Planet Venus Essay, Research Paper

Planet Venus

Venus ,named after the Roman god of love and beauty ,or perhaps the Earth’s sister planet considering the two are very similar in size and mass. Venus is covered by thick, rapid spinning clouds that trap heat in the atmosphere, creating a greenhouse effect. The temperatures get so hot they could melt lead, and pressure so intense it feels like being under 3,000 feet of water.

Venus reflects so much light that it’s usually the brightest planet in the sky. The volume (earth = 1) 0.88 ,the mass 4.8690 x 1027 g. ,and the density is 5.24 gm/cm3.

The atmosphere consists of mainly of carbon dioxide, and there is virtually no water vapor. And droplets of sulfuric acid. The thick atmosphere allows the Sun’s heat enters but not escapes resulting in the surface temp. being over 450 c (more than 800 f).

This planet is hotter than Mercury which is closer to the Sun. The density of the planet results in the pressure is 90 times greater than the Earth. That s why probes only last for 7 hours at a timer.

Venus rotates on its axis every 243 Earth days, but it orbits around the Sun every 225 Earth days. Venus is the only planet that rotates backwards from its surface, the Sun would seem to rise in the west and rise in the east. The Earth and Venus are very similar in density and chemical compositions. The surface of Venus is covered by about 20% of lowland plains,70% is rolling uplands ,and 10% highlands. The surface has been shaped by volcanism, impacts, and deformation or the crust. No direct evidence of currently active volcanoes has been found, although there was evidence of them being active once before.

Although no ocean, rain fall, or strong winds exists to erode surface feature, some weathering and erosion does occur.

Venera 4 was launched from a Tyazheliy Sputnik (67-058B) towards the planet Venus with the announced mission of direct atmospheric studies. On October 18, 1967, the spacecraft entered the Venusian atmosphere and released two thermometers, a barometer, a radio altimeter, and atmospheric density gauge, 11 gas analyzers, and two radio transmitters operating in the DM waveband. The main bus, which had carried the capsule to Venus, carried a magnetometer, cosmic ray detectors, hydrogen and oxygen indicators, and charged particle traps. Signals were returned by the spacecraft, which braked and then deployed a parachute system after entering the Venusian atmosphere, until it reached an altitude of 24.96 km.

Venera 7 was launched from a Tyazheliy Sputnik in an earth parking orbit towards Venus to study the Venusian atmosphere and other phenomena of the planet. Venera 7 entered the atmosphere of Venus on December 15, 1970, and a landing capsule was jettisoned. After aerodynamic braking, a parachute system was deployed. The capsule antenna was extended, and signals were returned for 35 min. Another 23 min of very weak signals were received after the spacecraft landed on Venus. The capsule was the first man-made object to return data after landing on another planet.

This spacecraft entered Venus orbit and was separated from the lander on October 20, 1975, after about 4.5 months of flight. The orbiter mission was to act as a communications relay for the lander and to explore cloud layers and atmospheric parameters with instruments including a French 3500 angstrom UV photometer, a 4000-7000 angstrom photo-polarimeter, a 1.5 to 3 micron infrared spectrometer, and a 8 – 30 micron infrared radiometer. The orbiter also carried a magnetometer and charged particle traps. Some reports indicated a camera system was also aboard. The orbiter consisted of a cylinder with two solar panel wings and a high gain parabolic antenna attached to the curved surface. A bell-shaped unit holding propulsion systems was attached to the bottom of the cylinder, and mounted on top was a 2.4 meter sphere which held the landers. At launch the Venera 9 spacecraft, including the lander, had a mass of 4936 kg.

Venera 13 and 14 were identical spacecraft built to take advantage of the 1981 Venus launch opportunity and launched 5 days apart. The Venera 13 mission consisted of a bus (81-106A) and an attached descent craft (81-106D). After launch and a four month cruise to Venus, the descent vehicle separated and plunged into the Venus atmosphere on 1 March 1982. As it flew by Venus the bus acted as a data relay for the brief life of the descent vehicle, and then continued on into a heliocentric orbit. The bus was equipped with instrumentation including a gamma-ray spectrometer, retarding potential traps, UV grating monochromator, electron and proton spectrometers, gamma-ray burst detectors, solar wind plasma detectors, and two-frequency transmitters which made measurements before, during, and after the Venus flyby.

Magellan,

Launch Date:

04-May-1989

Arrival Date:

10-Aug-1990

End of Mission:

12-Oct-1994

Overview

Magellan was the first planetary spacecraft to be launched from a space shuttle. It orbited Venus in a near polar, elliptical orbit, with a minimum altitude (periapsis) of 243 kilometers (150 miles). It made detailed maps of 98% of the planet’s surface using synthetic aperture radar. Magellan revealed no evidence on Venus of plate tectonics, such as operates with such profound effect on Earth. Volcanoes have left their marks on 85% of Venus, with lava plains, lava domes, large shield volcanoes, and extremely long lava channels. The rest of the surface is covered with ranges of deformed mountains. Magellan also made detailed gravity maps of Venus, determining that the gravity field is highly correlated with surface topography.

Objectives

Magellan’s primary task was to map the surface of Venus in order to determine its topographic characteristics. The mission was designed to reveal Venus’ land forms; its tectonics; the erosion, deposition, impact, and chemical processes at work on the surface; and to model the interior of the planet by studying variations in its gravity field.

And I leave you with one question, Will we as humans ever live on a distance planet ? It could happen .

My references were 1.Internet .2. Encyclopaedia Britannica .3. Nine Planets by Alan E. Nourse .4. Science Book