World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:14, No:11, 2020

An Overview of Pakistani Shales for Shale Gas Exploration and Comparison to North American Shale Plays

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Abstract : Pakistan has been facing a growing energy crisis for the last decade, and the government is seeking new horizons for increasing oil and gas production to reduce the gap between supply and demand. Recent developments in technologies to produce natural gas from shales at economical rates has unlocked new horizons for hydrocarbon exploration and development throughout the world. Operating companies in the U.S.A. and Canada have been particularly successful at producing shale gas, so comparing against the properties of shale gas reservoirs in these countries is used for an initial assessment of prospective shale gas reservoirs in other parts of the world. In this study, selected source rocks of Pakistan are evaluated for their shale gas potential using analogs selected from various North American shales for which data have been published. Published data for Pakistani shales were compiled, then assessed and supplemented through consultation with industry professionals. Pakistani formations reviewed are the Datta (shaly sandstone), Hangu (sandy shale), Patala (sandy shale), Ranikot (shaly sandstone), Sembar (sandy shale) and Lower Goru (shaly sandstone) formations, all of which are known source rocks in the Indus Basin. For this study, available geological, geochemical, petrophysical and elastic parameters have been investigated and are correlated specifically with the eight most active shale gas plays of the U.S.A., while data for other North American shale gas plays are used for general discussion on prospective Pakistani shales. The results show that the geological and geochemical parameters of all the Pakistani shales reviewed in this work are promising regarding their shale gas. However, more petrophysical and geomechanical data are required before conclusions on economic production from these shales can be made with confidence.

Keywords : Canada shale gas, Indus Basin, Pakistani shales, U.S.A shale gas
Conference Title : ICEGM 2020 : International Conference on Economic Geology and Mining
Conference Location : Dubai, United Arab Emirates
Conference Dates : November 09-10, 2020