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NORTH AMERICAN AIR DEFENSE COMMAND

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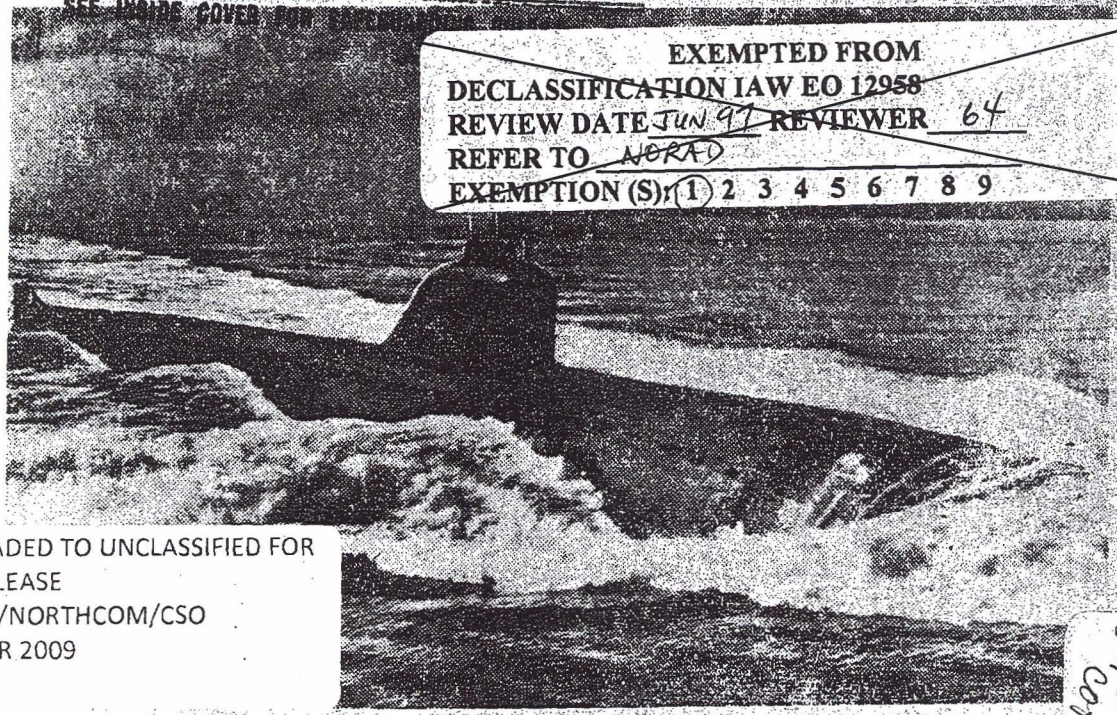

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NORAD Weekly Intelligence Review

Issue No. 44/65, 29 October 1965

The WIR in Brief

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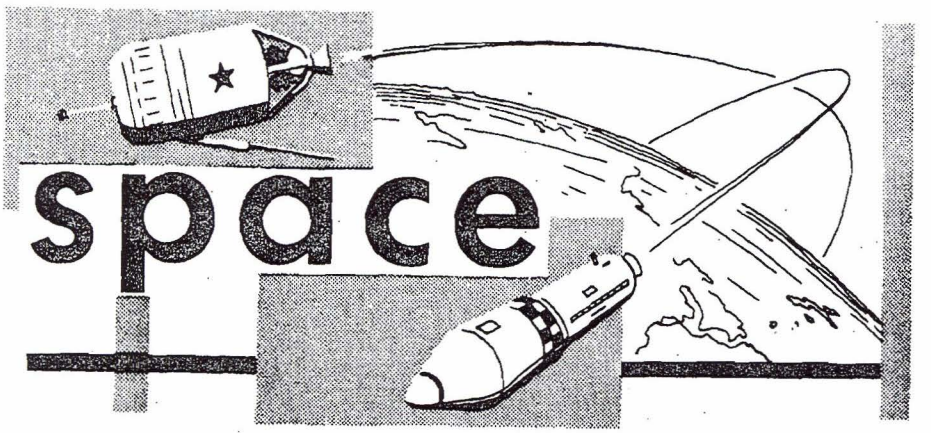

significant intelligence on space developments and trends

Soviets May Make 6th Lunar Soft-Landing Attempt of 1965 on 3 November

The Soviets may make another attempt to soft-land an instrumented package on the Moon on 3 November with a launch at about 0800Z, when conditions will be optimum for the event. The Soviets have made 5 such attempts this year and 4 or 5 in 1963 and 1964 -- all unsuccessful. (There is some uncertainty about the purpose of the apparent lunar launch of 21 March 1964.)

