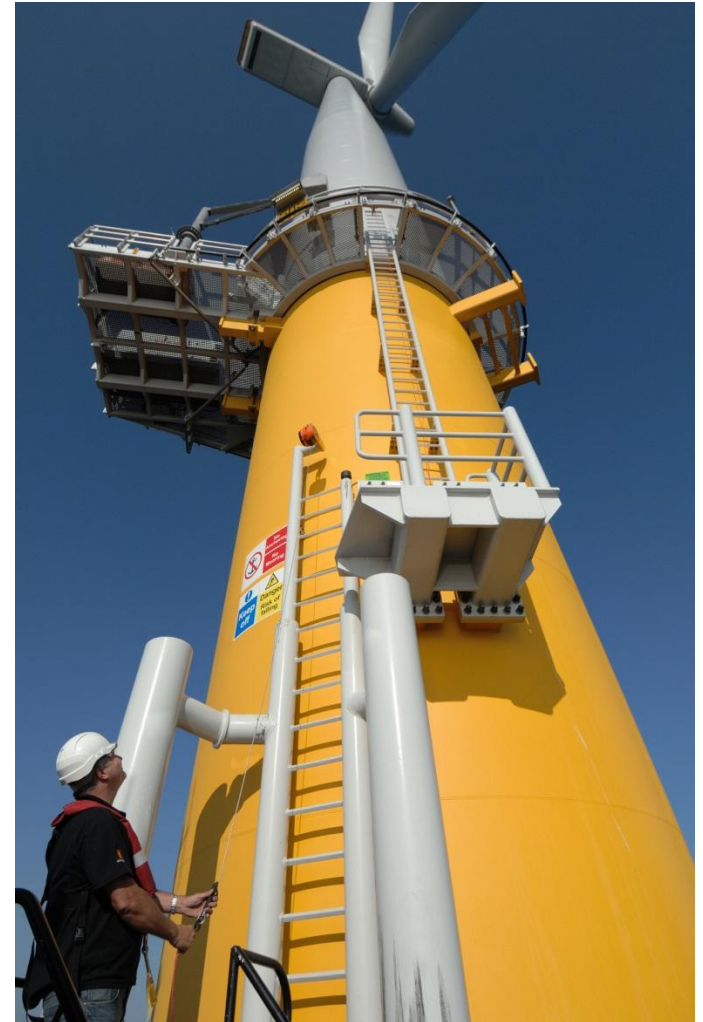
HSE risk management

HSE in contracts

Technical integrity

Work processes safe work

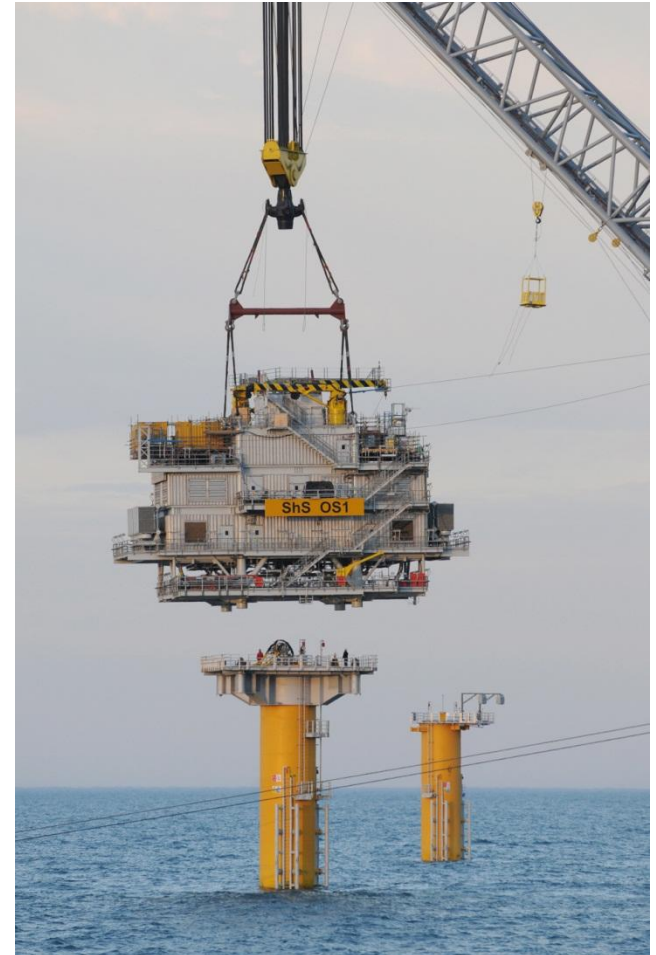
