



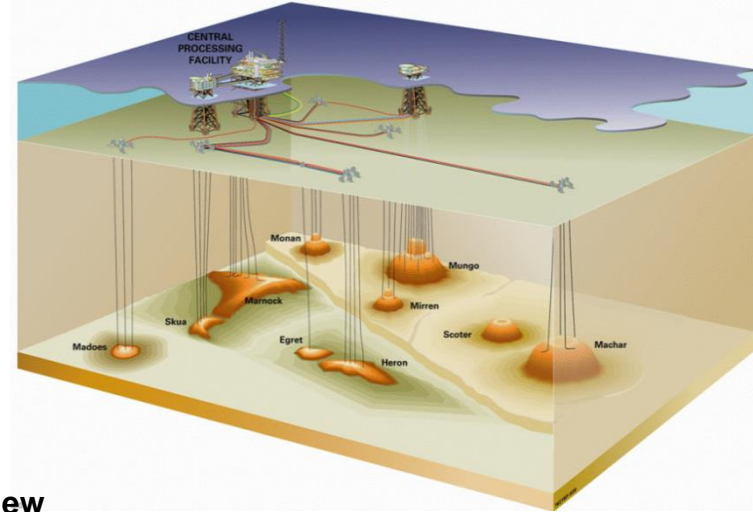
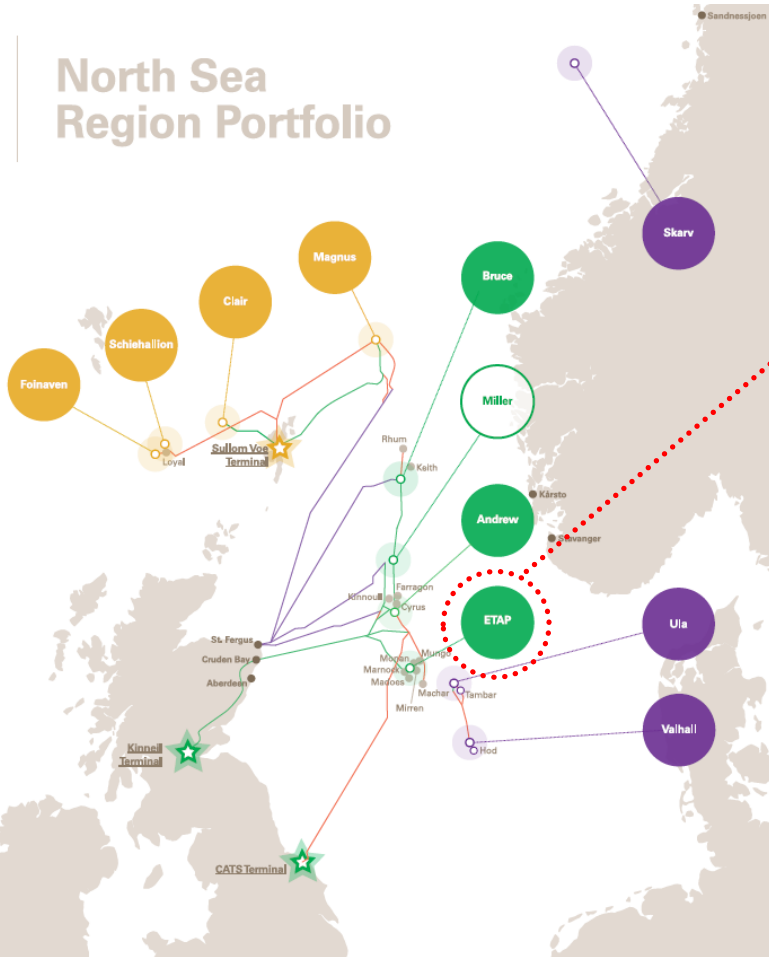
# Sand Management on ETAP: A multi-discipline approach

