

COMPARATIVE ECONOMICS OF TAR SANDS CONVERSION PROCESSES

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The tar sands resource is the only solid fuel resource currently being converted to liquid fuels in North America on a large scale. A 45,000 B/CD syncrude plant based on tar sands is currently in operation in the Athabasca region of Alberta. The major steps in conversion of tar sand to syncrude are (1) surface mining of tar sands, (2) hot water extraction of bitumen from mined tar sands, and (3) upgrading of bitumen by coking or hydrovisbreaking followed by hydrotreating of distillates.

The economics of a combined tar sands mining and conversion venture have been analyzed. It was found that tar sands mining costs, bitumen recovery efficiencies, choice of upgrading process, price of syncrude product, and royalty payments all significantly affect the discounted cash flow rate of return from an integrated venture. Results are presented at a level of 50,000 B/SD syncrude production and effects of the factors listed above are discussed. Effect of changing the scale of operations is also discussed.