LUNAR CRATER OBSERVATION AND SENSING SATELLITE (LCROSS) MISSION: RESULTS FROM THE VISIBLE CAMERA AND UV/VISIBLE SPECTROMETER ABOARD THE SHEPHERDING SPACECRAFT. J.L. Heldmann[1], T. Colaprete[1], K. Ennico[1], M. Shirley[1], D. Wooden[1], and the LCROSS Science Team, [1]NASA Ames Research Center, Moffett Field, CA, 94035

Introduction: The LCROSS (Lunar Crater Observation and Sensing Satellite) mission's ojectives were to study a permanently shadowed region near a pole of the Moon. Science goals included investigating the presence or absence of water on the Moon as well as furthering our understanding of other species trapped in these regions. The LCROSS mission launched with the Lunar Reconnaissance Orbiter in June 2009 and used the Atlas V Centaur Earth departure upper stage of the launch vehicle as a ~2300 kg kinetic impactor. The Centaur successfully impacted the Moon within the Cabeus Crater near the lunar south pole. The impact created an ejecta plume whose properties, including water ice and vapor content, were observed by the shepherding spacecraft (S-S/C) plus Earth- and space-based telescopes. Following a similar trajectory of the Centaur, the S-S/C flew through the Centaur impact plume and then the ~700 kg S-S/C also impacted the Moon.

Spacecraft Instrumentation: All science instruments aboard the LCROSS shepherding spacecraft successfully collected data during the final descent to the lunar surface. The LCROSS payload consisted of nine science instruments including one visible wavelength context imager provided by Ecliptic Enterprises Corporation, two near-infrared (1-1.4 micron/ 1-1.7 micron) cameras from Goodrich Sensors Unlimited, one mid-infrared (5-9.4 micron) thermal imager from Thermoteknix Systems, Ltd., one mid-infrared (5-15 micron) camera from FLIR Systems/Indigo Operations, a custom-built highly sensitive total luminance photometer (0.4-1 micron), a UV-visible spectrometer (260-650 nm) provided by Ocean Optics, and two compact low power near-infrared spectrometers (1.2-2.4 micron) built by Polychromix.

Results: This paper will focus on results from analysis of the shepherding spacecraft data during its final descent through the impact plume created by the Centaur impact. Results presented will focus on the visible camera and UV/Visible spectrometer data collected during the flash and curtain periods of the impact event.