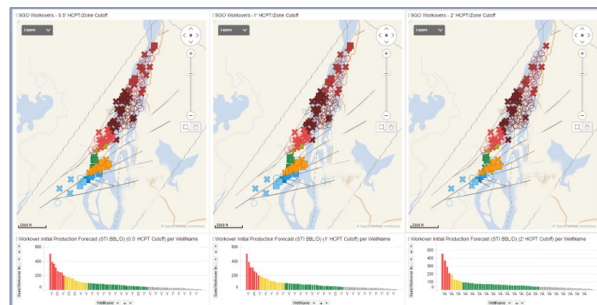


SpeedWise Reservoir Opportunity Reduces Catalog Update Workflow by Over 90% in a Mature Field

RESULTS

- In only six weeks, SRO identified an extensive opportunity inventory to increase oil production.
- Significant efficiency gains were made to the existing workflow for updating the opportunity catalog, resulting in more than a 90% reduction in time and cost.
- Moving from deterministic models to probabilistic models offered a more robust tool for decision making.



SRO workovers show locations of recompletions and reactivations identified using low or optimistic cutoff case (left), mid case (center), and high or conservative case (right). Identified opportunities could add 4,600 BBL/D to daily production in the low case, up to 7,000 BBL/D in the high case.

APPLICATIONS

SpeedWise® Reservoir Opportunity*

CUSTOMER

A major operator in South America

CHALLENGE

The asset is a mature field with over 70 years of production history from 200 wells (mainly vertical well development). After a long period of primary production, waterflood began over the past ten years.

The reservoir is a tertiary fluvio-deltaic to alluvial siliciclastic in a faulted anticlinal trap with low resistivity pay and 18 distinct layers. There was a need to identify recompletion and infill drilling candidates that are aligned with overall reservoir management strategy, satisfy both geological and engineering constraints, provide reliable forecasts, and are mechanically viable. The asset team's existing workflow to update the inventory was deterministic and would take over six months.

One of the key challenges was the poor understanding of reservoir compartmentalization and delineation of both original and current remaining oil. This jeopardized the reliability of the results generated by the existing deterministic workflow.

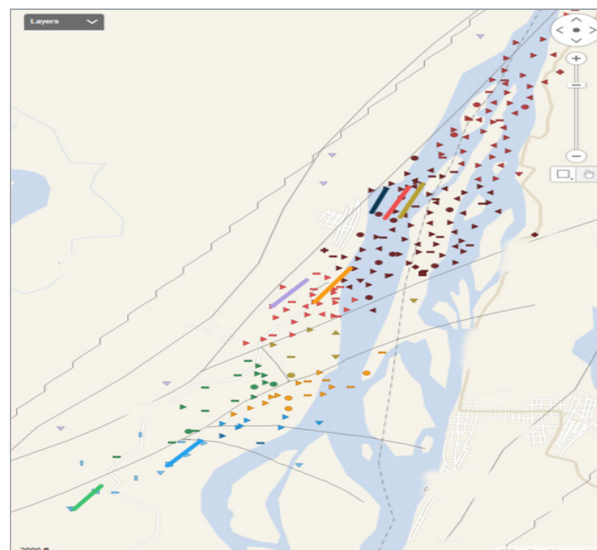
SOLUTION

SpeedWise Reservoir Opportunity was leveraged by the asset team with the aim of increasing the speed and accuracy of results. To account for uncertainty in the geomodel, low, mid and high case static models were used to frame a range of potential outcomes. More than 10,000 recompletion candidates were screened and evaluated. Over 17,000 vertical well candidates were evaluated based on the geo-engineering constraints. Fifteen different cases were run (5 varied settings/insight * 3 different static models) to better quantify the downside risk and upside potential.

*US Patent Pending

"I was impressed by the quality of the work, as they analyzed a large amount of data in a very short time period. SRO is a good methodology for giving you more details of the field, that could have been overlooked using other software."

Senior Asset Geologist



Basic field map shows the splayed faults coming off the main northeast-southwest fault. Wells are colored by the fault block they are in. Each fault block has varied drive mechanisms including gas expansion, a strong water drive, or a combination of gravity drainage, partial water drive, and expansion of a secondary gas cap.

RESULTS

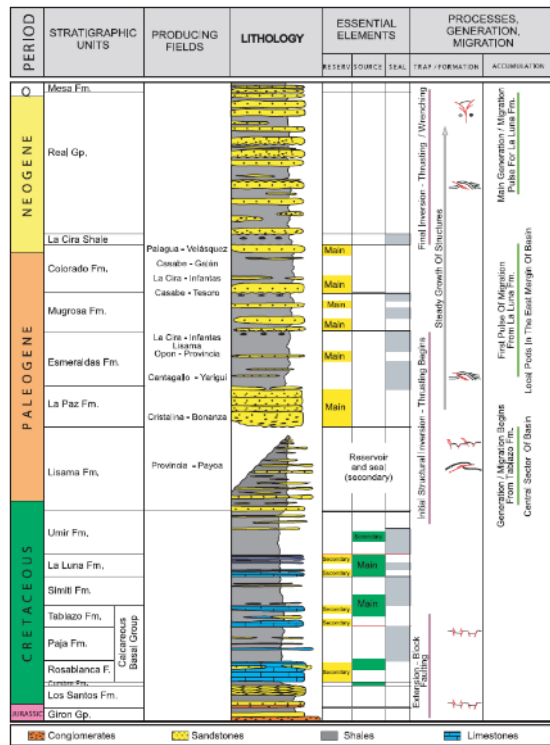
In only six weeks, SRO identified an extensive opportunity inventory to increase oil production.

