



**SPE-195751**  
**Galapagos Field Redevelopment (NW Hutton  
And Darwin) in the East Shetland Basin**

**JEB TYRIE, BRIDGE PETROLEUM LIMITED**

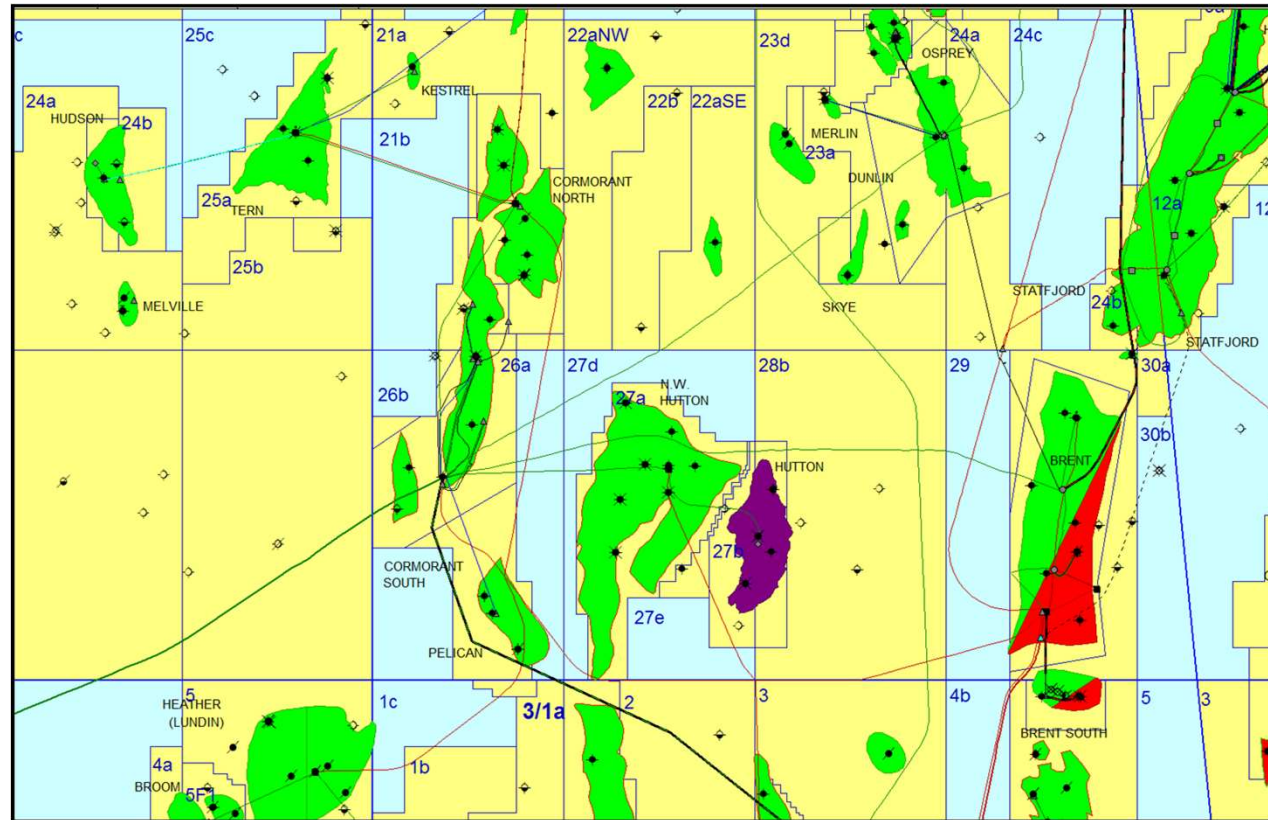
# Disclaimer

---

- The purpose of this confidential presentation (collectively, the “Presentation”) is to acquaint and familiarize prospective investors with Bridge Petroleum Ltd and its subsidiaries (“Bridge”) and Project Galapagos. Bridge is seeking investors for Project Galapagos. In order to properly obtain and read this Presentation, you are required to have signed the relevant Confidentiality Agreement. This Presentation and any additional information provided by Bridge or contained in any online data room is provided subject to the Confidentiality Agreement. Do not read this Presentation unless you have signed a Confidentiality Agreement furnished by Bridge.
- This Presentation is confidential and private. Distribution is restricted. It may not be reproduced, copied or replicated in any form including print and digital media without the express and written authorization of Bridge. This Presentation is and at all times shall remain the exclusive property of Bridge. You are responsible for protecting the confidentiality and propriety of the information contained in this Presentation. Improper disclosure may harm Bridge and you will be held responsible for any damages resulting from an improper disclosure on your part. Should it become necessary to present this Presentation to third parties as part of a due-diligence investigation or to obtain financing, you should advise the third parties that this Presentation is confidential and that you have signed a Confidentiality Agreement in order to obtain it.
- You are responsible for maintaining and protecting the confidentiality of this Presentation and that obligation extends to your employees, advisors, representatives, agents and any other third parties who subsequently receive this Presentation and the information contained herein.
- No representations or warranties, expressed or implied, are made regarding the accuracy or completeness of the information contained herein and any such representations and warranties are not authorized.
- This Presentation contains statements, estimates and projections provided by Bridge concerning anticipated future performance. Such forward looking statements, estimates and projections reflect assumptions by Bridge concerning anticipated results, which may or may not prove to be correct. No representations, expressed or implied are made as to the accuracy of such statements, estimates and projections and potential investors or buyers should rely on their own due diligence investigations.
- The directors, including the presenter(s), of Bridge Petroleum Ltd, as presenters of this Presentation represent Bridge. It is expressly understood that they are not agents or representatives of any prospective investor, buyer or recipient of this Presentation and that they are not acting and shall not act as a fiduciary of an investor into or buyer of Bridge. Bridge does not and shall not provide legal, tax, accounting and risk management advice. Prospective investors or buyers are advised to seek and obtain the counsel of competent professionals. Each of Bridge Petroleum Ltd and its related bodies corporate and affiliates and their respective directors, partners, employees, agents and advisers expressly disclaim any liability for any direct, indirect or consequential loss or damages suffered by any person as a result of relying on any statement in, or omission from, this Presentation.
- The foregoing is in addition to and without prejudice to all other disclaimers and agreements which a recipient of the Presentation shall be deemed to have agreed to or be bound by as provided in the Presentation.

