

Building Subsea Capability

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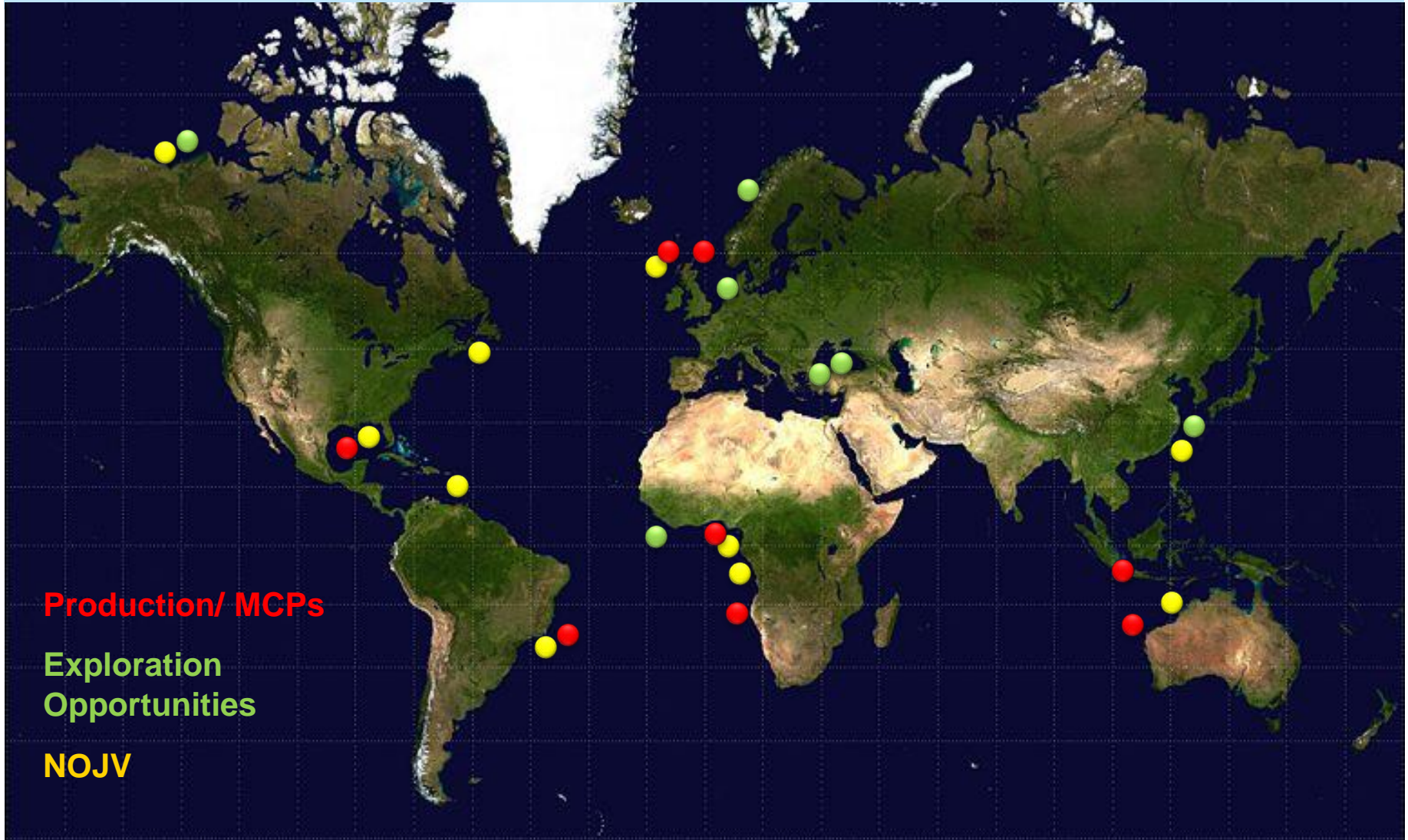


Subsea UK
8 February 2012, Aberdeen.



