STARDUST IMAGING OF COMET WILD 2: FIRST LOOK. R. Newburn[1], C. Acton[2], S. Bhaskaran[2], D. Brownlee[3], A. Cheuvront[4], T. Duxbury[2], M. Hanner[5], B. Semenov[2], S. Sandford[6] and P. Tsou[2], [1]Chipton-Ross, 4800 Oak Grove Drive, Pasadena, CA 91109-8099, Ray.L.Newburn@jpl.nasa.gov, [2]Jet Propulsion Laboratory, [3]University of Washington, [4]Lockheed Martin Space Systems, [5]University of Massachusetts, [6]NASA Ames Research Center

Introduction: On 2 January 2004 during its historic flight to return cometary dust samples to earth, the STARDUST spacecraft flew within the coma of comet Wild 2 and also took 72 images where the surface was resolved during the flyby. A combination of long and short exposures was used to observe the jets and the surface.

Comet Surface: The images revealed a planetary body, one not having a significant atmosphere, quite different from any other such body seen from other spacecraft. Surface depressions, potentially a combination of craters and vents, were not bowl-shaped but typically had steep walls and flattened floors. One depression considered to be a vent, the source of a jet, had a depth to diameter ratio of ~0.4, with near vertical walls.

Jets: At least 10 to possibly 20 jets were active during the flyby. Some were traced back to the surface where they seem to originate from the near vertical walls of depressions (vents) that were facing the sun, having the highest solar insolation.