

Potassium-Argon age determinations for the
General Petroleum Corp. Great Basins No. 1,
General Petroleum Corp. Great Basins No. 2, and
Gulf Oil Corp. Port Heiden No. 1 wells.

18 April 1975

Total of 7 pages in report.

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FROM N. D. Coggeshall AT Harmarville DATE August 28, 1972
TO Mr. B. W. Miller AT Bakersfield REFERENCE 4201DC44
ATTN: J. P. Gates
SUBJECT AGE DETERMINATIONS: CUTTING AND CORE
SAMPLES, PORT HEIDEN UNIT NO. 1, ALASKA
A-72-0042-12-(/)

Results of potassium-argon age determinations on cuttings and a core sample from the subject well submitted under cover of letters W. J. Cage, Jr., to T. J. Weismann, August 16, 1972, and D. A. Davis to H. A. Shillibeer, August 9, 1972, are reported confirming phone conversations with T. J. Weismann during the week of August 21, 1972.

The samples are:

Sample #1 Cuttings 10,980-10,990'
Sample #2 Cuttings 10,990-11,000'

Above samples described as porphyritic igneous rock which is believed to be extrusive in nature (N. D. Coggeshall/D. A. Davis to B. W. Miller, "Petrology and Palynology of Cutting Samples, Port Heiden Unit No. 1, Alaska", August 4, 1972).

Sample #3 Core 11,832-11,833'

Pertinent data:

	Spl. #1	Spl. #2	Spl. #3
Potassium Content	2.63	2.64	2.70
GrAr ⁴⁰ /GrSpl	8.00x10 ⁻⁹	7.97x10 ⁻⁹	7.79x10 ⁻⁹
% Radiogenic Argon	35%	40%	50%
Ar ⁴⁰ /K ⁴⁰	2.52x10 ⁻³	2.50x10 ⁻³	2.39x10 ⁻³
Calculated Age (m.y.)	43±4	42±4	42±4

The three samples dated are remarkably similar in potassium content, quantity of radiogenic gas, and determined age.

The radiogenic character of the gas is typical of that found in volcanic rocks of this type.

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SEP 11 1972

N. D. Coggeshall
N. D. Coggeshall

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SEP 20
EXPLORATION
DEPT.
SEPTEMBER 18, 1972

FROM N. D. Coggeshall AT Harmarville
TO Mr. B. W. Miller AT Bakersfield REFERENCE 4201DC44
SUBJECT Age Determination, Igneous Rock,
13,972', Port Heiden Unit No. 1, Alaska
Re Letter 9/11/72, DADavis-HAShillibeer
A-72-0045-11-(/)

The subject sample originally submitted by Mr. Gates to HTSC has been forwarded to Harmarville and dated by the K-Ar method.

The material is an altered (chloritized) very fine-grained igneous rock recovered in the junk basket from 13,972' in the well.

Altered material of this type will yield an experimentally determined age lower than the true age. The calculated "age" for this material is 36 million years. Because of the extent of alteration, this may be considered in good agreement with the 42 million year age determined on samples taken higher in the well. Pertinent data are given below:

Potassium Content = 2.05%
GrAr⁴⁰/Gr Spl = 5.32x10⁻⁹
% Radiogenic Argon = 22
Ar⁴⁰/K⁴⁰ = 2.15x10⁻³
Calculated Age = 36 ± 8 million years

As expected, the potassium content of this sample is lower than that of the other volcanics in the well, probably through alteration loss. Likewise, the amount and quality of the extracted argon is low, reflecting alteration and atmospheric contamination.

The determination was performed by R. T. Rupert.

Above information was reported to your office on September 14, 1972, in a telecon between B. W. Miller and T. J. Weismann.

If we can be of further help, please advise.