# Location UKCS BLOCK 211/27

- Galapagos Field Development
- East Shetland Basin
- BRENT Province
- Re-development of North West Hutton and extended to Darwin
- Concept Select
  - FSPO
  - 4 Sub-Sea Drill Centres
  - Horizontal wells
  - Artificial Lift
  - Flow Control Valves
- 90 mmstboe in base case
  - Low risk brownfield development, supplemented by well understood greenfield area

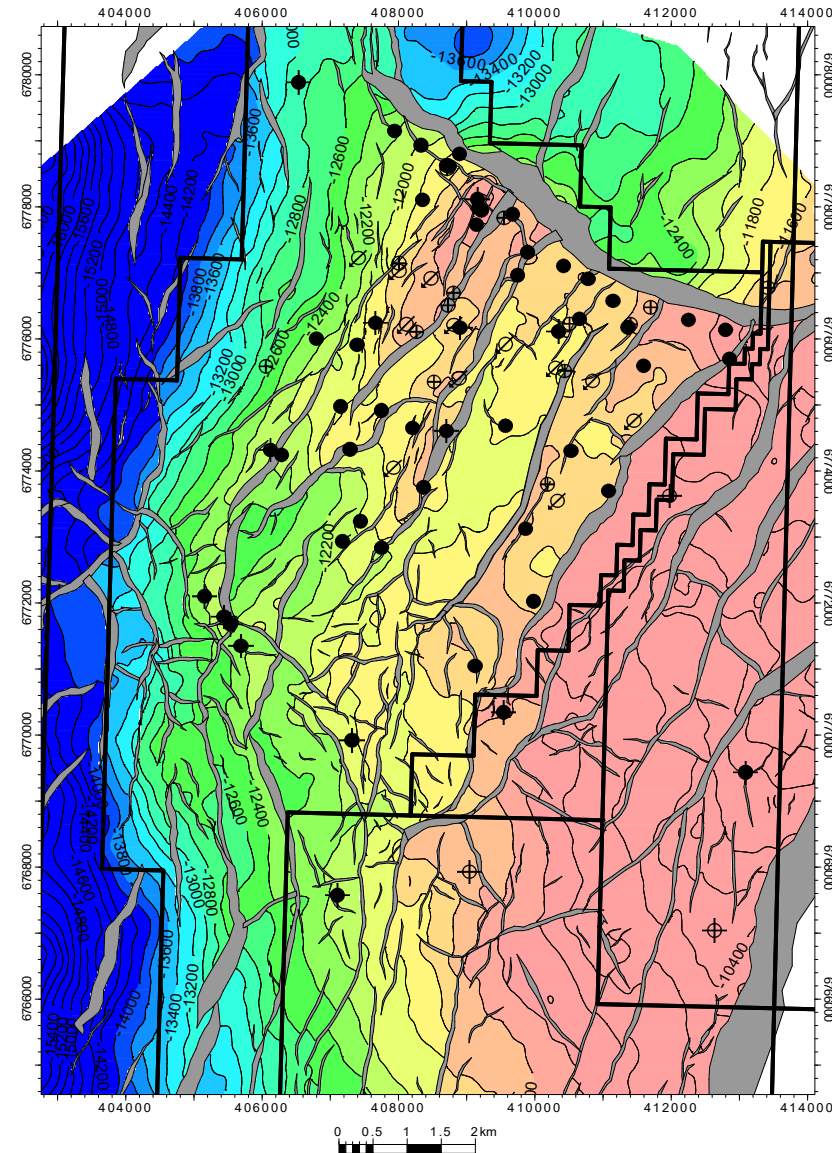


# The Problem

---

# Galapagos Structural Map

- Compartmentalised Terraces
- Full throw faults down to zero throw
- NW Hutton
  - 11 Exploration / Appraisal wells (1970s)
  - 52 Production wells (1983-2002 CoP)
- Darwin
  - 3 Exploration / appraisal wells (2013)
  - 2 successful oil wells in south

