

REFURBS & UPGRADES

CASE STUDY PACK



ENGINEERING MOMENTUM



Probe has been a trusted supply chain partner for engineering projects for over four decades. In this time, we have worked closely with our clients, building lasting relationships, to enable them to optimise asset productivity and performance.

Manufacturing oilfield equipment is at the core of the Probe offering. We are acutely aware of the demands and deadlines placed on our clients; so we are reliably responsive to their requests to ensure projects are delivered quickly but without compromising quality and safety. Our capabilities also extend to provide a complete aftermarket service for our clients' assets ranging from full in-house refurbishment, upgrade and recertification, even if equipment wasn't originally purchased from Probe. Refurbishing and recertifying existing equipment is a cost-effective and sustainable option for our clients. Any parts can be re-machined to the customers' specifications and back to their original state before being returned for final testing.

Probe's promise to you is always to find a solution to your engineering requirements, whilst delivering momentum to your project. The content of this case study pack provides insight into how we have provided unrivalled results to some of the design, procurement, manufacture and quality assurance challenges our clients have had over the years.

Thank you for taking the time to read this case study pack. We look forward to helping with your project very soon.

David Brennan Managing Director

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CASE STUDY 1

Efficiency of streamlined hub increased

The problem

An oilfield service company approached Probe to complete a full visual and dimensional inspection on a 6" GR-52 streamlined hub c/w 90-degree cushion elbow. The component was badly corroded on all sealing areas and internals.

This was a task for which Probe are ideally qualified, as Dave Good, Technical Sales Manager, Probe, explained: "Probe is not just a manufacturer of components; we have the in-house capability to refurbish and recertify existing equipment. This is a cost-effective and sustainable option for our clients as they look to maximise the life of existing equipment and minimise inefficiencies."

The solution

After Probe's in-house inspectors performed a full assessment of the cushion elbow, the team completed a full inspection report which was submitted to the client for review. The report provided a full evaluation of the condition of the component which included tolerance tests and visual findings.

Probe also recommended a procedure and refurbishment process to reinstate the equipment into an operational condition. This review was well received by the client and subsequently it was decided to refurbish and streamline the cushion elbow, rather than manufacture a replacement item, as this provided a more cost-effective solution. The approach also enabled a solution to be delivered to the client's short operational deadlines.

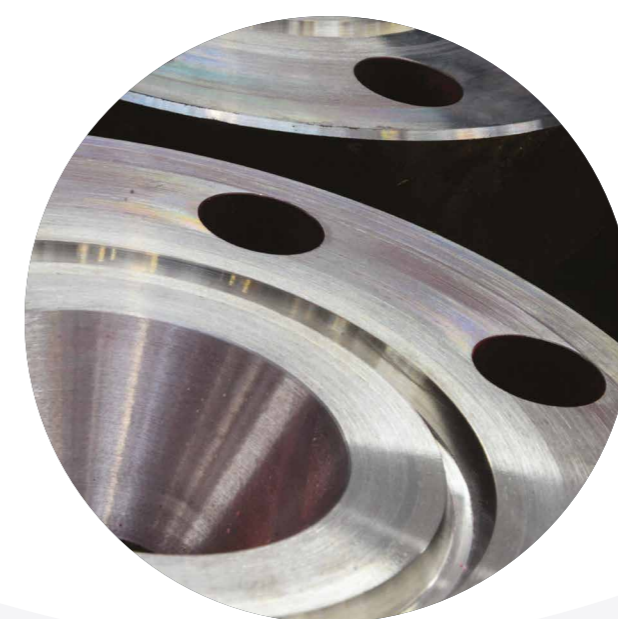
"As part of the refurbishment, all the sealing surfaces were rough machined to oversize allowing an Inconel weld inlay to be installed over the sealing area," said Dave Good. "Once this operation was completed the Inconel inlay was machined back to the specification required for the sealing face which ensured that the component still met with the required manufacturing tolerances. The internal areas were then inlaid with Inconel to help prevent further corrosion for when the component will be used in extreme environments."

Once the refurbishment had been completed the item was revalidated with third party certification and pressure tested to the required test pressure. This specification was in accordance with API 6A (20th Edition, NACE MR-01-75) and the client's requirements.

The result

Probe provided a full in-house inspection, recommendations, refurbishment, machining and testing service. All components were fully recertified to the specified requirements and the final product was supplied painted to the client's design expectations and requirements.

"The ability of Probe's multi-skilled team to provide a full cost-effective solution in the required time frame was particularly valued. We are now looking at other systems that could benefit from Probe's refurb and upgrade service to further increase operational efficiency of our components."



