

Analysis of Multicomponent Seismic Data Recorded with a New Hydraulic Thumper Source

Rafael J. Asuaje¹, Don Lawton¹, Malcolm Bertram¹, Kevin Bertram¹, Kevin Hall¹, and Eric Gallant¹

¹University of Calgary, Calgary, Alberta, Canada (rjasuaje@ucalgary.ca)

Abstract

This paper examines the performance of the new multicomponent weight drop source built by CREWES. The source was tested on the University of Calgary campus to generate P-waves and S-waves, and to provide a detailed velocity structure of the near surface. The source generates SH waves by orienting the source mast ± 45 degrees from the vertical and subtracting records generated with opposite source polarities. This cancels P-waves and constructively adds SH waves. The data collected show that the uppermost layer of the shallow subsurface has a P-wave velocity of 840 m/s and a SH-velocity of 215 m/s, yielding V_p/V_s of 3.90.