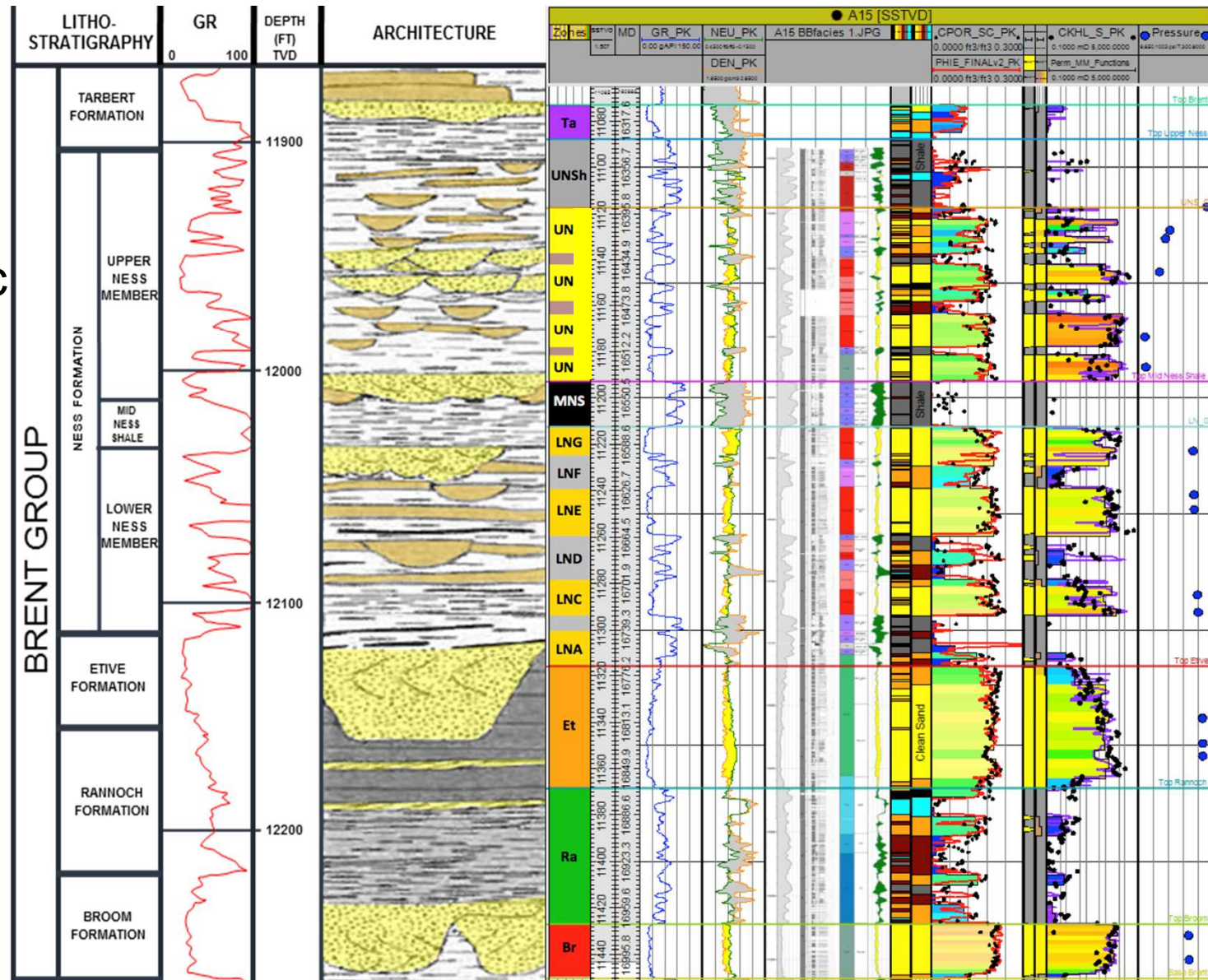




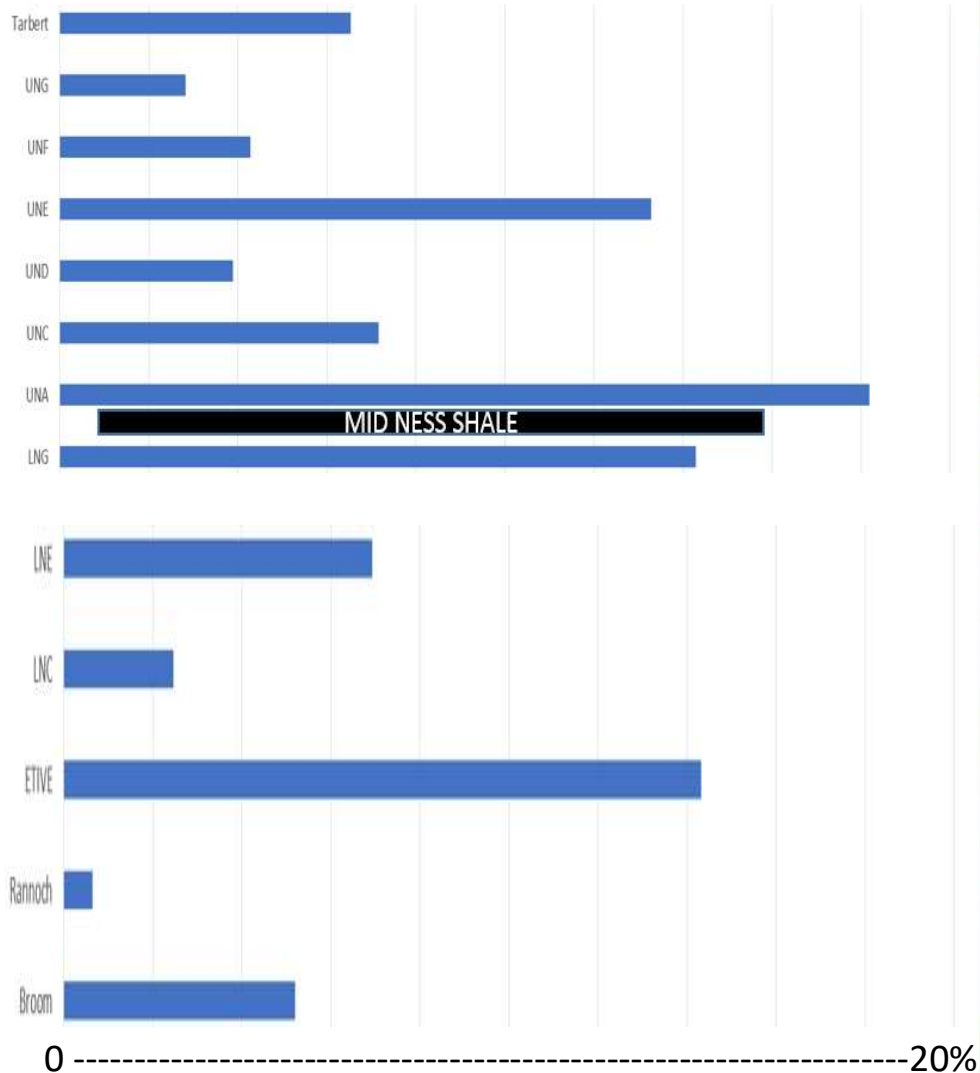
# DATA

- 2008/2014 Seismic
- Logs / Cores
- RFTs / PLTs
- Production Data
- BHP
- Studies, papers

