

Fission track ages from volcanic rocks in and near the Little Drum Mountains, Millard County, Utah

L.F. Hintze and B.J. Kowallis

Isochron/West, Bulletin of Isotopic Geochronology, v. 54, pp. 15-16

Downloaded from: <https://geoinfo.nmt.edu/publications/periodicals/isochronwest/home.cfm?Issue=54>

Isochron/West was published at irregular intervals from 1971 to 1996. The journal was patterned after the journal *Radiocarbon* and covered isotopic age-dating (except carbon-14) on rocks and minerals from the Western Hemisphere. Initially, the geographic scope of papers was restricted to the western half of the United States, but was later expanded. The journal was sponsored and staffed by the New Mexico Bureau of Mines (now Geology) & Mineral Resources and the Nevada Bureau of Mines & Geology.



ISOCHRON/WEST
A Bulletin of Isotopic Geochronology

All back-issue papers are available for free: <https://geoinfo.nmt.edu/publications/periodicals/isochronwest>

This page is intentionally left blank to maintain order of facing pages.

FISSION TRACK AGES FROM VOLCANIC ROCKS IN AND NEAR THE LITTLE DRUM MOUNTAINS, MILLARD COUNTY, UTAH

LEHI F. HINTZE
BART J. KOWALLIS

Utah Geological and Mineral Survey, 606 Black Hawk Way, Salt Lake City, UT 84108-1280
Department of Geology, Brigham Young University, Provo, UT 84604

Zircon fission track ages from in and near the Little Drum Mountains are reported (fig. 1, index map). The samples come from local ash flows and volcanoclastic units that have not previously been dated. Zircons were extracted from the samples by conventional magnetic and heavy liquid techniques and then dated using the external detector method and a zeta calibration factor of 310 ± 4 determined from several irradiations of SRM-962 glass and Fish Canyon zircon. Irradiations were done at the Oregon State University Triga Reactor. Errors given are two standard errors of the mean using the method described by Green (1981).

SAMPLE DESCRIPTIONS

- Y278 Tt2** Fission-track Tuff ($39^{\circ}24'02''\text{N}$, $112^{\circ}59'59''\text{W}$; Smelter Knolls W 7.5' quad., Millard Co., UT). *Analytical data:* (zircon—5 grains) fossil track density (track counts) = 8.94×10^6 tracks/cm² (1,699 tracks); induced track density (track counts) = 6.55×10^6 tracks/cm² (1,244 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Map unit Tt2 of Pierce (1974).
(zircon) 38.6 ± 3.1 Ma
- Y279 RKB** Fission-track Dacite ash-flow tuff ($39^{\circ}20'55''\text{N}$, $113^{\circ}04'22''\text{W}$; Red Knolls 7.5' quad., Millard Co., UT). *Analytical data:* (zircon—5 grains) fossil track density (track counts) = 8.42×10^6 tracks/cm² (1,574 tracks); induced track density (track counts) = 8.00×10^6 tracks/cm² (1,496 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Tuff is basal pumiceous part of Red Knolls Tuff (Hintze and Davis, 1989).
(zircon) 29.8 ± 2.3 Ma
- Y280 Tt1** Fission-track Lithic tuff ($39^{\circ}23'28''\text{N}$, $112^{\circ}57'42''\text{W}$; Smelter Knolls W 7.5' quad., Millard County, UT). *Analytical data:* (zircon—6 grains) fossil track density (track counts) = 4.82×10^6 tracks/cm² (1,392 tracks); induced track density (track counts) = 3.45×10^6 tracks/cm² (997 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Map unit Tt1 of Pierce (1974).
- Y281 TW** Fission-track Dacite ash-flow tuff ($39^{\circ}16'23''\text{N}$, $113^{\circ}07'50''\text{W}$; Whirlwind Valley SW from side of old US Highway 6, Whirlwind Valley SW 7.5' quad., Millard Co., UT). *Analytical data:* (zircon—5 grains) fossil track density (track counts) = 7.72×10^6 tracks/cm² (1,505 tracks); induced track density (track counts) = 6.70×10^6 tracks/cm² (1,307 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Red Knolls Tuff of Hintze and Davis (1989).
(zircon) 32.6 ± 2.7 Ma
- Y283 RKM** Fission-track Dacite ash-flow tuff ($39^{\circ}20'55''\text{N}$, $113^{\circ}04'22''\text{W}$; Red Knolls 7.5' quad., Millard Co., UT). *Analytical data:* (zircon—5 grains) fossil track density (track counts) = 8.40×10^6 tracks/cm² (1,185 tracks); induced track density (track counts) = 7.44×10^6 tracks/cm² (1,049 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Red Knolls Tuff of Hintze and Davis (1989).
(zircon) 32.0 ± 2.9 Ma
- Y284 Tt3** Fission-track Tuff ($39^{\circ}24'15''\text{N}$, $113^{\circ}00'10''\text{W}$; Little Drum Pass 7.5' quad., Millard Co., UT). *Analytical data:* (zir-