**6th European Sand Management Forum**  
26<sup>th</sup> March 2014

# ETAP (Eastern Trough Area Project)



## North Sea Region Portfolio



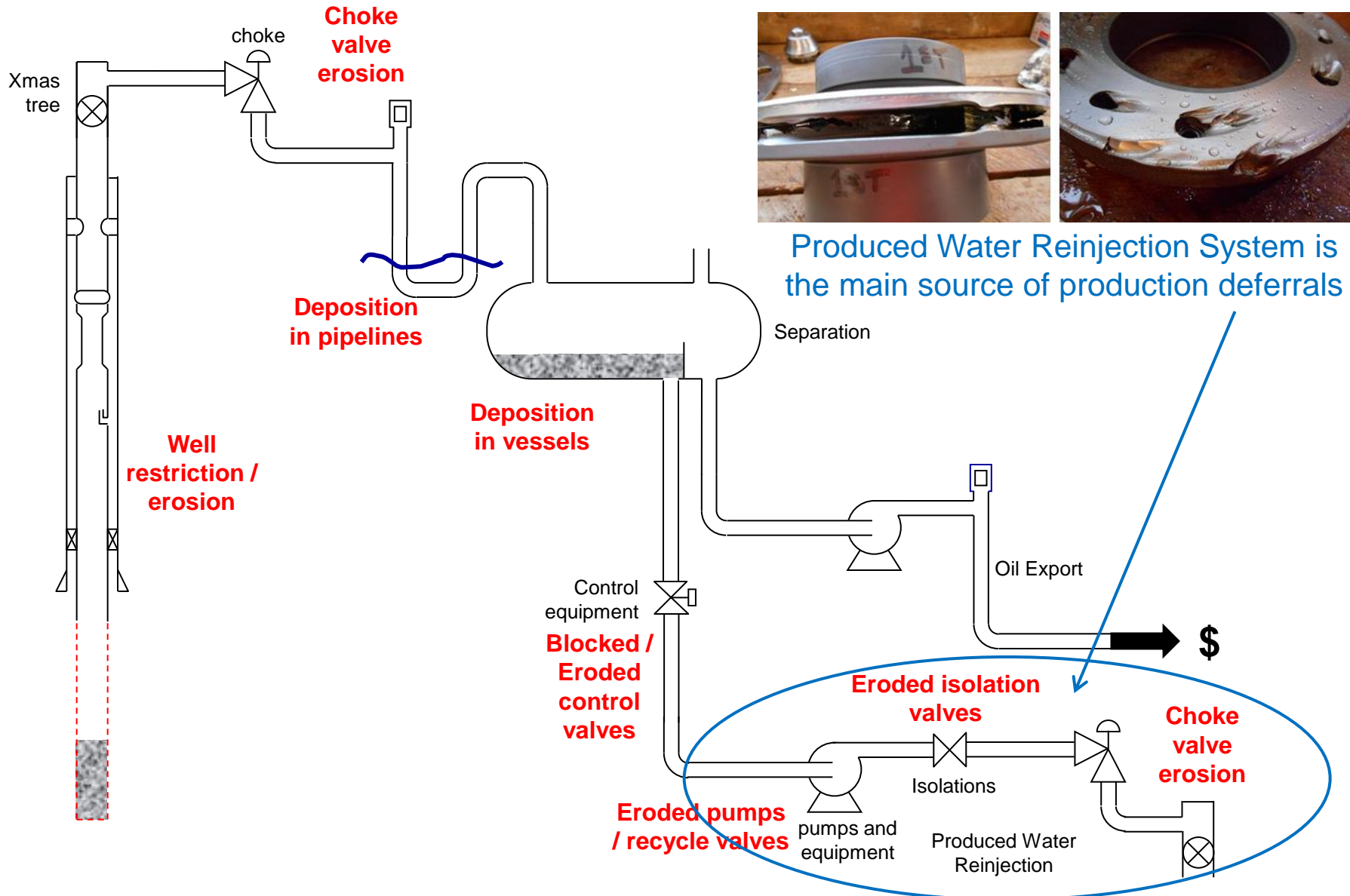
### Overview

- **Location-** 240km east of Aberdeen in Central North Sea
- **9 Fields**, 6 BP operated (Mungo, Machar, Monan, Madoes, Mirren, Marnock) , 3 Shell Operated (Heron, Egret, Skua).
- **Facilities-** Central Processing facility (CPF) two bridge linked platforms, Mungo NUI, 7 subsea tiebacks.
- **Start Up-** 1998
- **Peak Rate-**+200mbd and +300mmscf (ca. 2000)
- **Produced volumes:** ca. 0.6bn boe has been produced to date.
- **Export route-** oil via Forties Pipeline System to Kinneil; gas via CATS pipeline to Teesside.
- **JV** comprise of BP, Shell, Exxon, JX, First Oil.

