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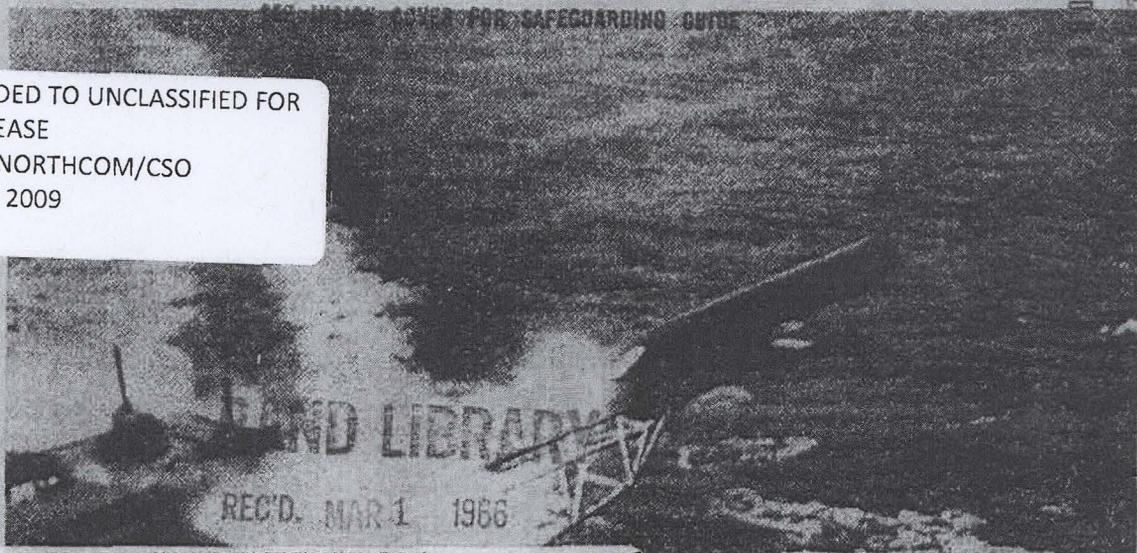
**WEEKLY INTELLIGENCE REVIEW (U)
PRIVILEGED INFORMATION**

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The WIR in Brief

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1 MARCH
Soviets say both functioning OK.
COSMOS 110 HELPING PAVE WAY FOR FUTURE SERIES OF MANNED FLIGHTS 8
No indication yet whether it will be recovered.

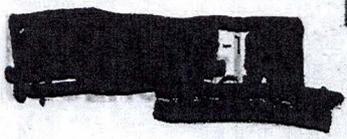
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COVER: Missile launch at sea (from Red Star) (OFFICIAL USE ONLY)
NOTE: Pages 28, 30, 31, 34, 35, 38, 39, 42, and 43 of this issue are blank.

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ENCLOSURE

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significant
intelligence
on space
developments
and trends

'107' Comes in on Time

The Soviets' Cosmos 107 was de-orbited on Revolution 127 on 18 February, probably impacting in the USSR at about 0627-0632Z. Although announced by the Soviets as a scientific research satellite, its mission was photoreconnaissance; however, it could also have carried equipment for other missions. Like almost all the other photorecce satellites launched by the Soviets in the past 2 years, Cosmos 107 was brought down after almost 8 days in orbit.

(NORAD)

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Cosmos 109 Another Photorecce Mission

The Soviets launched their 4th photorecce satellite of 1966 from Tyuratam at about 0850Z, 19 February, within 24 hours of de-orbit of Cosmos 107, their 3d one.

Cosmos 109 was launched by the SS-6 ICBM booster-sustainer and injected into orbit by a heavy Venik upper stage. All indications are that the new satellite carries a camera system of high resolution (5-8feet), following a series of 5 photorecce spacecraft (Cosmoses 98, 99, 104, 105 and 107) which carried systems of medium resolution (20-30 feet). The 5 preceding photorecce launches (Cosmoses 79, 85, 91, 92 and 94) carried high-resolution systems.

So far this year, the Soviets have been launching photorecce satellites at the rate of 2 per month. If this rate is maintained, the USSR will have launched 24 of these spacecraft by the end of 1966, or 6 more than the 18 (including 1 failure) launched last year. However, the launch rate may be even higher, as it usually is, in the summer months, when the longer daylight hours and the northerly location of the Sun favors photography of the Northern Hemisphere, in which are located most of the military installations

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of the Free World.