Reporting, investigating, learning



[Photo: Alan O'Neill](#) / Statoil

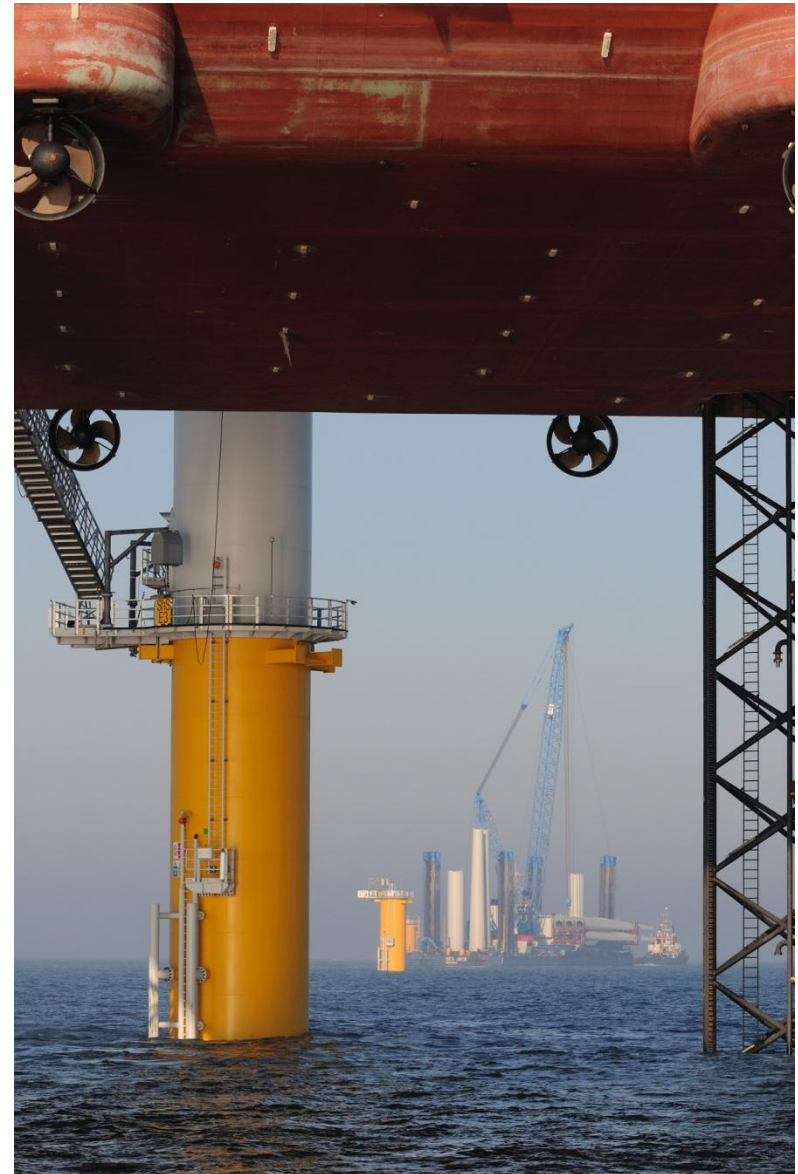
Immature industry, three industries merged

