Characterizing Shale Plays—The Importance of Recognizing What You Don't Know

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Abstract

Shale plays typically exhibit much more uncertainty in individual well performance than conventional reservoirs. Understanding this uncertainty is particularly critical during the exploration drilling program when one has relatively few wells on which to base decisions. A systematic approach to understanding and managing this uncertainty can be used to address key questions during the early phases of a drilling program, including "how many wells do I need to drill before I have confidence in the results?" and "does the well performance I've seen to date provide the encouragement needed to keep drilling?" To answer these questions, one must quantify the uncertainty surrounding individual well results. Key elements of this evaluation process include: 1) identifying analogs that can provide insights into the level of well performance uncertainty to expect; 2) stochastically modeling the potential range of well results from the testing program; 3) deciding what level of risk is acceptable to the decision-makers; and 4) planning and executing a testing program that incorporates these elements.

The primary take-away from this presentation is that it is critical to recognize, and properly characterize, uncertainty in shale well production performance when planning an exploration drilling program in shale plays. Without such an approach, the commercial potential of a play may not be adequately characterized, leaving the decision-makers without the information needed to determine the path forward. Understanding the uncertainty in well performance, and planning for it, will lead to more efficient exploration activity, and better informed decision-making.