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Reply to "Comment on 'The 1886 Charleston, South Carolina, Earthquake: Relic Railroad Offset Reveals Rupture' by Roger Bilham and Susan E. Hough" by Thomas L. Pratt, Martin C. Chapman, and Qimin Wu

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Introduction

We welcome this opportunity to respond to Pratt *et al.* (2025) (hereinafter P25). Bilham and Hough (2023) proposed a "first-cut" elastic deformation model for the 1886 earthquake, a quantitative source model constrained by identified coseismic constraints. A key observation was the measurement of a lateral offset of a railroad line south of Summerville, leading to a model with predominately dextral slip and minor convergence, from which we concluded that active faulting had raised the Penholoway Terrace >6 m since ~770 ka. P25 questioned these constraints and proposed an alternative rupture model with predominantly reverse slip. This alternative model is neither consistent with coseismic constraints nor with other geophysical data. In a revised model presented here, we recognize that uplift of the Penholoway Terrace is confined to the eastern edge of the terrace, which we conclude results from active fold-

Ashley River in 1886, Dextral offset of railroad track east of Summerville, Earthquake magnitude and intensity of ground motion, and Other fault models sections).

Absence of Evidence for Wholesale Uplift of the Penholoway Terrace

We first consider the evidence for and against the uplift of the Penholoway Terrace. Doar and Kendall (2014) quantified various physical processes influencing the two-million-year history of marine terraces on the South Carolina coast (Fig. 1a). Their data reveal that the height of these terraces rises with the logarithm of their abandonment age according to the relation, elevation = (17.05 ± 1.33) log(ka)−(28.1 ± 3.1) m. Yet, although the incision level at the toe of the Penholoway Terrace is neither higher nor lower than anticipated from its estimated age (Fig. 1b), and as P25 asserted there is no evidence for shallow