

GENESIS LATE-LIFE AND DECOMMISSIONING EXPERIENCE

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AGENDA

- Genesis quick overview
- Why decommissioning is an issue?
- UK regulation background
- Integrated engineering approach
- Decommissioning experience
- Case Studies
- Summary





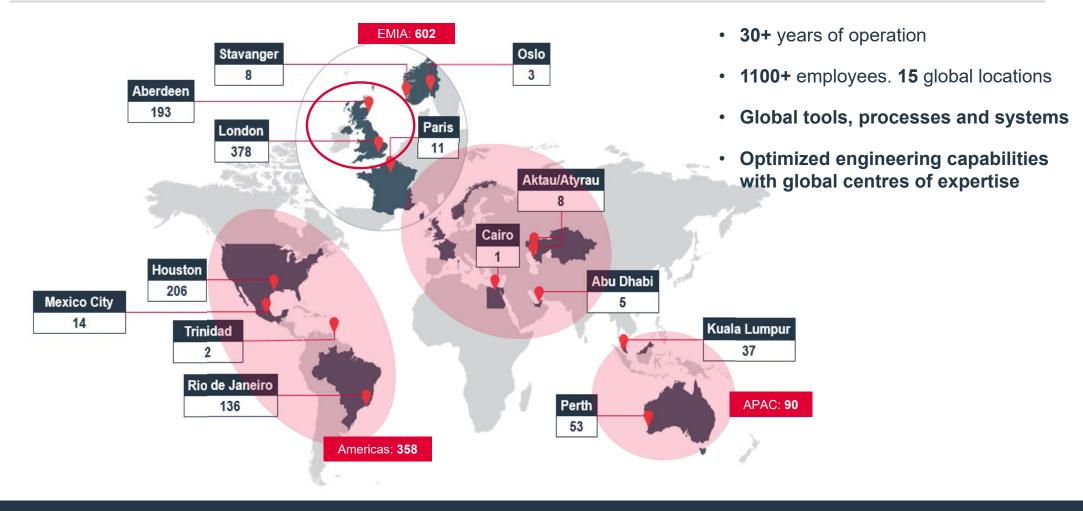
GENESIS OVERVIEW

GENESIS – ENGINEERING SOLUTIONS FROM SUBSEA TO TOPSIDES AND ONSHORE





Global Presence

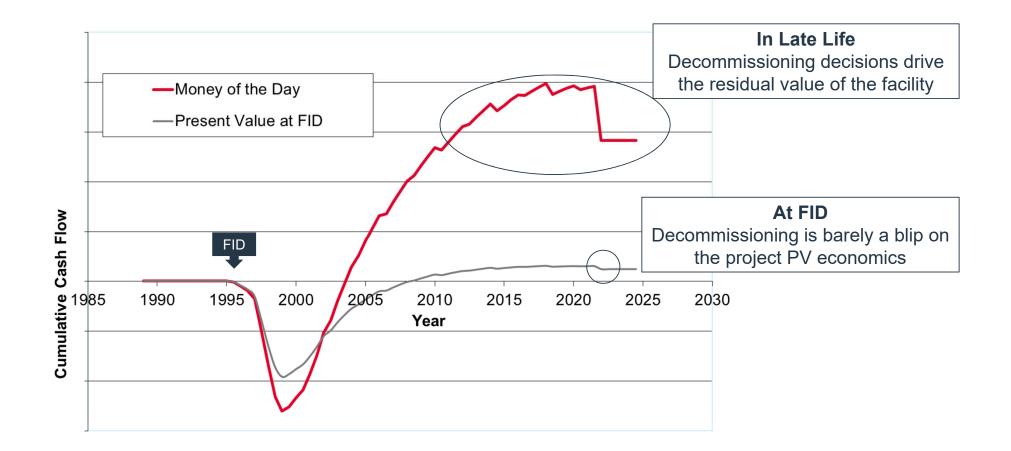






WHY DECOMMISSIONING IS AN ISSUE?

