Expro Excellence

Digital Well Integrity monitoring drives efficiencies and reduces risk

Safewells

Objectives and background

- OMV Petrom, the largest integrated energy producer in Southeastern Europe is active along the entire energy value chain: from exploration and production of oil and gas, to refining and fuels distribution, and further on to power generation and marketing of gas and power. OMV Petrom's core market is in Romania and has operations across the entire country, with thousands of wells in its exploration and production portfolio
- OMV Petrom's goal was to identify first priority wells for tubing replacement amongst the wells with tubing strings approaching critical limit
- OMV Petrom had been already using the Expro SafeWells well integrity management software and wanted to enhance its capabiity to allow tubing corrosion management in the same application. See Figure 1
- Expro were approached with an overall objective to provide a corrosion modelling software tool that uses existing tubing caliper measurments in conjunction with a calculated and adapted corrosion model able to predict tubing time until failure and percentage of wall loss through time

Expro Excellence

- Expro in conjunction with OMV Petrom developed a visualization software that connected input data points such as tubing parameters, well flow parameters, calculated vertical lift models and further industry standard calculation for multiple corrosion and erosion models with the ability for comparison and learning algorithms from the physical measured tubing logging
- Calculations are intuitively represented on a well depth chart and can be overlayed with the scope of comparing calculated paramaters with measured ones
- In the next step we follow a 3D representation of remaining wall thickness in future time projections typically cycled through 1 week, 1 month, 1 year or a decade. The ability to cycle ahead in time allows the understanding of a predicted failure moment in time and at which depth. Changes to various measured well parameters or projected future parameters additionally provide a visualization of the tubing length critical points. See Figure 2
- Expro delivered introductory in-house software training for the OMV Petrom team who have continued to expand and develop the usage of the Calipersim software and the associated SafeWells software

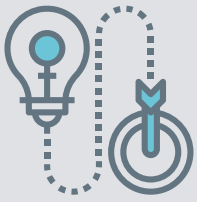
Value to the client

- In conjunction with SafeWells scheduled reports listing the main tubing corrosion parameters are sent from the CaliperSim software into SafeWells allowing easy visualisation of the full well stock. This allows undestanding of tubing remaining life and other important paramaters that affect tubing integrity
- The new reports can be further filtered to obtain priority lists for tubing replacement which was the main objective of this exercise in expanding the functionality of SafeWells
- The value of this tool consists also in continuous improvement of the corrosion model calcuation based on the learning option from tubing caliper measurements uploaded in the application, which further benefits the wells where caliper measurement are not available
- SafeWells and Calipersim are available as stand alone well integrity software modules or as a combined package as used in this instance by OMV Petrom

SafeWells™ WIMS software provided a digital based solution that helped us to manage our well stock, improve our data communication, and enhance planning and efficiency of operations.

The flexibility of SafeWells WIMS software allowed for outputs from the Calipersim predictive corrosion software to generate scheduled corrosion reports to all relevant parties and can play a role in updating MAASP, burst and collapse monitoring within SafeWells™ WIMS software.

Innovative solution



Well integrity

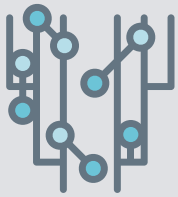


Figure 1 - Example SafeWells screen Image

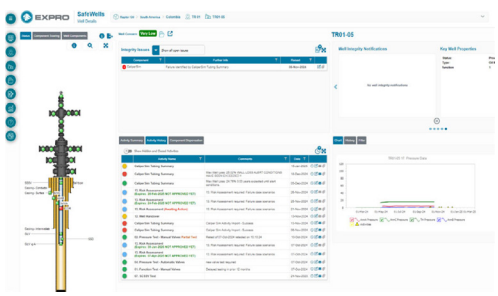


Figure 2 - Example Calipersim Image