EA23

A Systematic Review of Released Exploration Wells In Mozambique

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Summary

ERCL carried out a post well analysis, using available data to investigate four factors (charge, reservoir, seal and trap) in the different plays targeted. These wells can be symbolised in ArcGIS and simple statistics calculated

There are 100 released wells in the INP database of which 72 are classified as exploration wells. ERCL in conjunction with INP have reviewed the causes of failure in these wells across a variety of plays in the Mozambique and Rovuma Basins. In the Mozambique Basin the only proven play is the Campanian-Maastrichtian sandstones of the Lower Grudja Formation. The main producing area of this play is around the Pande, Temane and Inhassoro fields southwest of the Zambezi Delta. Geological successes have also been drilled at Buzi-1 and in the Njika wells, though neither of these is currently producing. Shows have also been found in Domo sands of Albian-Cenomanian age, though no production has been recorded. The proven plays related to the Rovuma Delta in Northern Mozambique include the Cretaceous clastics in the onshore Tembo-1 well. Offshore plays include Paleocene to Oligocene deepwater sandstones, which are present in both structural and stratigraphic traps.

A common process to help understand both proven and potential plays is post well analysis. Valuable data and information are obtained from both successful exploration wells and well failures in that:

- Successful wells allows check for bias (consistent overestimation or underestimation) in predrill volumetric inputs such as predicted thickness, productive area, etc.
- Dry holes give insights into failure modes, and whether the reasons for failure have a local or a regional impact, and
- A collection of well results gives insight into the success rate within a play

ERCL carried out a post well analysis, using available data to investigate four factors (charge, reservoir, seal and trap) in the different plays targeted. For each factor the results can be proven positive, proven negative or subject to some uncertainty, either through lack of data or uncertainties in the interpretation. These results are symbolised in a standard way using a pie chart as shown in figure 1.

An example is shown in Table 1 for the Lower Grudja play. The number of valid tests targeting this play is 14, which is too few for a rigorous statistical assessment of the play success but gives an idea of the chance of success for future exploration. The analysis indicates charge to be the key risk in this play, with close to 80% of wells having no evidence of hydrocarbons. The older onshore data also causes some uncertainties in the trap.

This kind of analysis is always subject to some uncertainty as reporting standards vary with age and operator. It does however give insights into the key risks of the various plays and helps to communicate the value of additional data regarding trap definition.

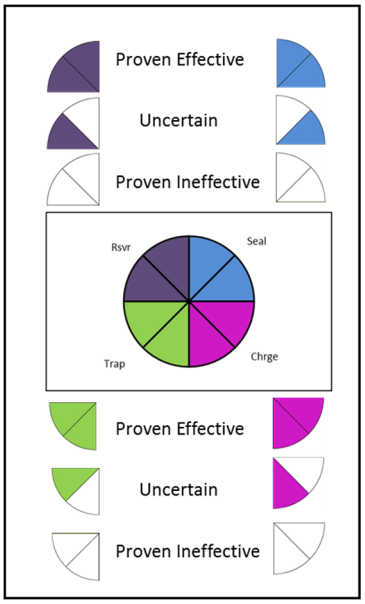

Figure 1 *Symbolising the results.*

	Percentage of Wells		
	Proven Positive	Uncertain	Proven Negative
SEAL	64.3	28.6	7.1
RESERVOIR	50.0	35.7	14.3
TRAP	28.6	64.3	7.1
CHARGE	14.3	7.1	78.6

Table 1 *Assessment of the play elements in wells targeting the Lower Grudja play in the Mozambique Basin.*