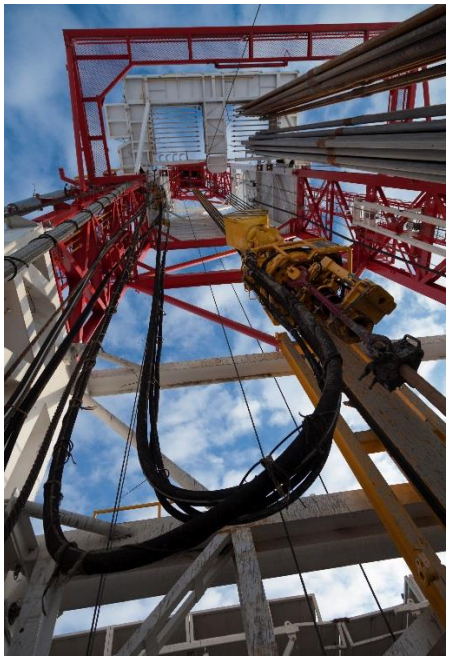
Born in the U.S.A.

The Potential for Duplicating America's Shale Success Overseas



- **To date, the vast majority of production of shale-based oil and natural gas has occurred in the U.S. and Canada.**
- **Favorable geology and the availability of water are key factors in this U.S. dominance, as are mineral rights laws, open markets, and supportive infrastructure.**
- **Shale exploitation in Mexico, China, Argentina and other countries is possible, but it faces combinations of 'below-ground' and 'above-ground' challenges.**
- **'Cracking the code' at shale plays requires technological expertise as well as doggedness—and favorable pricing.**
- **Until higher oil and gas prices return, shale development outside the U.S. and Canada is likely to remain limited.**
- **When prices rise and overseas interest in exploiting shale rises, "code-cracking" experts will find themselves in high demand.**

To a considerable degree, expectations regarding the potential for U.S. hydrocarbon exports have been based on the assumption that the status quo on shale-play exploitation will continue for some time into the future. That is, prospective buyers of natural gas liquids (NGLs), liquefied natural gas (LNG), and now crude oil will seek out U.S. suppliers because sufficient volumes will be available for those exports; and that competing suppliers – countries like Mexico, China, the UK, Poland and Argentina – will be unable to unlock hydrocarbons from their own shale. Or even if those countries and others ultimately "crack the codes" of their shale plays as successfully as their American counterparts have done, it will take decades for those volumes to reach the market in significant quantities.

The validity of the expectations surrounding international development of shale is not inconsequential; for instance, what if China were to succeed in tapping its vast shale reserves and as a result needed to import only one-half or one-quarter as much LNG as currently

estimated—or none at all? Or what if Argentina or Mexico were to exploit their shale and become major hydrocarbon suppliers to their Latin American neighbors, or if UK petrochemical companies were able to rely more on locally-sourced natural gas and ethane?

In this RBN Drill Down report, we explore what to date has been the near-total U.S. dominance of hydrocarbon production from tight oil and gas formations (which we reference here generically as "shale"), and the barriers facing other nations to duplicate U.S. successes with their own shale deposits. The report begins with a brief recap of U.S. shale development, and continues with an examination of the factors—geological, legal, political, and others—that as a whole have enabled the U.S. to quickly turn around its declining oil and gas sector and re-emerge as a top-tier hydrocarbon producer. The Drill Down report then reviews a representative group of countries with significant shale resources, and considers the challenges they may face in exploiting them. The report concludes with an assessment of what is most likely to occur—and how soon--regarding international shale development, and a discussion of the effects successful shale development overseas would have on U.S. producers, midstream companies and hydrocarbon exporters.

Note: The genesis for this Drill Down report is a chapter in "**The Domino Effect**; How the Shale Revolution is Transforming Energy Markets, Industries and Economics," a newly published book by Rusty Braziel, RBN Energy's president and CEO. The report expands upon the question posed in the title of Chapter 18: "Does the U.S. Have a Monopoly on Shale?"

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