

Odessa Separator, Inc.

CASE STUDIES

The following case studies have utilized tubing screens and/or pump screens to deal with sand and/or abrasive issues in the well. OSI is committed to manufacturing quality products and providing technical support to not only the end user, but also to the local pump shop to maximize productivity, profitability, and equipment run time.

Case Study #1

Apache Corporation, N.E. Drinkard Unit. The pumps in this field were seated below the perfs, with all wells having extensive rat hole depths. The field was experiencing both serious formation sand issues and gas interference. This combination was causing major maintenance and repair expense. The initial corrective action taken was the running of pump screens to help combat the influx of sand being pulled into the pump. The desired result was only partially achieved due to the existence of gas. A determination was made to run an OSI 24 foot tubing screen with a long dip tube. This configuration not only allowed for the correct filtration of sand, but also excellent gas separation. It also resulted in very long pump runs, which increased the company's production numbers for the field, while substantially lowering the overall maintenance costs.

Case Study #2

BP America, Windham 128-9 Well. BP was forced to pull the well every six months due to damaged traveling valve or plunger cuts on the pump caused by sand cutting. The rods were also becoming stuck because of sand buildup. These issues were discovered as a result of reduction in the production output and indications on the surface and down-hole cards. The well was designated to pump a maximum of 50 bbls / day at a depth of 11,900 feet. Based on the maximum daily production outlay for the well, the previous configuration of down hole production tools for combating the issue was incorrect. The configuration was not separating the solids adequately and allowed the solids to flow into the pump barrel, which resulted in sand cuts to the plunger and inner barrel surface. It was determined that a new configuration was needed to correct the issue. An OSI 24 foot tubing screen was placed into the hole to filter out the larger abrasives, allowing the smaller, non-damaging particles to become suspended in the production stream and float to the surface. This allowed for better pumping efficiency and production output. Pursuant to the down hole dynamometer cards, the well is currently producing efficiently, with no indications of sand interference or damage.

Case Study #3

Chevron U.S.A., Dollarhide Field. The well experienced problems because the formation was not holding the sand structure. Chevron was forced to run the pump above the perfs and experienced large repair costs due to frequent replacement of barrels and plungers with sand cuts. The sand problems forced the lease operator to lower the rod string 2-3 times per week in order to recoup adequate production numbers. They also experienced some problems with iron sulfide. Chevron decided to run an OSI 15-slot tubing screen to filter out the frac sand, formation sand, and other abrasives, which increased the bypass tolerance on the pump barrel to .009 tolerance. It provided maximum filtration of solids and allowed the smaller particles to suspend to the surface with minimal to no damage to the pump. This resulted in longer pump runs (an average of 2-3 years) and significantly reduced repair costs. Chevron started out running 1 or 2 OSI 8 foot tubing screens but eventually changed to using OSI 24 foot tubing screens in all of their wells. This reduced the period of lowering rod strings to 6-8 week intervals. Chevron considers the tubing screen to be the first line of defense for handling the sand/abrasive issues it faces.

Case Study #4

Yates Petroleum, Southeast New Mexico. Yates experienced problems in this area with sand and abrasives damaging their pumps, resulting in excessive down time and high maintenance expense. They initially placed OSI 8 foot tubing screens in their wells for the filtration of formation sand. They later changed to the OSI 24 foot tubing screens when they became available. The tubing screens have given them longer pump runs, which has resulted in fewer incidents of down time and lower maintenance cost. In some of the wells,

Yates has also experienced instances of gas interference and scale and frac sand problems. Different configurations and slot sizes have been utilized in the wells to correct these down hole issues, with positive results. Although Yates occasionally uses the OSI 8 foot tubing screen in their horizontal wells (running it above the perfs), the greatest corrective results have been experienced with the OSI 24 foot tubing screen, which they run on almost all of their wells in this area.

Case Study #5

Trilogy Operating, Rocker "B" Field. Trilogy had drilled numerous new wells in this area and planned on drilling many more wells in the Rocker "B" Field. They were experiencing severe frac sand, gas, and trash issues, once a well was completed. The pump was placed below the perfs to utilize production and reduce gas interference. After completion and fracturing, Trilogy would have to pull the new well every 3-4 weeks to change out the pump and or rebuild the pump due to plugging and or sand cutting. On some wells, they experienced severe gas interference which reduced the efficiency of the pump and increased production costs. They had substantial rat hole and decided to run OSI 23.5 foot 12 slot Tubing Screens in all new drills. Their pull time on new drill wells increased substantially from an average of every 3-4 weeks to every 6-7 months per well. Trilogy, has since, started running OSI 23.5 foot 12 slot Tubing Screens on all wells in this area and other areas, as their wells are pulled for pump repair or replacement.

Case Study #6

Occidental-Permian, in several fields in the Permian Basin(Dora Roberts Ranch Unit, TXL Unit, Sealy Smith Unit, Frances Unit, El Mar Unit, and various others) has run OSI's 23.5 foot Tubing Screens. They have found that by utilizing the tubing screens they are able to keep their down hole equipment running longer with increased production. Depending on the application, Oxy has run one to two screens in new drill wells and wells where they have reworked their well design. They have also redesigned the well bores of recently purchased fields to include OSI's 23.5 foot Tubing Screens. Oxy utilizes OSI's Tubing Screens, in various slot sizes, to help in cases dealing with frac and formation sand, gas interference situations, scale, and paraffin. Oxy has found that by utilizing OSI's Tubing Screens they are able to reduce their problem well issues and keep these wells on-line longer with a minimum of problems.

CASE STUDY REFERENCES

1. Burmea, John, Chevron U.S.A., Dollarhide Field, Andrews County, Texas and Southeast New Mexico.
2. Gonzales, George, BP America, Windham 128-9 Well, Crane County, Texas.
3. Lanier, Bruce, Yates Petroleum, Southeast New Mexico.
4. Warren, Mike, Apache Corporation, N.E. Drinkard Unit, Southeast New Mexico.
5. Mooney, Michael, Trilogy Operating, Inc. President-Midland, Texas
6. Northcutt, James M., Occidental Permian, Inc. Artificial Lift Specialist Sr.-LS-Midland, Texas