LATE LIFE - FINANCIAL APPROACH







UK REGULATION BACKGROUND

GUIDANCE & LEGISLATION UKCS

International Level	Regional Level	UK Level	Country Level	
Geneva Convention on the continental Shelf	OSPAR Convention	UK: Marine (etc.) Acts		
UN Convention on the Law of the Sea	UNEP Regional Seas Conventions Barcelona, Kuwait etc	Petroleum Act 1998 (and pursuant Regulations)	Marine Act (Scotland)	
		Safety Case Regs		
IMO Guidelines	Basel, Bamako etc. Conventions (transboundary)	Pipeline Safety Regs 1996	Marine & Coastal Access	
London Convention	EU Marine Strategy Framework Directive	Offshore Installations &Wells (Design & Construction, etc) Regs	Act (F&W)	
 UK Government Guidelines: Dept for Business, Energy & Industry Strategy Guidance Notes: Decommissioning of Offshore Oil & Gas Installations and Pipelines under the Petroelum Act 1998 BEIS Guideline Notes on Procedures for Regulating Offshore Oil & Gas Field Developments 		World Bank		
		Industry body Guidelines (API, OLF, OGP, OGUK)		
		Operator St	andards	

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GUIDANCE & LEGISLATION UKCS FOR DECOMMISSIONING

BEIS (Business Energy and Industrial Strategy) ODU (Offshore Decommissionning Unit)

Overarching responsibility for approval & regulation of all Decommissioning Programmes (DP's) for UKCS oil & gas installations, pipelines etc. To ensure that decommissioning is delivered in a safe, efficient & cost effective manner whilst minimizing the risk to the environment & other users of the sea.

BEIS : EMT and OIT (Environmental management team and Offshore Environmental aspectorate team) Advice on all environmental aspects of decommissioning proposals Approval of related consents including Marine Licensing	<section-header><section-header><section-header></section-header></section-header></section-header>	<section-header><section-header><text><text></text></text></section-header></section-header>	 SEPA, Environmental Agency, DEFRA Sishermen Organisations/ Federations Marine Scotland, JNCC Scottish Executive Marine Directorate Scottish Exec Radioactive Waste Team UK Hydrographic Office, Seafish, The Crown Estate, Historic Scotland Universities, Greenpeace, RSPB
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INTEGRATED ENGINEERING APPROACH

DECOMMISSIONING ACTIVITIES ACROSS AN ASSET LIFECYCLE



Create

Realise

Enhance

Design / Planning

Front End Thinking

- DAR Liabilities Assessment
- Regulatory Compliance
- DAR Strategy Planning
- Decisions <u>NOT</u> Deliverables
- Comparative Assessment
- Risk Assessment
- BPEO/BAT/EIA
- Programme Management

Preparation / Removal

Optimised Engineered Solutions

- Stakeholder Engagement Planning
- Regulatory Compliance
- Marine Activities Management
- Risk Analysis
- 3-D Integral PDMS Survey
- Engineering Structural Analysis
- FEED & Detailed Design
- Compliance Assurance

Disposal / Restoration

Protected, Maximised Value

- Site Evaluation & Assessment
- Regulatory Compliance
- Waste Management Planning
- Environmental Auditing
- Dismantling & Disposal
- Cleaning Procedures
- Reduce/Reuse/Recycle
- Monitoring & Inspection Plans