- Offshore energy
- Maritime
- Wind industry



Top H&S risks in offshore wind

- Lifting
- Working at height
- Maritime operations
- Personnel transport and transfer
- Diving
- Live electricity



HSE in offshore wind

- The industry is immature and HSE risks are higher than in oil and gas
- Repetitive work during installation and operation
- A high number of lifting operations
- Lack of harmonized governance on certification of personnel and equipment



[Photo: Alan O'Neill](#) / Statoil

HSE in oil and gas basis for offshore wind

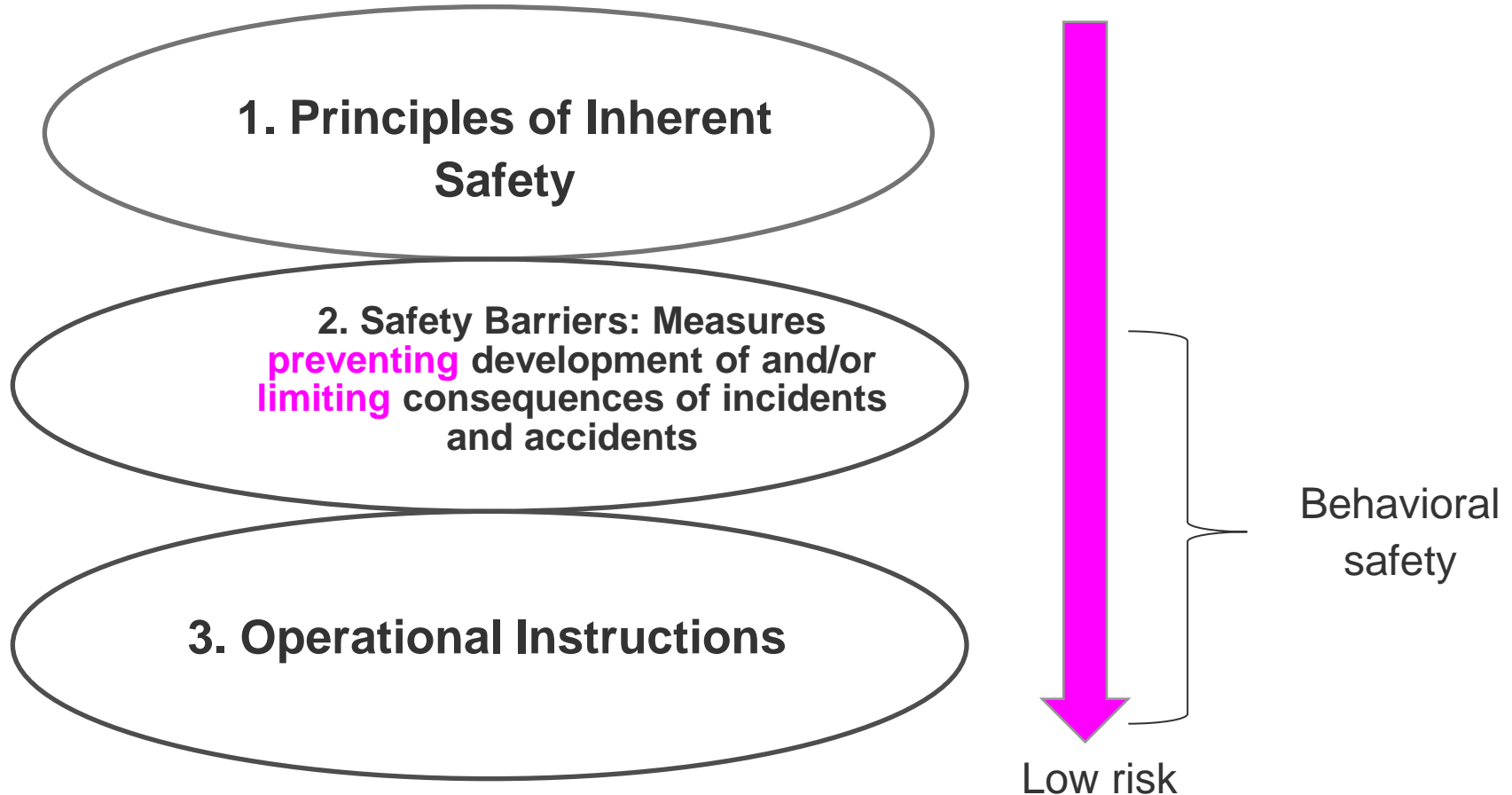
Oil & Gas HSE approach in offshore wind

- Work permit implemented outside project - during construction of Sheringham Shoal
- On site HSE team for monitoring and follow-up on incidents
- Emergency planning and exercises