Modified from Flint et al 1999



# Summary of all PLTs

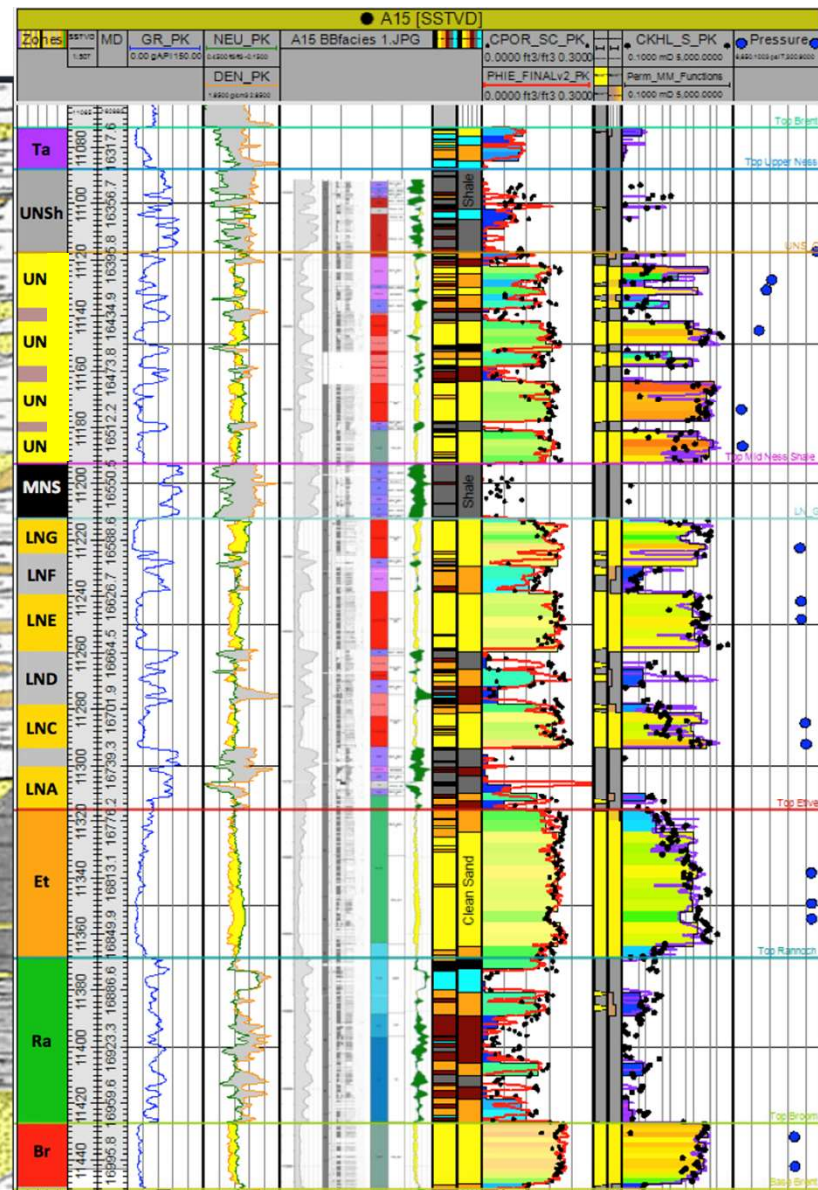
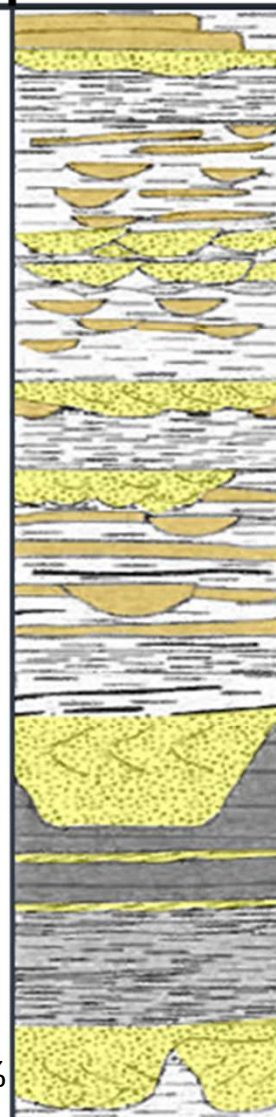


LITHO-  
STRATIGRAPHY

GR

DEPTH  
(FT)  
TWT

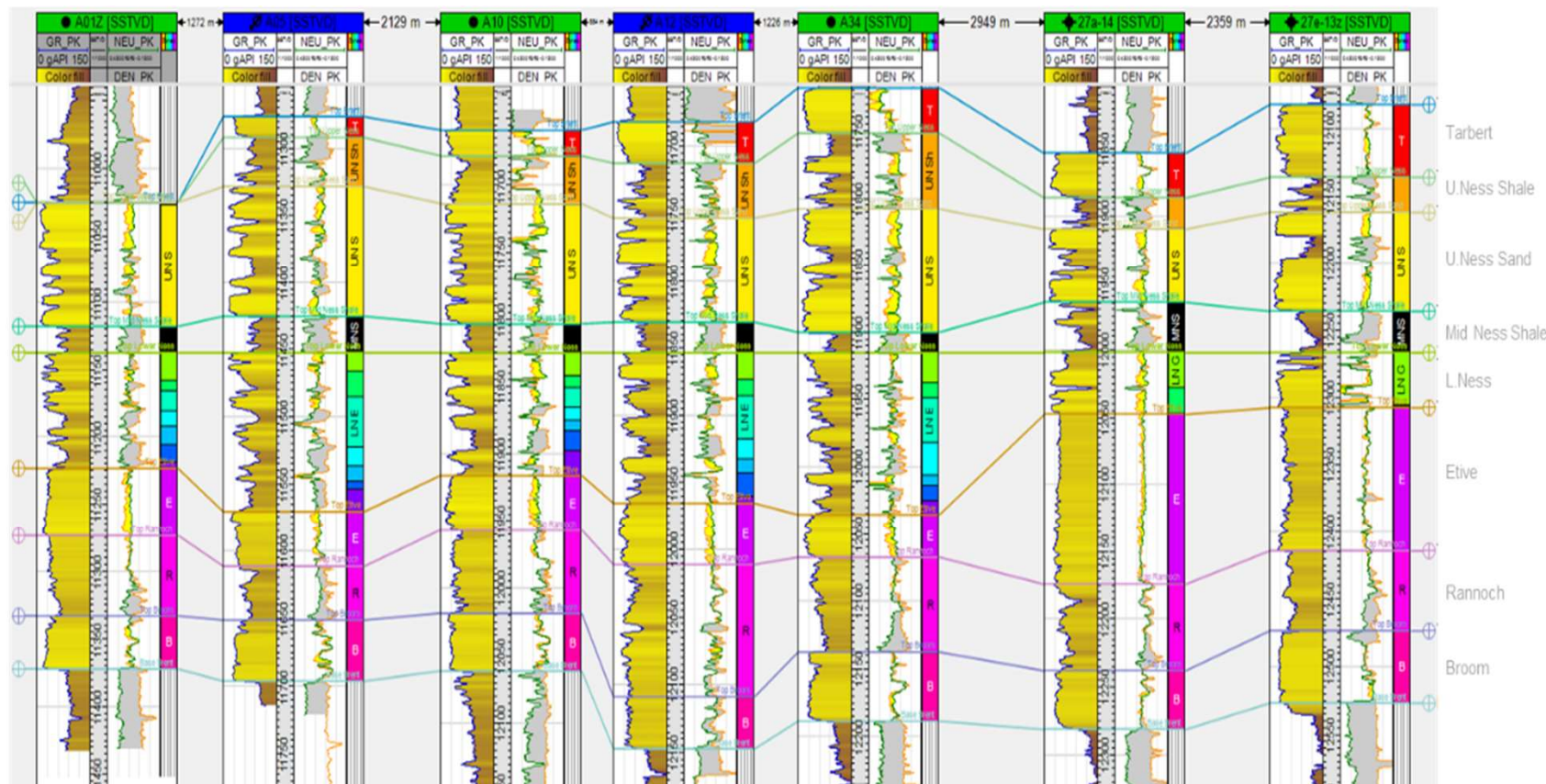
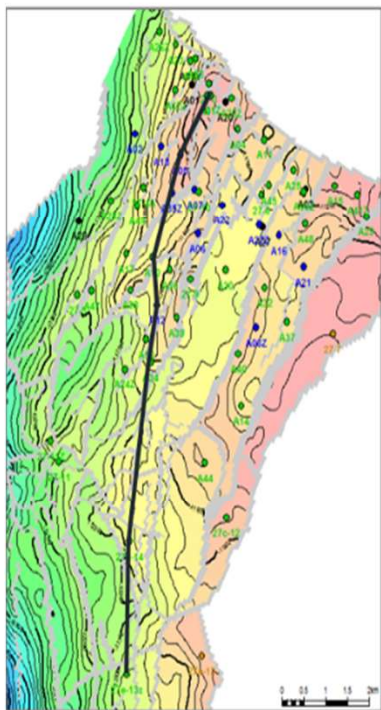
ARCHITECTURE





