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2015 GSA Annual Meeting in Baltimore, Maryland, USA (1-4 November 2015)

Paper No. 308-9

Presentation Time: 9:00 AM-6:30 PM

INITIAL GEOLOGIC MAPPING OF THE AC-H-9 OCCATOR QUADRANGLE OF CERES USING *DAWN* SPACECRAFT DATA

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We are using geological mapping as a method to identify the geologic processes that have modified the surface of dwarf planet Ceres, which NASA's Dawn spacecraft began orbiting in April 2015. Framing Camera data from the Approach (1.3 km/px) and Survey (415 m/px) orbits, including grayscale and color images and digital terrain models derived from stereo images, have enabled an initial characterization of the surface. Ceres has been divided into 15 quadrangles, and this abstract discusses the geology of the Ac-H-9 Occator quadrangle, located between 22°S-22°N and 216-288°E.

The quadrangle includes the 92 km diameter impact crater Occator, whose interior hosts Hubble "Bright Spot 5", which has now been shown to be in fact comprised of multiple bright spots associated with a possible fracture system on the floor of the crater. The crater has a scalloped rim that is cut by regional linear structures, displaying a cross-section of one structure in the crater wall. Color data shows that the Occator ejecta have multiple colors, suggesting excavation of materials of different compositions; to the northeast the ejecta is lower-albedo than that to the southwest. To the south of Occator is the 115 km diameter crater Kirnis, whose rim is degraded and whose floor displays a dome-like feature that could represent uplifting of the Ceres surface. The entire quadrangle is crossed by a regional set of linear structures, which both cut crater rims (including Occator and Kirnis) and affect crater shapes. Future work includes more detailed definition and characterization of surface units and estimates of their compositional variations through study of color images and Visible and Infrared spectrometer data, and application of crater statistical techniques to obtain model ages of surface units.

Support by D.A. Crown, C.M. Pieters, A. Nathues, M. Hoffmann, M. Schaefer, S. Marchi, M.C. De Sanctis, C.T. Russell, C.A. Raymond, and the Dawn Instrument, Operations, and Science Teams is grateful acknowledged. This work is supported by grants from NASA through the Dawn project, and from the German Space Agency.

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Wednesday, 4 November 2015: 9:00 AM-6:30 PM

Exhibit Hall (Baltimore Convention Center)

Geological Society of America *Abstracts with Programs*. Vol. 47, No. 7, p.783

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