

Brief petrographic and permeability/porosity analysis of the Kuparuk "C" Unit core (8741)
from the Texaco Inc. Wolfbutton 32-7-8 well.



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Total of 3 pages in report

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PETROGRAPHY

ALASKA - NORTH SLOPE WOLFBOTTOM 32 -7 -8 WELL

KUPARUK " C " UNIT

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8741 FT (2664 M)

MACROSCOPIC DESCRIPTION

The core piece consists of a bioturbated, fine grain sandstone.

The core was taken within a coarsening-upward cycle of the Kuparuk "C" Lithological Unit.

PETROGRAPHIC ANALYSIS

Petrographically, the Kuraruk "C" within the Wolfbuttom 32-7-8 well is a glauconitic, silica/ferroan dolomite-cemented litharenite/sub-litharenite (Folk's classification). The sample is also oil-stained.

Texture

The sample is fine grain scattered medium to coarse grain giving to the rock a moderate sorting. The grains are subangular to subrounded. The packing of the rock suggests an early cementation and moderate compaction. The sphericity is generally high.

Framework Grains

The modal analysis, visually estimated, of the framework grains consists of 70 quartz (mono- and poly), 10 % glauconite (smectitite/chloritized), 9 % shale clasts (illitized, sideritized), 5% chert (dissolved to various extend), 3% siltstone/fine sandstone and 2 % carbonate grains (fossil fragments). Subordinate amounts of plagioclase (~ 1% - somewhat albitized), K-Feldspar (1-3% - kaolinitized) and traces of phosphate and heavy minerals (zircon, tourmaline, and apatite) also constitute part of the framework grain.

Porosity

The sample consists of 12-15 % of total bulk volume. The nature of the porosity is mainly secondary consisting of dissolution of labile constituents (chert, shale clasts, feldspar) and dolomite cement. Abundant microporosity is associated with this type of secondary porosity where the effective porosity is in the range of 60-80% of total porosity i.e. 7-12 %.

The nature of such secondary porosity along with compaction associated with lithic fragments (shale clasts, glauconite) argued for low permeability.

Core analysis (attachment) resulted in a porosity of 12.7% and a permeability of 2.0 mD (K air).

Cement

The cement represents about 10% of the bulk volume consisting of mainly silica cement (syntaxial quartz overgrowths) and ferroan dolomite. Subordinate amounts of non-ferroan dolomite and siderite are also present.

Authigenic Clays

Authigenic clays are of minor importance (< 2%) consisting of mixed-layer Illite/Smectite/ Chlorite coating grains and concomitant with quartz overgrowths. Patchy kaolinite is also present as an alteration product of K-Feldspar or as discrete booklets in the pore space.

Matrix

Locally, a silty clay (illite/oxides/organic matter/carbonate) matrix is present associated with the borrowing.

CORE LABORATORIES

Company : PETRO-CANADA OIL AND GAS
 Well : WOLF BUTTON 32-7-8
 Location : 32-7-8
 Province : ALASKA

Field : BUTTON
 Formation : KUPAUKUK C SAND
 Coring Equip.: DIAMOND
 Coring Fluid : WATER BASE MUD

File No.: 52131-04-0344
 Date : 2004-08-04
 Analysts: DJB
 Core Dia: 25.4 mm

C O R E A N A L Y S I S R E S U L T S

SAMPLE NUMBER	DEPTH ft.	PERMEABILITY (MAXIMUM) K _{air} md	POROSITY (HELIUM) %	GRAIN DENSITY gm/cc	DESCRIPTION
1	8741.0	2.05	12.7	2.66	ss vf f

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