# Correlation – NORTH SOUTH

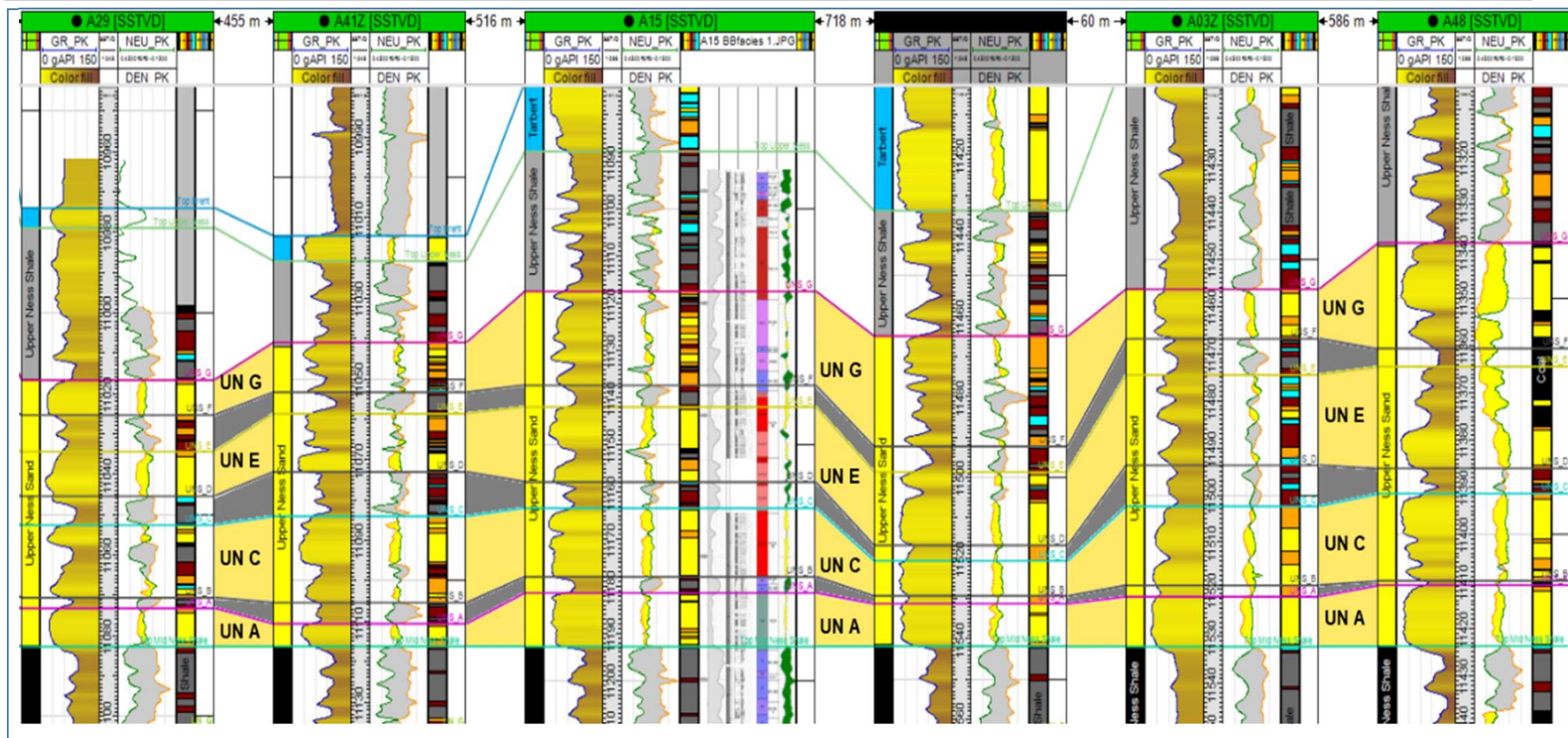
## Flattened on Mid Ness Shale



Confidential and subject to the disclaimer



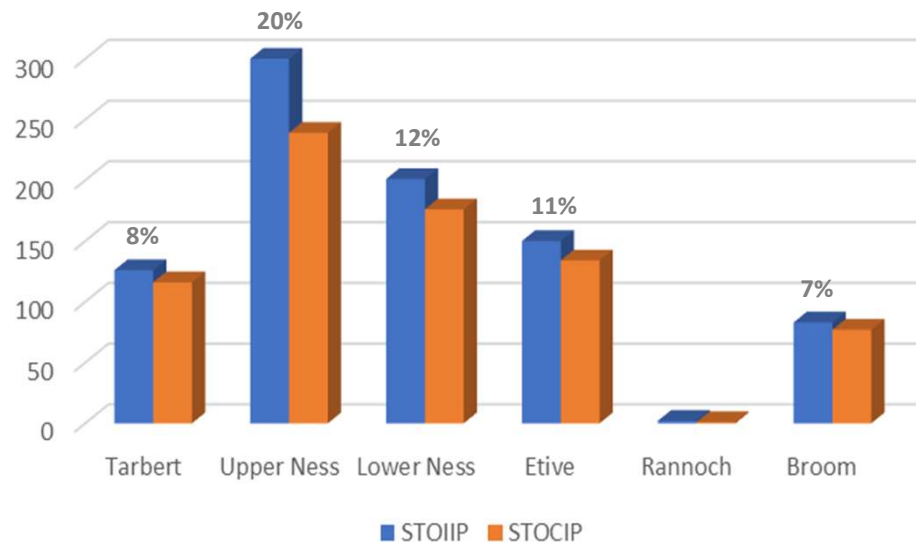
# Upper Ness Correlation



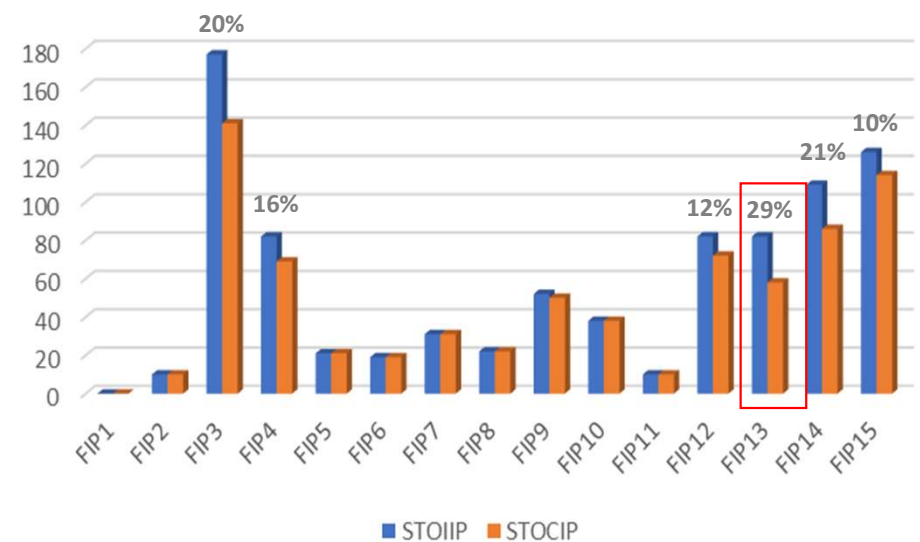
# STOIIP and Remaining Oil MMSTB

P90-P50-P10: 790 -- 883 -- 937

