Appendix A - Columns in the Database and Brief Descriptions

This Appendix lists all columns present in the released database as well as a brief description. Text `in fixed-width font` is the column name as it appears in the database. For brevity and since many columns effectively have the same description, items [in square brackets] are multiple instances of the prefix or suffix with the text in square brackets as the variable. For example, `LATITUDE_CIRCLE_[IMAGE, TOPOG]` indicates that there are two columns in the database, one named `LATITUDE_CIRCLE_IMAGE` and the other `LATITUDE_CIRCLE_TOPOG`.

`CRATER_ID` Crater ID for internal use, based upon the region of the planet (1/16ths), the "pass" under which the crater was identified, and the order in which it was identified.

`LATITUDE_CIRCLE_[IMAGE, TOPOG]` Latitude from the derived center of a non-linear least-squares circle fit to the vertices selected to manually identify the crater rim. Units are decimal degrees North.

`LONGITUDE_CIRCLE_[IMAGE, TOPOG]` Longitude from the derived center of a non-linear least-squares circle fit to the vertices selected to manually identify the crater rim. Units are decimal degrees East.

`LATITUDE_CIRCLE_SD_[IMAGE, TOPOG]` Uncertainty in the derived crater center from the non-linear least-squares circle fit.

`LONGITUDE_CIRCLE_SD_[IMAGE, TOPOG]` Uncertainty in the derived crater center from the non-linear least-squares circle fit.

`LATITUDE_ELLIPSE_[IMAGE, TOPOG]` Latitude from the derived center of a non-linear least-squares ellipse fit to the vertices selected to manually identify the crater rim. Units are decimal degrees North.

`LONGITUDE_ELLIPSE_[IMAGE, TOPOG]` Longitude from the derived center of a non-linear least-squares ellipse fit to the vertices selected to manually identify the crater rim. Units are decimal degrees East.

DIAM_CIRCLE_[IMAGE, TOPOG] Diameter from a non-linear least-squares circle fit to the vertices selected to manually identify the crater rim. Units are km.

DIAM_CIRCLE_SD_[IMAGE, TOPOG] Uncertainty in the derived crater diameter from the non-linear least-squares circle fit.

DIAM_ELLIPSE_MAJOR_[IMAGE, TOPOG] Major axis of a non-linear least-squares ellipse fit to the vertices selected to manually identify the crater rim. Units are km.

DIAM_ELLIPSE_MINOR_[IMAGE, TOPOG] Minor axis of a non-linear least-squares ellipse fit to the vertices selected to manually identify the crater rim. Units are km.

DIAM_ELLIPSE_ECCEN_[IMAGE, TOPOG] Eccentricity of the non-linear least-squares ellipse fit, defined as $e=\sqrt{1-b^2/a^2}$.

DIAM_ELLIPSE_ECCEN_[IMAGE, TOPOG] Ellipticity of the non-linear least-squares ellipse fit, defined as $\varepsilon = a/b$.

DIAM_ELLIPSE_ANGLE_[IMAGE, TOPOG] Tilt angle of the non-linear least-squares ellipse fit. Units are degrees between ±90° where 0° has the major axis aligned along a line of latitude, and positive values are counter-clockwise.

DEPTH_RIM_TOPOG Average elevation of each of the manually determined N points along the crater rim. Points are selected as relative topographic highs under the assumption they are the least eroded so most original points along the rim. Units are km.

DEPTH_RIM_SD_TOPOG The standard deviation from the mean of the N points along the rim.

DEPTH_SURFACE_TOPOG Average elevation of each of the manually determined N points outside of the crater rim and any visible ejecta blanket. This is notoriously difficult to estimate due to ejecta blankets from the crater of interest and other craters, as well as other complicating topologic features. Units are km.

`DEPTH_SURFACE_SD_TOPOG` The standard deviation from the mean of the *N* points along the rim.

`DEPTH_FLOOR_TOPOG` Average elevation of each of the manually determined *N* points inside the crater floor. Points were chosen as the lowest elevation that did not include visible embedded craters. Units are km.

`DEPTH_FLOOR_SD_TOPOG` The standard deviation from the mean of the *N* points along the rim.

