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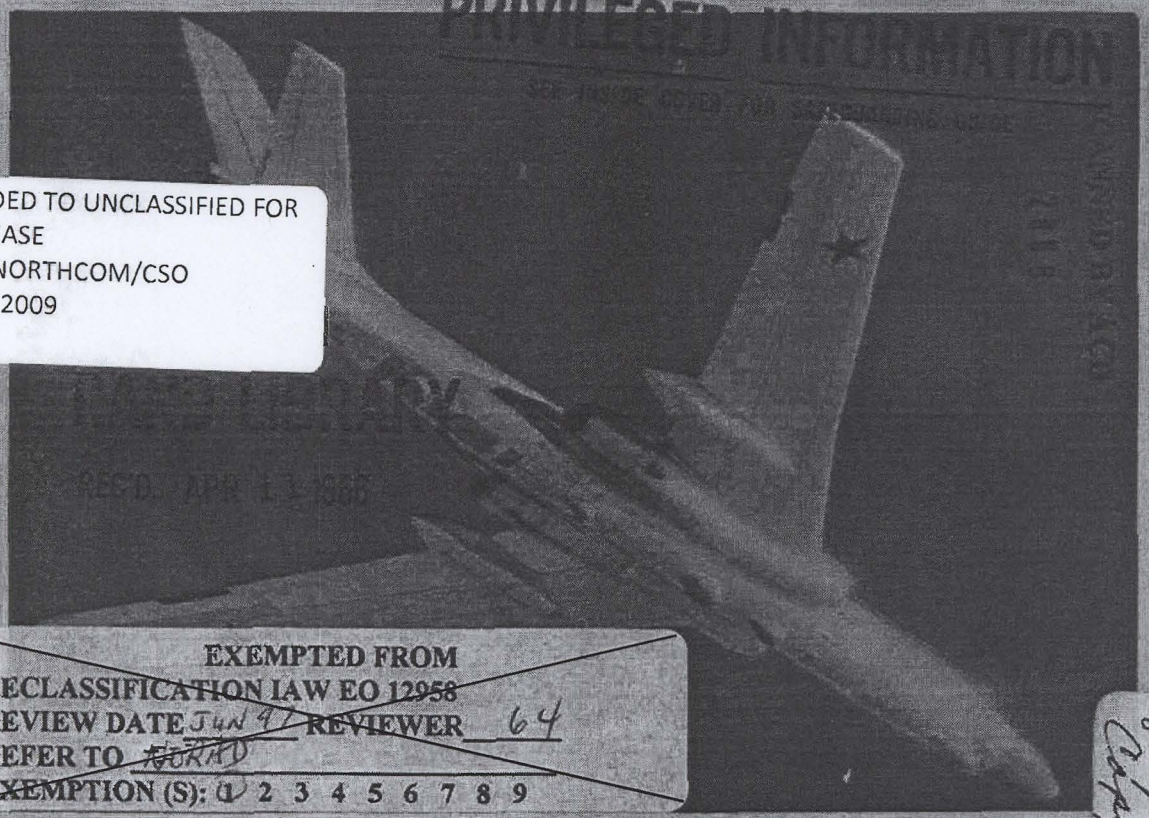

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WIR-14/66
8 Apr 1966
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The WIR in Brief

Portion identified as non-responsive to the appeal

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Space

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TRACKING STATION IN EGYPT USEFUL DURING EJECTION OF DEEP-SPACE PROBES 11

COVER: BADGER D ferret (furnished by COMICEDEFOR) (this caption SECRET) (Photo: OFFICIAL USE ONLY)

NOTE: Pages 30, 31, 34, 35, 38, 39, 42 and 43 of this issue are blank.

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significant intelligence on space developments and trends

Luna 10 at Least a Partial Success; Full Details Not Known

Luna 10, the Soviets' latest lunar probe, appears to be a success at least from the standpoints of propulsion and guidance and, possibly, of transmission of data about the near-lunar space environment.

Mission. Before Luna 10 orbited the Moon, TASS modestly said that its mission was to "test" systems for launching payloads around the Moon. After lunar orbit had been achieved, TASS said that the probe's mission was to seek a landing place on the Moon for manned spacecraft, to determine whether meteorites are a hazard to manned flights in the vicinity of the Moon, and to measure the Moon's temperature and gravitational and magnetic fields.

Propulsion, Guidance, and Trajectory. The Soviets launched Luna 10 with the same propulsion systems used for all their attempted interplanetary probes and for their 13 preceding lunar probe attempts. Details of the retro-rocket that finally placed the probe into lunar orbit are not known, but the one used for Luna 9's soft landing easily had the thrust necessary for this mission.