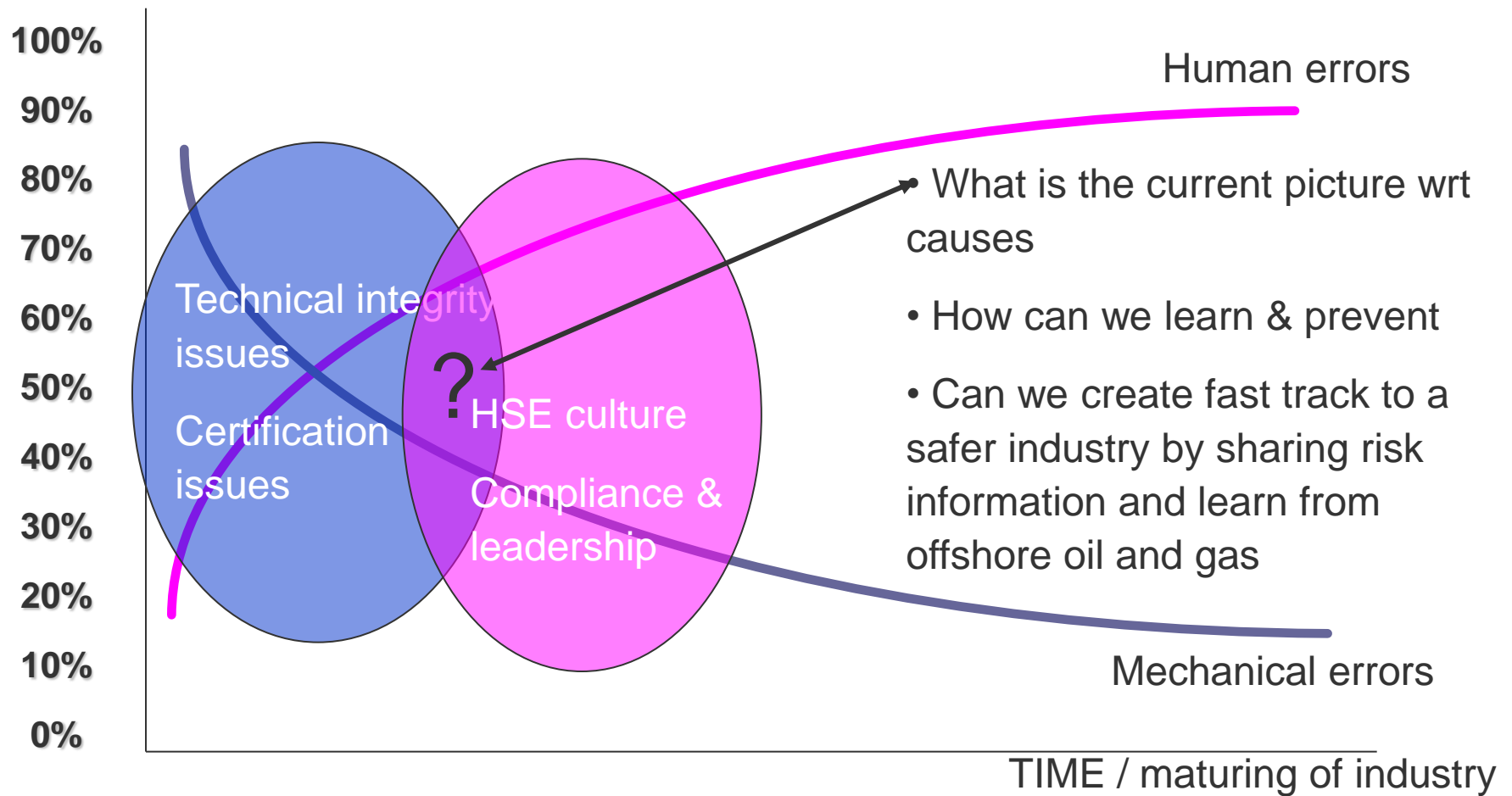
Key learnings

- Focus on inherent safety in design
- Secure resources for stakeholder management
- Highest risk is during offshore construction
- Risk during high number of repetitive lifts

Principles of Risk Reduction



Serious H&S incidents in offshore wind – what is the current root cause picture



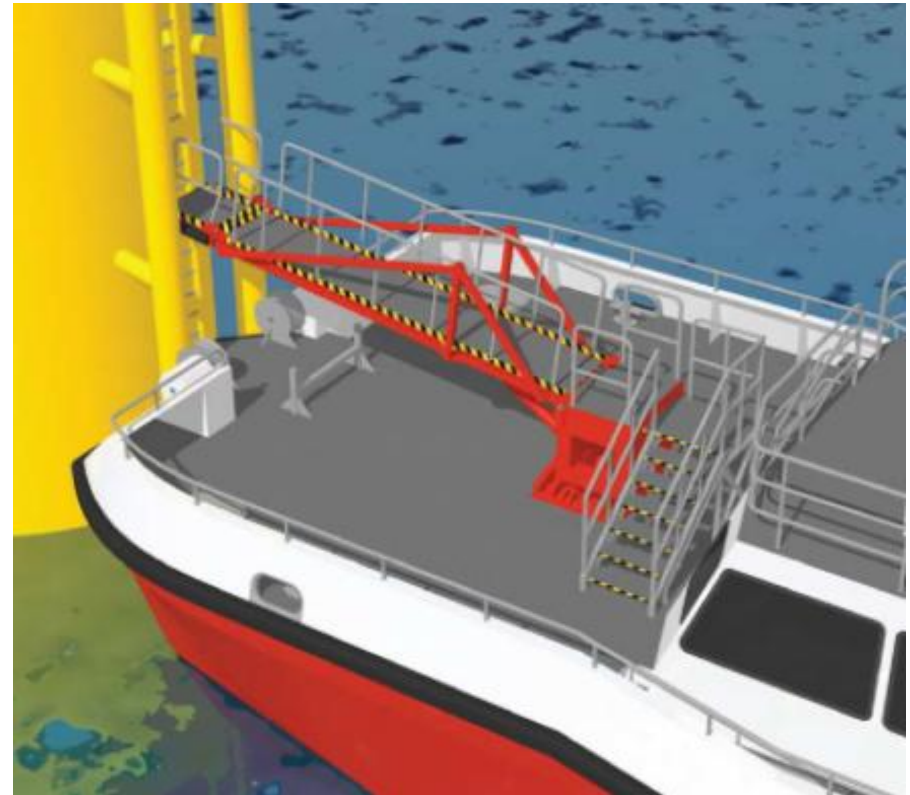
Early adoption of safe systems & designs

- Testing and implementation of new access systems for offshore wind
- Evaluation of advanced control systems for vessel motions
- Testing and early use of new PPE (e.g. survival suits)
- Systems for MOB rescue on PTVs



High HSE performance is good business

- Efficient prevention of accidents will save time and costs
- Inherent safety will reduce risk in offshore wind over time –**room for innovations and engineering**
- New designs can reduce service and maintenance frequency and reduce number of operational hours offshore – **more efficient operation**
- Training of work processes e.g. lifting, cranes and climbing can be done by using **new simulator technology**