CASE STUDY 2

Choke manifold refurbishment & recertification

The problem

When a client contacted Probe requesting a complete full visual and dimensional check on a choke manifold system they owned, from experience the Probe team knew this system would require a complete strip down of all component parts, followed by an inspection, and repair/replacement of those parts as required.

During the inspection process, it was confirmed that a vast amount of the sealing areas had corrosion/surface pitting and the actual valve seats also showed signs of pitting and corrosion. This was causing leak paths past the valves when closed.



The solution

Prior to starting the refurbishment of the choke manifold, a detailed inspection report was formulated and submitted to the client for review. Even though recommendations on how to get the equipment back into service included manufacturing new component parts, we agreed with our client that we would refurbish most of the damaged components of the choke manifold as we felt it was both achievable and the most cost-effective way to resolve the leakage paths. This also aided the customers operational deadlines without compromising on the quality.

Once the choke manifold and refurbished component parts had been re-assembled, a final pressure test to the system was completed. This included bidirectional pressure testing on each valve to ensure its integrity. Recertification was subsequently completed by a third party vendor.

Steven Blake, Operations Manager, Probe, said, "All the sealing surfaces were rough machined to oversize allowing an Inconel inlay to be installed over the sealing area. Once this operation was completed, the welded inlay was machined back to the specification required for the sealing face ensuring that they still met with the required manufacturing tolerances. The internal areas were then inlaid with Inconel to help prevent further corrosion.

"There was a requirement for Probe to remanufacture the choke manifold valve seats and sealing rods as we needed to ensure that the valve integrity could be achieved during operations. Having to manufacture these items separately did not compromise the project timetable. Once all refurbished and new components were made, the manifold was revalidated with third party certification and pressure tested to the required test pressure. The specification was in accordance with API 6A (20th Edition, NACE MR-01-75) and the customers' requirements."

The result

Probe provided a full in-house inspection, recommendations, refurbishment, machining and testing service for our client's choke manifold. All components were fully recertified to the specified requirements and the final product was supplied painted to the client's design expectations and requirements.

“Probe’s vast experience of this type of work proved invaluable in revitalizing our system with a solution that was both of high quality and will optimise the choke manifold’s productivity and performance. Their team provided a seamless service and responsive approach and we are very happy with the result.”

CASE STUDY 3

Refurb solution extends life of equipment

The problem

An oilfield service company approached Probe to complete a full visual and dimensional inspection on a 13 5/8" - 5000 Bowl - 7100 Tall. The component was badly corroded on all sealing areas.

This was a task for which Probe are ideally qualified, as Dave Good, Technical Sales Manager, Probe, explained: "Probe is not just a manufacturer of components; we have the in-house capability to refurbish and recertify existing equipment. This is a cost-effective and sustainable option for our clients as they look to maximise the life of existing equipment and minimise inefficiencies."

The solution

After Probe's in-house inspectors performed a full assessment of the drilling equipment, the team completed a full inspection report which was submitted to the client for review. The report provided a full evaluation of the condition of the component, which included tolerance tests and visual findings.

Probe also recommended a procedure and refurbishment process to reinstate the equipment into an operational condition. This review was well received by the client and subsequently it was decided to refurbish and streamline the 13 5/8" - 5000 Bowl - 7100 Tall, rather than manufacture a replacement item as this provided a more cost-effective solution. The approach also enabled a solution to be delivered to the client's short operational deadlines.

"As part of the refurbishment, all the sealing surfaces were rough machined to oversize allowing an Inconel weld inlay to be installed over the sealing area," said Dave Good. "Once this operation was completed, the Inconel inlay was machined back to the specification required for the sealing face, which ensured that the component still met with the required manufacturing tolerances. The internal areas were then inlaid with Inconel to help prevent further corrosion for when the component will be used in extreme environments."