STOIIP vs STOCIP by Formation

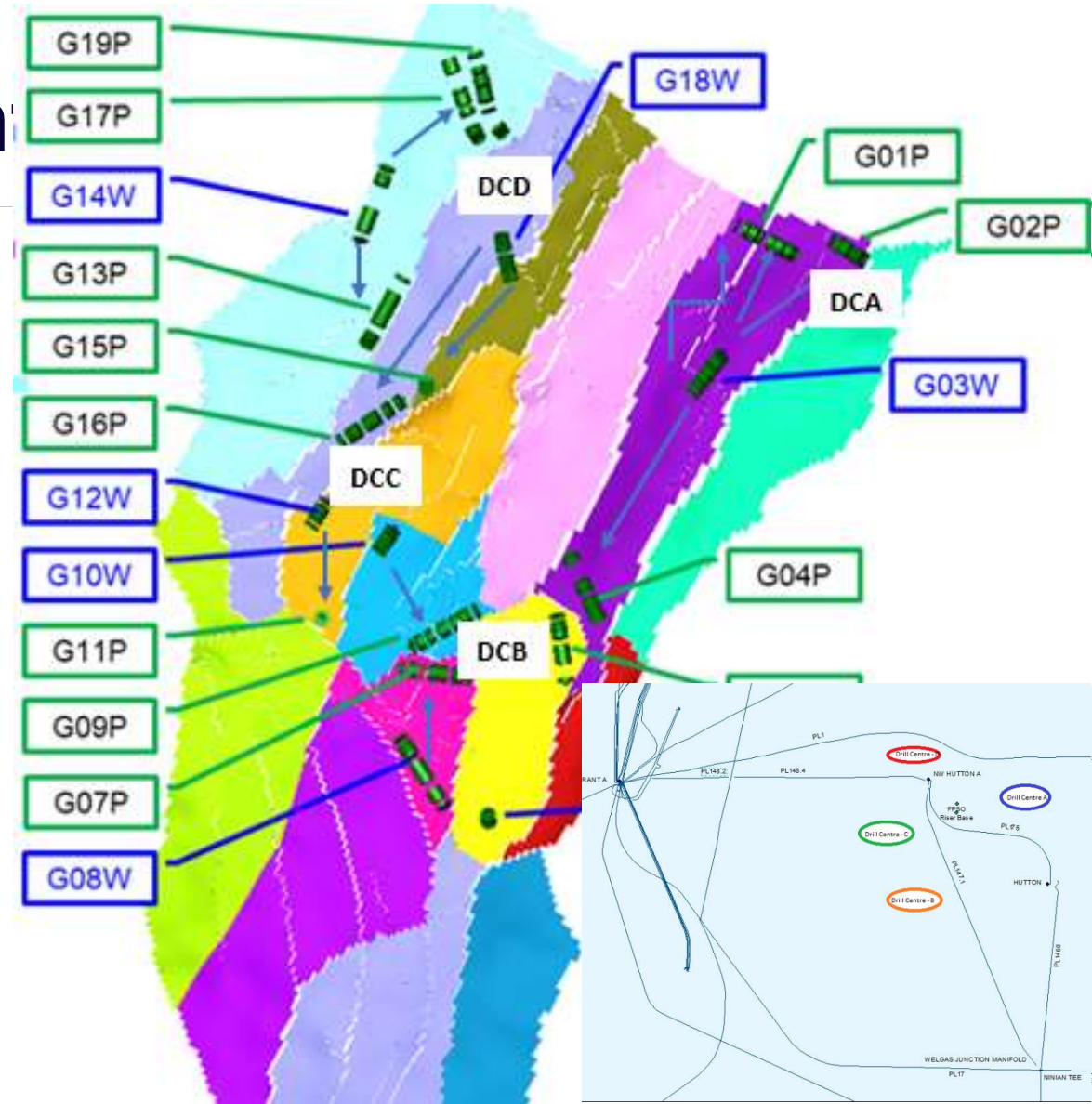


STOIIP vs STOCIP by FIP



# Field Development

- 4 Drill Centres
- Producer Injector Pairs
- Horizontal Wells
  - 3000 ft md cf 350 ft tvd
- Differential Pressure risk
- Use inclination of formation to simplify wells
  - Cut all zones
  - Straight reservoir section