- **Recompletions & Reactivations:** Identified opportunities could increase oil production 4,600 - 7,000 BBL/D
- **Vertical New Drills:** Up to 72 sweet spot targets that could increase oil production 7,700 to 9,900 BBL/D.

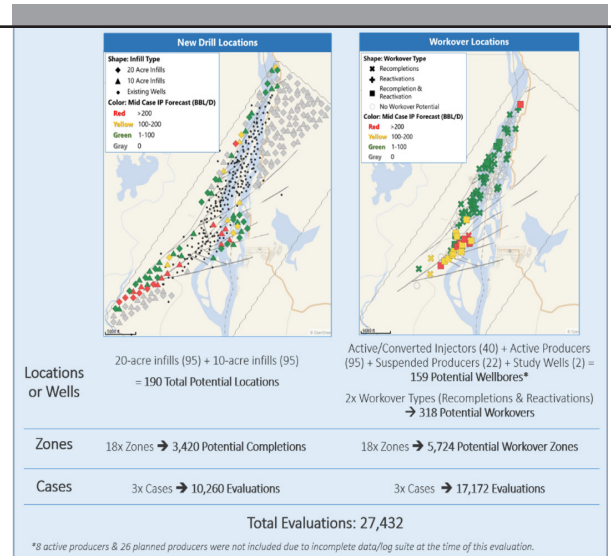
BENEFITS

Significant efficiency gains were made in the existing workflow for updating the opportunity catalog, resulting in more than a 90% reduction in time and cost. At the same time, the move from deterministic models to probabilistic models offered a more robust tool for decision making.

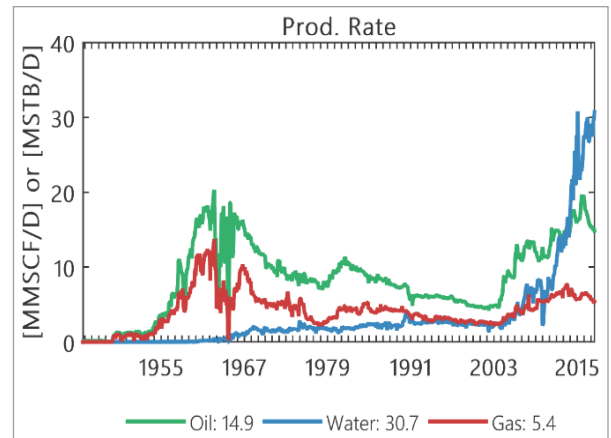
	Previous Workflow	SRO
Completion Time	6 months	6 weeks
Person Months Spent	24 months	8 weeks
# of Scenarios	1 case	15 cases



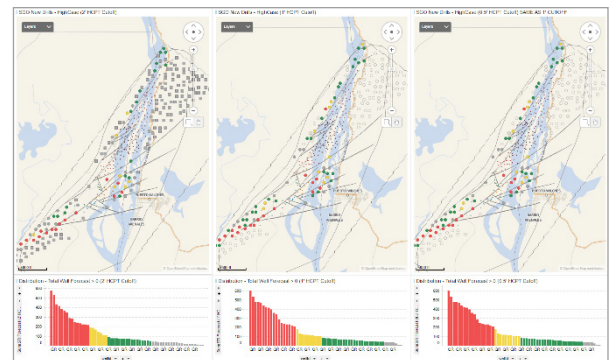
Middle Magdalena Valley lithology column showing formation names and ages (ANH, 2007). The fluvio-deltaic to alluvial Tertiary siliciclastic sandstone reservoir has significant vertical and lateral variation in addition to low resistivity pay challenges in the delineation of multiple oil-water contacts.



Summary of the number of opportunity evaluations completed for this project for new drills (left) and recompletions (right). Separate cases were run using mid, high, and low cutoffs to give the asset team a range of scenarios.



Field historical production shows three peaks in oil production that correspond to the three major drilling campaigns. Recent increase in water production is largely attributed to recent water flood in the largest, northernmost fault block which has been ongoing for the past 10 years.



All evaluated locations for potential vertical new drills from the conservative (left), mid (center), and optimistic case (right). Up to 72 identified locations could add 7,700 BBL/D to daily production in the low case, and up to 9,900 BBL/D in the high case.

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