

CHALLENGE

- Inspect customer-designed external lubrication oil system and identify root-cause of low-pressure/flow issue.

SOLUTION

- When a simple flow test indicated the external oil pump was starving for fluid, the suction line size was increased along with removing other inlet flow restrictions.

RESULTS

- After addressing the plumbing issue, the electric-driven oil pump was no longer cavitating and the system performed as designed

LOCATION



SUCCESS IN TROUBLESHOOTING MUD PUMP'S EXTERNAL OIL LUBRICATION SYSTEM

GD Energy Products (GDEP) resolves low oil pressure issue on customers external lubrication system and gets mud pump rebuild project back on track.

Our service team received a call from a drilling contractor who was experiencing a lowpressure issue with their external oil lubrication system. The system was designed by the customer and installed on our GDEP PZ1600 drilling pump. External lubrication systems are utilized to keep the pump properly lubricated while operating at lower RPM's.

Upon performing an initial inspection, it was evident the external lubrication system was not providing optimal oil flow and pressure. To aid in troubleshooting the issue, the customer provided our technician with a schematic of the system which provided important details such as piping diameters, filter micron specifications and relief valve settings.

DEFINING A FLOW PROBLEM

GDEP removed the 1 in. suction hose and replaced it with a 1-1/2 in. suction hose and repeated the bucket test. When it was restarted, the pump ran so smoothly it was almost silent. Furthermore, the oil now filled the 5 gallon bucket in less than 15 seconds, demonstrating that the oil pump was no longer exhibiting cavitation.

GDEP reinstalled the 1 in. discharge line to the main pump and immediately saw 90 PSI on the gauge after start-up. Oil was now bypassing the internal relief valve and had excellent internal lubrication in all areas of the drilling pump, especially within the front six spray bar nozzles, lubricating the cross head and slide area.

DEVELOPING A SOLUTION

GDEP's bonded pistons and valves feature a proprietary urethane blend for extended performance and durability. To measure product reliability, we monitored performance of GDEP's 5" flex-lip pistons along with our full-open, valves and seats. The test was conducted on a drilling rig operating in the that is equipped with GDEP 1600HP/7500 psi PXL pumps.

This was a multi-well, horizontal drilling pad with total well depths over 19,000 feet. Peak pressure recorded over the drilling operations was in excess of 5,400 psi and flow line temperatures were nearly 200°F. Both oil and water-based drilling muds were utilized in the various stages of the drilling operation. A summary of the performance hours is illustrated in the charts on the following page.

DELIVERING SUCCESS FROM TEAMWORK

Thanks to GDEP's creative problem solving, patience and practical thinking, GDEP was able to locate root cause, establish a fix and implement a plan to correct a serious problem for the customer.