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S. Alder, S.A.F. Smith, J.M. Scott

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Fault-zone structure and weakening processes in basin-scale reverse faults: the Moonlight Fault Zone, South Island, New Zealand

S. Alder, S.A.F. Smith* & J.M. Scott

Department of Geology, University of Otago, PO Box 56, 9054 Dunedin, New Zealand

*Corresponding author e-mail: steven.smith@otago.ac.nz
Corresponding author telephone: +64 03 479 7515
Corresponding author fax: +64 03 479 7527

Keywords: Basin inversion, reverse fault, fault reactivation, fault-zone structure, fault zone weakening, pseudotachylytes, foliated cataclasite, phyllosilicates, mechanical anisotropy

Highlights:

1) Rare field opportunity to study basin-scale normal fault zone reactivated in compression
2) Fault-zone structure in basement controlled mainly by host rock lithology and anisotropy
3) Hanging-wall laced by networks of steeply-dipping pseudotachylytes
4) Fault core contains progressively foliated fault rocks rich in chlorite and muscovite
5) Frictionally weak core facilitated steep reverse faulting and acted as hydrological barrier

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