(NORAD)

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Window for Lunar Shot Opens Again 2 March

The window for the next possible Soviet lunar event opens at about 1146Z, 2 March, assuming that the mission will be a soft landing, that the SS-6 ICBM booster-sustainer and heavy Venik upper stage will be used for propulsion (as has been the case for all Soviet lunar attempts since 1963), and that the payload will be injected into a 52-degree parking orbit prior to injection into trajectory toward the Moon (as was done with Luna 8 and Luna 9). (See chart on page 33 for Soviet lunar-probe chronology.)

The next Soviet softlander could be intended to explore some portion of the lunar surface believed to be unlike Luna 9's landing place (the Sea of Storms) or to gather some type of information about the Moon not collected by Luna 9, such as data on the temperature and composition of the lunar surface.

(NORAD)

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Veneras 2 and 3 Should Near Venus About 1 March

The two Venus probes, Venera 2 and Venera 3, which the Soviets launched last November, should make their closest approach to their target planet about 1 March, according to Soviet announcements. As of last report, the systems of both spacecraft including their communications, were still functioning properly.

The Soviets have not been very specific about the missions of these two vehicles, having said only that they will try to obtain information about the atmosphere and surface of Venus, that there are differences in their missions, and that one weighs slightly more than the other.

(Soviet press)

(UNCLASSIFIED)

Cosmos 110 Helping Pave Way for Future Series of Manned Flights

Cosmos 110 appears to be a preparatory step toward a new series of manned spaceflights which will probably involve a new-generation capsule and, possibly, a propulsion system not used previously for manned flights. The last series of Soviet spacecraft to carry dogs, the Korabl'-series





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recoverable vehicles (May 1960-March 1961), was followed very briefly by man's first spaceflight (12 April 1961).

TASS announced that Cosmos 110 carried 2 dogs and would conduct biological studies in space. A later announcement said that the dogs were protected against radiation by special suits. In this connection, Cosmos 110 is a high orbit (apogee about 475 n.m.) which causes it to spend much of its time in a high-energy region of the Van Allen radiation belts. Thus, the primary purpose of the flight would appear to be to test the effectiveness of equipment or systems which will protect humans against radiation involved in future space missions such as orbital flight passing through the Van Allen belts, extended flight in space laboratories, and flights to the Moon which may involve passage through the Van Allen belts or exposure to solar flares.

The biological-study aspects of the TASS announcement [redacted] [redacted] which show that Cosmos 110 is transmitting biomedical telemetry. Preliminary analysis shows that this telemetry closely resembles that of Voskhod 2, from which Cosmonaut Leonov made his famous walk in space last March, and that the electrocardiograms of the 2 dogs are normal, although one of the animals gives signs of being extremely nervous.

The Soviets could at the same time be:

- Collecting data on the biological effects of prolonged space-flight on higher animals (such as dogs), an area in which the Soviets have been deficient. (This possibility can be eliminated if Cosmos 110 is de-orbited within a few days after launch.)
- Testing a new-generation capsule and/or an improved propulsion system. (There is no direct evidence to support or contradict this hypothesis; however, it may be significant that no propulsion telemetry has been intercepted in connection with the launch of Cosmos 110.)

It is not known as of this writing (1630Z, 23 February) whether the Soviets intend to recover this spacecraft. They have not yet made any announcement on this possibility. They have never tried to de-orbit a satellite from an orbit as high as Cosmos 110's, nor will they be able to use their normal de-orbit procedures, that is, bring the vehicle down on a northbound pass in daylight with impact in established recovery areas of the south-central USSR. However, maximum benefit from the biological studies can be gained only if the dogs are brought down safely; this would enable study of the effectiveness of the radio-protective measures and the biological effects of prolonged space flight (if the latter is intended).

The new vehicle is the only one of the Cosmos series to carry animals, so far as is known or has been announced. The stated mission of the Cosmos series does not specifically include biological studies, but such studies could be considered an extension of the Cosmos mission of studying the near-Earth space environment.





