The Aerospace Corporation’s SEBASS hyperspectral imaging spectrograph uses two 128 x 128 focal-play arrays to record simultaneous LWIR and MWIR images (7.8 to 13.5 and 3.0 to 5.5 µm). The resulting thermal images can be used for characterization and identification of surface geological features. A brief description of the instrument and its operation on a DeHavilland Twin Otter aircraft will be given, followed by the presentation of preliminary results from data collections over Flagstaff, Arizona and Mesquite, Nevada.