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TWO LAUNCHINGS IN SPACE

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"TWO LAUNCHINGS IN SPACE"

From TASS AGENCY
to "PRAVDA" No. 31 [16617]
Moskva, 31 Jan.1964

ELEKTRON-I and ELEKTRON-2 IN FLIGHT

In accordance with the program of investigation of upper atmosphere levels and of cosmic space, a successful launching of a cosmic system took place in the Soviet Union on 30 January 1964. It consists of two scientific stations (AES) "Electron-1" and "Electron-2" put into essentially different orbits by a single powerful carrier-rocket.

The separation of "Electron-1" was effected in the active portion of the flight at operating engine of the last stage. Upon separation of the latter, the last stage of the carrier-rocket continued its flight along the given trajectory, and picking-up the required velocity, put the station " Electron-2" into an assigned orbit.

According to preliminary data, the orbits, near the calculated ones, have the following parameters :

ELEKTRON-1 - height in perigee — 406 km,
height in apogee — 7 100 km,

ELEKTRON-2. - height in perigee — 460 km
height in apogee 68 200 km

The revolution period is respectively for the two stations : 2 hours 49 min., and 22 hours 40 min.

The inclination angle of the orbit plane of the stations to the equatorial plane is of 61°.

A scientific instrumentation and radiotelemetry and also the radio-transmitters "Signal" and "Mayak", operating in the frequencies of 19 943, 19 954, 20 005, 300075 and 90 225 Mc/s, are installed on board.

The main problem is the simultaneous study of the inner and outer radiation belts, with the attending physical phenomena. The study of radiation belts will provide valuable data on the nature, the spatial disposition and on the energy spectrum of charged particles. Study of various emission ori inating from the depth of the cosmos will be conducted alongside with the physical conditions in the upper atmosphere layers.

The first radiotelemetry attested to the fact that all the apparatus functions normally.

From "KOMSOMOL'SKAYA PRAVDA" No. 27 (11879) February 1, 1964

COMMENTS by Member-Correspondents of the USSR Academy of Sciences

V. I. SIFOROV:

All radioelectronic devices of the rocket and of the satellites must operate with irreproachable precision. As separation of the first station took place already during the still active operation of the last stage's engine, Electron-1 initiated its motion along the orbit, while the rocket continued climbing to put, in the end, Electron-2 into orbit. Obviously an irreprochable and truly "jeweler-sort of precision is required from the work of the ground and on-board radio-technical instrumentation, without which no utlimate success can be expected from the launching.

Just imagine for a minute the real conditions of the flight. The frame of the powerful rocket is shaken by the operation and vibration of the engine. The instrumentation undergoes the overload effect. And yet, the electronic automation and the radio electronic devices must operate with substantial precision at the required moment of time. Obviously, the punctual following of the program of the experiment under such conditions is evidence of high reliability and perfection of the various sytems guiding the separation of the station "Electron-1". No less complicated was the putting into a preassigned orbit of the automatic station "Electron-2". Indeed, the rocket, having undergone the recoil force at separation of the first station, must again pick up the required velocity to put the second station into orbit.

The investigations having begun with the launching of Electron-I and 2 are a great necessity for us, specialists in radio electronics. From the state of radiation belts and of processes taking place within them depend not only the communications with the cosmic ships that will take course toward Mars, Venus and the Moon, but also those between the continents of our own planet. It is well known, that under specific conditions, radiocommunication on Earth is disrupted and this depends in many respects upon radiation belts' behaviour. If we are to the end aware of the processes taking place in them, it may help us create a reliable and steady system of world radiocommunications. Thus, altohough the Tass communiqué stresses the interest in the launching as regards the upper atmosphere layers, every reader of "Komsomol'skaya Pravda" must be aware that it has an enormous value for us, specialists in radioengineering and electronics.

V. L. GINTSBURG.

In order to study radiation belts, it is desirable to launch two satellites. One must cross the lower part of the radiation belts, the other — the upper one. We had the idea that two carrier rockets were required to that effect, but I think that each of us understands why it was much better for our constructors to manage with a single one!

One of the satellites went into a very high orbit, to heights not yet mastered. We know little of processes taking place there. Only rockets visited these heights, but they crossed radiation belts during a very short lapse of time, precluding a careful investigation. Now, Electron-2 will remain at these heights during a long time, thus providing us with numerous scientific data.

The content of radiation belts is varied. That is why, for example, we would be interested to know how perturbations, having begun in the upper layers of the belt, vary across their "thickness".

I am convinced that the successive cosmic experiments will provide us with great many interesting informations on the radiation sheath of the Earth.

Translated by ANDRE L. BRICHANT
under Contract No. NAS-5-2078
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615	[3]	ATSS	
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252	[5]		