



Umbilical Blockages JIP

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Experience (*and learning's*)

- **Undiagnosed flow restrictions**

 - Fluid compatability, mixing / stability over time**

 - Particulate contamination**

 - Seawater contamination**

 - Mechanical obstruction**

 - (operating procedures and equipment design)*

- **Line Collapse - hydrostatic head / well condition**

 - (operating procedures and system inter-locks)*

- **Corrosion - fluid-material incompatibility**

 - (material map)*

- **Hydrates - gas intrusion via downhole system**

 - (operating procedures and equipment design)*

Cost of poor fluid management



- Control Fluids – Poor equipment performance resulting in increased intervention frequency
- Scale / Corrosion/ Wax Inhibitors – Reduced confidence in actual delivery rates and locations resulting in over-injection, more frequent pipeline pigging, reduced production
- Methanol. Inability to deliver required volumes to achieve inhabitation during shutdown, perform pressure testing or for equalisation during start-up



JIP Scope ?

- **Definition of scope break point** – is this restricted to umbilicals or intended to cover end to end transportation system?
- **Management of Change** – changing fluid types imports significant risk, will this be addressed?
- **Material Mapping** – critical assurance tool when considering fluid change out, need for standard industry format ?



JIP Deliverables ?

Key elements to ensure a reliable fluid transportation systems for field life are

- Accurate material maps of the overall system
- Management of Change process for fluid change-out
- Umbilical system operating guidelines

Generic industry guidelines could

- Avoid repeating past errors
- Minimise duplication of effort at all levels in the supply chain
- Provide a framework for definition of system operating envelope between project to operational phases