Viscosity and Gravity of Historical Oil Samples from U.S. Navy Umiat (Blend, unknown well number) and from U.S. Navy Umiat Ruby No. 1 renamed (Umiat Test Well No. 4) both from the Irv Tailleur U.S. Geological Survey collection at the Alaska GMC

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Schlumberger

Fluids Analysis Report

Viscosity and Gravity of Historical Oil Samples
U.S. Navy Umiat (Blend)
Umiat Ruby # 1

Prepared For

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By

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Project 200800124

Oilphase - DBR Quality Assurance Process

Oilphase - DBR is committed to providing unsurpassed services in reservoir fluid sampling and fluid property analyses, while maintaining high standards of safety and quality. Our objective is to deliver the most accurate and reliable sampling processes and fluid property measurements available in the industry. This objective requires persistent innovation and ongoing development of state-of-the-art technologies and equipment.

A rigorous program of quality assurance, continuous employee training and enforcement of strict safety standards maintains our compliance with Quality, Health, Safety and Environment (QHSE) requirements. Proactive integration of QHSE objectives and management goals at every level supports the communication and implementation of QHSE policies and standards.

Oilphase – DBR requires that qualified engineering technologists perform all laboratory measurements according to specified analytical procedures designed for obtaining accurate and reliable data. Rigorous quality assurance programs and instrument calibration protocols are in place to ensure and maintain the accuracy of the procedures. Details of these programs are available upon request.

The results of all laboratory work are interpreted and reported by the Research Engineer responsible for supervision of the project. All property measurements and calculation procedures are maintained in company archives for a period of 3 years. This information is available for review by clients upon request.

The file and laboratory records information as listed below, provide access reference to all records related to this project. For answers to any questions, please do not hesitate to contact the undersigned Research Engineers.

File N° 200800124

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SUMMARY REPORT

Introduction and Objectives

In June 2008, Schlumberger Oilphase-DBR received two samples of atmospheric-pressure oil originating from the inventories of the State of Alaska. The samples originated from the Umiat oil field, drilled originally by the US Navy. The purpose of the project was to verify the viscosities of the two historical oil samples.

Scope of Analytical Work

The scope of experimental work consisted of the following elements:

1. Measurement of the viscosity of each received sample, using a Bohlin controlled-stress rheometer, at a single condition (atmospheric pressure and 100°F).
2. Verification of the results of the analysis, by testing standard-fluids of known viscosity (Cannon S6), in the same apparatus and in the same range of viscosity as the test-samples.
3. Measurement of the density of one of the samples, using an Anton Paar densitometer.

Results

The results of the tests defined in the Scope of Work appear in Table 1 (below).

The specific gravity of the oil, as measured in duplicate in the laboratory, was significantly lower than the original value reported by the USGS (Bureau of Mines) of 37 degrees API. Similarly, the viscosity measurements yielded values 2-3 times higher than those reported in government reports. The samples were nearly 60 years old at the time of testing, and were stored without any provision for preservation. It appears probable that the lighter fractions of the oil may have been vaporized, or the samples were otherwise compromised in a manner that would have elevated their density and viscosity.

Thus, it was concluded that the two Umiat oil samples did not appear to be representative of the original oil. Consequently, the measured analytical data are not considered to represent the fluid properties of the Umiat field accurately.

Table 1: Sample Inventory and Summary of Measured Properties

Field / Well	Sample Volume (cm^3 Approx.)	Viscosity @ 100°F / 0 psig (cp)	Density @ 60°F / 0 psig (g/cm^3)	Gravity (°API)
US Navy Umiat (Blend, no well number)	35	7.6	0.8749	30.1
Umiat Ruby # 1	20	5.6	Not Measured	Not Measured

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April 25, 2008

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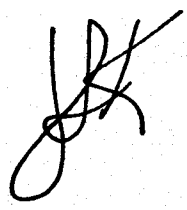
RE; **Oil samples** from **"Umiat Ruby #1"** & **"US Navy Umiat oil field"** in the **Taillleur Collection**

John,

Yesterday I took cuts from oils labeled "Umiat Ruby #1" and "US Navy Umiat oil field . . ." . Both of these samples are in Drawer One of the petroleum samples donated by Irv Tailleur. The cut from the first sample is about 10 milliliters and the cut from the second sample is about 25 milliliters. Both cuts are about 50 per cent of the original sample. The samples were taken for Vijay Bangia Vice President for Development at Renaissance Alaska, LLC in Houston and delivered to Bruni Warrick of Renaissance Alaska, LLC at 1039 West Third Ave. Suite 402 Anchorage Alaska today.

The samples appeared to not have leaked in that there was no residue on the threaded neck of either original sample bottle. There was no pressure release when the caps of the original sample bottles were removed at atmospheric pressure and 75 degrees Fahrenheit. There was no strong petroleum odor with either sample; the samples smell like linseed oil. Both original sample bottles were resealed using Teflon tape on the glass threads.

The cap for the bottle labeled "Umiat Ruby #1" split when I replaced it. I used Teflon tape to cover the split which is a temporary repair at best.



GMC DATA REPORT 353