Thistle Alpha – a collaborative campaign of challenging conductor clearance with a CPU

Together we can.

WellGear

EnQuest

Malcolm Coutie, Well Superintendent (EQ)
Andy Black, Operations Manager UK (WG)
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Thistle Alpha – CPU conductor campaign

Together we can. WellGear EnQuest

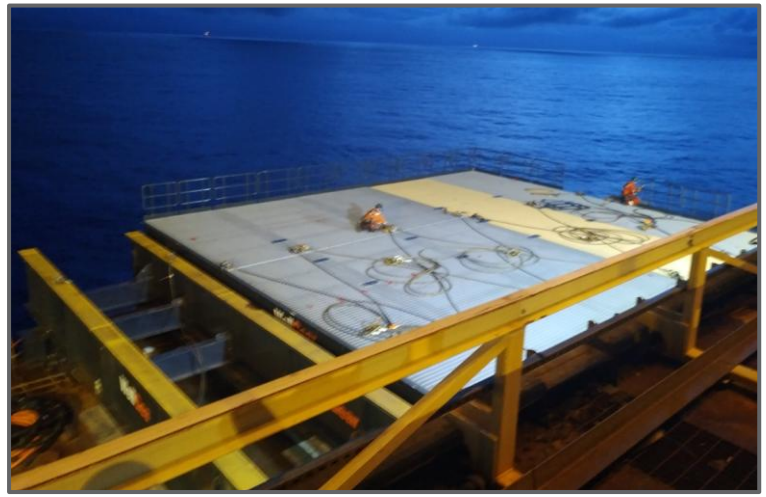
Recent History – 2006 to 2022

Why Install a Conductor Pulling Unit?

- De-risk main rig and asset project schedule
  - As operations progressed
    - recognition of potential for schedule to slip
    - recognition of potential to take up to 9 months off main rig schedule
      - not just a Wells cost discussion but overall whole platform cost and schedule reduction
- Reduce jacket integrity risks – particularly the -12m guide frame
- Likely that at least one Ph1 / Ph2 operation would require suspension to deal with a conductor on another well
  - Potential for significant delays / disruption to rig and platform schedule e.g. have to remove a steam cleaning spread and source conductor recovery equipment (if even available)
- A conductor pulling unit (CPU) is called that for a reason!
  - Designed to handle saws, boring / pinning machines, cut and layout sections with clamps / centralisers etc. Compare that to tightness of space in rig BOP deck
  - Has its own floating 'skid' deck to store equipment and well tubulars
  - Jacking system - ability to apply high pulling force at surface i.e. up to 460klb in controlled manner
- Why WellGear?
  - Previous, and very recent, experience and expertise from Brent, Dunlin etc
    - Onshore and offshore, proved to be invaluable in tricky situations that we faced
  - Availability and value

Upfront Preps

- Structural survey and analysis
  - Although two derricks had worked together originally, over the years significant degradation of steel work had occurred. Approval was given but only with main rig and CPU operating in separate modules
- Electrical supply
  - Decision taken to power the spread from platform power - to enable this dedicated power supplies and cable runs installed
  - Collaboration – b/w EnQuest electrical and WellGear to meet required schedule
- Fabrication
  - Two major scopes of fabrication completed to enable project to successfully launch
    - 150 ton floating skid deck
    - Upgraded substructure to enable clamp recovery
- Partial removal of conductor guides
  - Enabled conductors with clamps to pass through



