OGA Collaboration and Innovation in Decommissioning Event

12th September 2018

What are we trying to achieve

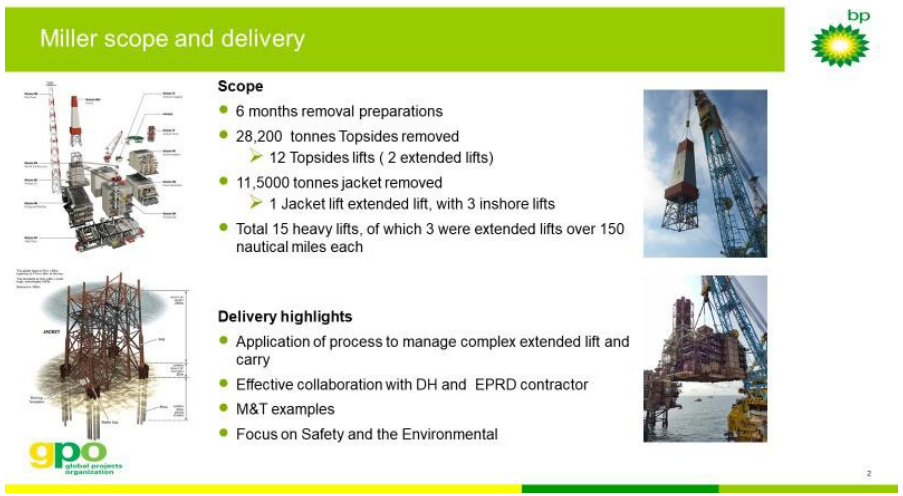
- BP is aligned with the OGA MER target to reduce decommissioning costs by 35%
  - Deeper collaboration with stakeholders and supply chain
  - Increased efficiency of execution
  - Different contracting models that offer greater value to all stakeholders

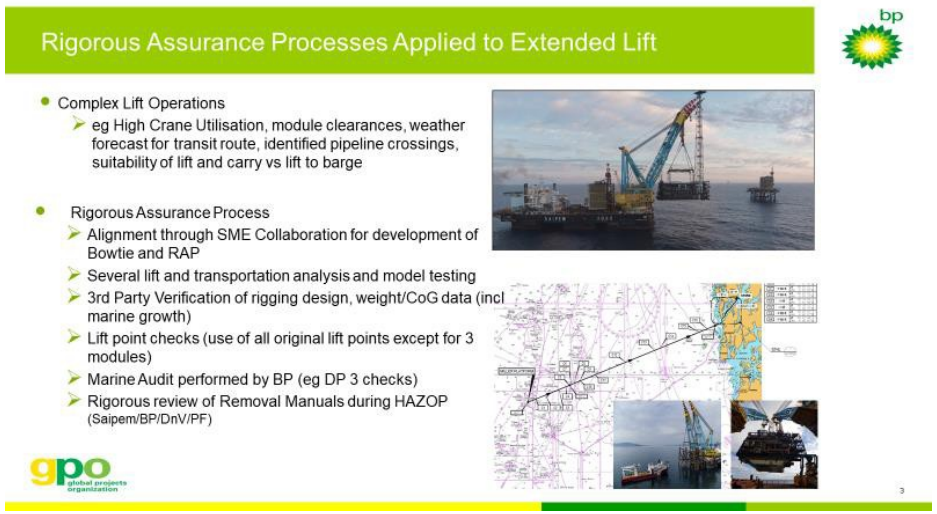
Technology and Innovation

- Technology innovation
  - Embedded digitisation of data, linked to control of work processes and offshore execution procedures
  - Maximise the use of cutting edge technology to strengthen the decommissioning process

Exemplar Miller platform removal – Case study

- Developed a high performing team comprising licensee, duty holder and engineer, prepare, remove, disposal (EPRD) contractors
- Team agreed a mission to deliver an exemplar decommissioning project
- Delivered this over 2017/2018 by deep collaboration focusing on team integration to minimise interfaces with a common mission
- 3rd party duty holder model ring-fenced resources to support execution at pace with the EPRD contractor, largely co-located in one office
- Technical innovation in lifting flare with module and extended lift materially reduced offshore execution time and risk
- VIDEO





Collaboration on Miller and Don subsea scope

- Collaboration with other scope 8-12% through Project Management and mobilisation costs
- Gap to OGA MER target 23-27%
  - Incremental cost savings as supply chain matures
  - Contracting models that minimise non-productive time
  - Onshore costs
- What do operators need to do differently to facilitate the step change?

Miller

Pipeline	Item		Material	Weight (Te)
16in Brae-Miller Linkline (PL-1971)	**16in spool at Miller** 367m (approx length)	Line pipe and bends	Steel	70
		Flanges	Steel	6
		Anodes	Zinc	<1
	SSIV structure	SSIV inc pipework, flanges, valves and fittings	Steel	45
		Protection Structure	Steel	42
		Anodes	Zinc	3
		Roof Panel	Steel	14
	Protection Features	43 Flexible Concrete mats on Miller Spoolpiece and umbilical	Concrete	180
		23 Grout Bags on Control Umbilical at Guide	Grout	<1
Gas Export Pipeline SSIV Control Umbilical	Electro Hydraulic/ Control Umbilical		Composite	6
Brae-Miller Linkline SSIV Control Umbilical (PLU-1973)	Electro Hydraulic/ Control Umbilical		Composite	1
	Umbilical Guide		Steel	<1
Total estimated weight				**1304**

Don

Item	Material	Weight in Air (tonnes)
Manifold	Steel	48.6
	Aluminium-zinc-indium anodes	1.3
Flowline Spoolpieces	Steel	1.3
	Equipment Total Weight	**51.2**
Displaced Flexiweight Mattresses on/around Manifold		13.2
	Stabilisation Total Weight	**13.2**

Item	Material	Weight in Air (tonnes)
Subsea Pipeline/Spoolpieces/ Valves/WI Tee	Steel	2766.0
	Aluminium-zinc-indium anodes	27.0
	Galvallum III anodes	28.0
	EPDM coating	373.0
	Concrete weight coat	43.0
3in Chemical umbilical and 4in control umbilical	Composite materials	440.0
	Equipment Total Weight	**3677.0**
Stabilisation (excluding NLGP crossing)	Grout formwork/flexiweight mattresses	823.2
	Grout bags	34.3
	Rock dump	4621.0
	Stabilisation Total Weight	**5478.5**