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Unlocking Ten Trillion Barrels of Global Oil Shale Resources: The State of the Industry

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The development of domestic oil shale resources has regained significant attention in the past few years. Several factors have contributed to this, including high oil prices, emerging recovery technologies, increasing world demand for liquid hydrocarbons, and the continued decline in U.S. conventional oil production. In recent years, several initiatives have been taken by the U.S. Government and the private sector to encourage the development of a domestic oil shale industry.

The United States has vast deposits of oil shale, nearly 2.0 trillion barrels across the eastern and western states. The development of this massive resource, however, is constrained, by a number of key factors including, but not limited to 1) resource access, 2) technology, 3) economics, 4) environmental and regulatory issues, and 5) infrastructure.

A comprehensive analysis has been completed to address these issues and identify options to accelerate the development of this resource. The analysis is based on a representative sample (about 70 billion barrels) of Western oil shale resource divided among multiple development “tracts.” Four production technologies were also considered. These technologies included emerging in-situ processes as well as traditional mining with surface retorting technology. Each development tract was screened for the potential application of each recovery technology. A detailed economic evaluation was conducted for each tract, and the selected technology with consideration for development under alternative economics, environmental, technology, and socio-economic options. The analysis indicated that with a concerted effort from industry, local, state, and federal governments, the oil shale production potential could reach 2.5 million barrels per day (MMBbl/d) with substantial benefits to the local and national economy.

Khosrow Biglarbigi is the president and director of petroleum engineering of INTEK Inc, an energy management consulting firm in Arlington, VA. He has more than 16 years experience in evaluating conventional and unconventional oil and gas resources, economic analysis, and public policy analysis. Biglarbigi recently provided engineering and analytical support to the Task Force on Unconventional Fuels (mandated by Energy Policy Act of 2005) as they identified and analyzed development hurdles for oil shale, tar sands, coal liquids, heavy oil, and CO2 flooding; and conducted cost/benefit analyses of potential options to overcome these hurdles. Biglarbigi has earned both M.S. and B.S. degrees in petroleum engineering from the University of Tulsa. He has written numerous publications related to oil shale, enhanced oil recovery, horizontal wells, resource evaluation, and development of oil and gas models