



Fig. 10. Superposed groove lanes and prominent grooves defining the western portion of lineament III (arrows). North is up. (Voyager 2 image 20631.23, centered near 13°S, 174°W.)

the latter two classes of trough segments, discussed below, were observed.

Galileo Regio-Marius Regio boundary. Two distinctive, throughgoing dark terrain structures in Galileo Regio terminate against lineament I, which defines the area's southern boundary. The first structure is a major, northeast oriented, throughgoing trough ("A" in Figure 4) that is superposed on both system I and II furrows (Figure 11). The trough splays out past 50°N. To the south in central Marius Regio (area 3), a throughgoing, north-northeast oriented trough ("A'" in Figure 4) also is superposed on system I arcuate furrows. In its northern portions (Figure 12), trough "A'" grades to a morphology nearly identical to that observed in trough "A." Trough "A'" terminates to the north at lineament II and to the south at lineament III. Both trough segments "A" and "A'" have a combination of northeast orientation, young relative age, and distinctive morphology that is regionally unique. However, the two segments do not form a single linear trend. The northern termination of trough "A" is several hundred kilometers to the east of the southern termination of trough "A'" in Galileo Regio, and trough "A'" is more northeast-oriented (Figures 4 and 7). McKinnon [personal communication, 1987] has suggested that trough "A'" is a continuation of a system II furrow from Galileo Regio, but this suggestion is difficult to reconcile with the observation that system II furrows in this part of Marius Regio have a west-northwest trend at right angles to trough A'.

The second major dark terrain structure in Galileo Regio that terminates against lineament I is one of the two system II fur-

rows in Galileo Regio that exceeds 2000 km in length ("B" in Figure 4). This structure terminates to the west against grooved terrain along lineament I and is the only >300-km system II furrow in western area 1 to do so. There is no observed continuation on the other side of the lineament, although the projected trace of the structure might pass through the southern edge of one or more of three small, dark blocks. To the west in area 2 is another system II trough ("B'" in Figure 4) that can be traced, where occupied by a younger groove, into shallowly resurfaced light grooved terrain where it terminates against lineament I. Trough "B'" is the only long system II structure in eastern area 2 for which there is evidence of termination of lineament I, and it is several hundred kilometers to the south of its expected position if it were an unbroken continuation of trough "B."

To test the hypothesis that the system I arcuate furrows were disrupted by left-lateral shear across Uruk Sulcus, the effect on trough segments "A", "A'", "B" and "B'" of retrodeforming the 500 km of shear offset hypothesized from furrow-pole separations was examined. Retrodeformation was accomplished by digitally rotating the traces of all area 1 troughs and furrows about the pole of the small circle defining lineament I and by remapping all troughs and furrows as in Figure 4. The result is shown in Figure 13. Linearity was restored to the two pairs of trough segments, "A"/"A'" and "B"/"B'." Therefore it is concluded that retrodeformation of 500 km of left-lateral shear across lineament I could independently restore (1) furrow trends in areas 1 and 3 to near concentricity, (2) linearity to two