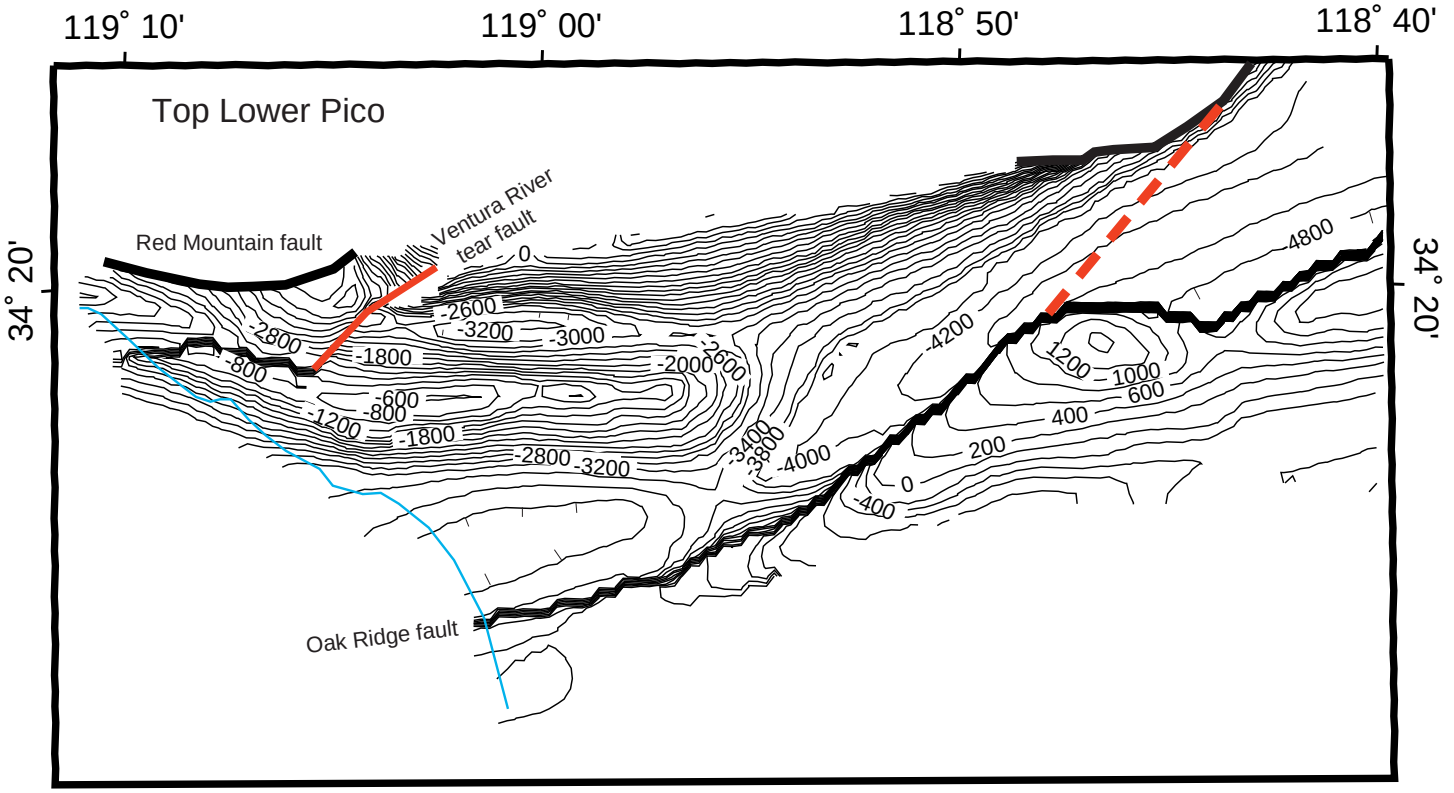

Figure 4: Top lower Pico map onshore. Contour interval is 200 m. Additional smaller faults exist and were digitized, and contours were digitized in the hanging-wall and footwall in areas of thrust overlap. This map will be combined with the offshore map (not shown) and restored during the renewal of this project.

SIGNIFICANCE AND DISCUSSION

Structural style and models for blind faults

Our mapping, restorations, and visualization provide information that can be used to compare models for folding above blind faults. For example, fault-bend fold and fault propagation fold models predict parallel layers of the syn-thrust strata (Suppe and others, 1992; Shaw and others, 1994). The ~6 km wavelength folding of the Mid Channel trend beneath Santa Barbara Channel provides a clear example to compare models. The asymmetry of the western part of this structure suggests a N-verging fold (Fig. 5), in contrast to the S-verging fold farther east (Shaw and Suppe, 1994). This fold has been interpreted by Novoa (1998) as a S-verging fault-bend fold near the location of USGS-111 (Fig. 5). The south limb, which we interpret as a backlimb, is the same width, 4 km, for strata of different age, but the dip increases with increasing age for the post-160,000 year reflections dated at ODP site 893. If the slip is greater than or equal to the backlimb width, as is required for syn-thrust strata by the fault-bend fold and fault-propagation fold models (Suppe, 1983; Suppe and Medwedeff, 1990), then slip since deposition of a ~110,000 horizon would be 36 mm/yr, and would be 80 mm/yr for a 50,000 year horizon. In contrast, a listric thrust model predicts that slip is proportional to limb dip, and that the observed fold can be created with 1 or 2 orders of magnitude slower slip (Seeber and Sorlien, submitted; see also Erslev, 1986).