Chevron Global Subsea Presence

One of the largest in the industry



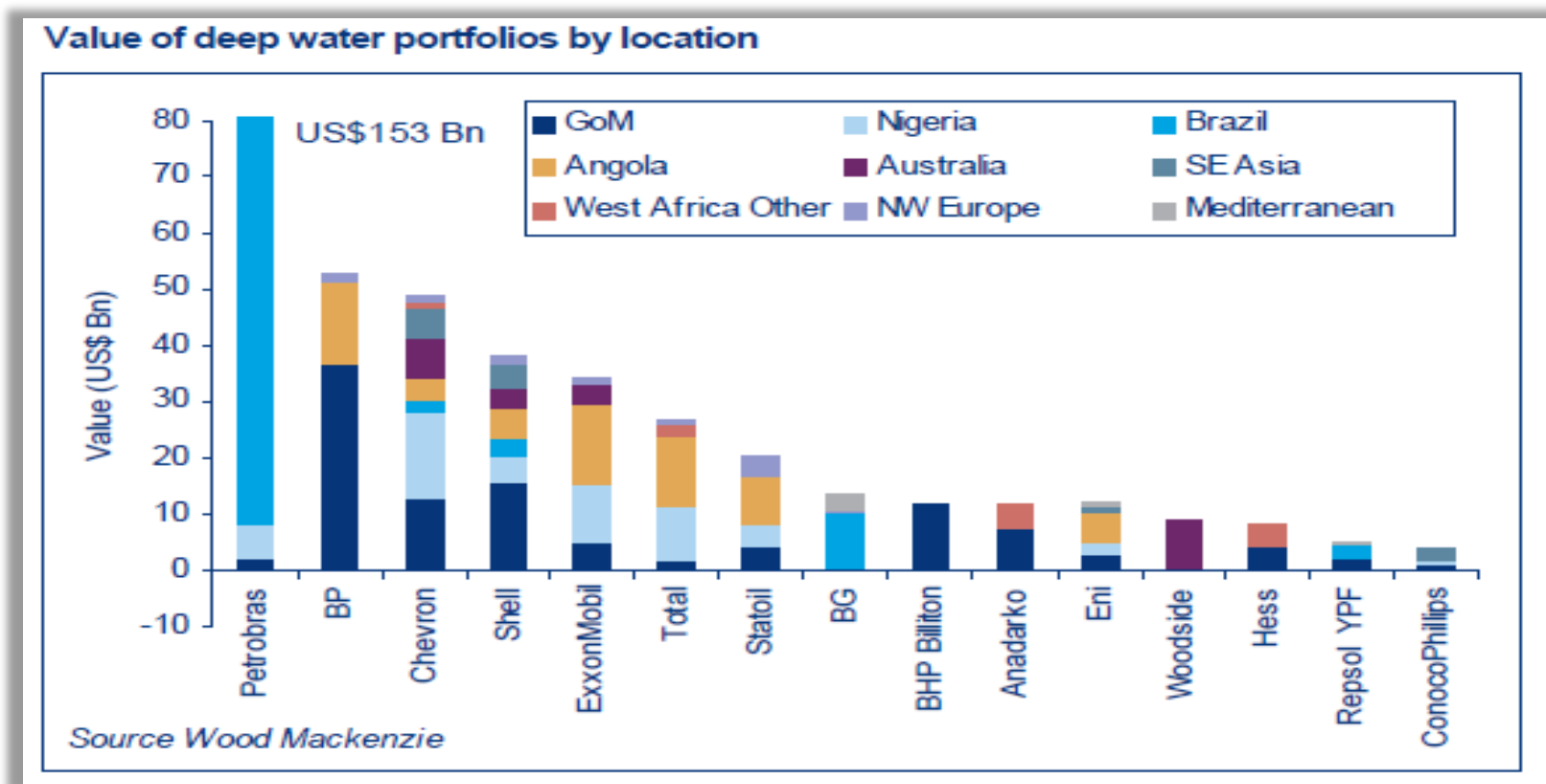
Chevron's Subsea Portfolio is Diverse and Growing:

2010 Subsea Production ~ 500MBOED

2015 Production > 800MBOED



- 20+ Major Capital Projects in queue



Technology plays a vital role Projects Becoming More Complex / Technology Driven



Project	15 KSI	Instrumented pipeline protection (HIPPS)	Multiphase Flowmeters	Subsea Sampling	Chem. Inj Distribution	Intelligent Well Completion	Subsea Boosting	Power	Direct Elec Heating
Project A									
Project B		Y							
Project C									
Project D			Y	Y	Y				
Project E		Y	Y						
Project F	Y		Y	Y	Y		Y	Y	
Project G									
Project H			Y	Y					Y
Project J					Y	Y	Y	Y	Y
Project K			Y		Y			Y	
Project L	Y					Y			
Project M		Y	Y	Y	Y				Y