An SS-6 ICBM booster-sustainer launched Luna 10 from Tyuratam at about 1048Z, 31 March, within 2 minutes of the optimum time for such a launch. A heavy Venik-type third stage injected the vehicle into parking orbit and, at about 1211Z, a fourth (so-called "interplanetary") stage injected the payload toward the Moon.

Injection into transfer trajectory toward the Moon appears to have been accomplished with good accuracy. Tracking of the probe during the early part of this maneuver [redacted] radar indicates that the spacecraft would pass within about 2800 kilometers of the Moon's surface. If no inflight course correction was made, the probe would have passed around the Moon and journeyed toward the Earth on a highly elliptical orbit, passing the Earth at a distance of about 10,000 kilometers. However, less thrust than was used for Luna 9's soft landing on the Moon in early February

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would have sufficed to guide Luna 10 into lunar orbit. TASS said that during the injection-into-lunar-orbit maneuver, Luna's speed was reduced from 6.8 miles per second to 0.77 miles per second.

Payload Configuration. TASS said that Luna 10 was a 539-pound sealed cylindrical container. (See Soviet drawing on page 36.) This announcement probably referred to the final load, after retrofire. The total load injected toward the Moon reportedly weighed about 3,520 pounds.

Radar signature analysis of the payload injected toward the Moon, based on an observation made at 1222Z, indicated that the vehicle was complex in shape and was spinning at the rate of once each 96.2 seconds. This slow spin was probably intentional -- to assure even distribution of the heat from the Sun's rays. Luna 10 appeared to have wire-like protrusions measuring about 12 feet from tip to tip and a flat, paddle-like protrusion 2.4x3 feet.

Accomplishments. The Soviets claim that Luna 10 is orbiting the Moon once each 3 hours; apogee of its lunar orbit is about 621 miles, perigee about 217.5 miles. They also say that the probe's communications are stable and that scientific data is steadily being relayed to the Earth.

Sir Bernard Lovell, director of the UK's large radiotelescope at Jodrell Bank, has said that Luna 10 appeared to be tumbling, in which case it probably would not be able to get the pictures needed for selecting a landing site for future manned spacecraft. This view can neither be confirmed nor denied by intercepts.

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Review and Preview. The Soviets, by successfully injecting Luna 10 into lunar orbit and, possibly, collecting data about the near-lunar space environment, have taken one more of many steps needed before men can be safely landed on the Moon and returned to the Earth. Among the most important steps remaining are development and testing of:

- Much larger propulsion units. (All of Luna 10's propulsion units were of types that have been in use since 1961, some of them since 1958.)
- Techniques and equipment for rendezvous, docking, and assembly of spacecraft in Earth orbit.
- Techniques and equipment for re-entering the Earth's atmosphere at the speeds expected of a vehicle returning from the Moon.

- Means for protecting man against possible solar flares while he is en route to, on, and returning from the Moon.

The Soviets have placed a high priority on their lunar program in the past 13 months: 6 probe attempts were made last year, 3 already this year (see chart on page 37). The likelihood of more lunar launches in coming months will depend largely on whether Luna 9 and Luna 10 have satisfied the Soviets's need for information about the surface of the Moon and about the space environment in the vicinity of the Moon. If more data or photography is needed, more launches can be expected in coming months. Otherwise, the next Soviet lunar ventures will probably involve the man-rating of new propulsion units or unmanned circumluna flights; these would be several months off.
(NORAD; TASS)
~~(SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK, and Canada)

East Germans to Develop Satellite-Tracking Camera, Probably for Soviets

A satellite-tracking camera with great range and accuracy reportedly is to be developed by an East German institute and produced by VEB Carl Zeiss, Jena. Designed primarily by Dr. M. Steinbach, a promising 29-year-old scientist-engineer who has been with Zeiss since 1961, the instrument is to meet the following specifications:

- Position determination equal to or less than 2 seconds of arc.
- Time determination equal to or less than 1 millisecond.
- Object detection "greater" than stellar magnitude 10.

The Soviets may be the real backers of this project, since the camera described would be superior to any now in use in the Communist world and would be roughly comparable to the US's principal satellite-tracking camera, the Baker-Nunn. The latter can give point images at magnitude 12.9 once every 4 seconds, with the possibility of reaching magnitude 17.5 at slightly longer exposures.

The new German camera will probably be a Schmidt-type with a lens speed of about f/1.5 and will have a 20-inch reflector. The Baker-Nunn has the slightly faster lens speed of f/1, is of the Super-Schmidt-type, and has a 20-inch aperture and a field of view of 30 degrees.

