

NOTES ON BASE

This map of part of the northern hemisphere of Venus has been prepared to support planning and operations of the Magellan Mission to Venus. The data used to compile the base were obtained as a result of a joint American and Soviet Venus mapping project (Basilevsky and others, 1989), conducted under the auspices of the U.S./U.S.S.R. Working Group on Solar System Exploration. Image information was taken almost exclusively from Venera 15 and 16 synthetic aperture radar - (SAR) image mosaics provided by the U.S.S.R. (Rzhiga, 1987; Alexandrov and others, 1988). Ancillary data included Pioneer Venus radar altimetry (Pettengill, 1977; Pettengill and others, 1979), Venera 15 and 16 radar altimetry (Kotelnikov and others, 1984, 1985) and Earth-based radar images provided by the Arecibo Observatory (Campbell and Burns, 1980; Stofan and others, 1987).

ADOPTED FIGURE The figure of Venus used for computation of this map projection is a sphere with a mean radius of 6051.0 (Kotelnikov and others, 1985).

The Polar Stereographic projection is used for this map, with a scale of 1:15,000,000 at lat +40° and 1:18,261,561 at lat +90°. Due to the retrograde rotation of Venus, longitudes increase from west to east in accordance with usage of the International Astronomical Union (IAU, 1983).

U.S.S.R. that is based on the tracked position of the spacecraft (Akim and others, 1986; Tyuflin and others, 1989). According to current IAU convention, the 0° meridian passes through the center of a craterlike feature, Eve (lat 32° S.), located within Alpha Regio, a feature of the southern hemisphere that is outside the area of this map (Masursky and others, 1980). No simple statement for accuracy can be given, but discrepancies as great as 10 km (0.1°) are likely to exist (Alexandrov and others, 1985; Tyuflin and others, NOMENCLATURE

are shown on the topographic map (sheet 1, U.S. Geological Survey, 1989). V 15M 90/0 G: Abbreviation for Venus; 1:15,000,000 series; center of sheet, lat 90° N., long 0°; geology (G).

GEOMORPHIC/GEOLOGIC MAP Radar images and semicontrolled and controlled radar-image mosaics were provided by the Institute of Radioengineering and Electronics and the Central Institute of Geodesy, Aerial Survey, and Cartography, Moscow

(Alexandrov and others, 1985; U.S.S.R. Academy of Sciences, 1987, 1988; Burba, 1989b). This map was compiled in 1989 from unpublished, Venera 15- and 16-based, 1:5,000,000-scale, preliminary geologic maps prepared by several authors from the Vernadsky Institute and the Geological Institute, U.S.S.R. Academy of Sciences, and from Moscow Lomonosov University. Several geologic units of the larger scale maps have been combined and revised to provide consistency of portrayal. Detailed descriptions of the mapped units and their regional settings and geologic history are given in the papers listed below that are indicated by an

MAP UNITS The 13 units were mapped on the basis of characteristics observed primarily on Venera 15 and 16 SAR images, supplemented by data from Pioneer Venus and Earth-based radar images obtained by the Arecibo Observatory. The units represent different terrain types classified by physiographic expression. They are not rock-stratigraphic units and are not assigned to a time-stratigraphic system. Faults not expressed as specific landforms such

as narrow depressions (grabens) or scarps are not shown. VOLCANIC CONSTRUCTS Large, rough-surfaced, domical uplift Large, smooth-surfaced, domical uplift Shield volcano with smooth slopes PLAINS UNITS

Smooth plains of lowlands Hummocky plains of lowlands and foothills Smooth plateaus ROUGH-TERRAIN UNITS

[Areas of tesserae (parquet) have rugged topography. They contain ridges and grooves that intersect from two or more directions and form diverse structural High mountain belt Rhombic tessera

Chevron-shaped tessera Tessera containing orthogonal or parallel ridges and Hummocky or chaotic tessera Ovoid (corona)—Circular system of ridges

Geomorphic boundary Boundary separating radar-bright and radar-dark areas—

Dots indicate brighter side. Interpreted as lava-flow Elongated prominence with gentle slopes

Narrow depression Scarp—Hachures point downslope Arachnoid—Circular complex with gently sloping concentric

rims and radial lineaments c ce Impact crater (c) and ejecta (ce)

+ Venera 9 landing site (lat 31.7° N., long 290.8°) X Pioneer Venus 2 north probe landing site (lat 59.3° N., long

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