



Welltec®

Baker Hughes 

**Archer**

# Brage Fishing Operation

A successful cooperation

2022/08/31

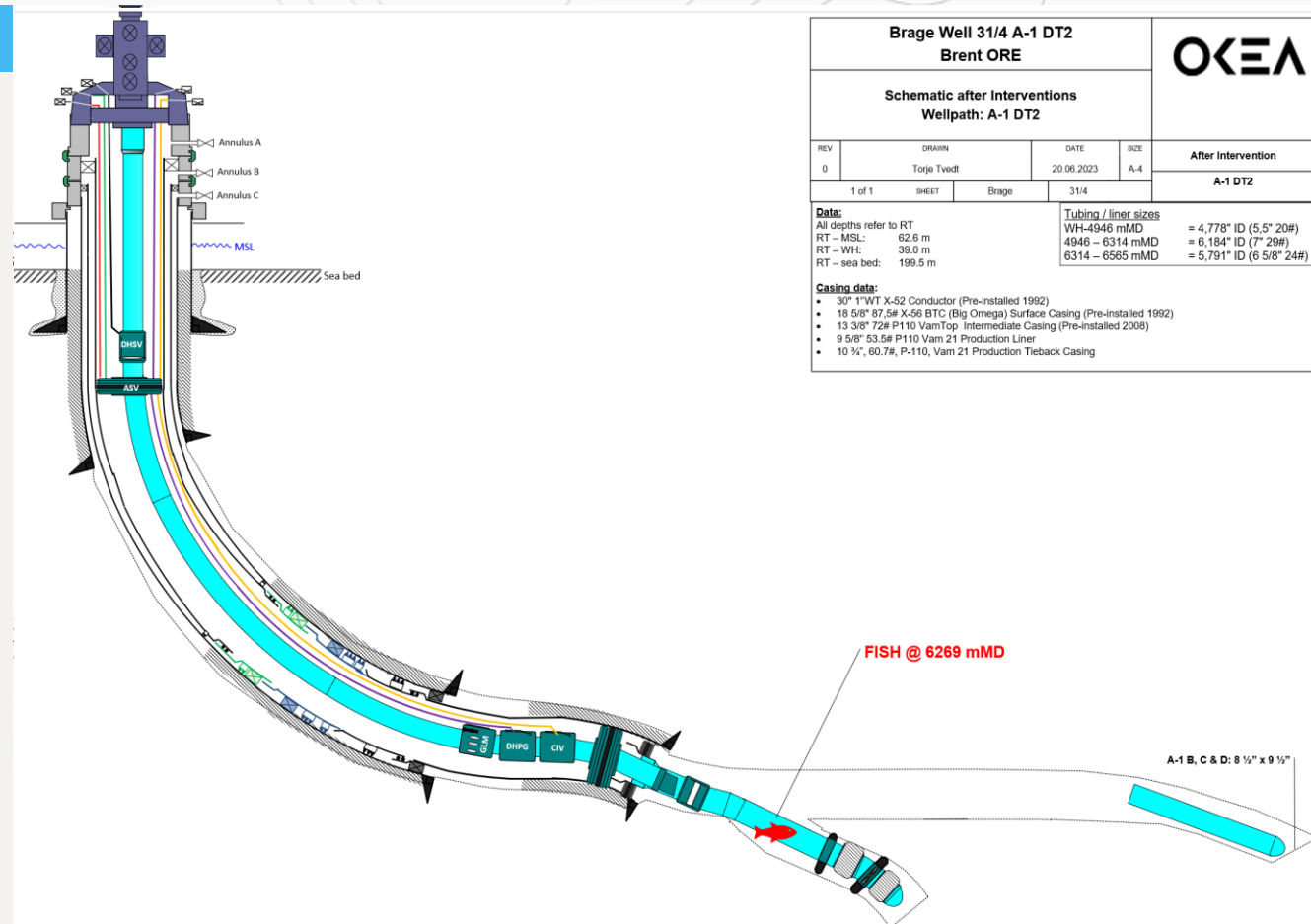
A light blue background with a white topographic map overlay. The map shows contour lines and a network of lines, possibly representing a river or road system.

