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NORTH AMERICAN AIR DEFENSE COMMAND

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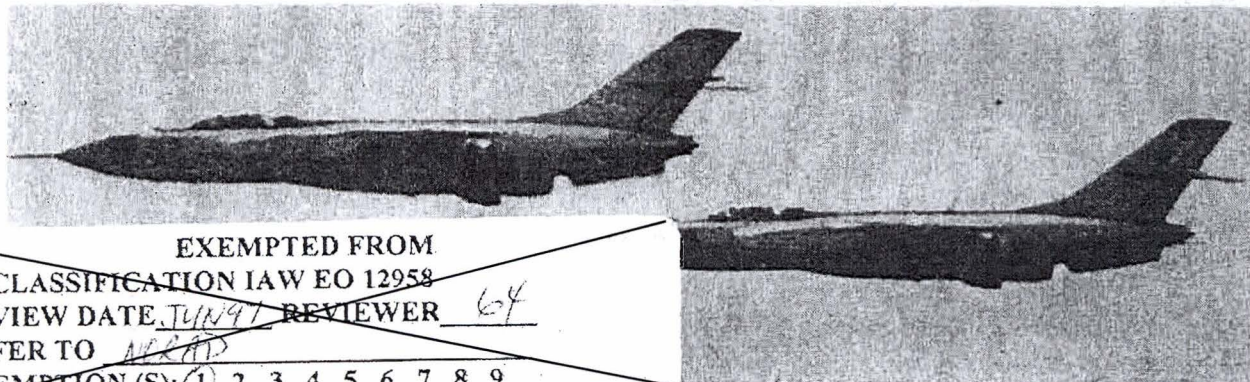
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Issue No. 39/67, 29 September 1967

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The WIR in Brief

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Space

SATELLITE MODEL OF UNIDENTIFIED TYPE DISPLAYED AT EXPO 67 BY SOVIETS

Soviet guides say it is weather craft but it does not resemble any known one.

REPORTED SPACECRAFT COMPUTER PROBABLY INTENDED FOR RENDEZVOUS, NAVIGATION

Gemini flights proved need for such a device. ORBITAL BOMBARDMENT SYSTEM TEST SUCCESSFUL FOR 5th CONSECUTIVE TIME; NAMED COSMOS 179

13th known test of OB-1. Program being rushed.

RECCE COSMOS 177 DE-ORBITED ON TIME After nearly 8 days in orbit.

RESULTS FROM COSMIC-RAY EXPERIMENTS CARRIED BY 'PROTON' SPACECRAFT APPEAR TO BE FAULTY

Speaker at scientific meeting changes his mind about how much data he'll present.

COSMOS 180 IS SOVIET 4th RECCE SATELLITE LAUNCH ATTEMPT FOR SEPTEMBER

1 a failure, but back-up craft usually not available.

SOVIETS HAVE MADE 50 SPACE LAUNCH ATTEMPTS SO FAR THIS YEAR, EQUALING TOTAL FOR ALL OF 1966

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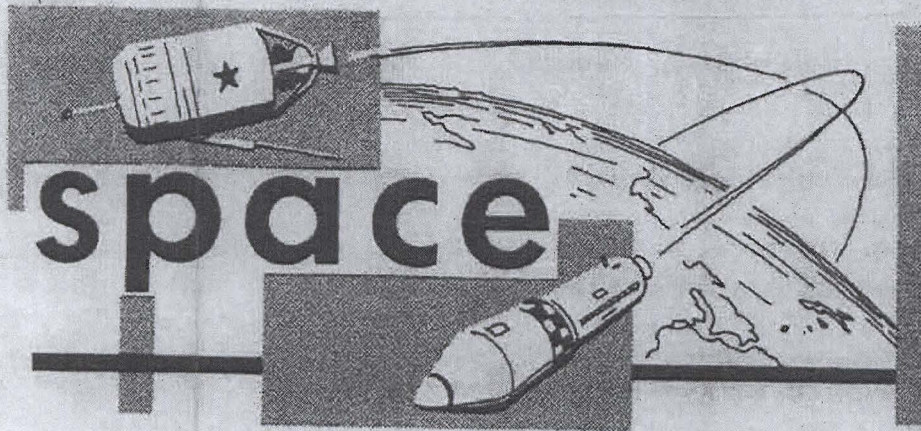
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significant
intelligence
on space
developments
and trends

Satellite Model of Unidentified Type Displayed at Expo 67 by Soviets

A satellite model which has been on display at the Soviet space exhibit at Expo 67 is unlike any known or publicized Soviet satellite. Shaped somewhat pear-like, the spherical portion is about 1 meter in diameter, while the elongated axis is about 1.5 meters long. Two panels of solar cells, each roughly 3x1.5 meters, are mounted on opposite sides of the craft.