N. D. Coggeshall
N. D. Coggeshall

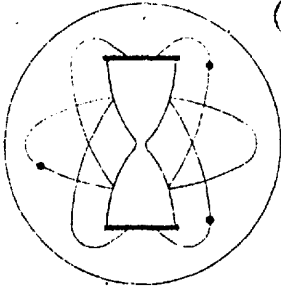
cc: M. J. Hill
H. J. Funkhouser

Gulf Oil Co.
Anchorage
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SEP 25 1972

TLL
PSD
J. Hill

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DIVISION OF OIL AND GAS
ANCHORAGE



KRUEGER ENTERPRISES, INC.

GEOCHRON LABORATORIES DIVISION

24 BLACKSTONE STREET • CAMBRIDGE, MA. 02139 • (617)-876-3691

POTASSIUM-ARGON AGE DETERMINATION

REPORT OF ANALYTICAL WORK

Our Sample No. A- 2980

Date Received: 30 December 1974

Your Reference: AKA-S-201

Date Reported: 22 January 1975

Submitted by: Castano
Shell Development
3737 Bellaire Blvd.
Houston, TX 77001

AKA-S-201
Gulf Oil Corp. Port Heiden
Unit No. 1, Sec. 20 T37S R59W,
Seward B.&M., Bristol Bay Basin
15,006-07'

Sample Description & Locality: *Fine grained granodiorite(?)*, AKA-S-201.

Material Analyzed: *Hornblende concentrate, -80 mesh. Estimated composition: Pale green hornblende, 80%; Chloritized biotite, 15 %; Others, 5%.*

Ar^{40*}/K⁴⁰ = .002230

AGE = 37.7 ± 2.0 M.Y.

Argon Analyses:

Ar ^{40*} , ppm.	Ar ^{40*} / Total Ar ⁴⁰	Ave. Ar ^{40*} , ppm.
.002546	.194	.002295
.002044	.156	

Potassium Analyses:

% K	Ave. %K	K ⁴⁰ , ppm
.840	.843	1.029
.847		

Constants Used:

$\lambda_{\beta} = 4.72 \times 10^{-10}$ / year

$\lambda_e = 0.585 \times 10^{-10}$ / year

K⁴⁰/K = 1.22×10^{-4} g./g.

$$AGE = \frac{1}{\lambda_e + \lambda_{\beta}} \ln \left[\frac{\lambda_{\beta} + \lambda_e}{\lambda_e} \times \frac{Ar^{40*}}{K^{40}} + 1 \right]$$

Note: Ar^{40*} refers to radiogenic Ar⁴⁰.

M.Y. refers to millions of years.

RECEIVED



24 Blackstone Street, Cambridge, Mass. 02139
Telephone Trowbridge 6-3091

9 September 1969

Mr. G. F. Stansberry
Pan American Petroleum Corp.
Security Life Bldg.
Denver, Colorado 80202

Dear Mr. Stansberry:

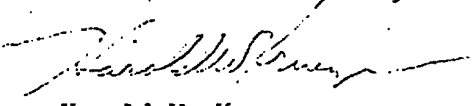
We have now completed the potassium-argon age determinations on several samples described in your letter of 15 July 1969. We were able to obtain age determinations on three of these samples and you will find these written reports enclosed.

A sample from Mobil Great Basins #1 at a depth of 11,040' gave an age of 120 m.y. This is an early Cretaceous age.

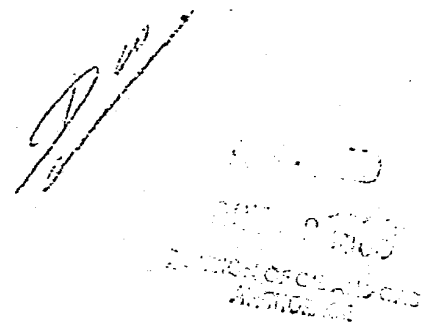
A very small sample from the General Pet. Great Basins #2 well gave an apparent age of 96.3 m.y. We had anticipated separating a small sample of amphibole for this analysis but we were unable to obtain enough for analysis. We finally chose to go ahead and analyze the whole rock sample in order to provide you with some useful information. In light of our experience we would suggest that the age of 96.3 m.y. is slightly young and that the rock is probably more likely to be about 120 m.y. old as a result of a small amount of argon loss from the feldspars.

