Appendix 1. EBSD analytical conditions.

Hitachi SU6600 SEM
Field Emission Gun
Shottkey source
Oxford Nordlys EBSD detector

EBSD conditions: 20kV
Condenser lenses: medium 6-8
Probe current: 5-4 nA
Anode aperture: 3
Objective aperture: 2
Time per frame: 23 ms
Noise reduction: 4 frame
High resolution: 60
Detect 5-7 bands
Appendix 2. BSE surface images of detrital shocked zircons.

A. 10SU14 grain 15

B. 10SU14 grain 19

C. 10SU31 grain 06

D. 10SU42 grain 38

E. 10SU14 grain 36

F. 10SU30 grain 01
Appendix 3.1. Interior grain images of detrital shocked zircons.

10SU37 grain 24
A. BSE

10SU31 grain 84

B. EBSD - BC*

10SU23 grain 119

C. EBSD

10SU34 grain 93

D. *BC = band contrast
Appendix 3.2. Interior grain images of detrital shocked zircon.
10SU42 grain 124
A. TL
B. SE
C. BSE
D. EBSD

50 μm

0° misorientation 7°
Appendix 4. Boulder of Onaping Formation in a Holocene glacial deposit. (A) Roadcut exposing a Holocene delta on Frenchman Lake Road, North Range of the Sudbury basin. (B) Close-up image of inset box in A; arrow points to sample 10SU28. (C) Sample 10SU28. The rock is composed primarily of altered vitric fragments and possible melt veins, and is interpreted to have originated from the ‘equant shard unit’ of the Sandcherry Creek member of the Onaping Formation (Ames et al., 2002). (D-E) Grains of quartz in sample 10SU28 that contain one orientation of possible decorated PDFs.