There is no identifying placard next to this model. Two Soviet guides when questioned have said that the object is a meteorological satellite, though it bears no resemblance to any publicized photos or models of Soviet weather satellites. If it really is representative of any type of Soviet satellite, it might be a model of one of the heretofore unpublicized Kapustin Yar or Plesetsk Cosmoses, perhaps one which has carried sensors associated in some way with the weather satellite program. It might, for example, be a model of Cosmos 158, which was launched from Plesetsk on 15 May 1967 into an orbit suitable for weather reconnaissance -- a nearly circular orbit of about 459 n.m. Cosmos 158's intended mission has not been identified, [redacted]

[redacted]
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Reported Spacecraft Computer Probably Intended for Rendezvous, Navigation

Soviet Academician Keldysh, head of the Soviet Academy of Sciences, stated at a press conference in Budapest on 6 July that the USSR had developed and installed in a spacecraft a computer weighing 40-65 pounds. He gave no other computer characteristics.

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This computer is probably a specialized one intended for rendezvous and navigation rather than one of the simpler computing devices for biological monitoring previously revealed by the USSR. The early US Gemini manned flights demonstrated the need for a computer in executing rendezvous in space, as ordinary pilotage by man tends to waste precious fuel.

The device mentioned by Keldysh may be the same one described earlier by Professor Sanin of Moscow State University. Sanin said that a Soviet on-board spacecraft computer had a 4,000-word ferrite-core storage, a 6-microsecond memory cycle, and a lifetime of more than 6 months. Discrete components were probably used in preference to integrated circuits, in view of Sanin's remark that the Soviets do not use the latter on space vehicles because their reliability is poor.

By comparison, a new US IBM on-board spacecraft computer which incorporates integrated circuitry is a general-purpose device weighing 10 pounds and having a 4-microsecond memory cycle time, a 1024-word memory, and a lifetime of more than 18 months.

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Orbital Bombardment System Test Successful for 5th Consecutive Time; Named Cosmos 179

The Soviets on 22 September conducted their 13th known test of an orbital bombardment system, only 3 days after their 12th test. The last 5 tests have all been successful.

The 13th vehicle, named Cosmos 179 by the Soviets, was launched from Tyuratam at about 1405Z, 22 September, into the low orbit of about 49.7 degrees inclination which is usual for such tests. Retrofire occurred at about 1535Z, and payload re-entry apparently was successful. (See map on page 32, for diagram of typical sequence of events in a test of the Soviet OB-1 orbital bombardment system.)

The chronological chart on page 33 indicates that the Soviets have accelerated this test program in recent months and that the difficulties which caused failures early in the program are being corrected. The Soviets apparently have assigned a high priority to this program, in order to introduce the weapon into the operational inventory as quickly as possible.

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Recce Cosmos 177 De-orbited on Time

Soviet reconnaissance satellite Cosmos 177, which the Soviets launched from Tyuratam at about 0606Z, 16 September, was de-orbited on 24 September early on Revolution 129, nearly 8 days after launch. Impact occurred at about 0604Z in the area of 51°N-49°E, about 30 n. m. northeast of Ozinki.

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Results from Cosmic-Ray Experiments Carried by 'Proton' Spacecraft Appear to be Faulty

At the Tenth International Congress on Cosmic Rays held in late June, a Soviet delegate speaking on the cosmic-ray experiments carried out by the USSR's heavy (12-metric-ton) Proton satellites failed to include in his talk many of the results given in a preprint which had previously been furnished congress delegates. The speaker apparently became aware -- sometime between preparation and delivery of his talk -- of the fact that some of the purported results of the Proton experiments conflicted with results obtained in the West by means of measurements made on the ground.

It would appear, therefore, that, despite the very favorable publicity the Soviets have received from their Proton satellites, the results obtained were erroneous. It is not known whether the errors resulted from faulty equipment performance or faulty analysis.

