

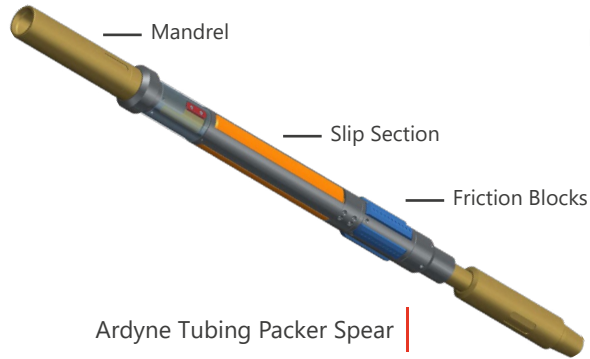
NEW TUBING PACKER SPEAR DESIGNED, BUILT & RUN IN 69 DAYS

Designed to back off & recover light fish with an easy set / release mechanism



Ardyne were approached by a Norwegian O&G Operator in 2020 to tender for a PP&A campaign which included 21 annular safety valve (ASV) retrievals.

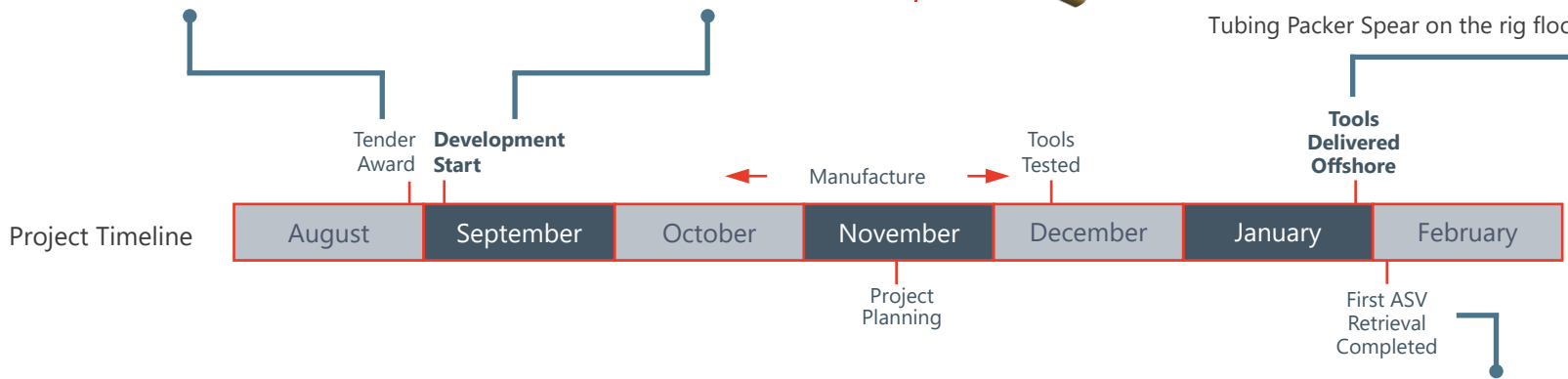
A newly designed spear to set in 5 1/2" was proposed to be developed to address the operational challenges.



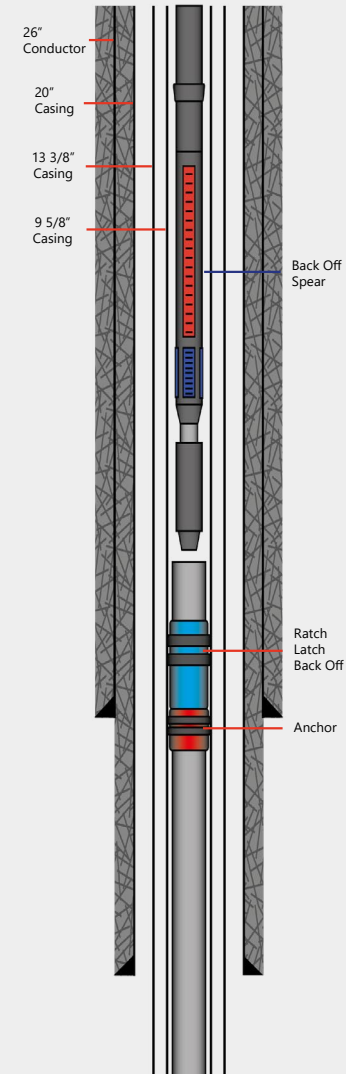
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Tubing Packer Spear on the rig floor



Back off & retrieve annular safety valve



Operational Requirement	Ardyne Solution
Engineered to accommodate light fish & low backoff torques	Slip & cone design allow for high radial forces with minimal overpull to minimise friction on threads during backoff operations
Large contact cross sectional area	Significantly larger than competitor spears to minimise contact pressure on casing to be pulled
Mechanical set & release slips	Rotate string to the left & pick up to set spear. Rotate string right to apply backoff torque. To release spear simply slack off string & rotate to the right
High torque capacity capable	Up to 13.5 kN.m

Operational steps:

- Apply overpull of 14 Tonnes to the string
- Reset overpull to 3 Tonnes
- Rotate the drill string right hand, torque increased to 2-3 kN.m
- Increase overpull to 7 Tonnes & continue to turn drillstring
- Wt decreased by 0.5 Tonne per rotation
- After 15 turns overpull fell off & the fish was free