The greatest utility of tracking cameras of this type is for scientific and geodetic purposes.
(CIA)
~~(CONFIDENTIAL)~~

Norway Building Space Telemetry Station on Spitzbergen Despite Soviet Protests

The Norwegians are building a telemetry reception station on Spitzbergen Island (the Svalbard) in the Arctic Ocean despite several Soviet protest notes.

This is one of several telemetry and tracking stations being built for ESRO (European Space Research Organization); its function is to receive telemetry signals from satellites in polar orbit.

Norway is prohibited by treaty with the USSR from using the island for any military purposes. In objecting to the building of the station, the Soviets argued that Norway, a member of NATO, could use it to collect intelligence on Soviet activities. The island is, of course, too far from the USSR to have any great intelligence-collection potential. As was expected, the Norwegians rejected the Soviet notes and the Soviets appear to have allowed the issue to lapse.

Construction of the station was on schedule as of recent date. Completion is expected about November 1966.
(CIA)
~~(CONFIDENTIAL)~~

Tracking Station in Egypt Useful During Ejection of Deep-Space Probes

The Soviets were in an indecent hurry to open an optical satellite-tracking station in the UAR: they submitted a written agreement to the UAR for approval on 10 January and the first instruments arrived by air on 18 January, the day before the agreement was actually signed.

The USSR, of course, badly needs tracking facilities at lower latitudes, but the new station, to be set up at Helwan Observatory, near Cairo, will be of particular value to the Soviets in observing the ejection phase of lunar and interplanetary probes, that is, the ejection from parking orbit into transfer trajectory toward the Moon or the planets.

The Soviets may have been hurrying to get ready to observe the ejection of Luna 9, which was launched on 31 January. The standard Soviet optical tracking camera, the NAFA 3S/25, is a simple instrument which could have been installed rather quickly on a temporary basis.

The station at Helwan will be manned by Egyptians, but one Soviet is to remain there. The Soviets may try later to expand their tracking effort in the UAR.
(CIA)
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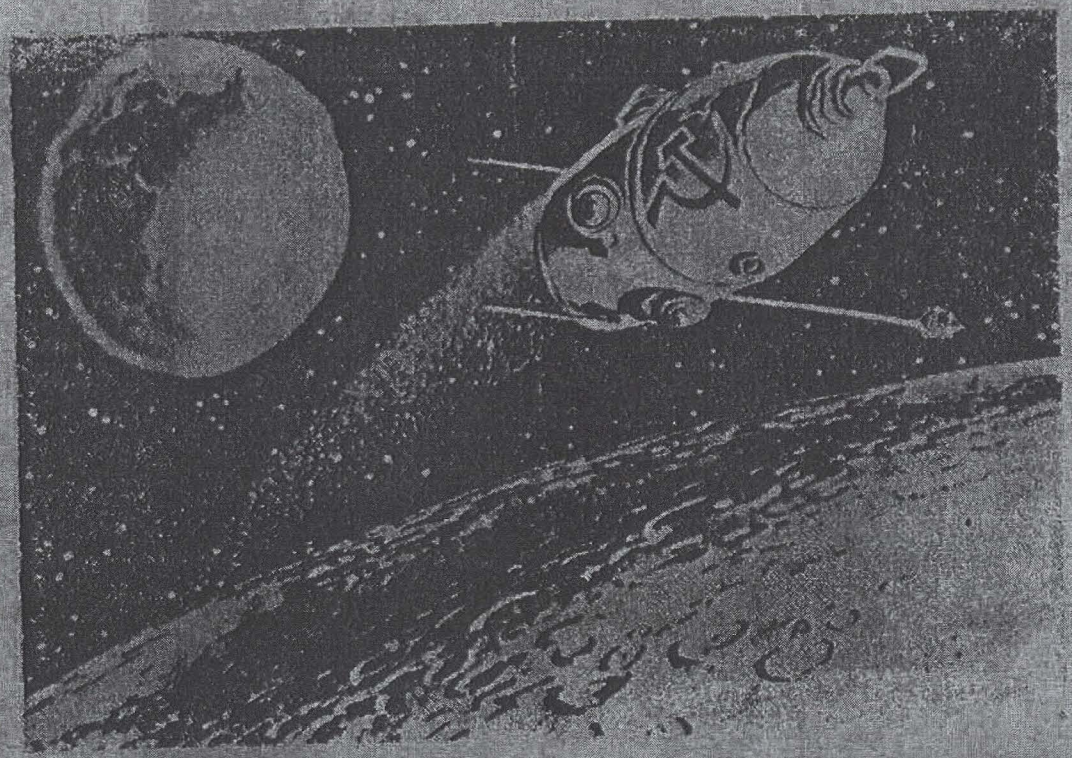
Luna 10