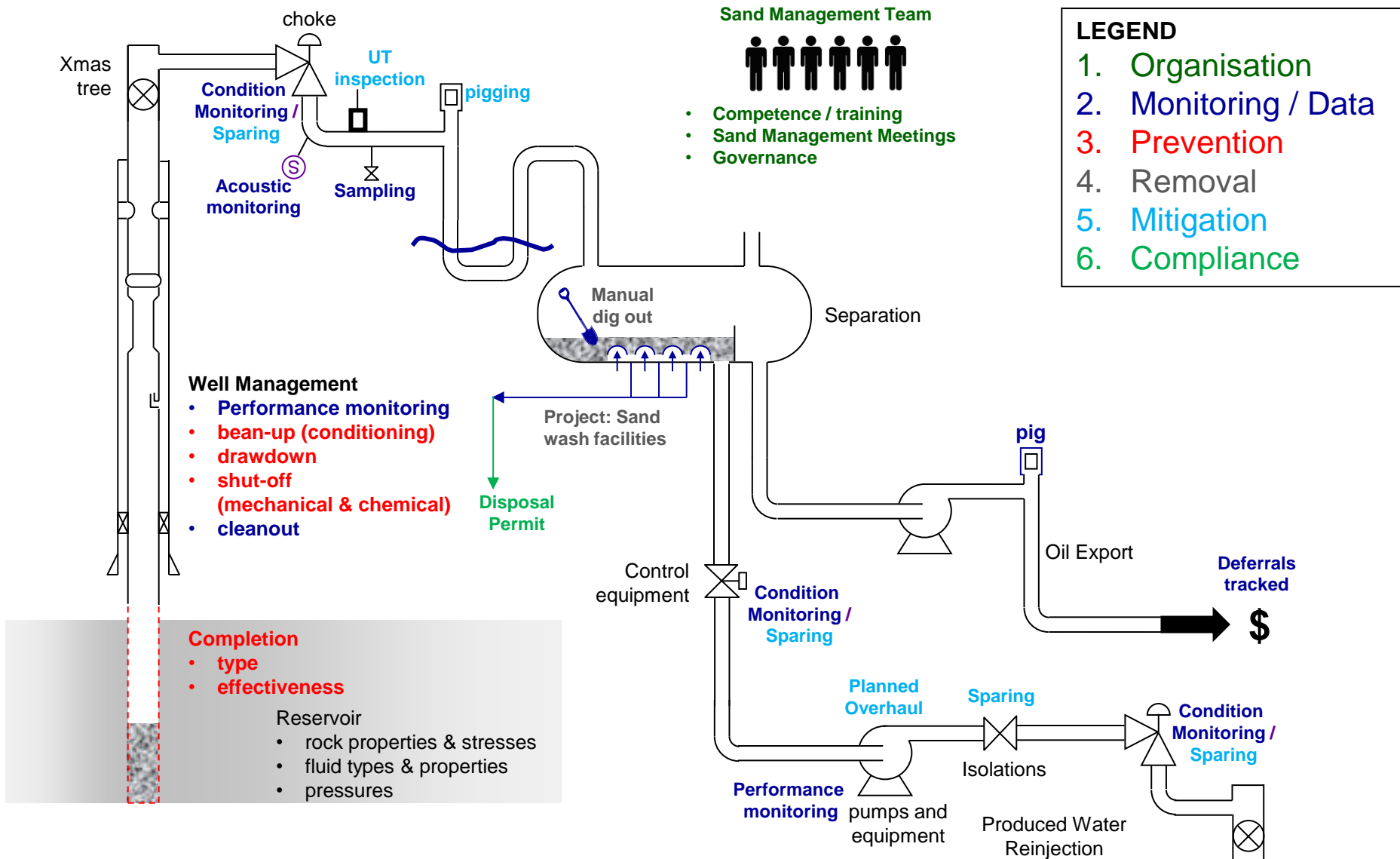
# Why does ETAP need a Sand Management Strategy?

- ETAP designed for sand-free production
- Significant deferrals, costs and POB demand
  - 1 mmbbls/yr
  - £2m cash costs
  - 600 POB demand per year
- Increasing deferrals and integrity risk expected to continue, and potentially accelerate, through field life due to:
  - Increasing water cut
  - Reservoir depletion
  - Increased drawdown
  - Increased GOR

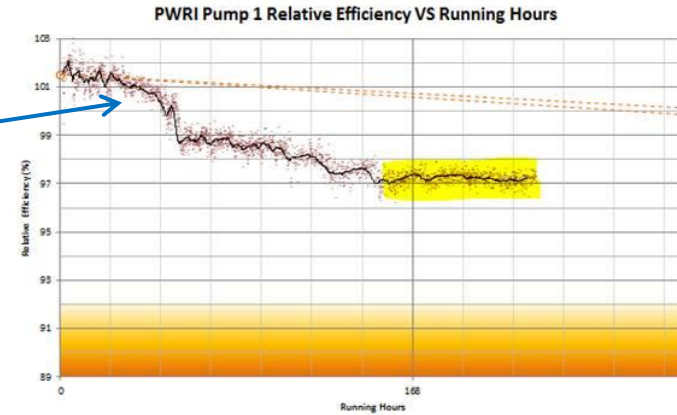
# What is the effect of sand production?



