

Risk Assessment, Decision Making and Play Fairway Analysis in a Fluvial Setup: Risk and Uncertainty

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Play risk consist of regional risk element, constrained by regional depositional model, which is further enhanced by poor or lack of quality data. Risk and uncertainty are inherent aspect of investing in exploration venture, and a successful and economically viable exploration programme requires a consistent consideration of risk aversion and accurate perception of uncertainty. The major attributes to define risk are (1) Quality of the seismic dataset (2) Presence of source, reservoir and trap (3) Play dynamics. In Muglad basin of Sudan the Mega elements of petroleum system are fluvial in nature, since this adds to uncertainty in predicting lateral facies variation in short distances. As the reservoirs are mainly thin fluvial sandstone they are not quite decipherable in conventional 2-D seismic. Authors have made a case study by analyzing role of 3-D data in reducing the uncertainty and pre and post 3-D data acquisition scenario is being analyzed and it is deciphered that more the Geological uncertainty, as in fluvial system, the level of uncertainty and risk factor increases exponentially if the data is not of high resolution to track the sand geometry. With the maturity of data base the risk factor decreases and confidence level for decision making and investment increases. The authors have shown by case history, the risk, both pre and post drilling, viz a viz success ratio and prospect identification, pre and post 3-D data acquisition.