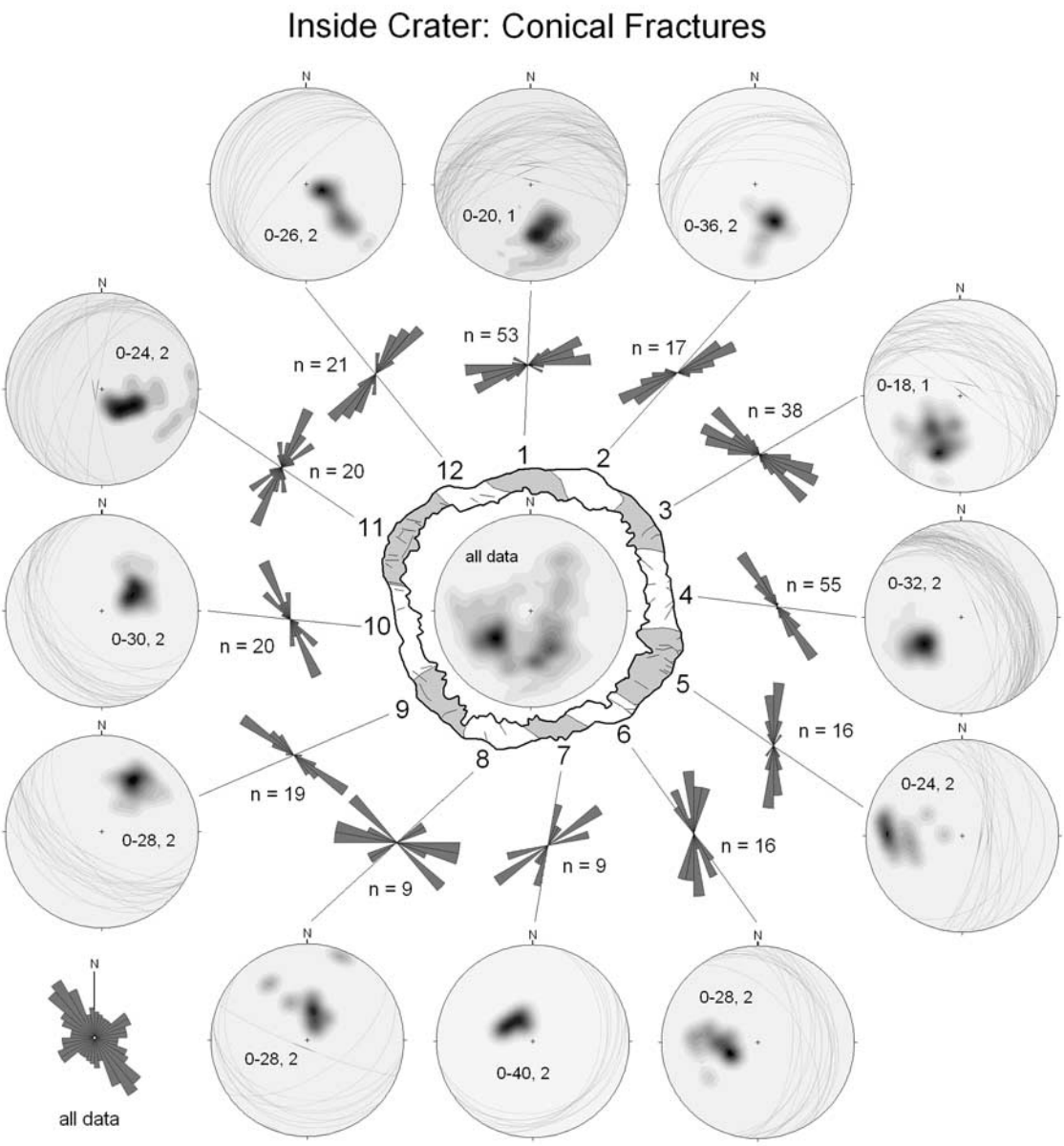

Figure 8. Impact structures (conical fractures): great circles, pole density contours, and bidirectional rose diagrams representing the geometry of conical fractures in the Moenkopi (Moqui and Wupatki members) and Kaibab (Alpha and Beta members) formations of the 12 crater wall tectonic blocks. The pole density range (in percent) and contour interval (in percent) are shown inside the equal-area plots; n represents a number of strike/dip measurements. A bidirectional rose diagram representing all measurements indicates preferential orientations of the conical fractures.

fication stage. Our field observations indicate the slumping is structurally controlled by the concentric fractures.

5. Link Between the Preimpact and Impact Fractures

[14] Figure 10 summarizes the nature of target rocks before and after the impact. Before the impact, the bedding surfaces are essentially horizontal, while after the impact, they acquire an asymmetric uplift pattern seen in the form of an amoeboid-shaped pole density contour pattern. The impact-related crater wall fractures appear different from the preimpact fracture systems. Although the impact may have generated new fracture orientations, a genetic link may also be masked by a reorganization of preimpact fractures during rim uplift. Crater rim uplift creates average dips of 20 to 56° and even overturns bedrock strata (Figure 11). In order to distinguish new from reoriented fracture orientations, we have recalculated the strikes and dips of the crater wall