## ➤ 1. Well History and Status

# Well Status – well history

## Well History

- Drilled and completed Q3 2021 (slot recovery)
- High water production, believed to be from the toe of the well
- Intervention performed April 2024; Install deep set HEX plug
  - Lost most of the oil production
  - Observed sand production



# Well history – attempt to pull plug

## May 2024 Intervention to pull HEX plug

- 1st attempt not successful
  - High friction and limited force available
  - Limited rig up height (13m +)
  - Not able to reach depth of fish

# Well history – attempt to pull plug

## May 2024 Intervention to pull HEX plug

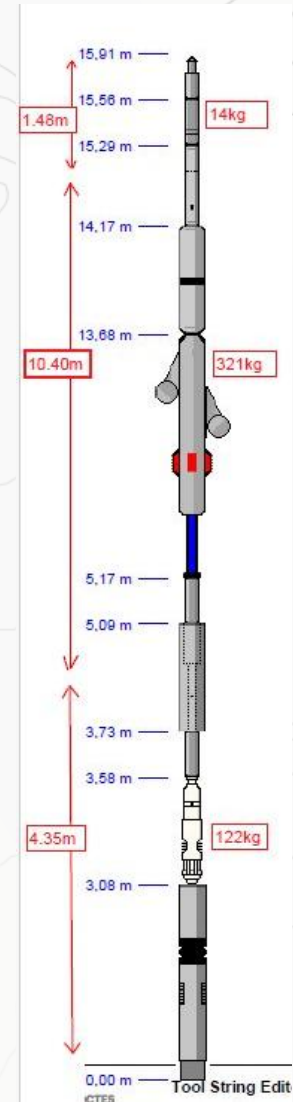
- 2nd attempt– fish in well
  - PRIME compact tractor/stroker
    - 40% shorter (7.25m vs 13.4m)
    - Space for xtra drive section
    - Bi-directional force of 16T
    - Configurable stroke length / 10" and 20"
    - Configurable anchor reach / covers full completion range
  - Released plug
  - Not able to push plug into rathole
  - High friction moving plug upwards (stroker and production) -> stuck
  - Timer activated release subs in BHA, no-go to release
  - Injected inhibited drill water into well to move sand and/or manipulate the release sub
  - Cable breakage – fish in well





# Fish - details

- The top of fish was located at 6269 m MD before bull-heading to release cable. How long the fish has moved down is unknown.
- Unknown location of the 15-20 m piece of SS wireline cable.
- The stainless-steel cable is not magnetic.



# Information prior to fishing operation

## Unknown factors prior to fishing operation

- State of plug
  - Partly retracted slips/element?
- Sand in well
  - Location and amount unknown
  - Friction
- Location of cable
  - Alongside fish?
  - Birds nest above?
- Condition of fish
  - 3 parts?
  - Fishes stacked or in parallel?



## ➤ 2. Fishing Operation - planning



# Fishing operation through drilling rig

- Well intervention through drilling rig
  - Extended rig up height for more tractor force and space for retrieving fish
  - Drilling operation paused
  - High day rate
  - Important with robust planning
    - Plan for an efficient fishing operation
    - Contingency plans in place

# Planning – key to success

## Integrated planning

- Close cooperation with Welltec, Baker Hughes, Archer and Interwell
  - Planning workshop face to face
  - Trust and open communication
  - Common goal
  - Mapping of
    - Well history
    - Data from previous interventions
    - Fishing scenarios
    - Contingency plans
  - Decision tree based on
    - Onshore SIT
    - Finding camera run
    - Result of each fishing run



- The proposed sequence of operations is as follows.
  1. Hand over well from Production Operations to Well Intervention.
  2. R/U Altus PCE, 7/16" mono E-line cable on BOP deck.
  3. Run SPACE Focus ultrasonic camera to assess position of fish.
  4. OPTION: Run Wellgrab fishing tool to retrieve upper and middle parts of fish.
  5. OPTION: Run mechanical fishing tool to retrieve cable and cable head
  6. OPTION: Run Power suction tool to retrieve sand or debris on top of fish
  7. OPTION: Run Wellgrab fishing tool to retrieve lower part of fish.
  8. OPTION: Run Wellgrab to retrieve middle part of fish.
  9. OPTION: Run mechanical fishing tools to retrieve part of fish.
  10. R/D all equipment.
  11. Hand over well from Well Intervention to Production Operations.
  12. Rig down and prepare operation at the next well in the campaign.

