A NOTE ON THE HANMER SPRINGS EARTHQUAKE, THURSDAY 29/08/1996

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An M5.5 earthquake in North Canterbury at 4:47 pm (NZST) on Thursday, August 29th caused strong shaking in the township of Hanmer Springs. Items were thrown off shelves and televisions and microwave ovens fell. The shaking was described as the strongest within memory by long-term residents. A reliable eye-witness described a sequence of "fireballs" at the top of the row of domestic power poles running along Jollies Pass Road towards the Hanmer Forest. The effects were apparently much weaker in the adjacent Culverden Basin, to the east.

An SMA-1 accelerograph of the University of Canterbury was triggered at Hanmer Springs; the record is shown below. Peak accelerations of about 20 percent of gravity were recorded in both horizontal components. While this is not very great, the width of the pulses is large, consistent with the very strong shaking felt in the village.

The interval between triggering of the instrument and the S-wave arrival (the start of strong shaking) was only 1.6 seconds, indicating a focal distance of about 12 km. Since the focus is usually several kilometres deep, this suggests that the rupture was very close to Hanmer, possibly on the Hanmer Fault whose scarp marks the rise which runs along southern boundary of the township. With a much smaller focal depth, and again assuming the instrument triggered on the P-arrival, the rupture could have occurred on the Hope Fault at the south of the Hanmer Basin.

The greater strength of the vertical component during the first 1.6 seconds is consistent with the near-vertical arrival of P-waves, adding further evidence for an epicentre close to Hanmer.

The usually inaccurate internal clock of the SMA-1 had been reset the previous week, so we have quite precise timing on the event. The S-arrival marked on the film image below occured at 14:47:06.6 +/- 0.5s

Although the earthquake was felt at Molesworth, in Christchurch and in the Craigieburn Ranges near Arthur's Pass, accelerographs at Molesworth, 60 km to the northeast, Arthur's Pass, 100 km to the southwest and at Kaikoura and Christchurch, set to trigger at about 1 percent of gravity in the vertical direction, were not triggered by this event.

Acknowledgement: The Hanmer accelerograph was purchased with funds from the University Grants Committee, and maintained expertly by Mr George Clarke with financial support from the University of Canterbury.

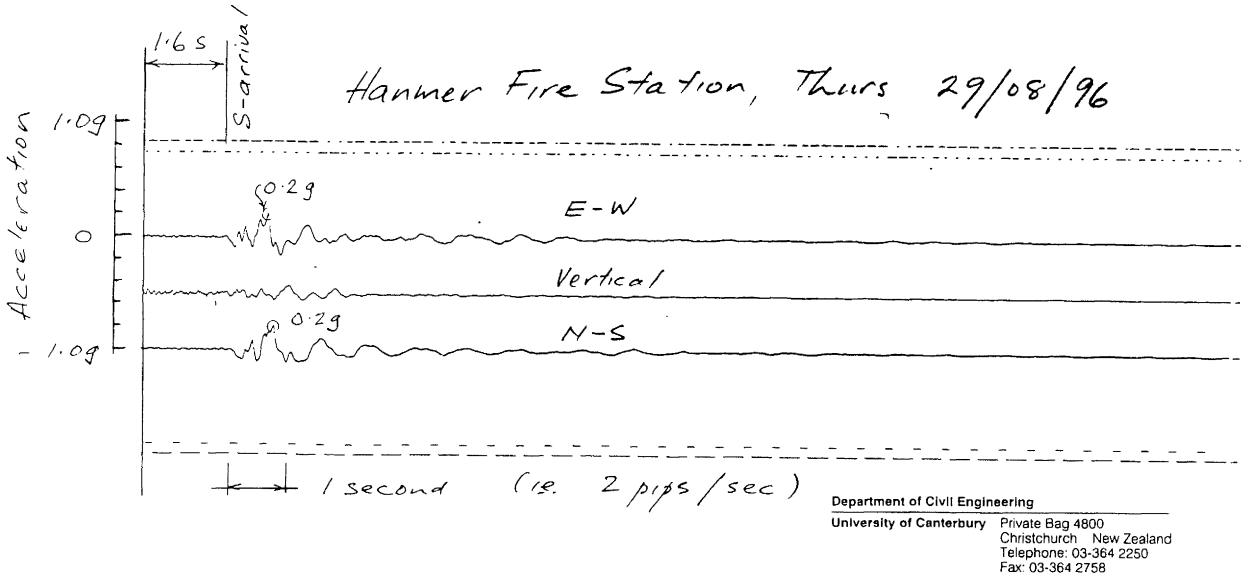

FIGURE 1. Accelerogramme recorded in the Hanmer Fire Station, on firm colluvial sediment.

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