`DEPTH_RIMFLOOR_TOPOG` Defined as `DEPTH_RIM_TOPOG` - `DEPTH_FLOOR_TOPOG`

`DEPTH_RIMHEIGHT_TOPOG` Defined as `DEPTH_RIM_TOPOG` - `DEPTH_SURFACE_TOPOG`

`DEPTH_SURFFLOOR_TOPOG` Defined as `DEPTH_SURFACE_TOPOG` - `DEPTH_FLOOR_TOPOG`

`PTS_USED_RIM_[IMAGE, TOPOG]` Number of *N* points manually selected around the crater rim to identify the crater.

`PTS_USED_SURFACE` Number of *N* points manually selected around the crater's surface for the topographic analysis.

`PTS_USED_FLOOR` Number of *N* points manually selected within the crater's floor for the topographic analysis

`PTS_USED_LAYER_1` Number of *N* points manually selected along the perimeter of the inner-most (or only) layer of the crater's ejecta. Note that this was done with THEMIS Daytime IR mosaics.

`PTS_USED_LAYER_[2, 3, 4, 5]` Number of *N* points manually selected along the perimeter of each successively outer crater layer (or blank if the crater does not have those lobes).

`NUMBER_LAYERS` The maximum number of cohesive layers in any azimuthal direction that could be reliably identified.

`MORPHOLOGY_CRATER_1` Basic morphology of the crater interior (following Barlow and Bradley, 1990); examples are illustrated in Appendix C.

MORPHOLOGY_CRATER_2 Notes features of interest through or on the crater wall.

MORPHOLOGY_CRATER_3 Notes features of interest on the crater floor.

MORPHOLOGY_EJECTA_1 Ejecta morphology classified following Barlow *et al.*, 2000; examples are illustrated in Appendix D. If there are multiple values, separated by a "/", then the order is the inner-most ejecta through the outer-most, or the top-most through the bottom-most.

MORPHOLOGY_EJECTA_2 The morphology of the layers(s) itself/themselves. This column further describes the ejecta/layer morphology to help differentiate. This classification system is unique to this work. Examples are illustrated in Appendix D.

MORPHOLOGY_EJECTA_3 Overall texture and/or shape of some of the layer(s)/ejecta that are generally unique and deserve separate morphological classification. Examples are illustrated in Appendix D.

MORPHOLOGY_EJECTA_COMMENTS Notes or comments about the ejecta or possible ejecta if it was ambiguous.

DEGRADATION_STATE An integer 1-4 that describes how fresh or degraded a crater is. Values are defined in Section 2.4.4.

SECONDARY Subjective indication of whether or not the identified crater is a secondary. If this column has a value, it is a subjective certainty with values defined in Section 2.4.5.

CONFIDENCE_IMPACT_CRATER In some cases, a partial circular depression was identified as a crater, but we are not certain it is a crater. This column is a subjective certainty from 1-4 that the crater is really a crater (1 would be not very confident, 2 is equal chance it may or may not be, 3 is that it very likely is an impact crater, and 4 would be a definite crater).

LAYER_[1, 2, 3, 4, 5]_PERIMETER Perimeter of the manually determined *N*-dimensional irregular polygon of the layer. Units are km.

LAYER_[1, 2, 3, 4, 5]_AREA Area of the manually determined *N*-dimensional irregular polygon of the layer. This is with the area within the crater's rim removed. Units are km^2.

LAYER_[1, 2, 3, 4, 5]_LOBATENESS Abbreviated as Γ. Gives a measure of the lobateness (Bridges and Barlow, 1989). Defined as [perimeter of ejecta] / SQRT(4·π·[area of ejecta]), which is effectively the percent difference of the perimeter of the flow vs. the perimeter of a perfect circle with the equivalent flow area. Unitless.

Note 1: The area of the crater itself IS included in this calculation.

Note 2: In this calculation, local spherical effects were NOT taken into account.

LAYER_[1, 2, 3, 4, 5]_EJECTARADIUS_EQUIV The radius to which the crater's ejecta would extent if it were a circle with the same area as LAYER_[1, 2, 3, 4, 5]_AREA.

LAYER_[1, 2, 3, 4, 5]_EJECTARADIUS_RELATIVE The relative radius to which the crater's ejecta would extent if it were a circle with the same area as LOBE_[1, 2, 3, 4, 5]_AREA. Calculated by:

LAYER_[1,2,3,4,5]_EJECTARADIUS_EQUIV / DIAMETER_CIRCLE_IMAGE.

CRATER_NAME Drawn from the USGS's online Gazetteer of Planetary Nomenclature, maintained by Jennifer Blue (http://planetarynames.wr.usgs.gov/).