Table 2. Digitized well logs from the Unocal Company of Wells Drilled Offshore From Point Pedernales, California, in the Santa Maria Basin

Well Name	Log Type	Logged Depth Interval, m	Processed True Vertical Depth Interval, m	Maximum Deviation
A-1	Gearhart four electrode dipmeter survey	710–1788 logged 715–1784 processed	605–1672	7.0°
A-7	Gearhart six electrode dipmeter	732–2226 logged 733–2197 processed	686–1802	45.1°
A-13 Log1	Schlumberger SHDT monitor log	1729–2284 logged 1730–2288 processed	969–1088	80.5°
A-13 Log2	Schlumberger dipmeter monitor log	2300–2606 logged 2301–2497 processed	1092–1138	79.7°
A-16	Schlumberger formation microscanner log	2643–4267 logged 2646–4201 processed	1008–1254	89.6°

For well A-13 we received two separate paper logs. "Logged depth" is measured along the well bore but is greater than the true vertical depth where the borehole is deviated.

tion data, using the breakout selection criteria described above. As an example we show the calibrated caliper and declination-corrected digitized dipmeter data and derived quantities as a function of log depth with the selected breakouts from well A-1 in Figure 12. Figure 14 shows all of the selected breakouts in the Point Pedernales data. We did not manually remove any breakouts due to key seats from the breakouts selected by computer. Note that no breakouts were found in the data from well A-7 because of the odd character of the data from the caliper arm, which routinely showed caliper arm diameters quite a bit larger and smaller than the bit size and caused the data to fail at matching criterion 3 described earlier. Since well A-7 was the only well logged with a six-arm dipmeter, the particular technique used to calculate six-arm borehole elongation angles becomes moot.

In Figure 13 we plot a histogram of the angular differences between the location of the high and low sides of the borehole and the breakout angle measured in the plane perpendicular to the borehole axis for all of our selected breakouts. There is roughly a 20° spread of breakout angles about the high side of the hole. These data show the same clustering of breakout angles near the high and low sides of the hole as *Qian and Pedersen*'s [1991] data (Figure 7).

6. Invert the selected breakout data for the best fitting stress state, using the combined GA and Powell optimization technique described above. The results of the inversion are shown in Table 3. We note that the misfit between the optimized model is 4.84°, more than twice as large as the 1.71° misfit from the *Qian and*

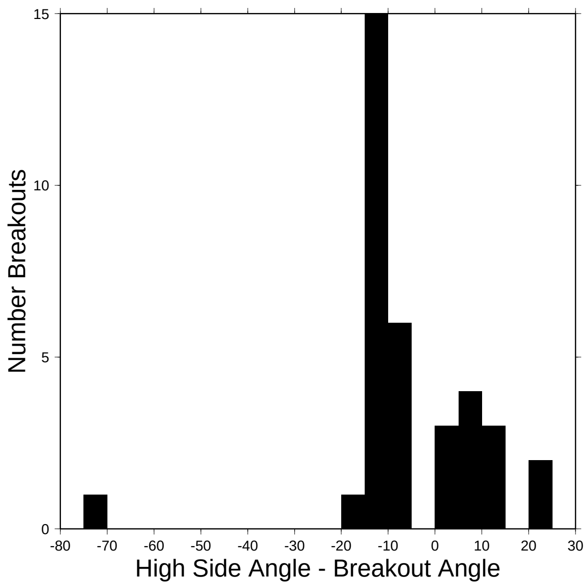

Figure 13. Histogram of the angular difference measured in the plane perpendicular to the borehole axis between the breakout orientation and the high and low sides of the borehole for the Point Pedernales data.