The 3 November date is even more favorable for a Soviet launch than was that of their last attempt on 4 October. The deep-space communications facilities in the Crimea will be able to monitor probe transmissions more hours per day in November than was possible in October. If the Soviets do not launch a probe on 3 November, it will probably mean that Moscow, in the interests of economy, is making an intensive study of the inflight systems believed responsible for recent lunar probe failures. In any event, the Soviets can be expected to launch one or more lunar soft-landers before the US makes its first attempt, now tentatively scheduled for January or February next year.

Data on known Soviet lunar launches made to date were shown on page 29, WIR 42/65.

A diagram of the trajectories of the Soviet probes which actually hit the Moon or approached it is shown on page 30 of this WIR. This diagram was taken from the 18 May issue of the East German newspaper National Zeitung. It does not include, of course, probe attempts made since the date of publication or any of the attempts which aborted and which the Soviets never acknowledged publicly as lunar probe attempts.
(NORAD; Library of Congress)
(~~SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

Bomber Designer Myasishchev Identified as Chief Designer of Vostok Manned Spacecraft

Vladimir Mikhaylovich Myasishchev, designer of the BISON bomber and now director of the Central Aerohydrodynamic Institute (TsAGI) of the Ministry of Aviation Industry, USSR, has been identified by a TsAGI department head as the chief designer of the Vostok manned spacecraft. His appointment to the top post in TsAGI was said to be a reward for the success of the Vostoks, which are also believed to have been used in a majority of the Soviet photoreconnaissance satellites launched to date. This appointment is indicative of an enlargement of TsAGI's design-specification control function, to include space as well as aerodynamic systems.

The chief designer of the Vostok previously was believed to have been Sergei Pavlovich Korolev of the Ministry of Defense Industry. Korolev is still credited, however, with design of the SS-6 ICBM, the vehicle used to launch the Vostoks and a majority of the Soviets' space vehicles, and of the Lunik upper stage which injected the Vostoks into orbit. He is also believed to have been responsible for integration of propulsion staging with the Vostok spacecraft.

This new information meshes with that obtained by a delegation from the UK Ministry of Aviation which visited the USSR in July 1963. Myasishchev at that time was identified as the head of TsAGI, and TsAGI was said to have had parallel responsibilities in both space and aerodynamics.

The design of both the Vostoks and the newer Voskhod manned spacecraft is believed to have been based on a pre-World War II balloon gondola design (WIR 25/65).

(FTD)

~~(SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

High-Orbit Communications Satellites Study Radiation Belts as Secondary Mission

Their capabilities for orbiting heavy payloads have enabled the Soviets on frequent occasion to accomplish two or more missions with a single space vehicle. One of the latest examples of this practice to come to light is the installation of radiation-measuring devices on Soviet 12-hour communications satellites, with a view to collecting data in a region of space which may be of critical importance to certain manned flights of the future but which the Soviets have been deficient in exploring.

Prior to August 1964 Soviet investigations of the higher regions of the Van Allen radiation belts which surround the Earth had been limited to those conducted by 4 Electron-series satellites -- 2 with apogees of about 7,000 km, 2 with apogees of about 66,000 km -- and by interplanetary probes and some lunar probes when they passed through the belts en route toward their targets.

Analysis of [50X1 and 3, E.O.13526] Molniya 1, a communications satellite which the Soviets launched 23 April 1965 into a highly eccentric orbit with an apogee of nearly 40,000 km and a period of 12 hours, indicated that this satellite was transmitting data on space radiation. Later, the Soviet newspaper Pravda mentioned briefly that this vehicle carried instrumentation to study the effects of the radiation belts on satellite onboard systems.

The Soviets have also claimed that radiation counters were installed on Cosmos 41, which is believed to have been an unsuccessful attempt to relay TV coverage of last year's Olympic Games to Europe on a real-time basis. (Cosmos 41 was launched 22 August into an orbit almost identical to that of the first Molniya 1 and the second Molniya 1 (see next article) unlike that of any other Soviet satellites.) A Soviet paper presented at the COSPAR Space Science Symposium held in May 1965 said that 9 radiation counters had been installed on Cosmos 41:

2 semiconductor counters
1 scintillation crystal
3 gas discharge counters with essentially symmetrical shielding
3 end-window gas discharge counters

It was one of the largest radiation-belt instrumentation packages flown by the Soviets.

The West has [50X1 and 3, E.O.13526] signals from Cosmos 41, a fact which suggests that the vehicle failed not only in its primary mission of communications relay but also in its secondary mission of collecting data on the Earth's radiation belts.

