WELL ARTIFICIAL LIFT DESIGN TOOLS

CATEGORIES

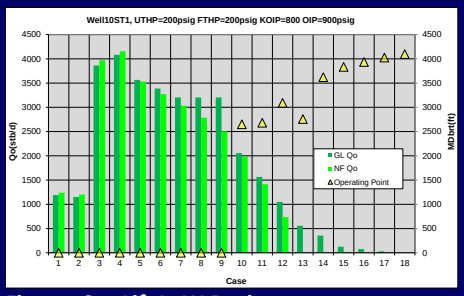


Figure: Gas Lift LoW Design

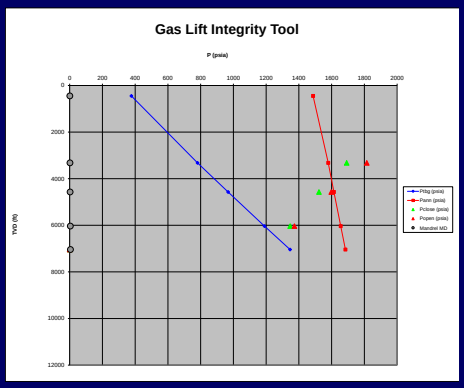
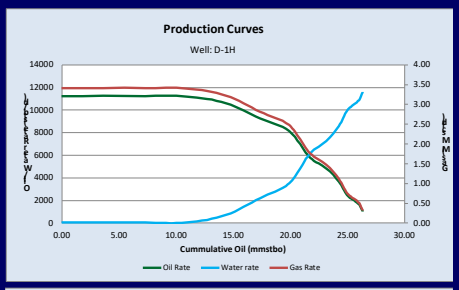


Figure: Gas Lift Integrity and Status



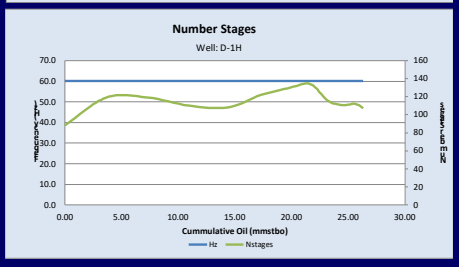
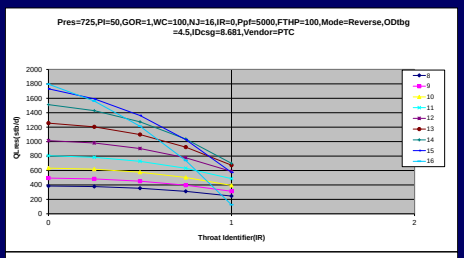


Figure: ESP LoW Performance



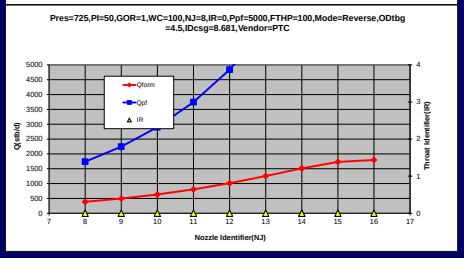


Figure: Jet Pump LoW Design

WELL ARTIFICIAL LIFT DESIGN AND PROBLEM ANALYSIS TOOLS

OBJECTIVES

Sapella provide detailed artificial lift design services for artificial lift equipment and artificial design projects. Services have been completed for operators and equipment vedors. As part of these services Sapella also write manuals and procedures for operators. We are specialised in:

- Selection of gas lift equipment given life of well (LoW) conditions.
- Design of dual bore applications.
- Problem analysis of gas lifted wells and provide a gas lift integrity tool to identify valve status, potential multipointing or mechanical failure of valves.
- ESP design for LoW conditions. The ESP simulator provides ESP type, number of stages, required operating frequency, need for gas separators and other details. Liquid levels and establishing the maximum head encountered during start up of ESPs can be completed with our transinet simulator.
- Jet pump design and problem analysis over LoW conditions.

All our tools link to Prosper or the Sapella PVT and multiphase flow codes.

DESCRIPTION

A design process tpically consists of provision of the data by the operator. Apart from the typical data such as reservoir, PVT and facilities constraints, typically the predicted conditions from a reservoir simulator are provided. These are reservoir pressure, PI, GOR and water cut trends versus cumm oil or time.

These parameters are entered into the artificial lift simulators and a detailed Prosper file is built. The simulator runs the Prosper file and creates the necessary analysis outputs for a reliable artificial lift design, whether it is gas lift, ESPs or jet pumps that are being analysed. The results are all plotted and displayed in Excel, to allow the operator to modify results formats to his liking.

BUSINESS DRIVERS

The automated design process can be completed quickly and with high certainty, saving costs.

The process for each artificial lift option has been used and implemented 100s of times. The processes are well proven.

The operator learns the design process and the tool corrects and highlights any false entries.

API standards are closely followed in each of the design processes, whether gas lift, jet pump or ESP methods are selected.

Variables that Prosper does not compute are calculated. They may be key in some design applications.

An economic screening can easily be provided, comparing well performance under different artificial lift modes.

The tools provide detailed problem analysis procedures, to increase certainty in understanding of the well status

WHAT IS UNIQUE

Easy to use

The simulator allows to compute life of well conditions.

It can be used to identify artificial lift problems.

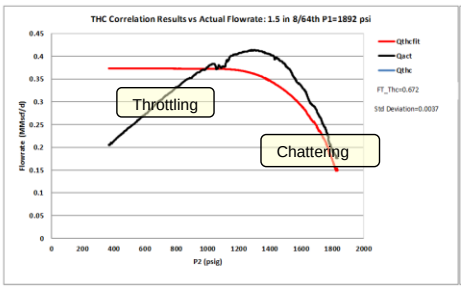


Figure: Transient gas lift valve behaviour

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