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Shock Response of Body Centred Cubic Metals JEREMY MILLETT, GLENN WHITEMAN, NEIL BOURNE, NIGEL PARK, MATTHEW COTTON, AWE, Aldermaston — Over the past few years, a research programme has been in place to examine the shock response of body centred cubic metals such as tantalum and tungsten. Examination of the development of shear strength behind the shock front has shown common behaviour in that a marked decrease has been noted, both in the pure metals and their simple alloys. This has been ascribed to the low generation of new dislocation line length due to the high Peierls stresses found in these metals. However more recent work in niobium and molybdenum has shown a more constant response in shear strength due to either a much lower Peierls stress (niobium) or the possibility of twin formation (molybdenum). We now extend this work to investigate the role of initial dislocation density in tantalum, and broaden the mechanical study to include the spallation response in these metals.

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