Three Campaigns

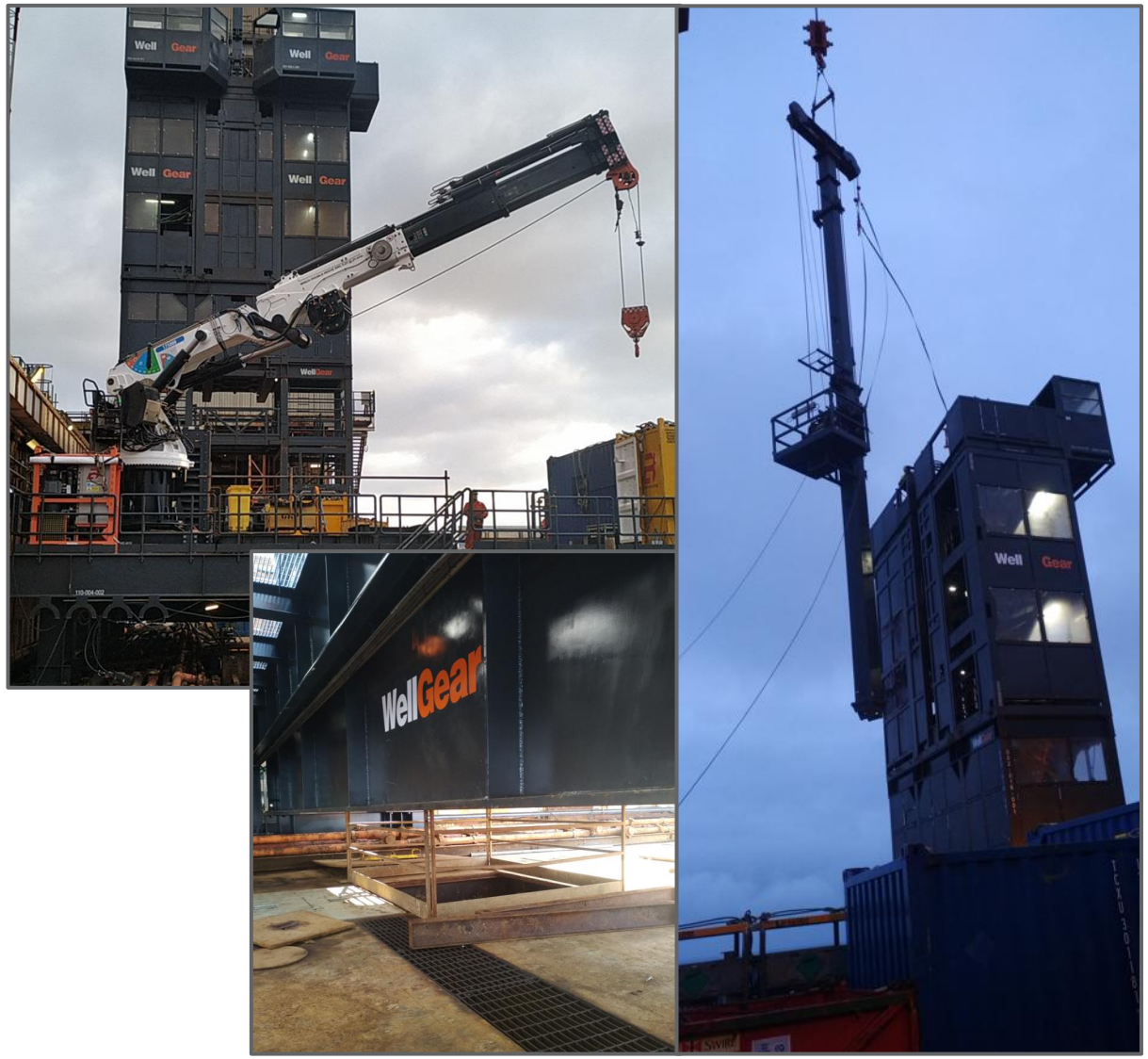
- **Campaign 1 - July to October 2023**
  - PO issued end April - 9 wks to design, fabricate and mobilise – tight turnaround achieved
  - Collaboration - b/w EnQuest, SS7 and WellGear to enable DSV / CPU SIMOPS
  - Unit installed in 3 weeks in July
  - Priority - those with structural clamps above first subsea guide
    - 18 planned / 7 achieved
- **Downmanned for winter – November 2023 to late April 2024**
  - Project POB priorities, expected winter weather, pre- main rig intervention campaign
- **Campaign 2 - May to September 2024**
  - Install Brimmond crane April 2024 prior to ops
  - Operations then removal of unit in September
  - Protect main rig schedule (Ph1 / Ph2 priority), avoid unit move in winter
  - 16 planned / 11 achieved, 1 outlier @ 23 days
- **Campaign 3 - October 2024 to April 2025**
  - Unit modified onshore then reinstated on south side
  - Wait for main rig to finish operations on leg
  - 17 planned / 13 achieved (including 5 of 6 in leg)
- **Overall**
  - 31 conductor removed by CPU with many lessons learned for remaining 14 with main rig
  - 30”, 20”, 13⅜” recovered to either first, second or third subsea guide

