WHERE IS THE SOURCE FOR UZBOI VALLIS, MARS? T. J. Parker and D. S. Gorsline, University of Southern California, Dept. of Geological Sciences, Los Angeles, CA 90089-0741.

Uzboi Vallis is an outflow channel over 350km long in the North-Central Argyre and Southwest Margaritifer Sinus regions of Mars. It lies north of Nereidum Montes between the craters Bond (31.5°S lat., 34° lon.) and Holden (26.5°S lat., 34.5° lon.). Just north of Bond, the width of the entire channel system is over 60km (including tributaries to either side), although the channel floor to the north is closer to 15km wide. About 80km north of Bond, Uzboi encounters a 50km crater at (31°S lat., 36° lon.) which lies on a branch of the channel around a streamlined obstruction. Beyond a few km from the crater rim, the floor of the channel either to the north or south does not appear to be mantled by ejecta material. Much of Uzboi Vallis' floor appears rather flat to a point approximately 100km upstream (south) of Holden. Its texture here becomes rougher, and a narrow, smaller valley has been cut into the floor on its east side. This smaller valley is continuous with a notch in the rim of Holden. Small, filamentary valleys on the interior floor of Holden appear to be in alignment with this notch.

Evidence of channeling can be seen within 20km of the north rim of Bond. Part of the channel appears to head in theater escarpments north of Bond. The size of this "source" area appears too small to account for the amount of erosion evident downstream in Uzboi Vallis. It seems more likely that the theater headed source north of Bond developed much later than the main system and that the original source lies beneath or south of Bond. Indeed, there is a trough comparable in size and depth to Uzboi Vallis between Bond and the fresh-looking 130km crater Hale to the south (35.5°S lat., 35° lon., fig. 1). This trough, approximately 100km long, is clearly evident in Viking Orbiter stereo image pairs, though it has been partially filled with ejecta from Hale. The stereo images reveal a topographic notch in Bond's south rim where the trough meets it, possibly indicating a post-Bond, pre-Hale breach by renewed flow through the channel into the crater's interior. South of Hale, at 38°S lat., 36° lon., another channel segment can be seen extending from the south rim of Hale for at least 50km through Nereidum Montes into the interior smooth plains of Argyre Basin. The width of this channel, 15km, is similar to that of the floor of Uzboi Vallis.

It seems likely that an ancient lake within Argyre Basin (1, 2, 3) is the source for Uzboi Vallis, which begins south of Hale, rather than north of Bond. This lake was probably derived from flow into the basin from three large valley networks to the south (3). Uzboi Vallis is likely a relatively ancient system, possibly early to middle Hesperian, since it is superposed by four fairly large impact craters - Hale (130km), Bond (100km), the 50km crater north of Bond, and Holden (140km).

REFERENCES: (1) Pieri, D. C. 1980, PhD Thesis, Cornell University, Ithaca, New York, 281p. (2) Parker, T. J. 1985, Master's Thesis, California State University, Los Angeles, 165p. (3) Parker, T. J. 1989 LPSC XX, p. 826-827.

UZBOI VALLIS SOURCE. Parker, T. J. and Gorsline, D. S.

Figure 1: Stereo image pair of upper Uzboi Vallis. Crater at right is Bond (100km diameter). Crater at left is 50km in diameter. This crater lies on the east branch of Uzboi Vallis around a streamlined island (north end of channel in this scene). Probable headward extension of Uzboi Vallis lies south of Bond's rim. A notch in the crater rim at this point may indicate post-Bond channel flow into the crater interior from the south (A cloud can be seen associated with this notch in the right image). North is toward upper left. Viking Orbiter images: 611A27 (left), 574A14 (right).