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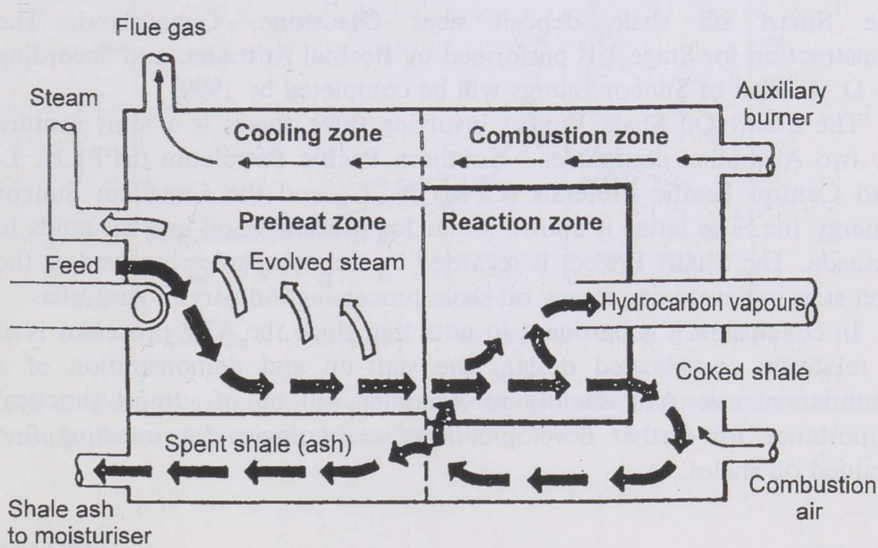
INFORMATION

ALBERTA TACIUK PROCESS (ATP) SELECTED FOR RETORTING AUSTRALIAN OIL SHALE

The Alberta Taciuk Process was invented by Alberta engineer William Taciuk and jointly developed through AOSTRA (Alberta Oil Sands Technology and Research Authority) and UMA Engineering Ltd. It was originally designed as a new extraction process for the Canadian oil sands industry. Later this process was adapted also for other application, such as retorting oil shales for the production of liquid products. In this respect Australia with her considerable rich oil shale reserves attracted attention and in 1986 a sample of oil shale from the Kerosene Creek Member of the Stuart oil shale deposit, Queensland was tested in Calgary in a laboratory scale batch facility modelling the Taciuk Process. Test results were promising and a bulk sample of the Stuart oil shale was excavated and shipped to Calgary for testing in a continuous ATP Processor (5 tons per day) constructed by UMATAC Industrial Processes, a division of OMA Engineering Ltd.

The basic design element of the ATP retorting facility is a reactor-processor. As may be seen in Figure, a rotating processing chamber is arranged in a stationary outer vessel. In the first chamber 8 mm particle size oil shale feed is subjected to preliminary heating in the preheat zone



ATP processor internal flows

at 200-300 °C. Heating is effected through the wall of the inner cylindrical chamber by hot flue gases. If the moisture content of the feed shale is high, it is preliminary dried to a moisture content of 5-10 %. The heated material further passes through a seal to the reaction zone (to the second cylindrical chamber) to be mixed with recycled shale ash to bring the internal temperature up to 400-600 °C.

In this process the organic matter (kerogen) is decomposed to produce oil vapours, gas and residual carbon. The vapours and gas are passed to the oil recovery section where oil and water are condensed. Coked shale from the reaction zone passes through a seal to the combustion zone. Into this zone hot air is injected to burn coked shale in a quantity sufficient for supplying necessary process heat. Auxiliary burners are provided to supply heat for process start-up and to maintain the combustion zone temperature at a stable level (to 750 °C). The excess shale ash is passed to the cooling zone where it transfers heat to the incoming feed shale in the preheat zone, and is discharged to a moisturiser for cooling and dust control.

Flue gases from the combustion zone pass to a cyclone for dust separation followed by wet gas cleaning and chemical sulfur dioxide removal prior to discharging through the stack.

During pilot testing over three months in Calgary the operation of the processor was smooth throughout. Since the feed material was fairly uniform in size, it easily passed the seals in the reactor. Under testing the oil yield was as high as 88-97 % of the Fischer assay oil, the operation was stable and without breakdowns.

Accordingly, a Stage 1 demonstration plant with a throughput of around 6000 tons per day of feed shale is currently under construction in the Stuart oil shale deposit near Gladstone, Queensland. The construction for Stage 1 is performed by Bechtel Australia, and according to D. A. Riva of Suncor Energy will be completed by 1999.

The Stuart Oil Shale Project involving three stages is a joint venture by two Australian companies - Southern Pacific Petroleum (SPP) N. L. and Central Pacific Minerals (CPM) N. L., and the Canadian Suncor Energy Inc. The latter is known so far for processing oil and oil sands in Canada. The Stuart Project is regarded by the companies involved as the first step in developing a new oil shale processing industry in Australia.

In conclusion it is pertinent to note that since the ATP processor is of a relatively complicated design, the start-up and demonstration of a commercial size ATP facility in Australia will be of utmost practical importance for further development of technologies for retorting fine grained oil shales.

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ADDITIONS AND CORRECTIONS

OIL SHALE 1997, Vol. 14, No. 3, pp. 409-418: _M. Mandre_ "Changes in a Forest Landscape Affected by Alkaline Industrial Dust"

On page 414, the legends to figures 4 and 5 should be placed as follows:

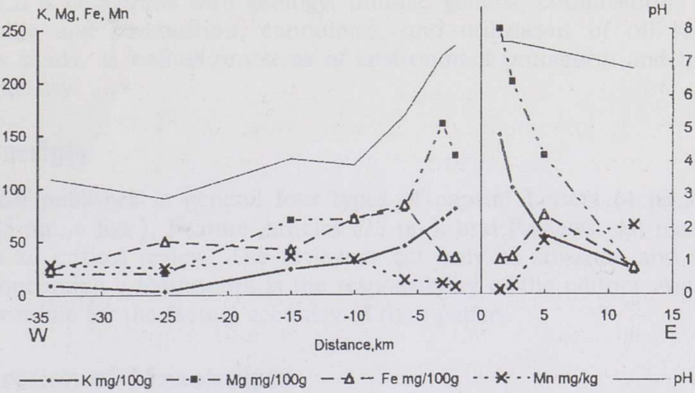

Fig. 4. Values of soil pH and content of some mobile form of chemical elements in humic horizons of forest sample plots on the investigated transect

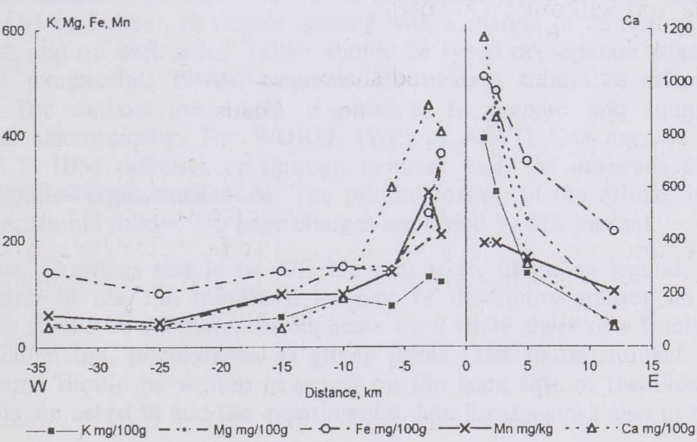

Fig. 5. Total content of some chemical elements in the humic horizons of forest sample plots on the investigated transect

EDITORS