General Challenges / Surprises

- Weather – 2 trip system needed 36hrs to POOH cutter, RIH anchor, remove rigging – particularly Campaign 1
- Weather – unit skid, gin pole, cranes – particularly Campaign 3
- Parted 20" or 30"
- Dive Support Vessel interaction – SIMOPS, fumes
- Unexpected recovery of cut inner strings after dual cuts, despite large O/P applied already
- Unexpected cemented 'D' annuli, particularly those changed in 80s
- Unexpected uncemented 'D' annuli - recovered after high overpull
- Campaign 1
  - inefficiency of running BHAs through the unit (gin-pole 7T rating)
  - dependency on platform cranes
- New single-trip tooling – issues with releasing
- Some 20" casing changed out in 1980s to different weight – required different grapples, not identified till on well
- Online removal of guides were required:
  - damaged conductors or tabs / rings may not pass through on way out
  - importance of good survey of conductors and investigating **any** anomalies or queries

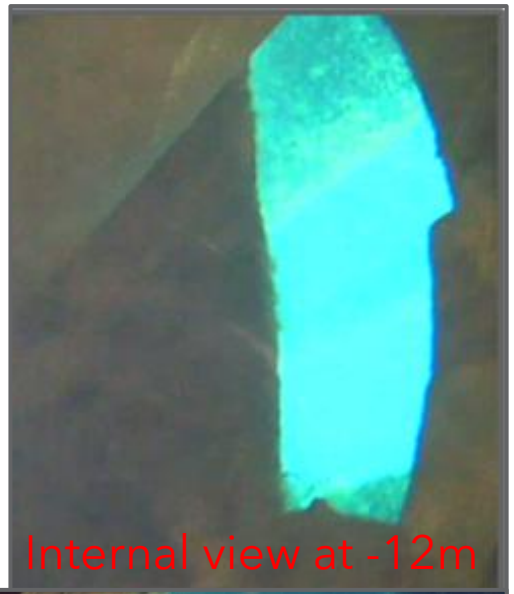
Campaign 1 to 2

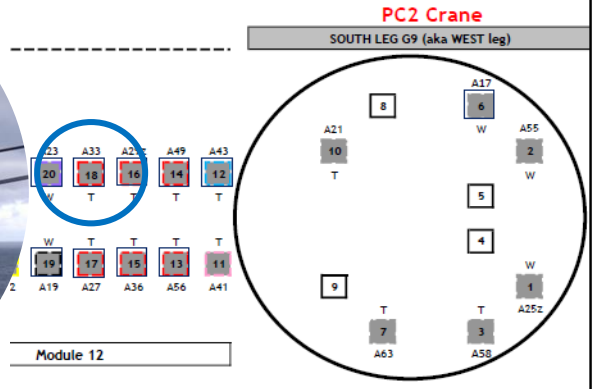
- Lessons / upgrades
  - Minimise critical path time by not going directly to adjacent slot
  - Gin pole increased from 7T to 10T
  - Platform crane dependency
    - Brimmond Crane installation
- Collaboration
  - Commercial proposal to keep unit on platform over winter
  - WellGear engineer allocated to EnQuest office for remainder of project
    - Integral part of EnQuest Wells team
    - Conduit into key people in WellGear
  - Collaborative and helpful discussions b/w EnQuest and Shell on performance of Brimmond crane on Brent Charlie