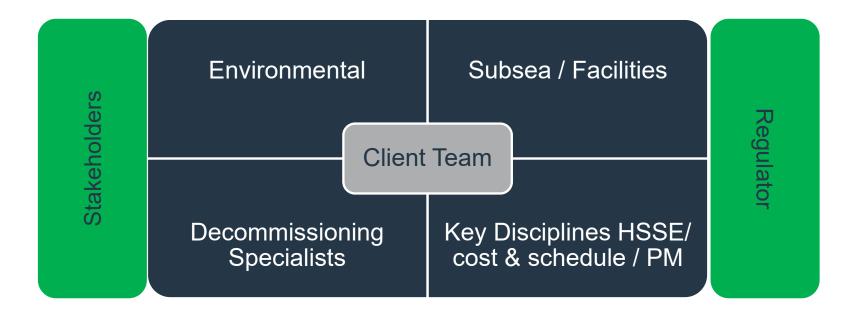
Assurance Role

Proprietary Tools & Processes





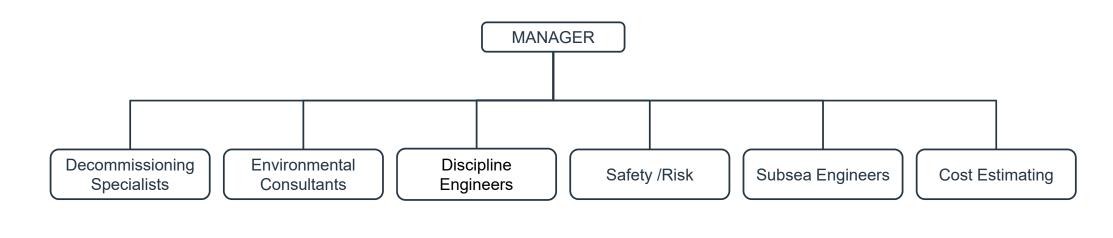
INTEGRATING THE DISCIPLINES



- Experts in individual fields, centres of excellence
- Same methods and tools globally
- Seamless multi-centre working



BASIC DECOMMISSIONING TEAM



Discipline Engineers & Project Services Support





DECOMMISSIONING EXPERIENCE

GENESIS DECOMMISSIONING HISTORY

Awarded global D&R EFA by ENI in Completed a D&R Following significant global market interest Genesis embarks on the development of conjunction with Technip (Rome) to support a proprietary D&R Estimating and Reference database **Efficiencies Study** their global asset portfolio. incorporating a Reference case study to investigate technology review for Awarded Maureen the Decommissioning Options for Shell for the the OGA. Decommissioning Project HazID by **Brent Field Phillips Petroleum** Awarded EFA for the Brae Field D&R Commissioned by Services by Marathon Total Awarded the first ever OGUK to write the Frigg **Beatrice Comparative** Facilities, Environmental & Comparative D&R Assessment and **Decommissioning Support** Bayu-Undan Darwin Assessment Awarded Miller HSF Decommissioning contract by the DTI (UK) LNG Abandonment **Guidelines for UK** Decommissioning Programme. Studies Study for Conoco-Flotta Terminal D&R Industry Appraisal Studies by Phillips (Australia) Study for Talisman ΒP Energy 1998 1999 2000 2004 2007 2010 2012 2013 2014 2015 2016 2017 2002 bp Recent D&R Clients ConocoPhillips HESS TALISMAN Chevron Oil & Gas UK PremierOil nexen B G Y N F 大学 Department of Energy & Climate Change DANA BG GROUP **FairfieldEnergy** saso

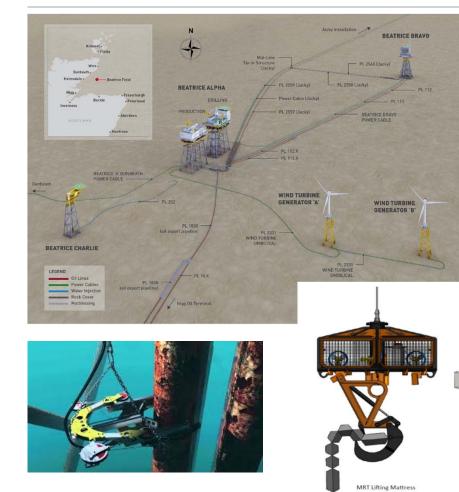


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- RSRUK: Beatrice Comparative Assessment and Decommissioning Programme
- Spirit Energy: DP6 Process Simplification for OPEX reduction
- Enquest (Malaysia): PM-8 and Seligi Field Decommissioning Options Study