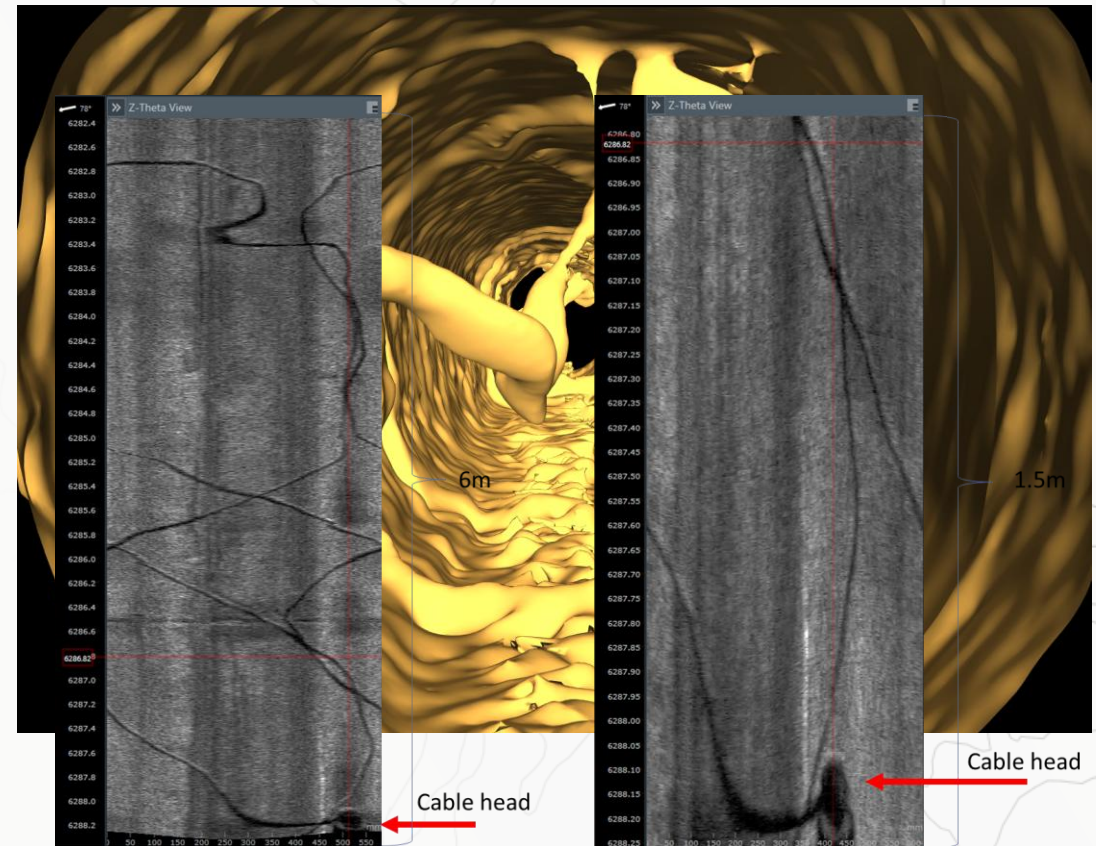


## ➤ 2. Fishing Operation - execution

# Archer Space Focus

## • Highlights

- The Archer SPACE Focus is an Ultrasonics camera tool
- Well proven technology, widely run for years
- Possible to RIH with tractor while logging
- Good visual images from well
- Information important for determining BHA setup for first fishing run
- Quick response on logging results
- Overpull first 8-10 m when POOH, i.e indication of loose top fish
- Cable on top of fish