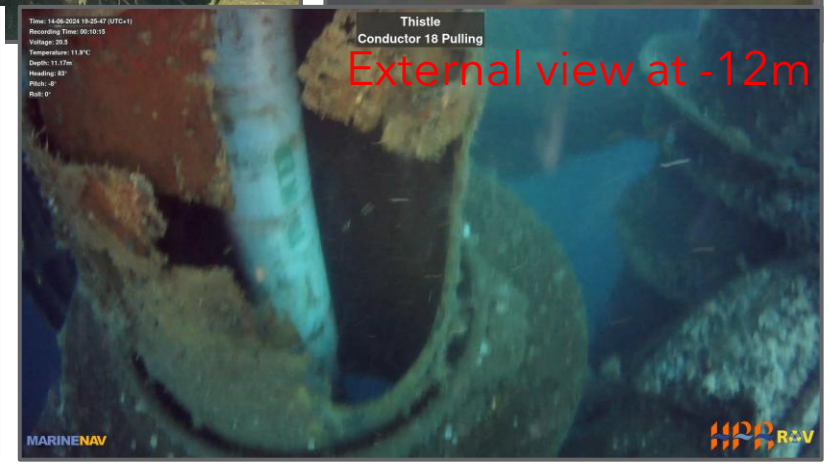


Campaign 2 Challenges – C18 integrity

- Became high priority
- Holed at first subsea guide
- Opportune – during rig CLP right after AB1 / AB2
- Decision to recover in 2 sections
- High pulls required to get through surface guides due to damage
  - Petrofac removed section of guide







Campaign 2 Challenge – ROV Position

- ROV observing wrong guide during cut!
  - believed we had a completely failed cut
  - in reality knives had not cut through straps which run through guide and joined clamp halves together
  - Once situation clear then clamp strap was parted with overpull applied
  - Subsequently increased sweep of knives from 36″ to 42″ to ensure straps are fully cut

Campaign 2 Lessons

- Move to tension recovery from top for welded conductors with clamps based on built-up experience and knowledge
  - Took test pull and recovered in tension, no sacrificial string
  - Significantly quicker, safer and less reliance on weather window
- Section milling not required – used cutter to remove 3ft interval of 13⅜" casing for 20" and 30" cuts worked well (triple-string recovery scenario)
- Better focus on communication to ROV operator on position of cut!
- Once established that a 20" x 30" was fully cemented - took opportunity to reduce quantity of boring / pinning

Upgrades / Lessons - Campaign 2 to 3

- Modification of rotary table
  - Enable pass through of 54.5” full-circle centralisers (donuts) on platform leg wells all located in the pile sleeves
- Windspeed limit for moving unit - engineering kicked off, enabled a change from 29kts to 38kts
- Struggled to make up sacrificial casing in wind
  - ran casing deeper into unit
  - new frame in workbasket made to support casing, chain-tong tight then pick up to make up properly

Campaign 3 Challenges – C14

- Damage at -40ft guide observed, didn't affect recovery
- Conductor slipped down over anchor (on sacrificial casing)
  - Suspected conductor condition / debris-packed slips / weld seam
- 13⅜" sacrificial string coupling stopped descent, lodged in work basket
- Had to cut guide to enable deformed conductor to pass

Campaign 3 New Challenges - General

- SIMOPS – first real clashes with main rig
  - Many clashes between CPU HW permits (DWS) and breaking containment / circulating on main rig
  - Main rig service lines on skid deck required removal for centre slots - downtime on both rigs
- Grout tubes – lessons learned for main rig campaign

Collaboration

- EnQuest & WellGear – how did it go?
  - Straightforward / conventional contract
    - Supplied 3rd party kit, also supplied kit for main rig programme
  - WellGear engineer embedded in EnQuest team supported by base
    - Writing regulatory submissions and programmes
    - Conduit into key people at WellGear
    - Pro-active approach to challenges
  - Developed respect for, trust in, and reliance on, WellGear
    - Weekly service / cost review,
      - open and honest discussion on issues, resolved at the time
      - cost trackers signed off in timely manner
      - invoicing and payment straightforward
  - Took a big-picture approach to dealing with commercial challenges to enable the focus to remain on the technical challenges of conductor removal

