Case Study:

TAQA PulseEight wireless technology successfully deployed for major operator in Alaska

TAQA's PulseEight ISV / Intelligent Safety Valve restores well integrity with significant increase in well production.

Well Data

Location: Prudhoe Bay, Alaska

Well Type: Land, Oil Producer

Installation Date: 25th December 2020

Prudhoe Bay Alaska was identified as a location for a field trial of TAQA's next generation of PulseEight ISV / Intelligent Safety Valve. This region has a number of wells mandated to have a functioning sub surface safety valve (SSSV) or similar due to proximity to water and/or inhabited areas. If there is no functional SSSV, these wells must be equipped with a storm choke or back pressure valve to permit ongoing production. However, the high back pressure required to ensure functionality of these valves often results in the wells operating below their production potential.

The PulseEight ISV unique capabilities offer the capability to maximize production and still ensure a downhole shut in should emergency events occur.

The Challenge

An operator in Prudhoe Bay had a well which had been shut-in since May 2020 due to high water cut and low oil production. The well was previously operated with ~950psi flowing well head pressure required to maintain the BPV in the open position and for it to close in an emergency situation.

However, this flow rate was insufficient to achieve the desired oil production and reduce the associated water cut. Any attempts to achieve higher flow rates often saw the BPV close without warning and taking a number of days to return the well back to production.

TAQA Solution

In late December 2020, the self-contained, self-powered PulseEight SIV was deployed on slickline thru-tubing and set in a nipple-profile at ~2,200ft. The tool was successfully commissioned after completing a series of simulated well production and well integrity scenarios. After each simulated event, the valve closed as expected and successfully re-opened from surface using a subset of TAQA's wireless telemetry Fluid Harmonics.

The State Regulator, Alaska Oil & Gas Conservation Commission (AOGCC), witnessed multiple commissioning tests of the new technology and approved the well to be put into full production in late February 2021.

The self-contained nature of the ISV also applied to surface infrastructure. The ongoing monitoring of the system utilized existing pressure monitoring tied to the operator's SCADA system which, in another first, permitted secure access globally via a partnership between TAQA & OSIsoft and their PI cloud-based systems.

The interface of data was conducted and commissioned digitally prior to TAQA arriving on location, where it was tied into another 3rd party SCADA system. Real-time data was then visible to TAQA throughout the installation, commissioning and well production stages.

Prudhoe Bay pad wellhouses

Project Results

During initial testing and subsequent well clean-up, the established flowing well head pressure with the ISV installed is ~200psi. A reduction of over 750psi compared to the conventional BPV/ambient valve.

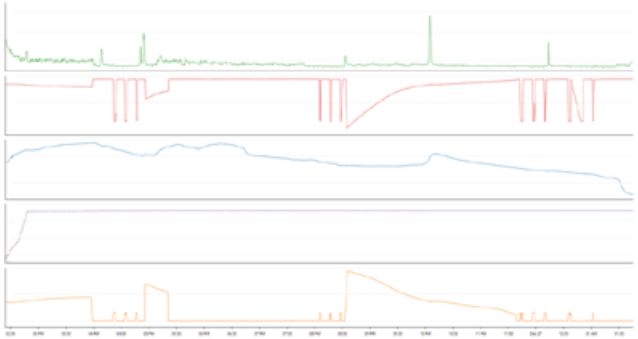
As a direct result, the most recent well test (at time of reporting) recorded a flowing well head pressure of 209psi, with a three-fold increase in total fluids but the associated reduction in water cut (WC) associated with this drawdown saw a near ten-fold increase oil. Longer term, it is expected that the WC will continue to reduce delivering more incremental oil.

The PulseEight isv not only improved well productivity but also improved well integrity and simplified well operations. Function testing has been completed by the operator personnel without issue as a result of training received at time of commissioning.

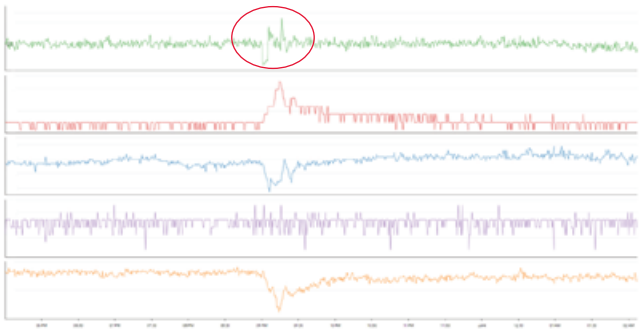
Rig up and installation of PulseEight ISV

The ISV functionality is repeatable, and can be inflow tested or pressure tested from above with no loss of performance.

Ongoing monitoring of the real time data in the cloud is permitting analysis of the system's Vitality Pulse (an embedded signal within the flowing pressures) which gives verification of continued tool functionality.



Real-time monitoring of commissioning function tests



Real-time visualisation of daily Vitality Pulse