Subsea Technologies: key part of overall DW Technology Investment



▪ Subsalt Imaging

3D WAZ

▪ Drilling

> 10,000' salt

Dual gradient drilling

Next generation drillships

▪ Completions

Single-trip multi-zone frac pack

In-Well artificial lift

▪ Rigless Well Intervention

▪ Ultra-Deepwater Developments

- 10,000' WD

▪ Long Distance Tiebacks

- 50+ Miles Oil
- 200+ Miles Gas
- Sea-floor boosting & processing

▪ Host Facilities with Small Field Tie-ins

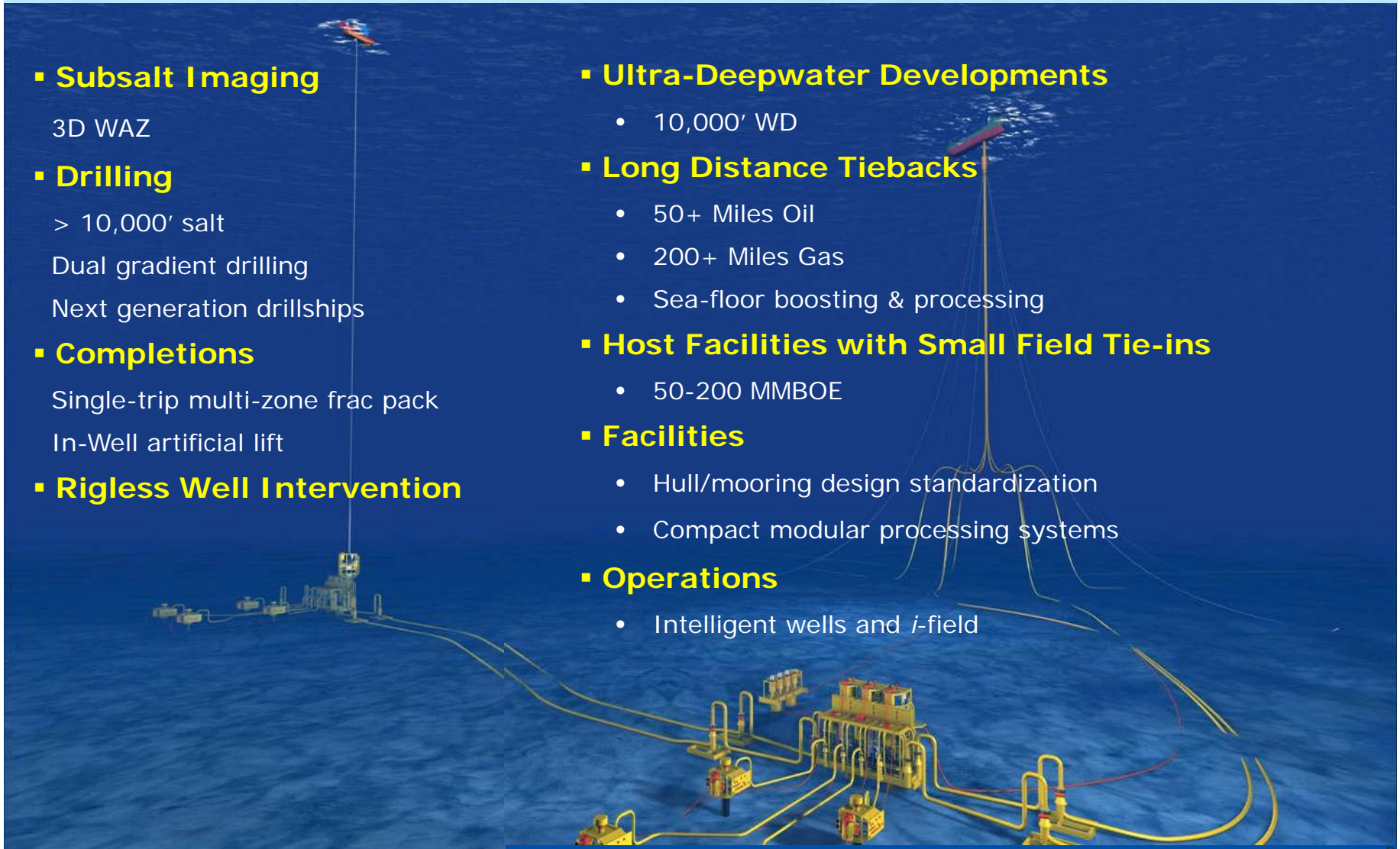
- 50-200 MMBOE

▪ Facilities

- Hull/mooring design standardization
- Compact modular processing systems

▪ Operations

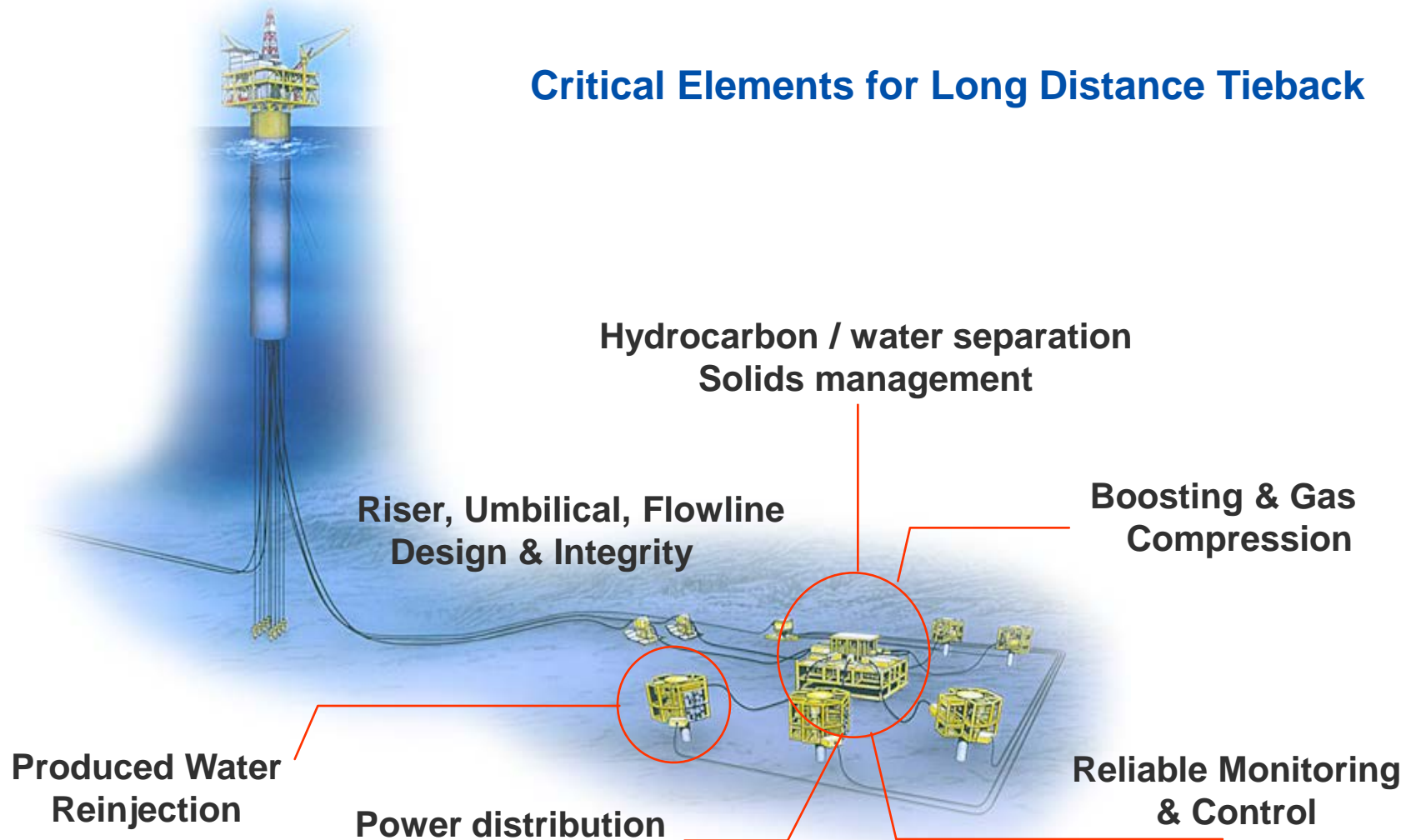
- Intelligent wells and *i*-field



Technology Investment will be focused, collaborative & leveraged



Critical Elements for Long Distance Tieback



Technology Collaboration drives Industry forward: Subsea Wet Insulation Systems (SWIS) JIP



JIP Outline

- Establishing performance of wet insulation materials for pipeline and equipment up to 10000ft and developing system improvements by understanding behaviour.