# Tool functionality

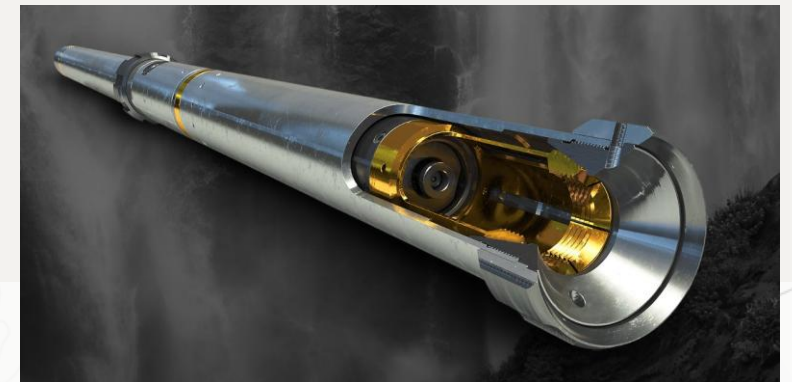
## WellGrabber

- A versatile claw tool designed to efficiently retrieve loose items from the wellbore, ensuring unobstructed access.
- Recovering debris and other objects that hinder wellbore access.
- Wellbore ID and fish OD can be measured to determine correct engagement area
- The “biting” force on the fish can be adjusted to secure proper engagement.



## Welgrab (HEO – High Expandable Overshot)

- Able to grip on fish neck with wireline cable OR at any other section of the fish.
- Adjustable grip with real-time measurement of grip ID -> Verifies latch on fish.
- HEO allows "swallowing" over large OD and "bite" on a designated area – long overshoot section
- Can accurately measure OD to confirm correct engagement area
- Grabbing range 1,5” – 3,2”

