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**X-ray Diffraction Measurements in Silicon Shocked Along [100] and [111] Orientations Below the Elastic Limit** Y.M. GUPTA, STEFAN J. TURNEAURE, Washington State University — Plate impact experiments were performed to obtain uniaxial strain loading along [100] and [111] in Si compressed below the Hugoniot elastic limit (HEL). X-ray diffraction measurements were obtained to determine the interplanar lattice spacing along the wave propagation direction in the shocked state. Additionally, the continuum response of the Si crystals was obtained for these orientations by monitoring the rear surface velocity history using laser interferometry. Both sets of measurements are in good agreement with the Si response, calculated using second and third order elastic constants. Our results will be compared with earlier measurements [1]. Work supported by DOE. [1] A. Loveridge-Smith et al., Phys. Rev. Lett. **86**, 2349 (2001).

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