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Shear Strength Response of the Aluminium Alloy 6082-T6 During One-Dimensional Shock Loading JOHN HARRIGAN, University of Aberdeen, JEREMY MILLETT, AWE, NEIL BOURNE, University of Manchester — The measurement of shear strength via the use of lateral stress gauges has been shown to be a viable technique in a number of materials. An experimental investigation on the intermediate-rate behaviour and shock response of the aluminium alloy, 6082-T6, is reported here. Results obtained using the lateral stress gauge technique show that the shear strength increases with impact stress. The lateral stress behind the shock front is seen to be relatively flat, unlike many other face-centred cubic metals and alloys, where a decrease in lateral stress indicates an increase in shear strength. This unusual response may be a reflection of the high stacking fault energy of aluminium and its alloys resulting in a reduction of the work hardening (*i.e.* increases in dislocation and/or twin density). Further plate impact results show that the Hugoniot of 6082-T6 is in effect identical to that of the more widely known 6061-T6. Split Hopkinson pressure bar results are used to provide a fuller picture of the rate-dependant behaviour of 6082-T6 over a range loading rates and conditions. Key words: shear strength, aluminium alloy, one-dimensional shock

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