This incident is similar to an earlier one in which the Soviets publicly reported at an international meeting values for micrometeorite impacts which were inconsistent with values obtained by the US. On that occasion the reporting Soviet scientist was embarrassed by questions from the floor and was forced to reanalyze the data and publish revised results. In the present instance, the Soviets avoided a repetition of that embarrassment by omitting the questionable results from the actual delivered remarks.

The cosmic-ray experiments carried by the Proton-series spacecraft Protons 1, 2, and 3 (launched between July 1965 and July 1966) held great promise, for they were to measure primary cosmic radiation involving nuclei in heretofore unexplored portions of the energy spectrum -- up to 100 trillion electron volts. Proton 3 was also to start the search for "quarks," hypothetical fundamental particles with fractional electrical charges.

Western intelligence, however, has estimated that the primary mission of the Proton launches was to flight-test the very large 2-stage liquid-propellant SL-9 launch system.





The SL-9 system, possibly modified, plus an added upper stage or stages was also used in the spring of 1967 to orbit two other satellites, Cosmoses 146 and 154; these vehicles are believed to have been large prototype spacecraft which, when operational, will appear in the Soviet manned space station and/or manned lunar programs.

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50X1 and 3, E.O.13526

Cosmos 180 is the Soviets' 4th Recce Satellite Launch Attempt for September

Cosmos 180, which the Soviets launched from the Plesetsk Space and Missile Complex at about 1030Z, 26 September, is a military reconnaissance satellite. [redacted] its mission is medium-resolution photorecce and collection of ELINT. It was launched by the SL-4 propulsion system, which includes the SS-6 ICBM booster-sustainer and the heavy Venik upper stage, into an orbit with an inclination of about 72 degrees.

It will be de-orbited on 4 October if the Soviets follow their normal procedure.

The 26 September event is the Soviets' fourth recce-satellite launch attempt this month (1 Sep, 11 Sep, 16 Sep, 26 Sep), in contrast with the usual rate of two such launches per month. The 1 September vehicle did not achieve orbit, but the total of four launch attempts in one month is still unusual, since the Soviets in the past have not ordinarily followed up a recce-satellite launch failure with launch of a back-up vehicle.

It may be significant that three of these launches occurred at about 1030Z (1 Sep, 11 Sep, 26 Sep), which would be a normal time for launch of a reconnaissance satellite at this time of year. The consistency of launch times throws into sharper contrast the 0606Z launch time for Cosmos 177 (16 September), suggesting some special requirement of unknown type for this craft. Only two other Soviet recce satellites have been launched this early in the day -- Cosmos 168 (12 July, 1967) and one which was launched 21 July 1967 but failed to achieve orbit. It is suspected that these two may have been intended partly to simulate pre-strike and post-strike reconnaissance for an exercise of the Soviet's Strategic Rocket Troops (pp. 7&8, WIR 32/67).

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Soviets Have Made 50 Space Launch Attempts So Far This Year, Equaling Total for All of 1966.

The launch of Cosmos 180 on 26 September was the Soviets' 50th known space-launch attempt of 1967, equaling the total number of attempts for the entire year 1966. Four of last year's 50 attempts were failures, and so far four of this year's attempts have been failures. Soviet space activity for this year thus is running at a much higher level than last year. Launch reliability appears to be unchanged.

This year's activity has been marked by:

- A step-up in the rate of testing of the OB-1 orbital bombardment system.
- An increased number of apparent research satellite launches.
- The reappearance of payloads launched by the relatively light SL-8 launch system, after an absence of about 18 months. (The purpose of these launches is not known.)
- The launch of one manned satellite (there were none in 1966).
- The launch of 3 prototype satellites which are believed to be involved in the manned and/or lunar programs.
- The attempted launch of two Venus probes -- one successful, so far. (The launch window for Venus was not open last year.)
- A total absence of lunar-probe launches this year (there were 6 last year, including one failure).

Launches of reconnaissance and utilitarian (communications, weather) satellites continue at about the same rate as last year.

It is not known whether the launch tempo of the first nine months of 1967 will be maintained for the rest of the year, since many programs and many factors are involved. It is expected, however, that the Soviets will launch one or more high-prestige space events before the 7 November celebration of the 50th anniversary of the Bolshevik Revolution and, possibly, before the 10 anniversary (4 October) of the advent of the space age, which was opened by Sputnik 1.

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