[50X1 and 3, E.O.13526] the first Molniya 1, however, indicates this vehicle carried essentially the same instrumentation announced by the Soviets for Cosmos 41. At least it sent data from 9 counters, exactly the number said to be installed on Cosmos 41. If, as seems likely, Cosmos 41 and the first Molniya carried instrumentation payloads which were identical or nearly so, then it is possible that the second Molniya, a communications satellite which was launched 14 October 1965 into an orbit substantially similar to that of Cosmos 41 and the first Molniya, also carries radiation-belt instrumentation. The first Molniya has not been heard from since 15 August 1965.

(CIA; NORAD)

~~(SECRET)~~

CORRECTION

'Second' Molniya 1 Erroneously Identified as 'Molniya 2'

Last week's WIR erroneously identified the Soviets' second known communications satellite as "Molniya 2." The Soviets, for some strange reason, are referring to it as the "second Molniya 1." Whether this practice results from a press or communications error or is an indication that members of some other series of communications satellites will be known as Molniya 2s is not known. In any event, it is unprecendented -- in either Soviet or US practice -- to assign one number to more than one vehicle. Previously, the Soviets have consistently assigned consecutive numbers to vehicles bearing the same name, such as the Sputniks, Korabls, Cosmoses, Vostoks, Voskhods, Polyots, Zonds, and Electrons.
(Soviet press; NORAD)
~~(SECRET)~~

Cosmos 92 De-orbited Routinely on Rev 127

Cosmos 92, which the Soviets launched from Tyuratam at about 0815Z, 14 October 1965, was deorbited on Revolution 127 after nearly 8 days in orbit, impacting in the USSR at about 0631-0636Z, 24 October. Of the 26 Soviet photoreconnaissance satellites (including Cosmos 92) launched in 1964 and 1965, 24 were brought down after about 8 days in orbit.

The Soviets have announced that this vehicle carried instrumentation for measuring infrared and ultraviolet radiation of the atmosphere. (See next article.)
(SPADATS; NORAD)
~~(SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

Soviets Claim Numerous Cosmoses Carried IR and UV Instrumentation

The Soviets, possibly in an effort to buttress their claims that their Cosmos-series satellites have actually been research vehicles, have recently given details on infrared (IR) and ultraviolet (UV) instrumentation said to have been carried by numerous Cosmoses, including Cosmoses 45 and 92 specifically.

Professor Alexsandr Lebedinsky, according to a recent TASS announcement, said that Cosmos 92, which was launched 16 October and de-orbited 8 days later, carried 2 IR spectrophotometers, 1 UV spectrophotometer, and 2 photometers (which operate in the optical part of the spectrum).

The 2 IR instruments, Lebedinsky said, covered the 7- to 20-micron and 14- to 38-micron regions of the infrared, each making a spectrogram

in 20 seconds. The purpose was to measure the vertical distribution of temperature of the Earth's atmosphere, suggestive of a meteorological mission. The instruments sometimes were pointed vertically downward, sometimes toward the horizon.

The UV spectrophotometer was used to obtain spectrograms of the poorly studied UV radiation of the stars.

The photometers, which were used to measure the brightness of the Earth's surface and measured the luminescence of the night sky in the equatorial and middle latitudes, took 8 measurements each 12 seconds through light filters which were changed automatically.

Lebedinsky said that 12,000 IR spectrograms of the type recorded by Cosmos 92 had been made by previous Cosmos vehicles, that all 'CosmosA' type vehicles (he did not say which were of the A type) had carried similar UV spectrophotometers, and that Cosmos 92's predecessors had also carried photometers to measure the brightness of the Earth's surface.

The Soviet 1965 National Report to COSPAR (Committee on Space and Astronautical Research) said that Cosmos 45, which was launched 13 September 1964 and recovered 5 days later, had carried instrumentation to measure the Earth's IR and UV radiation backgrounds. The data apparently was retrieved on tape or film after satellite recovery, for none of the telemetry intercepted from Cosmos 45 was of the type described in the report.

Cosmos 45's instrumentation apparently was a little different from Cosmos 92's. The COSPAR report said that the devices made vertical measurements of the Earth's IR and UV radiation (no mention of horizontal measurements) continuously for 65 hours. The IR spectrum, it said, was measured by a diffraction scanning spectrometer which in an 80-second cycle:

- Scanned the Earth's surface at 9.5- to 18.5-micron wavelengths.
- Measured the energy distribution in the Earth's IR spectrum from 14 to 38 microns and from 7 to 20 microns.

The Earth's UV emissions were measured by a UV spectrophotometer when the sub-vehicle point (the point on the Earth's surface directly beheath the satellite) was in daylight, by a 5-channel colorimeter when it was in darkness. An ultraviolet diffraction monochrometer obtained a spectrum from 2300 to 3100 Angstrom units in 40 seconds. The colorimeter had 3 wideband filters and 2 narrowband filters which were changed every 2.5 seconds. A photometer continuously measured the brightness of the sub-vehicle point in the 0.6- to 0.8-micron range to indicate the degree of cloudiness.