Innovation example - New access system

- Expand operational window, from 1,5-2,0 significant wh
- Has been tested at Hywind demo (Statoil and Siemens) and Scroby Sands (E-on)
- Has been contracted for Sheringham Shoal

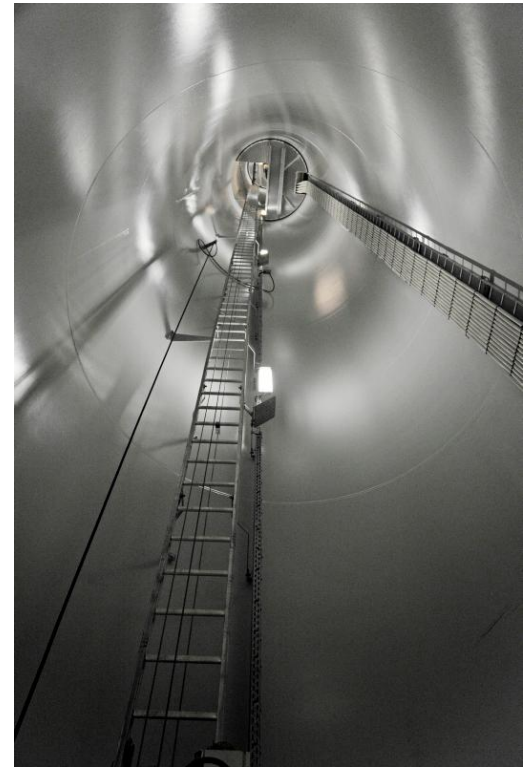


Innovation needed - inherent safety in offshore wind to be improved

Davit Cranes



Internal Ladders systems

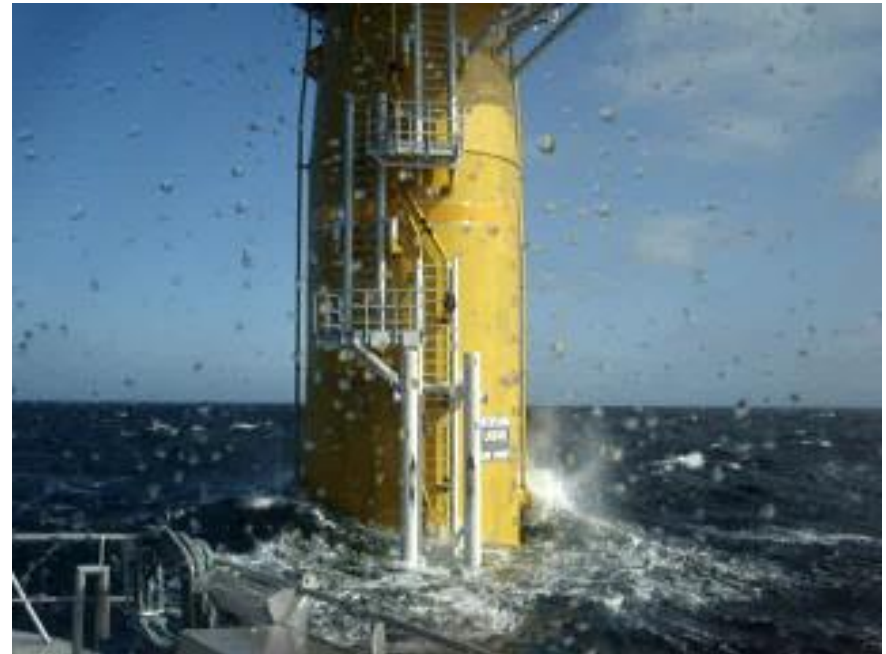


Innovation need on emergency – how to do Efficient and safe Emergency



Summary & Conclusions

- Management approach for offshore oil and gas is useful for offshore wind
- Risk picture has many similarities
 - E.g. Marine operations & lifting operations
- Inherent safety improvements can reduce risk and costs
- HSE is good business
- **Large room for innovations !**





Thank you for your
attention

Thank you

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