New K-Ar ages from the Eldora-Bryan stock and Idaho Springs Formation, Front Range, Colorado

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NEW K-Ar AGES FROM THE ELDORA–BRYAN STOCK AND IDAHO SPRINGS FORMATION, FRONT RANGE, COLORADO

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This report presents new K-Ar ages from the Eldora–Bryan stock, Front Range, Colorado previously studied in great detail by Hart (1964) and Hart and others (1968). The data will be used for part of a larger study of the effect of stock intrusion on lanthanide and actinide redistribution in the Idaho Springs Formation as a function of distance from the contact. Samples EL-3, 6b, and 24a are from the sampling traverse of Hart (1964) while samples EL-26–29a are from the Rollins Pass Road near the crossing of Antelope Creek south of the Eldora traverse (Hart, 1964) but where stock and Idaho Springs Formation rocks are both exposed. Constants used in the calculations are λ_e + $\lambda_{e'}$ = 0.581 x $10^{-10}yr^{-1}$, λ_β =4.962 x $10^{-10}yr^{-1}$, and $^{40}K/K_{total}$ = 1.167 x 10^{-4} mol/mol. *Analysts:* Geochron Labs., Cambridge, MA.

SAMPLE DESCRIPTIONS

1. *EL-3*   K-Ar
Biotite-hornblende felsic gneiss, Idaho Springs Formation. (39°57'06"N, 105°35'08"W; Boulder County, CO). Green hornblende (45%), plagioclase (35%), K-feldspar (10%), opaques (8%) with minor quartz, biotite, chlorite, zircon noted in strongly foliated gneiss cut by quartz monzonite with feldspars (70%) and quartz (30%) with minor biotite. Sample is a mixture of Idaho Springs Formation cut by apophyses of the Eldora–Bryan stock about 0.1 to 0.3 m from the contact. *Analytical data:* (biotite) K =7.358%, 7.513%; *^{40}Ar = 0.03179 ppm *^{40}Ar/ΣAr^{40} = 56.4%, 76.3%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 59.0 ± 2.2 m.y.

2. *EL-6b*   K-Ar
Pegmatite-bearing felsic gneiss, Idaho Springs Formation. (39°57'06"N, 105°35'06"W; Boulder County, CO). K-feldspar (75%), quartz (20%), biotite (3%), opaques (1%), apatite (trace). *Analytical data:* (biotite): K = 7.667%, 7.682%; *^{40}Ar = 0.03259 ppm; *^{40}Ar/ΣAr^{40} = 56.1%, 59.4%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 58.6 ±2.2 m.y.

3. *EL-24a*   K-Ar
Biotite-hornblende-plagioclase gneiss, Idaho Springs Formation. (39°57'05"N, 105°29'19"W; Boulder County, CO). Foliated gneiss cut by pegmatite stringers. *Analytical data:* K = 6.953%, 6.863%; *^{40}Ar = 0.6751 ppm; *^{40}Ar/ΣAr^{40} = 96.2%, 95.0%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 1029 ± 35 m.y.

4. *EL-26*   K-Ar
Mafic gneiss. (39°55'14"N, 105°36'49"W; Gilpin County, CO). Biotite-hornblende-plagioclase gneiss, strongly foliated. *Analytical data:* K = 7.587%, 7.501%; *^{40}Ar = 0.3195 ppm, 0.3140 ppm; *^{40}Ar/ΣAr^{40} = 63.7%, 51.7%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 57.9 ± 2.2 m.y.

5. *EL-27a*   K-Ar
Biotite-hornblende gneiss, Idaho Springs Formation. (39°55'18"N, 105°36'32"W; Gilpin County, CO). Biotite (8%), hornblende (30%), plagioclase (45%), K-feldspar (5%), opaques (8%), quartz (4%); strongly foliated with some pegmatitic stringers. *Analytical data:* (biotite) 7.767%, 7.791%; *^{40}Ar = 0.03427 ppm, 0.03097 ppm; *^{40}Ar/ΣAr^{40} =43.2%, 69.3%; (K-feldspar) K = 4.239%, 4.190%; *^{40}Ar = 0.02245 ppm, 0.02054 ppm; *^{40}Ar/ΣAr^{40} =26.8%, 71.9%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 57.9 ± 2.2 m.y.
(K-feldspar) 70.1 ± 2.7. m.y.

6. *EL-28*   K-Ar
Biotite-hornblende gneiss, Idaho Springs Formation. (39°55'18"N, 105°36'23"W; Gilpin County, CO). K-feldspar-rich gneiss, biotite and hornblende partially altered. *Analytical data:* (K-feldspar) K = 7.103%, 7.121%; *^{40}Ar = 0.03526 ppm, 0.03541 ppm; *^{40}Ar/ΣAr^{40} = 71.0%, 76.5%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(K-feldspar) 68.4 ± 2.5 m.y.

7. *EL-29a*   K-Ar
Biotite-hornblende-pyroxene gneiss, Idaho Springs Formation. (39°55'14"N, 105°36'16"W; Gilpin County, CO). Foliated gneiss cut by pegmatitic stringers; K-feldspar from pegmatite and biotite from gneiss separated. *Analytical data:* (biotite) K = 7.376%, 7.348%; *^{40}Ar = 0.03694 ppm, 0.03490 ppm. *^{40}Ar/ΣAr^{40} = 62.9%, 72.7%. (K-feldspar) K = 4.160%, 4.114%; *^{40}Ar = 0.04645 ppm, 0.04401%; *^{40}Ar/ΣAr^{40} = 77.2%, 78.7%. *Collected by:* D. G. Brookins, M. S. Abashian, L. H. Cohen, H. A. Wollenberg.
(biotite) 67.2 ± 2.5 m.y.
(K-feldspar) 147 ± 6 m.y.

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