A survey paper on the Soviet space effort which was presented by G. A. Skuridin at an astronautical meeting in Chicago in May this year said that Cosmos 45's IR studies were essential to the development of satellite

orientation systems. They could, however, also aid in the development of IR and/or UV systems for detecting missile launches.

Both Cosmoses 45 and 92 have been assessed by Western intelligence as photoreconnaissance satellites with a capability to carry out secondary missions as well. Both were launched by SS-6 ICBM booster/sustainer combinations and injected into orbit by heavy Venik upper stages, which are believed capable of orbiting payloads of 12,000-14,000 pounds. (TASS; CIA; NORAD)
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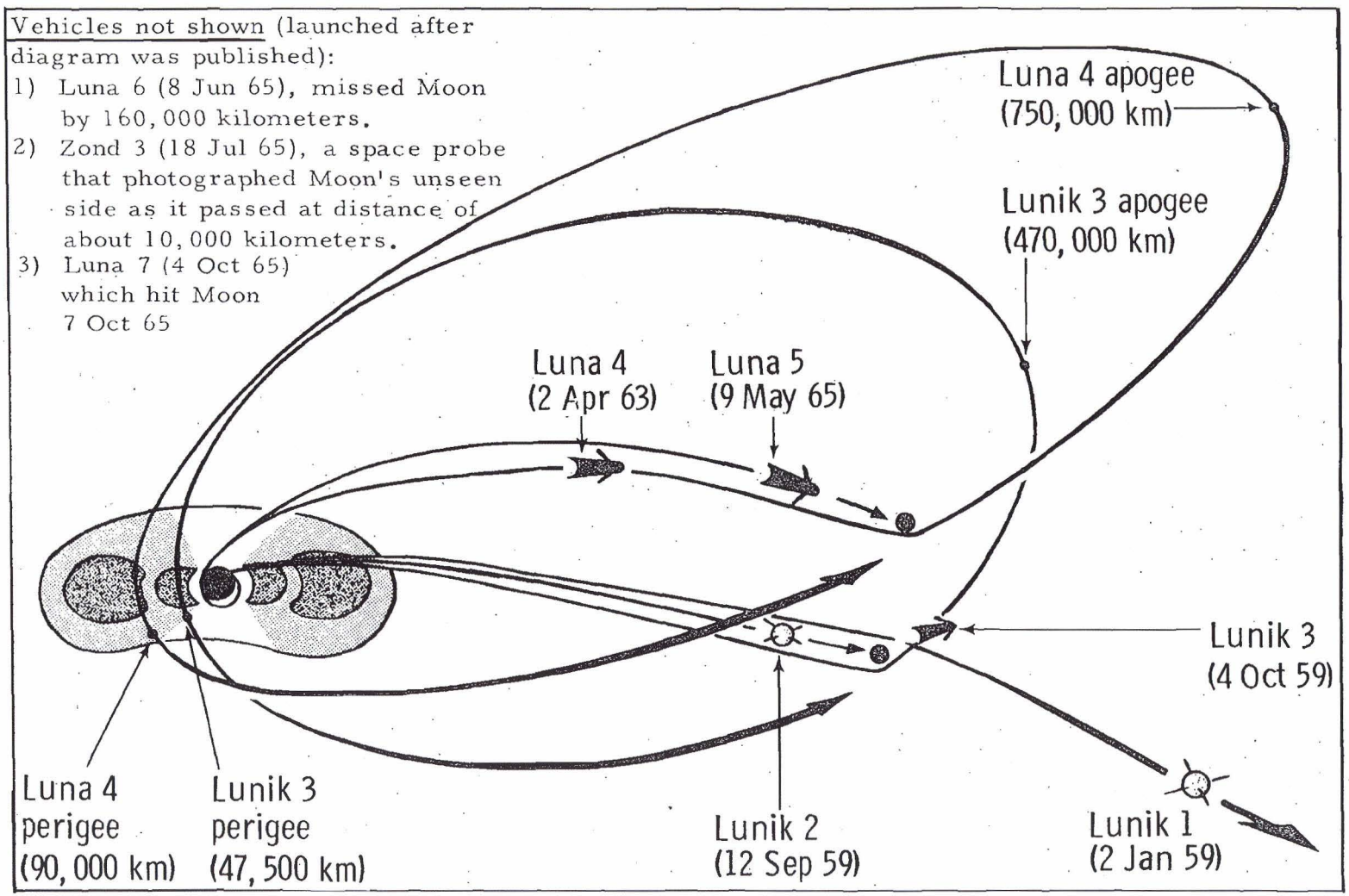
Portion identified as non-responsive to the appeal

Soviet Lunar Trajectories
(from East German newspaper)



(Also omitted: propulsion failures.)