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Introduction

This Open File contains digital data of gasoline range and C15+ saturate fraction gas chromatograms of 262 crude oil samples obtained from wells drilled in the Western Canada Sedimentary Basin. The gas chromatograms are stored in *.pdf (portable document file) format. All analytical work was done at the Organic Geochemistry Laboratory at the Calgary Office of the Geological Survey of Canada in the 1990's. The significance of the data is not discussed in this report. Some of these data have been previously interpreted in several geochemical studies (see list of references).

Experimental

Preparation of crude oils

About 30-45 ml of oil were poured into a tared flask, boiling chips were added and the oil was heated up to 210°C. The fraction boiling below 210°C was distilled into a separate flask and weighed. The remaining fraction was cooled and weighed. About 4-5 grams of the fraction boiling above 210°C was deasphaltened by adding an excess of pentane (40 volumes). About 100 milligrams of each deasphaltened oil were then fractionated using open column liquid chromatography.

Analysis of gasoline fraction hydrocarbons

The gasoline range hydrocarbons (iC5-nC8) were analysed on a HP5890 Gas Chromatograph connected to an OI Analytical 4560 purge-and-Trap Sample Concentrator. A small amount of the whole crude oil was mixed with deactivated alumina and transferred to the Sample Concentrator which was fitted with a tenax/silica gel/charcoal trap (OI trap #9). This was connected to a split/splitless injector on the Gas Chromatograph which was equipped with a 60m x 0.32 mm x 0.25 μm DB-1 column. Most samples were analyzed using the following temperature program: initial hold at 30°C for 10 minutes and then programmed to 40°C at a rate of 1°C/min, final temperature held for 25 minutes resulting in 45 min total run time. Some samples were analyzed using longer 55 min total run time and consequently there are some variations in retention times between different samples. The eluting hydrocarbons were detected using a flame ionization detector.

Liquid chromatography

A mixture of 28-200 mesh Silica Gel (MCB) and 80-200 mesh alumina (ALCOA) (1/3:2/3 by weight respectively) was used as a support for the column. The support is activated by heating at 120°-150°C for 12 hours. A glass wool plug is placed at the bottom of the column and covered with a 1 cm thick layer of sand. The support, weighed as 1 g of support/10 mg of deasphaltened sample, is slowly settled in pentane and any air trapped is released by gentle tapping on the column. A

deasphaltened sample, dissolved in a minimal amount of previously measured pentane, is then added to the column. Saturates are recovered by eluting with pentane (3.5 ml/g support), aromatics with a 50:50 mixture of pentane and dichloromethane (4 ml/g support), resins with methanol (4 ml/g support) and any remaining asphaltenes with chloroform. The solvents are rotary-evaporated, separate fractions transferred to tared 1 dram vials, dried in a slow stream of nitrogen and weighed to constant weight.

Gas chromatography

Saturate fractions were analysed using gas chromatography (GC). A Varian 3700 FID gas chromatograph was used with 60m x 0.32 mm x 0.25 μm DB-1 column with helium as the carrier gas. The temperature programmed was 60ºC to 300ºC at a rate of 6ºC/min and then isothermal for 30 min. The eluting compounds were detected and quantitatively determined using a hydrogen flame ionization detector.

Gas chromatography - mass spectrometry

Analyses of saturate biomarkers were performed on a VG 7070 mass spectrometer with a gas chromatograph attached directly to the ion source. The instrument was controlled by an Alpha Workstation using Opus software. A 30 m fused silica column (DB-5, J&W Scientific) was used for GC separation. During the typical analysis the temperature was initially held at 100ºC for 2 min and then programmed at 40ºC/min to 180ºC and at 4ºC/min to 320ºC. After reaching 320ºC the temperature was held for 7 min. A few samples were analyzed using slightly modified temperature program and consequently there are some variations in retention times between different samples. The mass spectrometer was operated with a 70 eV ionization voltage, 100 mA filament emission current and interface temperature of 280ºC.

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