



Case Study 2082

Shallow Vertical Gas Well Cleanout Activities in
Northeast Central Alberta Canada

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Presented by: ADL Oilfield Services

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Case Study for ADL Oilfield Services

Company Profile

Since 2004, ADL has provided expert well stimulation and remediation services, using a precision Stable Foam generating system to successfully complete over 750 vertical and horizontal wells; including injection, disposal and production wells, plus pipeline cleanouts, remediation projects and foam assisted drilling. Major Oil & Gas producers look to ADL as the industry benchmark for generating Stable Foam at surface.

Business Situation

High consumer demand, coupled with a strategic need to sustain long term energy self-reliance, natural gas and tar sands represent the raw fuels of the future. Thousands of new wells are drilled yearly, while thousands more decline in production. A portion of the wells in decline are suffering from residual debris including bitumen, wax, clay and sand, due to formation collapse and also at times, caused by remedial well activities. High well pressures can drive debris further into the formation, with subsequent reduction in productivity.

Clients typically contact ADL Services when conventional methods of well cleaning fail, including: chemical flushing, slick water applications, pressurized gas or hydraulic applications and even re-fracturing.

Technical Situation

The following well case study represents a typical well condition assessed and addressed by ADL Services. The well is listed by location, characteristics and condition. The UWI number and sensitive owner information are withheld. The subject well includes background, description, solutions and objective well production before and after ADL Services intervention.

Well 2082 - Resdeln, Alberta Canada

This shallow, vertical natural gas well was drilled and cased in January 1998, jet perforated in February of 1998 and commencing of gas flow in March of 1998. The ADL field assessment noted the well was experiencing chronically low production leading up to the time of ADL servicing.

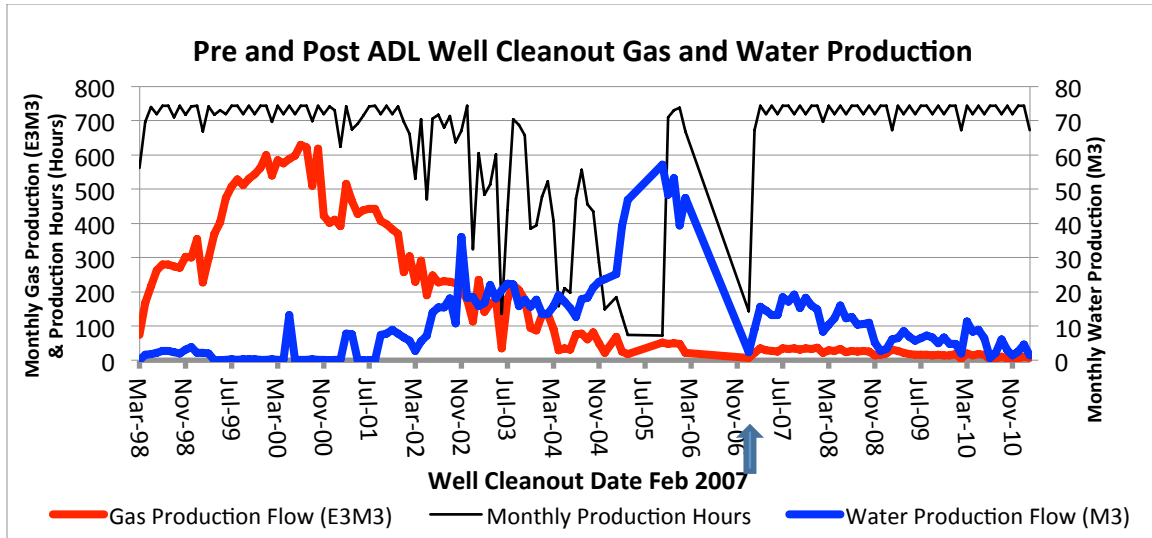
Solution

The ADL Work Design Plan was executed February 2007 including: a structured methodology focused well survey and schematic reviews, work layout targeting foam to the point of need, sampling, safety protocol, work execution, monitoring, reporting and cleanup. Particular well behaviors or personality was determined, allowing for customized foam design (both content and delivered volume), as well as defined the target application. Coil tubing delivered Stable Foam to the designated target area. The foam generated at surface was sampled to assure adequate foam quality. After testing, the foam was delivered at a low rate and pressure to the designated target zone at the predetermined foam density customized specifically for the personality and needs of the well.