Key Lessons

- Collaboration and common goal
  - onshore / offshore / wells / asset / service partners / JV
  - one-team approach - wouldn't have worked otherwise
- Interrogate the 1985 telex – don't assume anything!
- Expect the unexpected!
- Team resilience – it isn't easy! 6pm one Sunday night – both CPU and main rig stuck!
- CPU – the right tool for recovering conductors
- Guides and conductors designed to go south only e.g. flat-bottomed guides!
- Regulatory status – is the safety case right for the stage you're at
- SIMOPS – review and consider all scenarios upfront if poss..
- Value of the right technology e.g. cameras
  - SeaSpy and Spyball for annuli and casing internals
  - Suitcase ROV – HPR
    - Game-changer for conductors and asset inspections

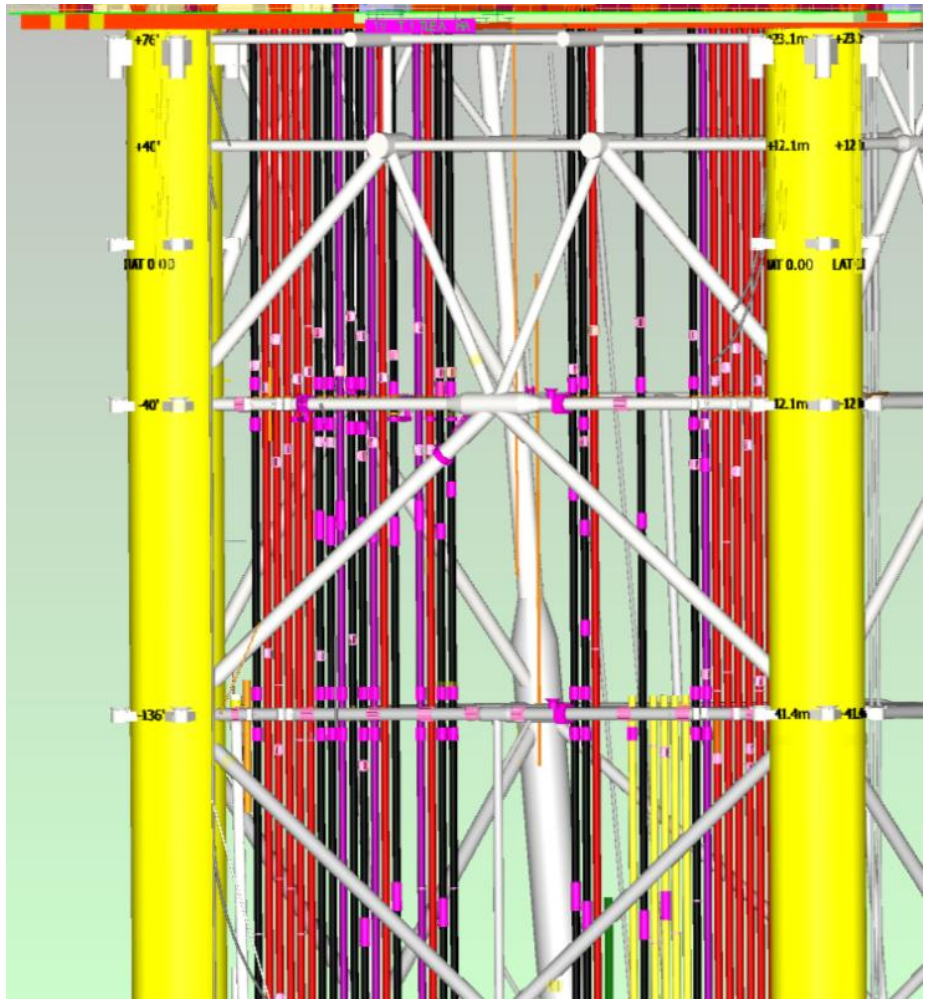
DATE : 5TH AUG 1987

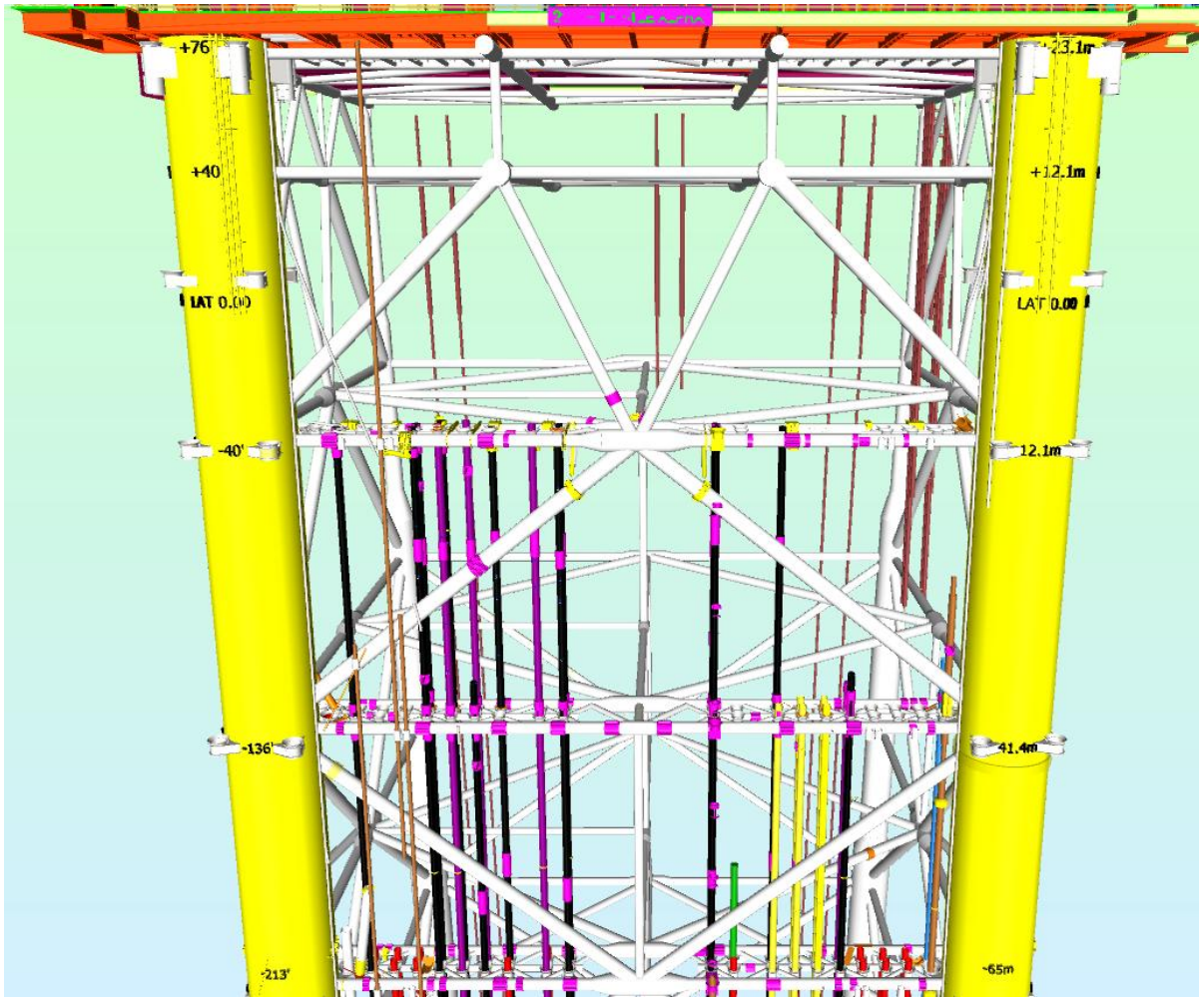
SUBJ : PRODUCTION WIRELINE + COMPLETIONS REPORT 5-8-87

SLOT 34 CASING REPAIR/DUAL COMPLETION

0600-1800 R/U + RUN 20'' PATCH + 20'' CSG INSTALLING CENTRALIZERS AS PER BRITOIL PROGRAMME: TACK WELD 1'' WELD 1'' CMT LINES TO CENTRALIZERS AS CSG RUN
1800-2030 M/U 20'' SPEAR ASSY + LAND 20'' CSG: P/U 25K O/PULL TO ENSURE GRAPPLE ENGAGED
