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NORTH AMERICAN AIR DEFENSE COMMAND

W O I R

WEEKLY INTELLIGENCE REVIEW (U)

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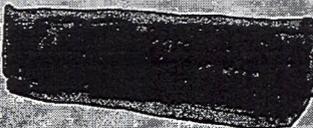
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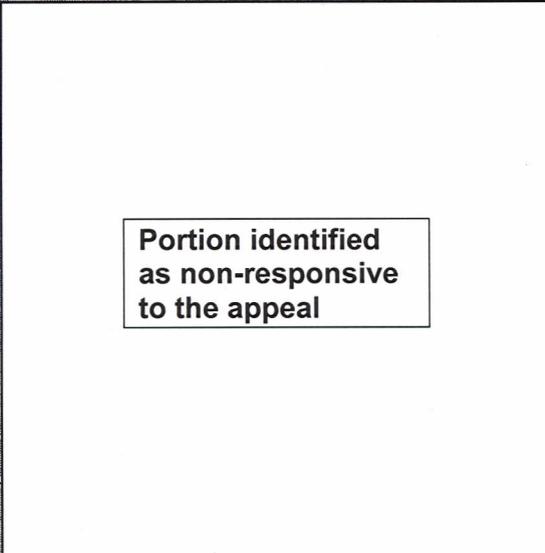
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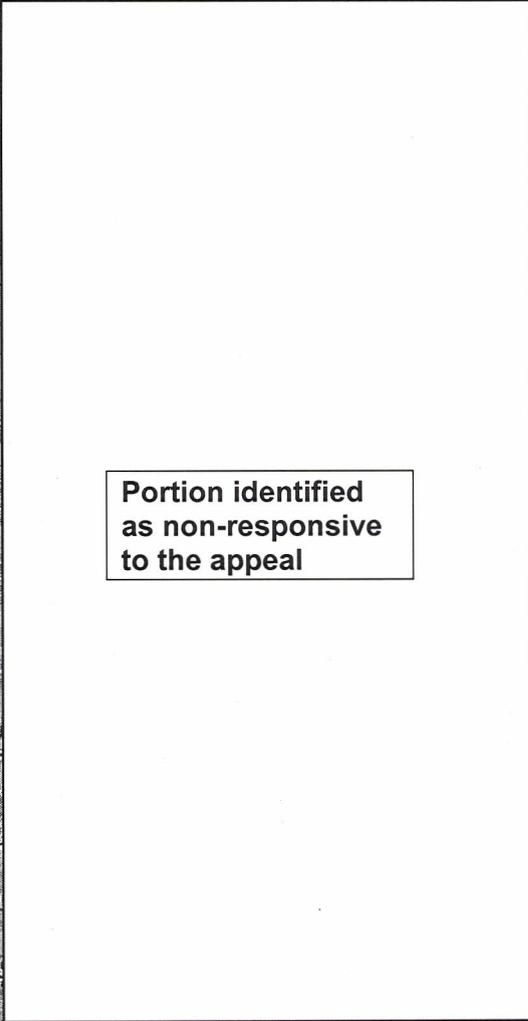
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Issue No. 51/64, 18 December 1964

The WIR in Brief

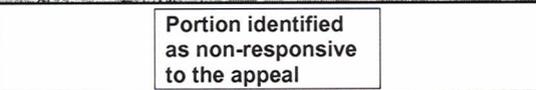


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RECENT EULL IN MISSILE-RANGE ACTIVITY NOT WITHOUT PRECEDENT



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Space

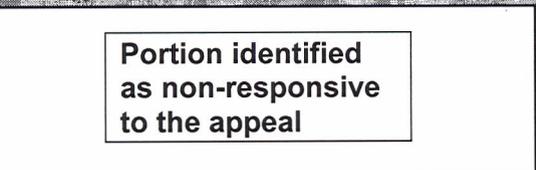
SOVIET PHOTORECCE SATELLITES PROBABLY GETTING GOOD COVERAGE OF FREE WORLD TARGETS

Soviet photorecce equipment adequate. COSMOS 51 PROBABLY A RESEARCH VEHICLE

A routine Kapustin Yar launch. COMMUNICATIONS SESSIONS STILL BEING HELD WITH ZOND 2. SOVIETS CLAIM

Position as of 8 Dec given. EARLY POLYOT LAUNCH A POSSIBILITY

Ships close to point on Earth trace of earlier Polyots. SOVIETS CLAIM LUNIK 4 NOW IN HELIOCENTRIC ORBIT



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COVER: BADGER B with missiles. (from Red Star (OFFICIAL USE ONLY))
NOTE: Pages 2, 31, 32, 34, 35, 38, 39, and 42 of this issue are blank.