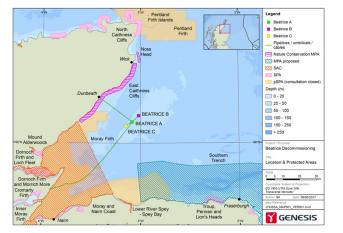
RSRUK BEATRICE FIELD COMPARATIVE ASSESSMENTS AND DECOMMISSIONING PROGRAMME



Scope included;

- Identification and Comparative Assessment of Decommissioning options for subsea infrastructure
- Supporting technical, safety, environmental and cost studies
- Review of emerging technologies and novel techniques
- Production of the Consultation Draft of the Decommissioning Programme for full field – All platforms and SURF
- Support to Stakeholder Engagement Workshops

MRT Closed on Mattress







SPIRIT ENERGY DP6 SIMPLIFICATION PROJECT

PROJECT AIMS:

Centrica approached Genesis for developing a project for the simplification of two drilling platforms in the East Irish Sea.

Genesis have been involved with the project from inception to execution.

- Project Aims:
 - Reduction of planned maintenance man-hours of 55-60% with backlog clearance as a function of simplification;
 - Removal of FM backlog with targeted scope aimed at no future FM campaign required before COP;



- De-bottlenecking of process by removal of NRV's, Choke Valves, DP meter and redundant valves will increase gas recovery over life of field;.
- Increase in platform uptime by specifying 36hrs standby for both UPS system and HPU along with simplification of the ESD system to allow production to continue without any need for an intervention for up to 36Hrs following mains power outage.

The DP6 campaign is now complete from the Genesis side with many notable achievements.

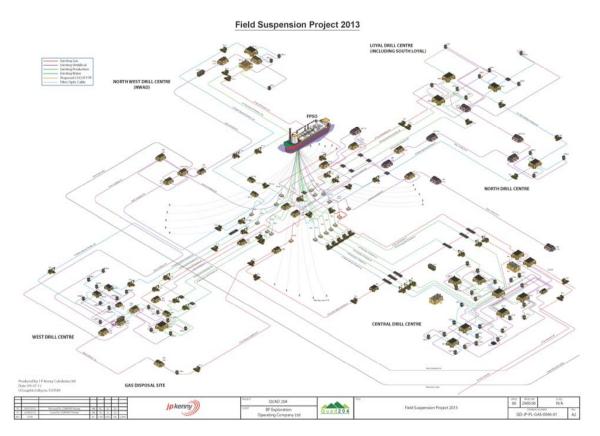




BP SCHIEHALLION COMPARATIVE ASSESSMENT STUDIES

Comparative Assessment studies for decommissioning the Schiehallion pipelines and subsea infrastructure, comprising:

Infrastructure	Quantity			
Production flowlines	10			
Water injection flowlines	6			
Gas lift flowlines	4			
Gas import/export flowlines	3			
Gas disposal flowline (currently unused)	1			
Dynamic umbilicals	3			
Static umbilicals	10			
Risers	15			
Manifolds	23			
Flowline Jumpers	100*			
*31 of the 100 jumpers are a bundle of 3 jumpers				
(2 production and 1 gas)				





Summary

- ✓ REGULATORY MATURITY
- ✓ FULL AND EARLY ENGAGEMENT FEL AND STAKEHOLDERS
- ✓ INTEGRATED ENGINNERING SERVICES
- ✓ EXTENSIVE DECOMMISSIONNING TRACK RECORD
- ✓ INNOVATIVE AND COLLABORATIVE APPROACH
 - Safety
 - Economical
 - Social
 - Environmental
 - Operational





THANK YOU

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