(a Soviet drawing)

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The Soviet Lunar Program -- a Time Scale

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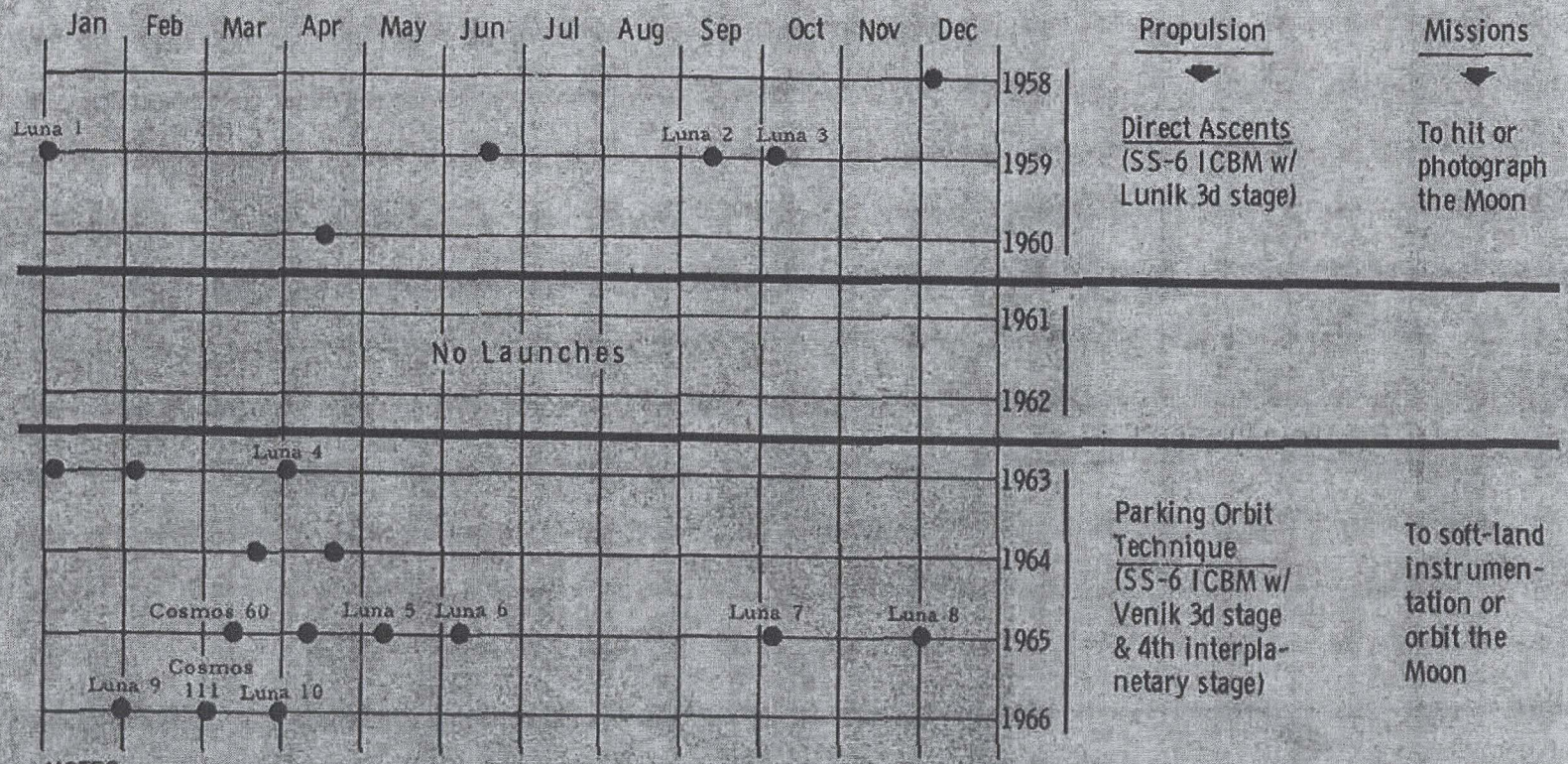
(Does not include Zond 3, which, though it photographed the unseen side of the Moon as it went into orbit around the Sun, was primarily a test bed for interplanetary-probe systems, particularly for those to be used on Venera 2 and Venera 3, which were launched 3 months later.)



NOTES:

1) Unnamed vehicles were launch failures which the Soviets did not announce.
2) Cosmoses 60 and 111, which the Soviets said were scientific-research Earth-satellites of the Cosmos series, actually were lunar probes which failed to achieve transfer trajectory.
3) For mission results through Luna 9, see p. 33, WIR 6/66.