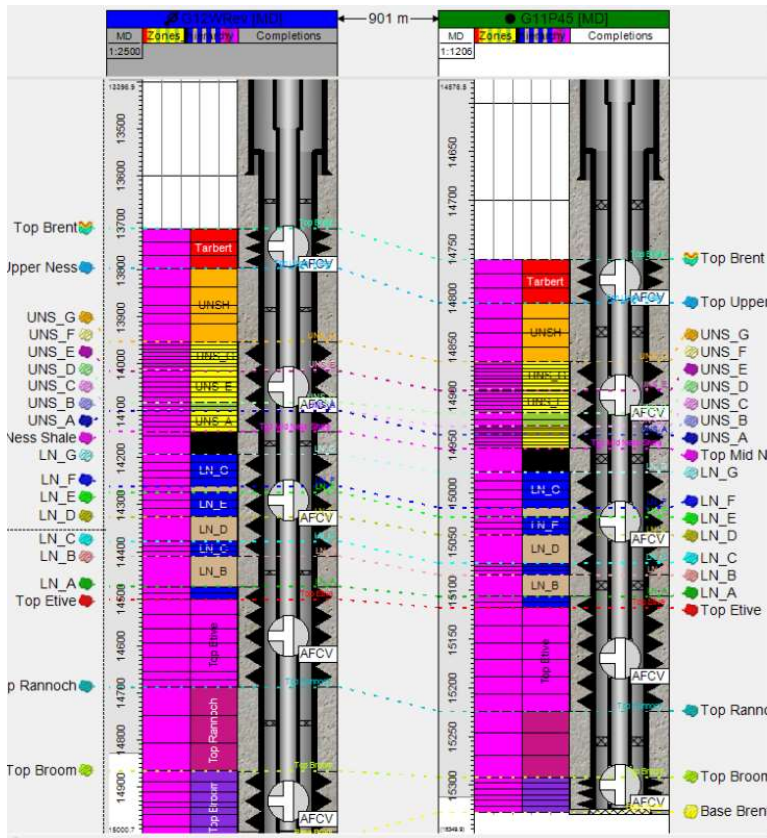


# The Challenge

---

- 20 years of Production History -- 20 years shut-in
- Monitor forecast performance against History Match Simulation Model
  - New wells, new information(?)
  - How much performance?
    - What parameters?
  - Model updates, how often?
- 75 FCV on Injectors and Producers
  - 5 Injectors 11 Producers
- Set FCV valve position for X months ahead (?)

# FCV Completion and Optimised Valve Positions



Confidential and subject to the disclaimer

# The Solution

---



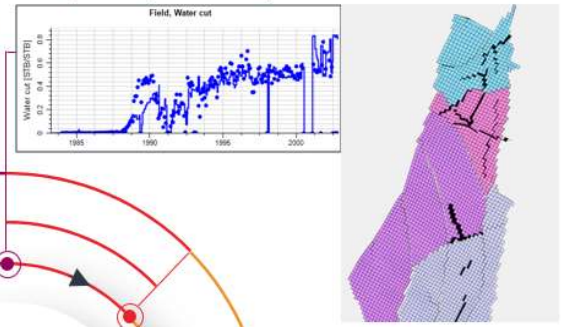
# Forecast

- 250 uncertainty runs were conducted, excluding structure:
- Range of 796 – 888 – 943 mmstbo
  - Upscaled 16 cases P90/P50/P10 bins:
- Forward models selected on match to history without further edits
  - FIP and well
  - Cumulative oil, cumulative water,
  - BHP and RFT

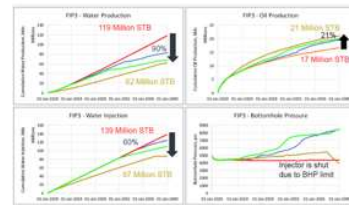
Item	Scenario	Oil	Water	Gas	CO2	Other	Factor	Item	Scenario	Oil	Water	Gas	CO2	Other	Factor	Item	Scenario	Oil	Water	Gas	CO2	Other	Factor
1	Base	796	1.0	0.0	0.0	0.0	1.0	1	Base	888	1.0	0.0	0.0	0.0	1.0	1	Base	943	1.0	0.0	0.0	0.0	1.0
2	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	2	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	2	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
3	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	3	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	3	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
4	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	4	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	4	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
5	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	5	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	5	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
6	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	6	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	6	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
7	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	7	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	7	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
8	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	8	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	8	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
9	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	9	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	9	Uncertainty	943	1.0	0.0	0.0	0.0	1.0
10	Uncertainty	796	1.0	0.0	0.0	0.0	1.0	10	Uncertainty	888	1.0	0.0	0.0	0.0	1.0	10	Uncertainty	943	1.0	0.0	0.0	0.0	1.0

