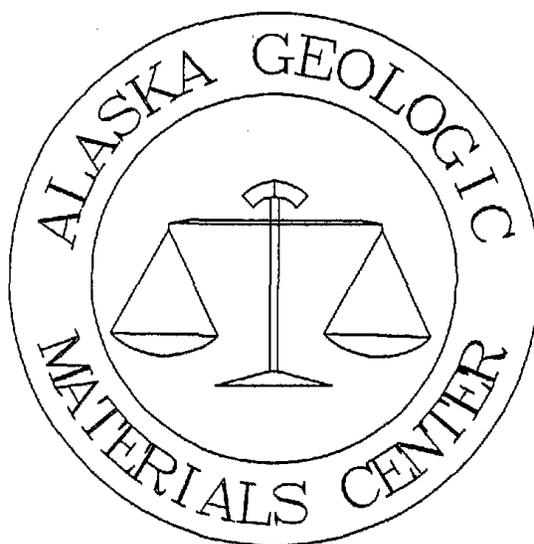


Core (2971.5', 2980.5', 3002.2', 3,010', and 3,014') analysis report of the U. S. Navy Fish Creek No. 1 well.



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Total of 8 pages in report

Alaska Geologic Materials Center Data Report No. 216

ARCO ALASKA, INC.

CORE ANALYSIS REPORT
FISH CREEK #1
EXPLORATION
NORTH SLOPE, ALASKA
CL FILE NO. BP-C-1516

Performed by:

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Final Report Presented
June 14, 1993

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INTRODUCTION

Core Laboratories was requested to perform permeability and porosity measurements on behalf of Arco Alaska, Inc. for samples recovered from the Fish Creek #1 well from the North Slope, Alaska. Presented herein are the results of this study.

Slabbed sections of core approximately one inch in thickness were received in Anchorage by Core Lab. personnel. A service description and methodology are presented in section 1. The core analysis results and lithological descriptions for the horizontal samples are presented in section 2.

We sincerely appreciate this opportunity to be of service and hope this data prove beneficial in the development of a reservoir.

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SECTION 1

CONVENTIONAL CORE ANALYSIS SERVICE DESCRIPTION

SECTION 1

CONVENTIONAL CORE

Conventional Core Processing

Upon arrival at Core Laboratories Anchorage facility, the slabbed sections of core were saturated with water, then placed in a freezer and allowed to freeze overnight.

The one-inch routine plugs were cut parallel to bedding, through the central portion of the one inch slabs. The horizontal plugs were cut using carbon dioxide liquid as a coolant, and trimmed on a dry saw. Two samples - from 2971.5ft. and 2980.5ft. - failed and were not suitable for further analysis. The sample from 3002.3ft. was well consolidated and required no special handling. The samples from 3010.0ft. and 3014.0ft. were wrapped in lead foil with screens at each end to prevent their parting along bedding plains.

Laboratory Procedures

Plug Cleaning

The horizontal plugs were cleaned individually for a minimum of five day in a Dean-Stark. The plugs were considered clean when no cut fluorescence was observed using trichloroethane under UV light..

Plug Drying

The horizontal plugs were dried in a convection oven at 240 F for 24 hours.

All samples were cooled in a desiccator to room temperature before porosity and permeability measurements were made.

Grain Density

Grain volume determinations were measured on desleeved samples according to Boyle's Law utilizing Helium in an Auto Porosimeter. The equipment was calibrated to yield a grain density variation of less than .005 gm/cc. Grain densities were calculated using Equation 1.

$$D_g = M_g/V_g \quad (1)$$

Where: D_g = Grain Density
 V_g = Grain Volume
 M_g = Grain Mass

Atmospheric Porosity of Consolidated Samples

The horizontal plug samples were measured for bulk volume by mercury displacement at ambient conditions. Porosity was calculated using Equation 2.

$$P = [(V_b - V_g) / V_b] \times 100 \quad (2)$$

Where: P = Porosity, Percent
V_b = Bulk Volume
V_g = Grain Volume

Atmospheric Permeability to Air

Horizontal permeabilities were measured in a Hassler type core holder at a confining pressure of 400 psig after the plugs were redried overnight at 240F. Permeability calculations were performed as defined by Darcy's Equation for compressible fluids, Equation 3.

$$K = \frac{P_a \times v \times 1000}{(P_1 - P_2)(P_1 + P_2)} \times \frac{Q_a \times L \times L}{V_b} \quad (3)$$

Where: K = Permeability
v = Gas Viscosity
P₁ - P₂ = Differential Pressure

$\frac{P_1 + P_2}{2}$ = Mean Pressure

P_a = Atmospheric Pressure
Q_a = Flow Rate
L = Length
V_b = Bulk Volume

SECTION 2

CONVENTIONAL CORE ANALYSIS TABULAR RESULTS

CORE LABORATORIES

ARCO ALASKA, INC.
 FISH CREEK NO. 1
 NPRA
 NORTH SLOPE, ALASKA

FILE: BP-3-1516
 ANALYST: PLB,DJS,TR
 DATE: 14-JUN-93

DEAN STARK ANALYSIS

SMPL #	DEPTH FT	PERMEABILITY KAIR MD	POROSITY (HELIUM) (%)	GRAIN DENSITY GM/CC	DESCRIPTION
1	2972		SAMPLE FAILED		
2	2981		SAMPLE FAILED		
3	3002	0.49	18.2	2.71	SS-miltgy,slt-vfsd,predfsd,wsrtd,wmd,mod cmt,qtz,blk arg gr
4	3010	45	30.0	2.67	SS-miltgy,slt-vfsd,predfsd,wsrtd,wmd,p cmt,qtz,blk arg gr
5	3014	110	30.7	2.67	SS-miltgy,slt-vfsd,predfsd,wsrtd,wmd,p cmt,qtz,blk arg gr,frac