

SPACE EXPLORATION SYMPOSIUM (A3)  
Space Exploration Overview (1)

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POSSIBILITIES OF INTERNATIONAL COOPERATION IN VENERA-D PROJECT. ENGINEERING  
CHALLENGES.**Abstract**

The first generation of automated interplanetary stations has paved the way to the Venus. Many objectives have been reached for the first time ever: a flight to the planet, entry into the orbit, descent in the atmosphere, landing on the surface, taking of panoramic images, soil sampling and drift of the balloon-born probes in the atmosphere. Successful and numerous missions of Venera family Soviet spacecraft let foreign media organizations name so-called Morning and Evening star, Earth's sister Venus as the Russian Planet.

Vega mission (1984 – 1986), flight to Venus (it forms the first syllable “Ve” of the mission's name Vega) and to Halley's Comet (the second syllable “Ga”) have been prepared in wide-ranging international cooperation. The Venusian part of the mission included the planet fly-by, landing on its surface and drift of a floating balloon-born station in the atmosphere. The spacecraft, the lander and the balloon-born probe were designed and built by the Soviet Part. The scientific instrumentation was developed in cooperation with nine countries. Ground stations of Russia, Europe, USA, Canada, Australia, Africa, Puerto Rico, Brazil received and processed data from the spacecraft.

Currently, after a long lapse of thirty years, Russian specialists have started work on design and development of a perspective spacecraft for the Venus research - Venera-D mission. The letter D in the mission's name means long-term research. It is a Russian project. Vega spacecraft will serve as a prototype for design and development of the new spacecraft. The main engineering solutions made during design and development of descent modules, landers as well as balloon-born probes could become useful again. The successful operation of Venus Express Spacecraft, which had Russian scientific instruments on-board, gives impulse for new challenging scientific research.

The Russian Part invites foreign scientists and experts to participate in this project. Venera-D has good reasons to be announced as a new international project. Such proposals have already been made in the frame of International Forums such as International Astronautical Federation Congresses, COSPAR, etc. Great interest in cooperation on the new program of the Venus research and interaction with specialists from Europe, USA and China have been expressed. A complex approach with application of various research means such as an orbiter, sub-satellites, atmospheric probes could be used in the first project.

Distribution of efforts and responsibility between participating Parties will help to increase the level of technical developments and scientific efficiency of experiments.