

Progress in Characterizing Jordan's In Situ Oil Shale Resource

Richard Terres, Wasfi Omari, Ibrahim Al Najjar

Jordan Oil Shale Company, Jordan

Jordan Oil Shale Company (JOSCO), a 100% Royal Dutch Shell company, has been granted a 22,270 km² concession in Jordan, in order to assess the potential of Upper Cretaceous/Paleogene Oil Shale strata for production via Shell's proprietary In-situ Conversion process (ICP). Shell's objective is to delineate one or more 'Sweet Spots' as well as to evaluate each 'sweet spot' for containment risk, geomechanical risk and quantify the energy required to convert and produce oil from the kerogen-bearing shale in a commercial project. The Shell exploration effort has now entered its third year of major field operations. During this period, Shell has completed an initial phase of drilling in all areas of the concession and is now conducting a second drilling phase aimed at characterizing the more prospective regions. A hydrology testing unit has been deployed to investigate the sealing potential of the top and base oil shale as well as to define any observed water influx. A purpose built "Hot Wire Test" unit is being used to measure the in-situ rock thermal conductivity in several wells. A pilot high-resolution seismic acquisition program has been conducted with the objective of determining parameters for a subsequent larger program. Together with this ambitious field program, Shell continues comprehensive laboratory and technical studies. Virtually all routine geochemical and core evaluation is done in Shell's Jordan GeoLab located in Amman. Fundamental regional geologic framework stratigraphy, sedimentology as well as organic and inorganic geochemistry studies are being conducted by Shell-sponsored PhD students in Newcastle and Bochum Universities. Resource specific geomechanical and pyrolysis measurements are being coordinated by Shell's Houston-based Jordan Development Team. This comprehensive evaluation has confirmed the encouraging nature of the in-situ Jordan Oil Shale resource.