I trust these results will be useful to you and that you will get in touch with me if you have any questions about any of them. In the meantime I am enclosing our invoice for these analyses and I hope we will have the pleasure of serving you and Pan American again in the very near future.

Sincerely,
GEOCHRON LABORATORIES, INC.


Harold W. Krueger
Technical Director

HMK/pw
encl.


AMERICAN PETROLEUM INSTITUTE



REPORT OF ANALYTICAL WORK

POTASSIUM-ARGON AGE DETERMINATION

Our Sample No. B -1324

Date Received: 28 July 1969

Your Reference: Mobil Great Basins #1, 11,040-41

Date Reported: 29 August 1969

Submitted by:

G. F. Stansberry
Pan American Pet. Corp.
Security Life Bldg.
Denver, Colorado 80202

Sample Description & Locality: Altered granite, Mobil Great Basin Well, 11,040-11,041

Material Analyzed: Mica concentrate, -80/+200 mesh. Estimated to be 30 to 40% biotite and muscovite, 30% chlorite, remainder a variety of heavy minerals. (Too small for further purification).

Ar^{40*}/K⁴⁰ = 0.00727

AGE = 120 (±6) x 10⁶ years.

Argon Analyses:

Ar ^{40*} , ppm.	Ar ^{40*} / Total Ar ⁴⁰	Ave. Ar ^{40*} , ppm.
0.00915	0.503	0.00814
0.00714	0.445	

Potassium Analyses:

% K	Ave. %K	K ⁴⁰ , ppm
0.923	0.917	1.119
0.911		

Constants Used:

$\lambda_{\beta} = 4.72 \times 10^{-10} / \text{year}$

$\lambda_e = 0.585 \times 10^{-10} / \text{year}$

$K^{40}/K = 1.22 \times 10^{-4} \text{ g./g.}$

$$\text{AGE} = \frac{1}{\lambda_e + \lambda_{\beta}} \ln \left[\frac{\lambda_{\beta} + \lambda_e}{\lambda_e} \times \frac{\text{Ar}^{40*}}{\text{K}^{40}} + 1 \right]$$

Note: Ar^{40*} refers to radiogenic Ar⁴⁰.

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REPORT OF ANALYTICAL WORK

POTASSIUM-ARGON AGE DETERMINATION

Our Sample No. R -1325

Date Received: 28 July 1969

Your Reference: Gen. Pet. Great Basins, #2, 8820-30 Date Reported: 29 August 1969

Submitted by:
 G. F. Stansberry
 Pan American Pet. Corp.
 Security Life Bldg.
 Denver, Colorado 80202

Sample Description & Locality: Small chip of diorite.

Material Analyzed: Whole rock (Size proved inadequate for separation of amphibole concentrate.)

$$\text{Ar}^{40*}/\text{K}^{40} = 0.00578$$

$$\text{AGE} = 96.3 (\pm 5.5) \times 10^6 \text{ years.}$$

Argon Analyses:

Ar ^{40*} , ppm.	Ar ^{40*} / Total Ar ⁴⁰	Ave. Ar ^{40*} , ppm.
0.00590	0.548	0.00567
0.00544	0.495	

Potassium Analyses:

% K	Ave. %K	K ⁴⁰ , ppm
0.826	0.804	0.981
0.781		

Constants Used:

$$\lambda_{\beta} = 4.72 \times 10^{-10} / \text{year}$$

$$\lambda_e = 0.535 \times 10^{-10} / \text{year.}$$

$$\text{K}^{40}/\text{K} = 1.22 \times 10^{-4} \text{ g./g.}$$

$$\text{AGE} = \frac{1}{\lambda_e + \lambda_{\beta}} \ln \left[\frac{\lambda_{\beta} + \lambda_e}{\lambda_e} \times \frac{\text{Ar}^{40*}}{\text{K}^{40}} + 1 \right]$$

Note: Ar^{40*} refers to radiogenic Ar⁴⁰.