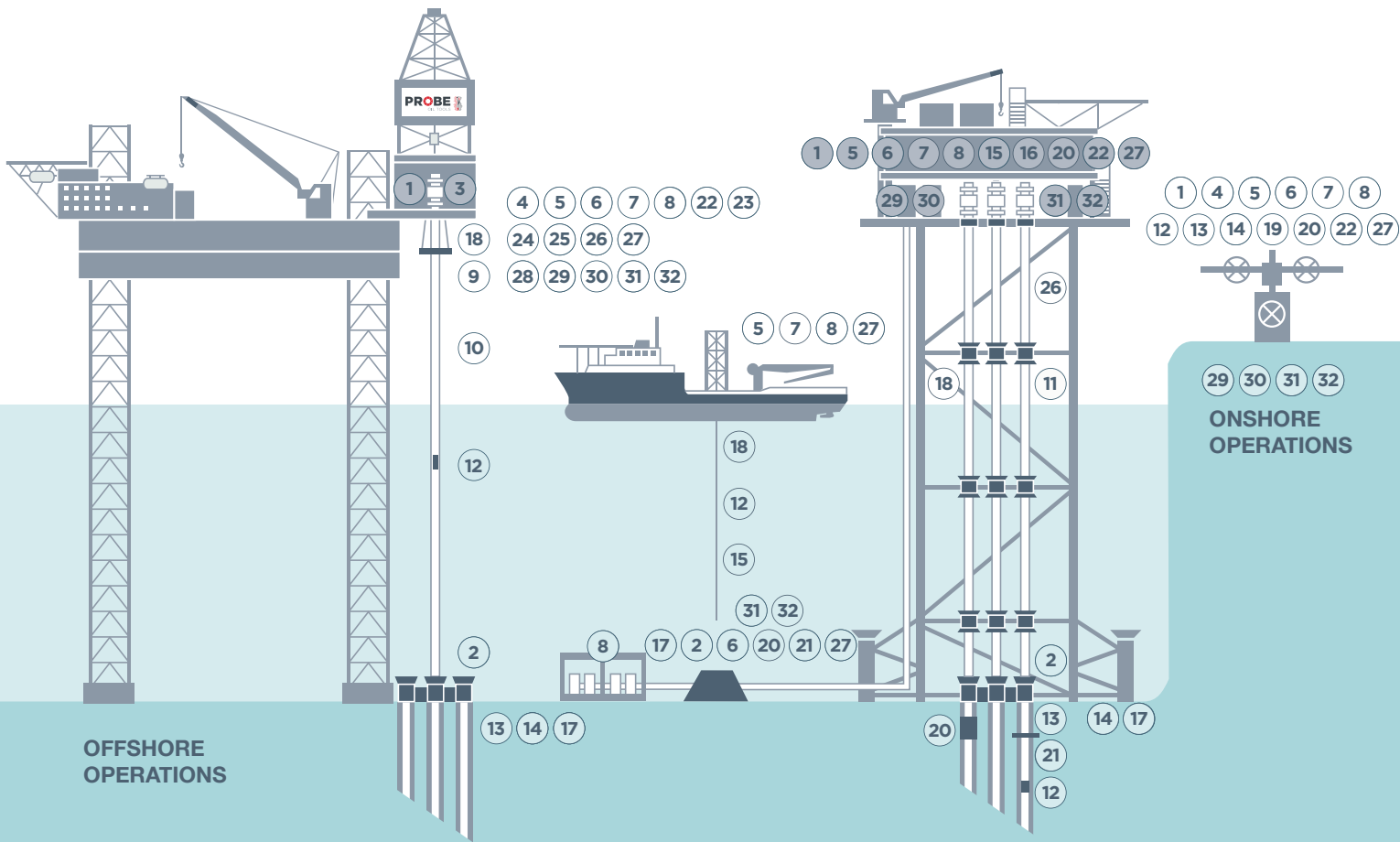
Once the refurbishment had been completed, the item was revalidated with third party certification and pressure tested to the required test pressure. This specification was in accordance with API 6A (20th Edition, NACE MR-01-75) and the client's requirements.

The result

Probe provided a full in-house inspection, recommendations, refurbishment, machining and testing service. All components were fully recertified to the specified requirements and the final product was supplied painted to the client's design expectations and requirements.

"The Probe project team were very flexible and able to respond quickly to our requirements. They brought with them a positive attitude to problem-solving and their recommendations to refurbish our equipment saved us time and money."





OFFSHORE OPERATIONS

ONSHORE OPERATIONS

- | | | | |
|---------------------------|-----------------------|---|--|
| 1 Surface wellheads | 9 Tension rings | 17 Subsea offset adaptors | 25 Tubing & casing crossover subs |
| 2 Subsea wellheads | 10 Drilling riser | 18 High pressure high temperature riser | 26 Pup joints |
| 3 Wear bushings | 11 Marine riser | 19 Frac head | 27 Lift subs |
| 4 Drilling spools | 12 Flow control tools | 20 Instrument flange/test caps | 28 Rotary connection repair |
| 5 Surface trees | 13 Casing hanger | 21 Test plugs & running tools | 29 Casing connection repair |
| 6 Diverter spools | 14 Tubing hanger | 22 Chiksan pipe | 30 Tubing connection repair |
| 7 Double studded adaptors | 15 Lubricator | 23 Drifts | 31 Wellhead repair & maintenance |
| 8 Choke & kill manifolds | 16 Wellhead desander | 24 Rotary crossover subs | 32 Pressure equipment repair & maintenance |

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