G&G STOPIP by Zone 1250 runs

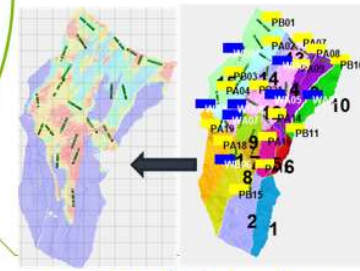
FIP(well) History Match Selection



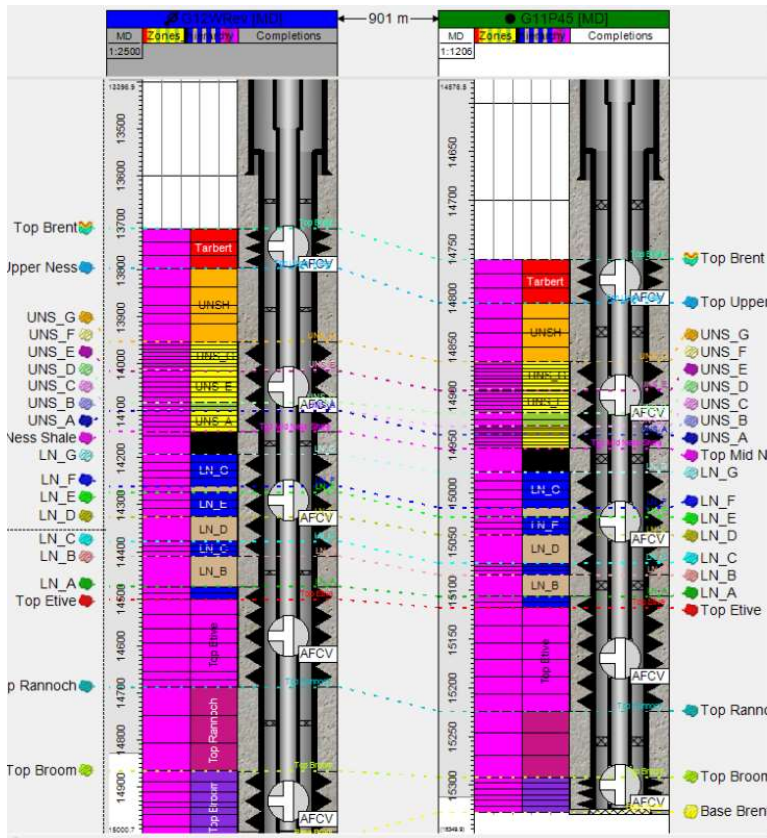
Optimised recovery



Development Well Selection



# FCV Completion and Optimised Valve Positions



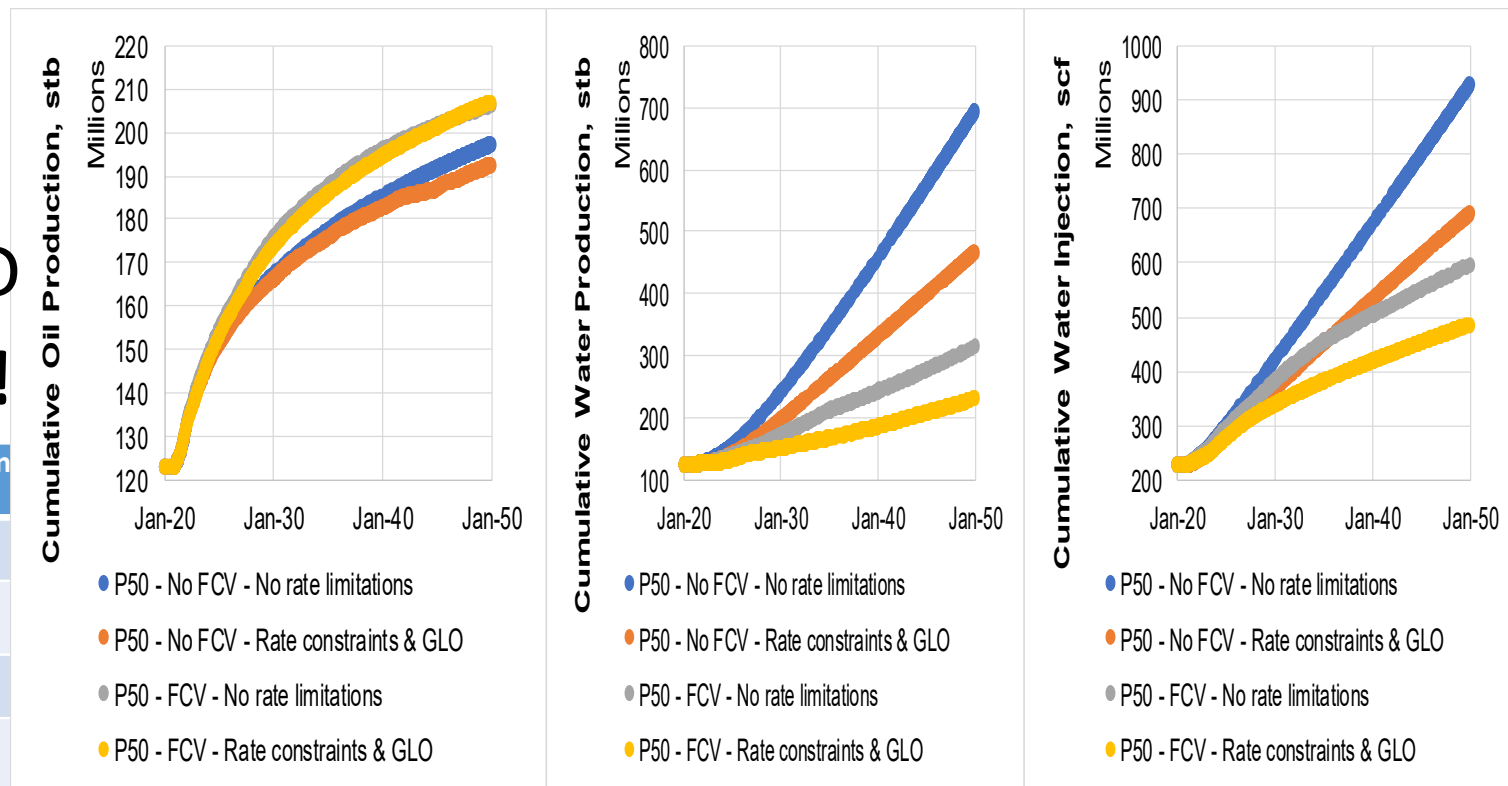
Confidential and subject to the disclaimer

# How to Shrink the Facilities (FSPO Case)

## FCV

- Monitoring
- 90 → 45 MBL/D
- ➔ **Smaller Boat!**

Constraints	Oil mmstb	Water mmstb	Injection mmstb
P50 - No FCV	<b>197</b>	<b>692</b>	<b>926</b>
P50 - No FCV Rate & GLO	192	465	688
P50 - FCV	207	312	595
P50 - FCV Rate & GLO	<b>207</b>	<b>230</b>	<b>484</b>





# Monitoring

---

- Monitor forecast performance
  - History Match Simulation Model
- New wells, new information(?)
  - Logs, RFTs, (no DST or core)
- How much performance?
  - Every 3 months
- Model updates, how often?
  - Initial 6 month rebuild based on
    - New wells
    - Pressure Pulse tests
  - Automated History Match quarterly
    - Rates, Water Cut, BHP, THP
      - Weekly data
  - Rebuild annually
- 75 FCV on Injectors and Producers
  - 5 Injectors 11 Producers
    - PLT every day!
      - Rate and BHP per zone
      - Water cut to 40%
      - Tracers as back up
    - Production test for Scale and rate monthly
- Set FCV valve position for 1 year (?) ahead
  - Optimisation is demanding
    - Automated work flow
  - Use Forecast windows and FIPs
    - 1 year ahead