- Thirteen participants, Budget \$4.5 MM
- Co-managed by Chevron and Statoil



Objectives

- Long term simulated service testing to establish performance of available insulation systems at field operating conditions
- Non-linear FEA modelling predicting of linepipe and FJ system performance
- Development of guidelines for the design, specification, qualification, inspection and application

Testing

- Simulated service tests at seabed temp and pressure, full internal temperature; startup, shut down and JT cooling
- Bending of coated pipe & FJ
- Intentional disbondment to study the effect on corrosion and thermal performance
- Comparing Laboratory material property testing against FEA results

Test Locations

- Statoil, Heriot Watt, Doosan Babcock

Materials

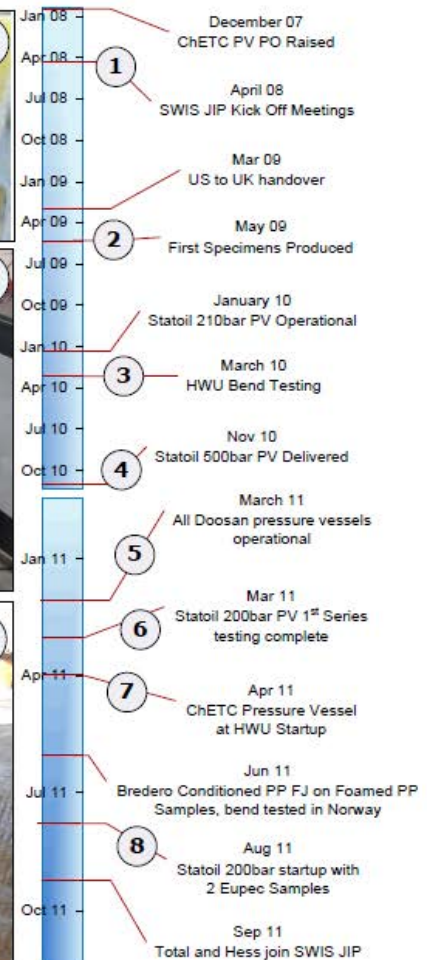
- PU (syntactic, solid), PP (syntactic, solid, foam), PS, Silicone, Phenolic, Syntactic Epoxy, Vulcanised Rubber

Suppliers

- Bredero Shaw, Perma-Pipe, Socotherm, OJS, PIH, FMC, Trelleborg, AIS and Cuming

Subsea Wet Insulation Systems (SWIS) JIP

2007 – 2011 TIMELINE



Keys to Success



- Global Technology Investment : invest where the skills are.
- Leverage UK capabilities globally.
- Technologies need to be integrated into Asset Solutions
- Chevron Engineering Standards will ask more of suppliers: but will ensure the reliability & availability performance we need to successfully deliver our resource base.
- Subsea infrastructure is the delivery vehicle for the reservoir: need to understand subsurface uncertainty and deliver the right system at the right time.



- *Subsea MCP are a significant part of Chevron growth strategy*
- *Upcoming large subsea projects will need strong project management skills and leadership with focus on improving on-time delivery performance, aftermarket support and experienced support personnel.*
- *Increased investment in R&D for subsea technologies over next 5 years*
- *Chevron will continue to operate a Center of Excellence model for Subsea – 3 hubs: Aberdeen, Perth, Houston.*
- *Organizational Capability & Operational Excellence focus to create business value: the right people in the right place, doing the right things every time.*

Questions?