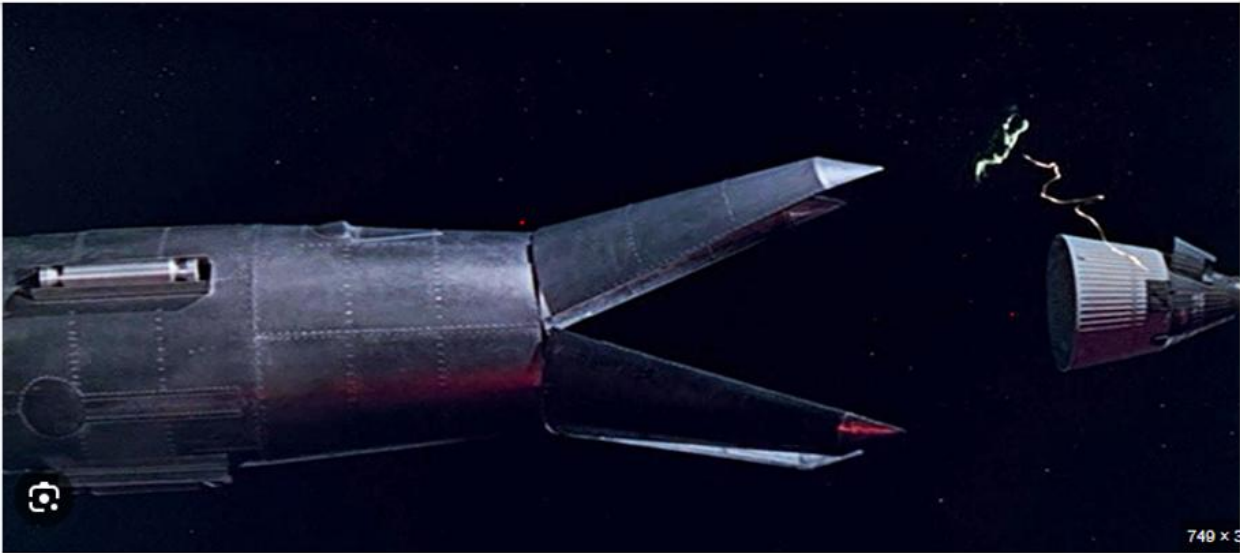




# WellGrabber fishing



Brage 2024



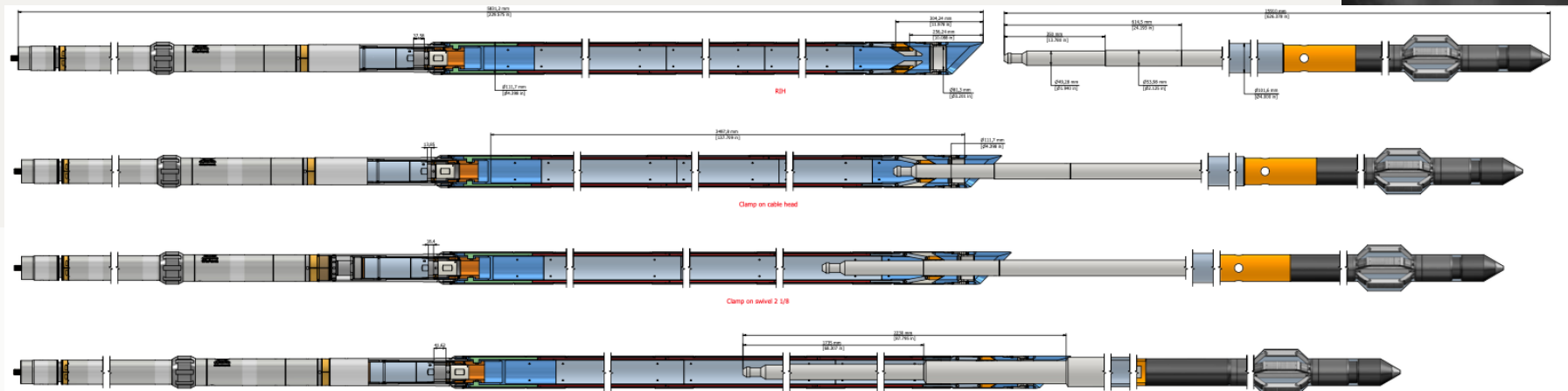
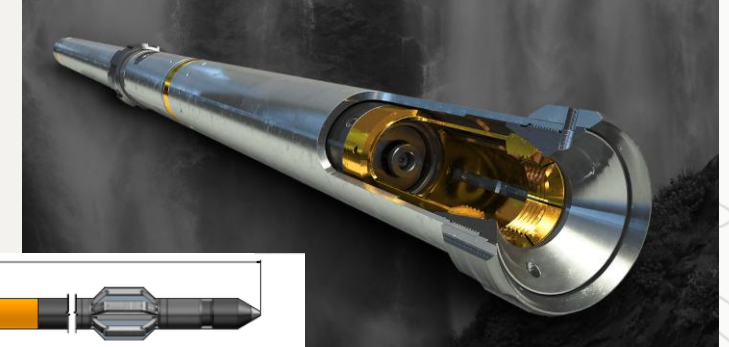
You only live twice, 1967



# Welgrab (HEO – High Expandable Overshot) fishing

## • Highlights and learnings

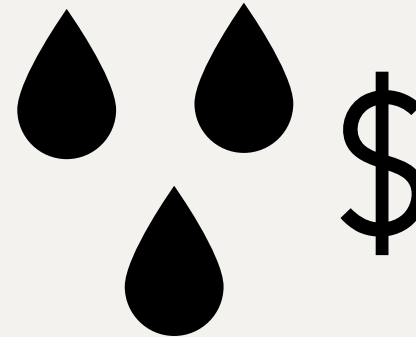
- Topside readout of grab position, can confirm fish in grab prior to POOH
- Successful fishing of middle and lower fish
- Good discussion and risk session upfront of operation
  - Risk of tractor failure and possible trouble pulling through WL entry guide
- Overpull through entry guide and nipple profile
- Confirmed lower RSS had never released



## ➤ 3. Result

# Result

- Well back on production
  - Oil rate +/- back at same rate as before plug installation
- Sand production still present -> reduced
  - Future challenges as lower zone waters out?
- Important well for the asset (7<sup>th</sup> best producer)





*Thanks for your attention!*



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