Launch & Orbital Data. Cosmos 110 was launched from Tyuratam at about 2005Z, 22 February 1966, into an orbit with parameters reported as follows:

| | <u>By NORAD Space Defense Center</u> | <u>By TASS</u> |
|-------------|--|-------------------------------|
| Inclination | 51.85 degrees | 51.9 degrees |
| Period | 95.357 minutes | 96.3 minutes |
| Apogee | 879.1 kilometers (475 n. m.) | 904 kilometers (487 n. m.) |
| Perigee | 192.1 kilometers (104 n. m.) | 187 kilometers (101 n. m.) |

(NORAD; TASS)

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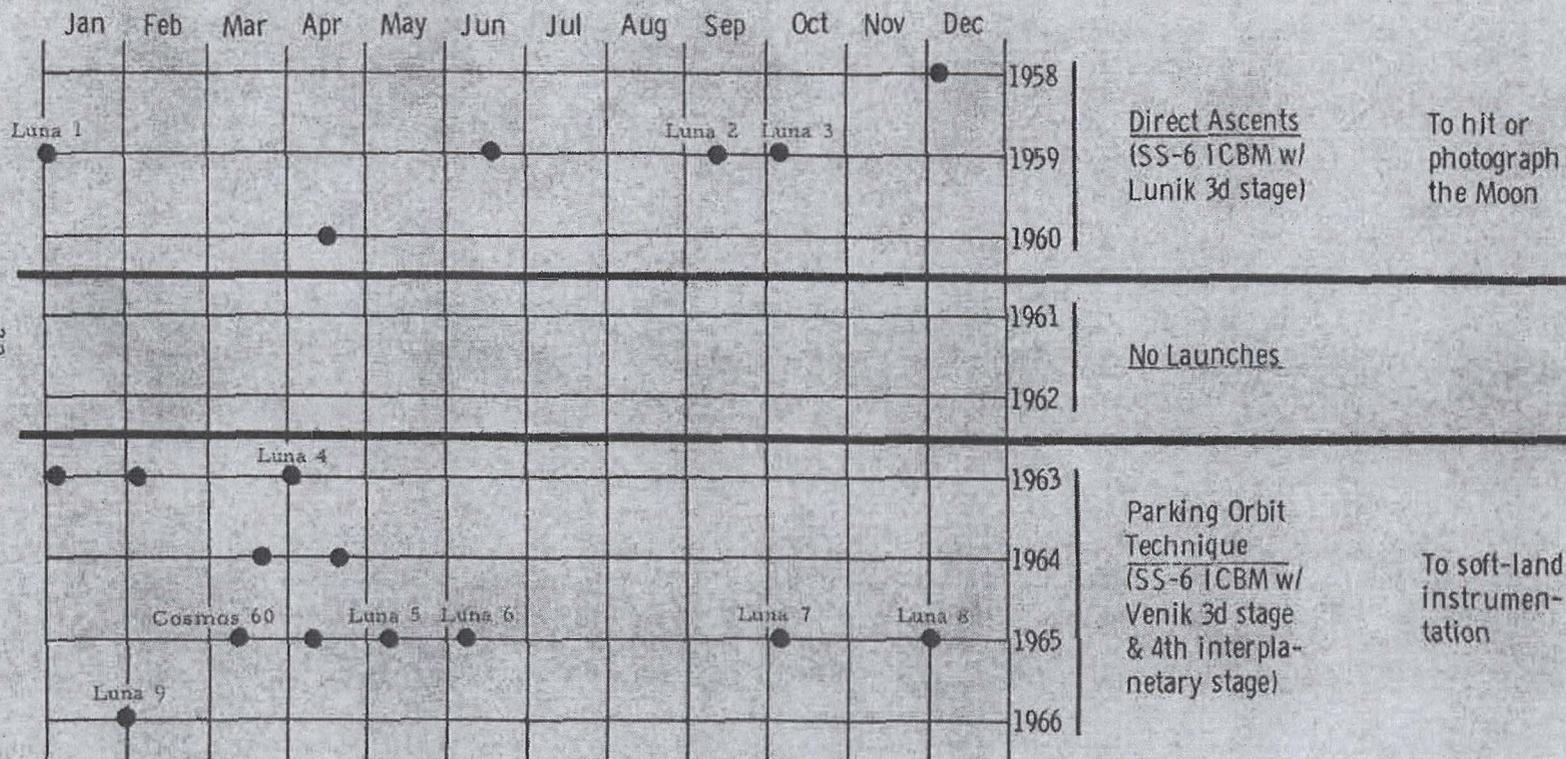
The Soviet Lunar Program -- a Time Scale

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(Does not include Zond 3, which, though it photographed the unseen side of the Moon as it went into orbit around the Sun, was primarily a test bed for interplanetary-probe systems, particularly for those to be used on Venera 2 and Venera 3, which were launched 3 months later.)



NOTES:

- 1) Unnamed vehicles were launch failures which the Soviets did not announce.
- 2) Cosmos 60, which the Soviets said was a scientific-research Earth-satellite of the Cosmos series, actually was a lunar probe which failed to achieve transfer trajectory.
- 3) (For mission results, see listing on page 33, WIR 6/66.)

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