

# ResPack Petrophysics

Formation evaluation from wireline log analysis and machine learning



## INDUSTRY CHALLENGES

### Speed

Fast quality control, editing, and formation evaluation from wireline log data plays a critical role in developing both unconventional and conventional assets.

### Identification

Heterogeneous formations present a host of challenges related to subsurface evaluations and development plans.

### Data

In frontier exploration areas, finding enough high-quality well data can be problematic due to the lack or quality of wireline log data.

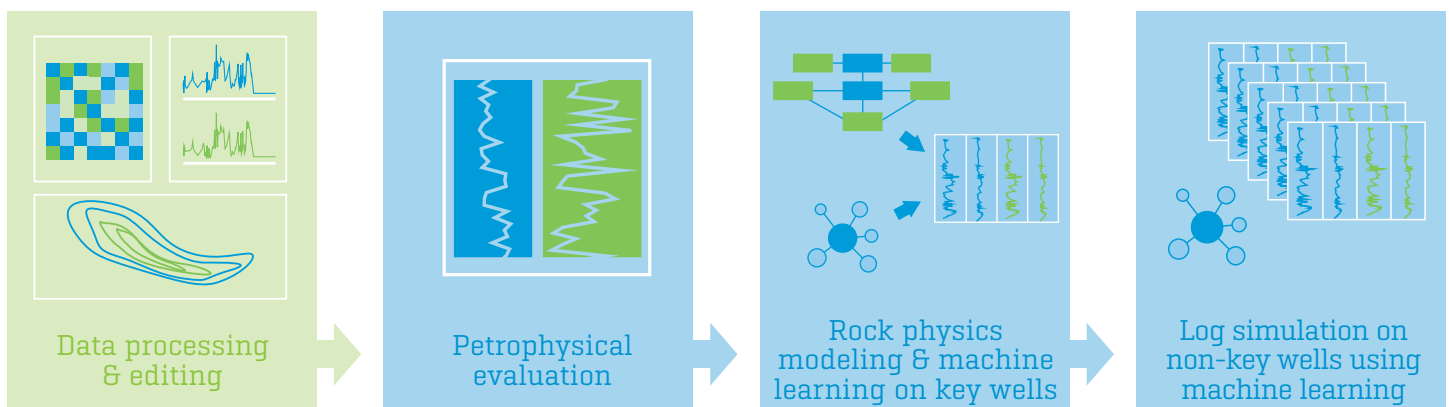
## GEOSCIENCE SOLUTIONS

### RESPACK PETROPHYSICS ADVANTAGES

- Accelerate subsurface understanding using the power of machine learning
- Gain knowledge of rock properties across the entire asset using machine learning to fill data gaps
- Make timely management decisions with essential formation evaluation data, delivered fast
- Generate well-constrained seismic inversion products across your asset by combining log and seismic data

### ROCK PHYSICS MODELING AND MACHINE LEARNING ALLOW CONFIDENT WELL PLANNING

CGG completed a **ResPack Petrophysics** project using proprietary and public well data for a seismic inversion of the Spraberry and Wolfcamp Formations in the Midland Basin, Texas. The project lacked sonic data for depth conversion and subsequent inversion. Through the application of rock physics modeling and machine learning, synthesized sonic logs were produced in wells containing only triple-combo data—a process that provided additional elastic log data to further constrain the seismic products, enabling the client to plan lateral well drilling targets.

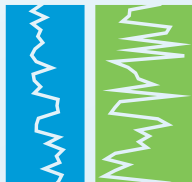


The ResPack Petrophysics workflow compensates for missing well data by using rock physics and machine learning to simulate sonic logs.

## RESPACK PETROPHYSICS DELIVERABLES

## High-quality log suites

- Edited and evaluated logs
- Delivery: LAS file formatted and intelligently databased



## Formation evaluation

- Lithology
- PHIT & PHIE
- Sw
- Pay zones
- Elastic properties



## Asset evaluation



- Net: Gross
- Original oil-in-place (OOIP) calculations



## RESPACK PETROPHYSICS ADD-ONS

ResPack Fast	Locating drilling targets through the integration of <b>ResPack Petrophysics</b> and seismic to deliver fast seismic inversion in weeks instead of months.
ResPack HD	Identifying drilling and development opportunities within heterogeneous thin-bed reservoirs by integrating <b>ResPack Petrophysics</b> and geostatistical inversion.
ResPack Cuttings	Applying organic and inorganic rock properties from cuttings or core analysis to constrain the <b>ResPack Petrophysics</b> model.
ResPack Pore Pressure	Analyzing how pressures within rock pores vary within the subsurface. <b>ResPack Petrophysics</b> supplies crucial formation compaction insights to the pore pressure workflow.

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