2030-0230 M/U + P.TEST CMT LINES TO 1000PSI: ESTABLISH RATE/PRESS RATIO THROUGH LINES BEFORE CMTG. CMT 30''/20'' ANNULUS AS PER PROGRAMME. CLEAN + R/D CMT LINES
0230-0600 CONSTRUCTION WELD SECTION BETWEEN 30'' + 20'' BASEPLATE AS PER PROGRAMME

Jacket pre-CPU and post-CPU

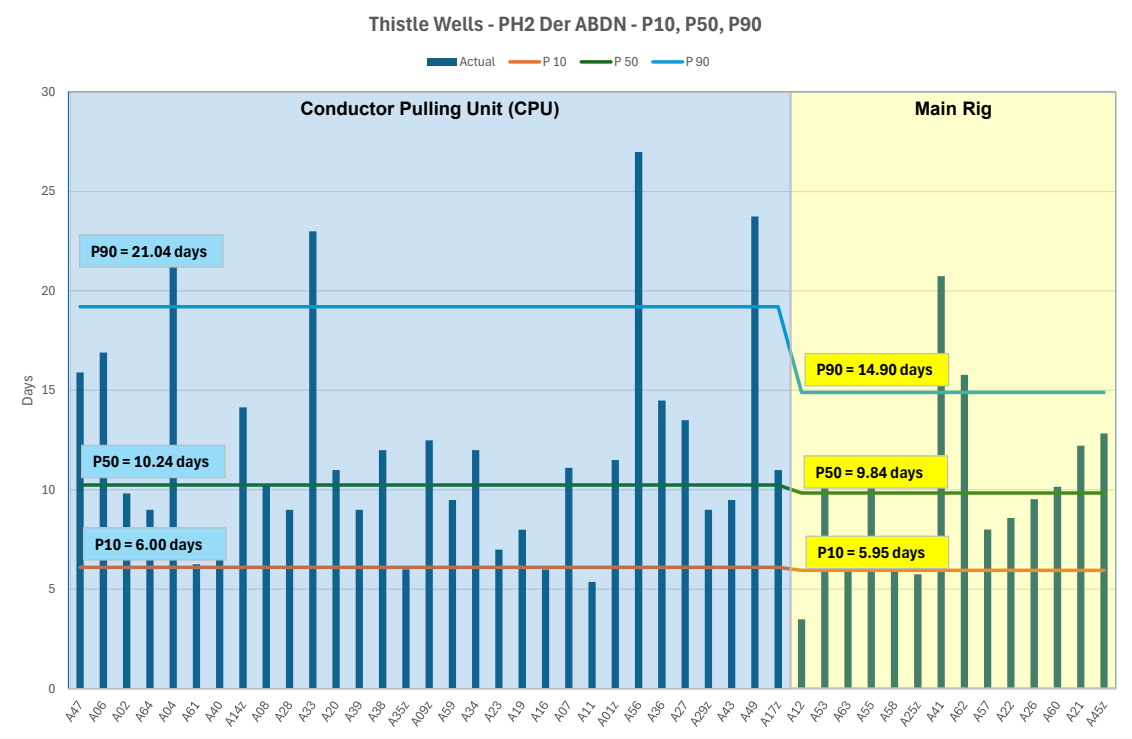




Thistle Alpha – CPU conductor campaign

Key Stats

- CPU campaign followed by removal of remaining conductors by main rig
- Final recovery carried out September 2025



	Qty	Average days per conductor	Prod	NPT	WoW	P10 (days)	P50 (days)	P90 (days)
CPU	31	12.0	62.2%	20.0%	17.8%	6.0	10.2	21.0
Main rig	14	10.1	63.6%	31.7%	4.7%	6.0	9.9	14.9

Thank you