

Operator Conducts Successful Multi-Well P&A Campaign in the North Sea

BARAMAG® SWARF SEPARATION AND RECOVERY UNIT EFFECTIVELY HELP TO REMOVE OVER 95% OF SWARF

NORTH SEA, UK

CHALLENGE

- » Avoid HSE exposure of swarf handling and containment
- » Find a reliable way to recover swarf and enable re-use of milling fluids
- » Minimize rig-up and rig-down time at multiple wells
- » Prevent equipment wear and tear

SOLUTION

Engineered at-surface solution included the BaraMag® Swarf Separation and Recovery Unit and BaraMag Flow Diverter for:

- » Quick rig-up and rig-down of flow head
- » Efficient and cost-effective swarf recovery
- » Safe containment into a collection skip for transport and disposal

RESULTS

- » Eliminated waste by recovering >95% of swarf
- » Zero HSE incidents and no service quality concerns

OVERVIEW

A major operator contracted Halliburton Baroid to assist with a Plug & Abandonment (P&A) campaign offshore UK, in the North Sea. The campaign was comprised of multiple wells, which needed a new casing milling technology to enable re-use of milling fluids (free from swarf)—without incurring HSE hazards or costly rig-up time.

The Baroid separation solutions team recommended the BaraMag® Swarf Separation and Recovery Unit for this P&A project. Designed to provide safe and effective handling of swarf, it removes ferrous metals from fluids while milling casing; thus, minimizing harmful impact on offshore equipment. Deployment proved successful in recovering over 95% swarf, while also avoiding non-productive time (NPT), HSE incidents, and service quality issues.

CHALLENGE

The operator's key objective was to separate and contain the swarf material in collection skips to be carried away and disposed of. Failure to remove these harsh metallic particles can lead to excessive wear and tear on rig surface equipment; contaminate drilling fluids; and expose personnel to health, safety, and environmental (HSE) risks. Removal of swarf from milling fluid requires a reliable and efficient means of separation at surface to ensure successful operations. In this case, traditional solids-control shale shakers would be inadequate given the large quantity of swarf to be removed.

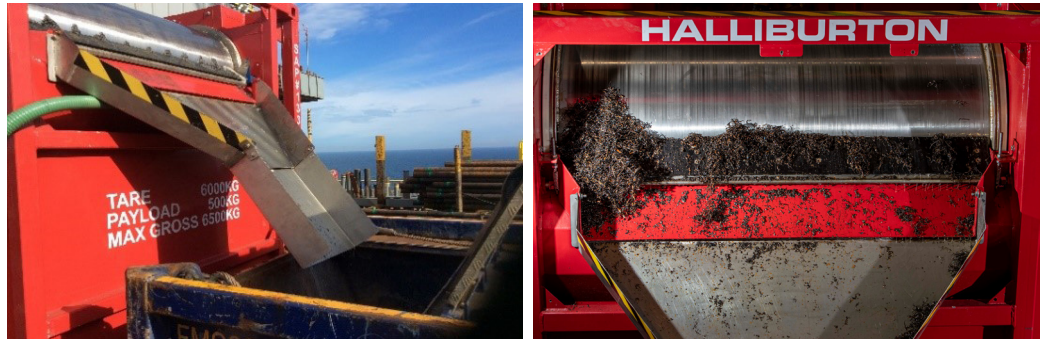


Shows BaraMag unit in the yard (left), and Halliburton Baroid team operating the unit on the rig (right)

SOLUTION

The BaraMag Swarf Separation and Recovery Unit was identified as the optimal solution due to its effective removal of particles and strands of ferrous and ferromagnetic metals from drilling fluids when conducting operations, such as milling, abandonment, slot-recovery, or side-tracks. This is accomplished in two stages via mechanical and magnetic means:

- » Return flow from the well passes through the unit, with the first stage capturing the majority of the swarf and discarding the material into a collection skip.
- » A second separation and polishing stage removes fine to ultra-fine magnetic particles that may still be entrained in the fluid.



Shows the BaraMag system in action with discharge chute positioned over a skip (left), and a close-up of recovered swarf (right).

RESULTS

In the first phase of the campaign, eight wells were plugged and abandoned, with a total of 18 sections milled in the wells; wherein, the BaraMag unit was rigged up and rigged down. The BaraMag® Flow Diverter was also employed for each milling job. A rig-up time of 24 hours (simultaneously with rig operations) ensured that the operator met the timeline requirements of their P&A program.

The main accomplishments were:

- » Total of eighteen runs
- » Total >2,750 ft. casing milled, with >45,000 kg of metal recovered
- » >95% swarf recovered and safely contained into skips
- » No HSE, NPT, or SQ incidents

CONCLUSION

This first utilization of the BaraMag system allowed the operator to cost-effectively mill and handle returned swarf on surface without NPT or HSE incidents. The economic value of the returned milling fluid and the minimization of waste were crucial in successful milling and ultimate completion of the P&A job scope, maximizing operator asset value.

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