- Dunlin Alpha installed 1977 with an expected design life of 25 years
- First oil 1978
- Dunlin satellites developed – Osprey (1991) and Merlin (1997)
- Combination of circumstances led to CoP
  - Required subsea infrastructure investment
  - Conductor integrity issues
  - Low oil price
- Termination of Production June 2015, following achievement of maximum economic recovery
- >522 million BOE produced over 37 years in operation
GREATER DUNLIN AREA
Infrastructure

- 195km NE of Lerwick, Shetland
- Greater Dunlin consists of 4 fields
- Dunlin Alpha Concrete Gravity Based platform
  - CGBS weight ~ 320,000 tonnes
  - Topsides weight ~ 20,000 tonnes
- Dunlin Alpha: 45 platform wells
- Osprey & Merlin: 16 subsea wells
- Dunlin, Osprey & Merlin Subsea Infrastructure

A small maintenance team was utilised to “Tepid” stack the package between operational campaigns to minimise reactivation work.

A limited reactivation was completed to allow the derrick package to be utilised as a wireline skid for an efficient well plugging campaign and where possible Phase 1 abandonment operations.

Well abandonment commenced once the drilling package had been fully reactivated. Wireline operations continued in parallel to drilling operations by deploying an ASEP mast.
- Conductor condition
  - Parted conductors
  - Separated Talon connectors, retrofit clamps
- Annulus Charging
  - Significant number
  - External Casing Packers
- Pore pressure profile
  - 13 3/8” annular cement condition
    - “Pozmix” low viscosity cement
    - Channelled cement
    - Significant fill above TTOC
- Reservoir Isolation
  - 9 5/8” “Pozmix cement”
  - Packer position in liner
  - Short liner length between perf and top
- Unknown well conditions
  - Some wells undisturbed and not entered in almost 30 years
- Cemented Completions
  - ESP wells
  - Plastic coated
Well Annulus Monitoring regime

Plug Wells for tree removal
- Control Line Sealant
- Cut tubing and install shallow “POP”
- Acoustic logging tools

Through tubing abandonments
- Reliance on O&G abandonment guidelines assumptions
- Ability to cement high angle wells
- Plastic coated tubing & scale
- Bullhead cemented completions

Post Tree Recovery – Rig Operations
- Eliminate slickline requirement

Phase 1 Abandonments
- Log through tubing
- Balanced plug set in liner or 9 5/8” casing using tubing
- Section mill 9 5/8” casing if required

Phase 2 Abandonment
- Little or no probability of an effective barrier behind casing
- 13 3/8” casing section milling
- PWC or Circulate behind casing
Osprey & Merlin
Well Abandonment Operations

- Transocean 712
  - Modifications
  - LWI

- Stage 1
  - Modify EDP/LRP to HOP between wells
  - Batch operations in the summer
  - Plug wells
  - Eliminate use of old tooling - THODJ
  - Coil Tubing to Phase 1 abandon

- ROV operations
  - Diver Operated trees
  - Remove stab plates, flowline clamps
  - Cut flowline connectors
  - Remove flowline connectors from guide bases

- Stage 2
  - Hop rig BOP between wells
  - Utilise casing pulling tooling to avoid section milling
  - Multi-skilling team