The thermal solution route to pipelineable synthetic crude oil

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A supercritical hydrogen-donor solvent converts kerogen in oil shale to pipelineable synthetic crude oil at around 450˚C. The product oil is then extracted under supercritical conditions, leaving a dry, non-toxic residue. Mineral values specific to each oil shale, such as metal oxides and soda ash, can be extracted from the residue, and the remainder used to produce Portland cement. A product oil recycle is the slurrying medium for the incoming ore, and is re-hydrogenated before each pass to improve final product quality. Additional testing and pilot plant work is required to confirm solvent recycle ratios and other design parameters.

A case study based on more than 100 samples of shale from the Cb lease illustrates a conceptual commercial application. The Colorado work, including several engineering studies, spanned more than two decades of work by John Rendall in Albuquerque laboratories and pilot plant facilities.

Australian Thermal Solutions Pty Ltd (a subsidiary of an Australian public company) has global marketing rights for the worldwide-patented technology, and an exclusive license for Australia. The company has started testing of its Julia Creek, Queensland, oil shale deposit, and is installing a 1 tonne/hour continuous pilot plant at Townsville, Queensland, which is expected to produce about 1 barrel of oil/tonne of shale. The pilot plant focus is to establish the environmental and economic benefits of a fluid heat transfer/hydrogenation medium, together with enhanced yields of an improved quality of oil and generation of clean residues for extraction of vanadium and molybdenum values and production of Portland cement."