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## DATA REPOSITORY TABLES

**TABLE DR1:** Tabulated summary statistics from field measurements of calcite filled extension fractures in the north and south fracture zones.

**TABLE DR2.** Tabulated shape preferred orientation (SPO) data from cemented, foliated damage zone samples.

**TABLE DR3.** Results of  $\delta^{18}\text{O}$  (VSMOW) and  $\delta^{13}\text{C}$  (VPDB) analyses.

**TABLE DR1.** Tabulated summary statistics from field measurements of calcite filled extension fractures in the north and south fracture zones

		Kinematic Aperture (mm)			Calcite Generations		
Site	n	mean	max	min	mean	max	min
North Fracture Zone	56	2	6	< 1	1	2	1
South Fracture Zone	33	12	150	< 1	2	6	1

Kinematic aperture data is in mm. The number of individual measurements used to construct mean, max, and min values are given as n.

**TABLE DR2.** Tabulated shape preferred orientation (SPO) data from cemented, foliated damage zone samples

Sample	Distance (m)	n	Mean Dip (°E)	Uncertainty (°)	Strength	Chi-Squared	Porosity (%)
LM1k	1	103	74	14	0.52	74	3.8
S041715-10	1	159	76	12	0.47	96	2.0
S041615-5	2	107	62	16	0.45	63	2.1
LM1j	3	136	80	10	0.55	138	1.0
S041715-11	3	132	76	13	0.49	90	3.8
S041615-4	5	159	76	12	0.49	111	2.0
S041715-9	7	191	68	15	0.37	97	3.0
LM1i	8	156	76	10	0.60	114	2.3
S041615-3	9	125	72	16	0.42	73	1.6
LM1h	10	136	77	18	0.48	83	1.9
S041715-8	10	174	78	11	0.51	137	4.2
<b>Mean</b>		146	74	14	0.48	101	2.4

Distance is in m perpendicular east from the fault core, and n denotes the number of grains measured in each sample. Quantification of mean, uncertainty, and strength of the SPO follow Masuda et al. (1999). Chi-squared values greater than 33.4 indicate statistically significant SPOs at the 99% confidence level; all samples yielded statistically significant SPOs.

**TABLE DR3.** Results of  $\delta^{18}\text{O}$  (VSMOW) and  $\delta^{13}\text{C}$  (VPDB) analyses

Pore Filling Cements (South Fracture Zone)	$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	Vein Type
LM1HBS-1	-2.6	23.2	NA
LM1IBS-1	-2.8	23.1	NA
LM1jBS-3	-2.9	23.3	NA
LM1iBS-2	-3.3	22.7	NA
LM1hBS-2	-2.9	23.4	NA
LM1JBS-1	-2.5	22.9	NA
LM1JBS-2	-2.6	23.0	NA
LM1kBS-3	-3.0	22.6	NA
LM1KBS-1	-2.6	22.7	NA
LM1KBS-2	-2.5	22.7	NA
Pore Filling Cements (North Fracture Zone)	$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	NA
041615-3-1	-3.1	23.3	NA
041615-3-2	-3.1	23.4	NA
041615-5	-3.1	23.1	NA
Clasts in Injectites	$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	NA
LM1nBS-por-1	-3.1	23.4	NA
LM1cB1-2	-2.9	23.6	NA
LM1CB1-1	-2.7	24.2	NA
LM1CB2-1	-3.0	23.8	NA
LM1CB1-1	-2.4	23.8	NA
LM1CB2-1	-2.7	23.3	NA
Injectite Matrix Cement	$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	NA
LM1cB1-inj-1	-3.0	22.5	NA
LM1cB2-inj-2	-3.3	22.4	NA
LM1nBS-inj-1	-3.5	22.2	NA
LM1nBS-inj-2	-3.5	22.4	NA
Veins	$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	NA
LM1d1-vein-2-1	4.1	22.3	Breccia
LM1d1-vein-2-2	5.7	22.4	"
LM1w1-vein-1	-1.9	22.4	Parallel
LM1w1-vein-2	-1.5	22.5	"
LM1w1-vein-3	-1.9	22.2	"
LM1D1-VEIN-1	5.3	21.8	Breccia
LM1D1-VEIN-2	5.8	22.0	"
S-89-2-g2	-2.6	22.8	NA
S-89-2-g3	-3.5	21.5	NA
LM1x	-1.1	23.1	Parallel
041715-C1-g1	-1.7	22.2	Parallel
041715-C1-g2	-1.4	22.2	"
041715-C1-g3	-2.2	23.2	"
041715-C2-g1	-0.6	22.9	Perpendicular

041715-C2-g2	-3.4	22.1	"
041715-C2-g3	-3.3	21.8	P"
041715-c12-g2	-1.0	22.3	Parallel
041715-C5-g1	4.6	21.9	Breccia
041715-C5-g2	4.2	21.8	"

All results are in ‰ units. Where individual sample names occur multiple times, corresponding numbers indicate replicate analyses subsampled from corresponding thin section billets. Precision for  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$  measurements is less than 0.1‰.