Katarina Jegdic* (jegdick@uhd.edu), One Main Street, Houston, TX 77002. Analysis in semi-hyperbolic patches for the unsteady transonic small disturbance equation.

We consider a Riemann problem for the unsteady transonic small disturbance equation resulting in diverging rarefaction waves. We write the problem in self-similar coordinates and we obtain a mixed-type hyperbolic-elliptic system. We use the theory of generalized characteristics and we formulate the problem in a semi-hyperbolic patch that is between the hyperbolic and the elliptic regions. Using the characteristic decomposition in the semi-hyperbolic patch, we prove existence of a smooth local solution and obtain various properties of global smooth solutions. (Received February 16, 2017)