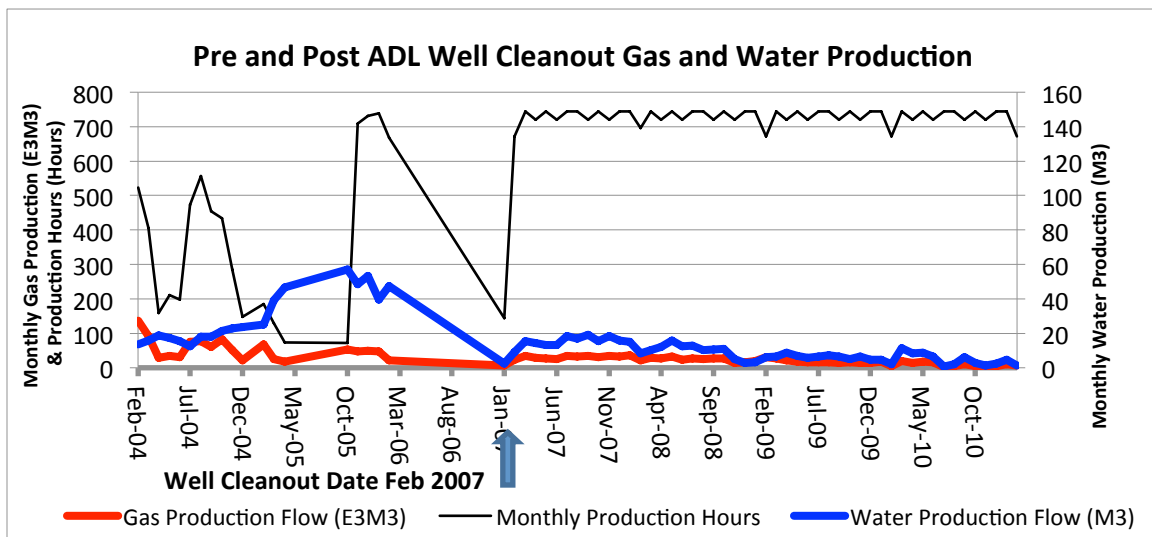
The project Cleanout Report notes reflect Stable Foam extracted 0.300m³ of fine formation sand and mud. Shut In Casing Pressures (SICP) were 150kPa before cleanout and 350kPa post cleanout. Shut In Tubing Pressures (SITP) were 175kPa before cleanout and 350kPa post cleanout. The well was then placed back into production after 8 project hours.

Benefits

The following graph depicts the classic well production arch with subsequent declining production hours through the life of the well. It is evident through the well's midlife, operational disruptions and the onset of water intrusion made this well very unreliable.



A closer examination of the production hours (below graph) shows a remarkable increase and stabilization of well operation. Post cleanout production resulted in a powerful effect on well operational reliability sustaining stable gas flow for over 4 subsequent years.



Return on investment for one project day of assessment and cleanout is substantial, noting the significant rise in sustained operational hours through the present. This client's well production has remained sustained, stable and reliable, not requiring another cleanout since the February 2007 event.

Summary

This subject natural gas well was experiencing steadily declining gas production, due to an accumulation of fine formation sand and mud within the well and formation, coupled with water intrusion, with resulting disruptions on operation. After 8 project hours, Stable Foam removed a total of 0.300 m³ of fine formation sand and mud, returning reliable, sustained gas production for well over 4 years to date.

Therefore, it can be seen consistent operations was regained and sustained.