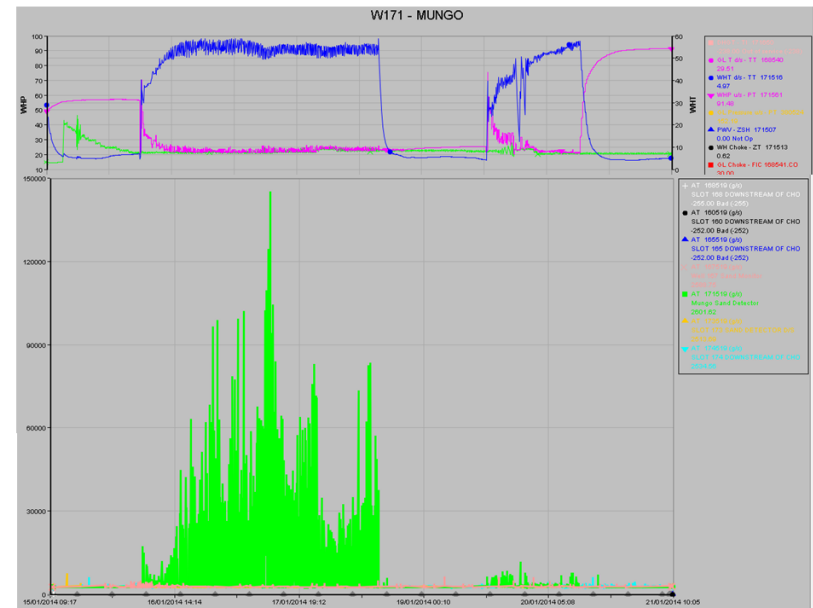
# ETAP Sand Management Strategy Overview



# Examples of strategy in practice

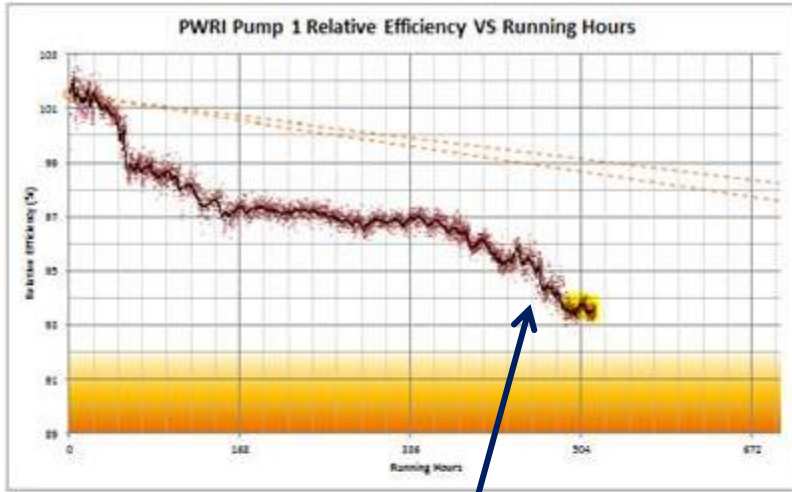


- Pump life extended by trending efficiency and understanding cause of decline
- Well sanding reduced through controlled bean-up
- Sand monitors online and in use
- Sampling for sand underway, improved understanding of high risk wells and sand transport





# Examples Continued



- Significant PWRI efficiency decline caused by bringing on a sand-free well
- Instability causes sand pull through from vessels to the PWRI pumps

# Key Learnings

- Sand Management is a multi-discipline subject, it needs a multi-discipline team
- Data is key but difficult to obtain, start now!
- Sand detectors do not need to be calibrated
- Think 'Fit for purpose' not 'perfect solution'
- You can make a big difference without major modifications – start now!
- Think 'Life of Field' – sand production and its impact will change.



# Acknowledgements / Questions

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**Questions?**



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