

GEOLOGIC MAP OF NAVKA PLANITIA QUADRANGLE, VENUS; Jeffrey J. Plaut, Jet Propulsion Laboratory, California Institute of Technology, Mail Stop 183-501, 4800 Oak Grove Dr., Pasadena, CA 91109.

The Navka Planitia Quadrangle (V42) is located in the equatorial plains of Venus, southeast of the Beta/Phoebe highland and northwest of the Dione Regio volcanic rise. The region is dominated by volcanic deposits, including a regional plains unit, broad volcanic flow complexes and extensive flow fields that display unusual radar scattering and emission properties. A prominent NNW-trending deformation belt, interpreted as a rift zone, crosses the west side of the area and terminates at Iweridd Corona. Voluminous lava flow emplacement was apparently localized along this zone, but the rift-related deformation now visible at the surface post-dates virtually all of the volcanic activity. Isolated, elongate, embayed patches of moderately deformed plains and more intensely deformed terrain (tessera) occur across the area in N- and NW-trending groups. The early history of the area is obscure, but after emplacement of the regional plains unit, the development of flow complexes and extensive flow fields occurred, followed by minor wrinkle ridge deformation and major rifting in the west side of the area.

DESCRIPTION OF MAP UNITS

fl Lobate flow materials--sinuous, overlapping deposits with lobate or digitate margins associated with large volcanic constructs or flow fields; commonly occur in radial or fan-shaped patterns around source regions; radar backscatter highly variable, from very bright to very dark; may contain fields of small domes, cones or shields; typically undeformed or moderately deformed, except in linear disruption belts, where pervasively fractured. Interpretation: lava flows comprising large volcanic complexes and shields, usually associated with regional uplift.

flu Lobate flow materials of Ushas Mons--sinuous, overlapping deposits with lobate or digitate margins associated with the large volcanic edifice Ushas Mons (center 25 deg. S, 323 deg. E). Similar in characteristics to unit fl, except flows occasionally emanate and/or are channeled by apparently pre-existing lineaments; undeformed to moderately deformed by fractures or wrinkle ridges. Interpretation: lava flows comprising the uppermost deposits of the Ushas Mons edifice.

pu Plains, undifferentiated--areally extensive deposits showing few or indistinct lobate margins and no clear identifiable source areas; generally moderate-to-low in radar backscatter, although higher backscatter areas are not uncommon; may contain domes, cones or shields, in isolation or clusters; backscatter is often modulated in vicinity of impact craters; moderately deformed over extensive areas by wrinkle ridges; pervasively fractured in disruption zones. Interpretation: volcanic plains composed primarily of areally extensive lava flow units.

pm Mottled plains--extensive deposits containing a distinctive pattern of discontinuous low and moderate backscatter patches; may contain low-relief shields; slightly deformed by wrinkle ridges or fractures. Interpretation: volcanic plains formed in multiple episodes of solidification, foundering and re-emergence of molten lava.

pd Deformed plains--isolated high-standing patches of terrain containing broad ridges, fracture sets and/or clusters of domes, shields or cones; fractures or ridges typically consistent in orientation within any single occurrence of unit; consistently embayed by units pu or fl; generally moderate in backscatter, except in areas of dense fractures. Interpretation: embayed remnants of deformed volcanic plains surfaces whose emplacement and deformation pre-date emplacement of units pu and fl.

pdC Deformed plains, corona/caldere--isolated high-standing patches of terrain that form circular outlines or masses; moderate backscatter; may contain fractures in patterns concentric with unit outcrop pattern; consistently embayed by units pu or fl. Interpretation: embayed remnants of high-standing portions of calderas or corona-like structures.

cl Complexly lineated materials--small, isolated, high-standing, generally radar bright patches showing dense sets of fractures with several orientations; consistently embayed by units pu or fl. Interpretation: embayed remnants of intensely tectonically-deformed materials.

ci Impact crater materials--includes crater rim, floor and proximal ejecta.

cif Fluidized impact crater materials--generally high backscatter lobes of material extending downslope from proximal ejecta deposits. Interpretation: fluid flows of target materials mobilized during ejecta emplacement.

GEOLOGIC MAP OF NAVKA PLANITIA QUADRANGLE: PLAUT, J.J.