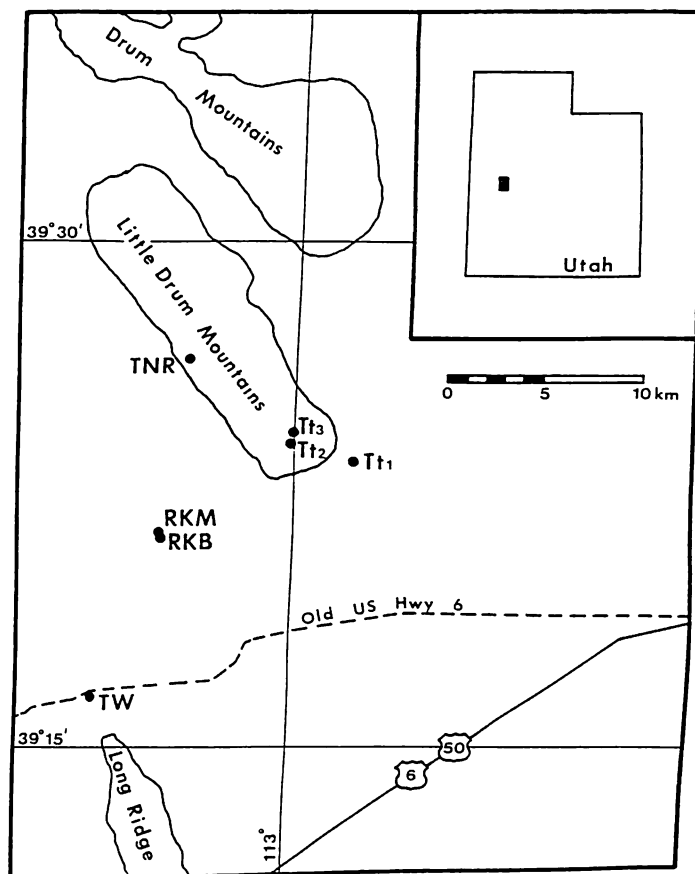


FIGURE 1. Index map showing sample localities. Field sample numbers are shown.

con—4 grains) fossil track density (track counts) = 5.61×10^6 tracks/cm² (1,962 tracks); induced track density (track counts) = 5.06×10^6 tracks/cm² (1,772 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285 tracks). *Comments:* Sample was a heavy sand collected from a gully draining tuff unit Tt3 of Pierce (1974).

(zircon) 31.3 ± 2.3 Ma

7. Y285 TNR

Fission-track

Dacite ash-flow tuff (39°26'06"N, 113°03'45"W; Little Drum Pass 7.5' quad., Millard Co., UT). *Analytical data:* (zircon—6 grains) fossil track density (track counts) = 8.07×10^6 tracks/cm² (1,566 tracks); induced track density (track counts) = 6.71×10^6 tracks/cm² (1,302 tracks); mica detector track density (track counts) = 182,932 tracks/cm² (4,285

tracks). *Comments:* Red Knolls Tuff of Hintze and Davis (1989). This sample contains two grain populations. The younger three grains (31.0, 31.5, and 31.6 Ma) give a combined age of 31.4 ± 3.2 Ma, while the older group (37.0, 38.9, and 38.6 Ma) give an age of 38.0 ± 4.6 Ma.

(zircon) 34.0 ± 2.8 Ma

REFERENCES

- Green, P. F. (1981) A new look at statistics in fission track dating: *Nuclear Tracks*, v. 5, p. 77.
- Hintze, L. F., and Davis, F. D. (1989) Geologic map of the Red Knolls Quadrangle, Millard County, Utah: Utah Geological and Mineral Survey Map Series.
- Pierce, C. R. (1974) Geology of the southern part of the Little Drum Mountains, Utah: *Brigham Young University Geology Studies*, v. 21, p. 109.