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Recent Lull in Missile-Range Activity Not Without Precedent

US radar detected the following Soviet missile launches between 30 October and 15 December 1964:

<u>Time & Date</u>	<u>Type</u>	<u>Launch Site</u>	<u>Range</u>
1326Z, 30 Nov	Zond 2*	Tyuratam	Interplanetary
2301Z, 09 Dec	Cosmos 51#	Kapustin Yar	Orbital
0020Z, 15 Dec	SS-9 ICBM	Tyuratam	3400 n.m.
1319Z, 15 Dec	SS-4 MRBM	Kapustin Yar	1050 n.m.

* Launched by SS-6 ICBM booster & sustainer, injected into Earth parking orbit by heavy Venik third stage, and injected into transfer trajectory toward Mars by fourth (interplanetary) stage.

Launched by 2-stage vehicle of unknown type.

The lull in missile test launches during this period is not unprecedented,





neither is it seasonal. Weather could be a contributing factor, as could the need for reserving one or more of the ranges for planned space shots.

The lull may now be over, with ICBM test firings to the Pacific possibly in the offing. Two missile-range instrumentation ships have been dead in the water since 12 December at the impact area 7,000 n.m. from the rangehead, and a third could reach the area by 17 December. (Also see Space section of this WIR.)

This is one of two areas closed to shipping by a Soviet announcement this summer, but the closure of this particular area was to be effective only through 1 November. (The other area, 6500 n.m. from the rangehead, is still closed to shipping by this summer's Soviet announcement.) The Soviets could, however, reclose the 7,000-n.m. area. They have never fired to one of the Pacific impact areas without first announcing its closure to shipping. They have, however, launched ICBMs to such areas within 24 hours of the closure announcement.

Subsequent to the closure announcements of last summer, the Soviets successfully fired 3 SS-9 ICBMs to the 7,000-n.m. area and 1 SS-10 ICBM to the 6500-n.m. area.

(Diyarbakir & Shemya RADINT; DIA, NORAD)

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significant
intelligence
on space
developments
and trends

Soviet Photorecce Satellites Probably Getting Good Coverage of Free World Targets

The Soviets are probably obtaining good quality photographic coverage of sensitive Free World targets with their photoreconnaissance satellites (most Tyuratam-launched Cosmoses), according to an FTD assessment of Soviet capabilities in photography.

Soviet capabilities to operate an automated camera aboard a space vehicle and to process film were first demonstrated by photographs of the far side of the Moon taken by Lunik 3, which was launched 4 October 1959.

Soviet aerial cameras appear to be of high quality, incorporating essentially all modern features, including automatic-exposure control, panoramic view, high-quality extralong-focal-length lenses, uniform-tension film drives, automatic image-motion compensation, computation circuits, and in-flight processing.

A 3-year-old report claims that the Soviets have films with resolutions well above 100 lines/millimeter, although they have lower sensitivity than standard aerial film. It is assumed that some progress has since been made in devising a higher speed film with high resolution, in view of the considerable film research being accomplished. Western tests on Soviet black-and-white and color films showed them to be inferior to comparable US types in uniformity of density and in color balance, respectively.

Also contributing to the quality of the USSR's photoreconnaissance satellite coverage is the Soviets' ability to launch their vehicles on schedule and to inject them into closely controlled orbital parameters.

(FTD)

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Cosmos 51 Probably A Research Vehicle

Cosmos 51 which the Soviets launched from Kapustin Yar (KY) at about 2301Z, 9 December, is probably a scientific research vehicle, as the Soviets claim. Its orbital parameters, according to SPADATS:

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Inclination to Equator	48.70 degrees
Period	92.49 minutes
Apogee	546 km (292 n.m.)
Perigee	254 km (136 n.m.)

Signals have been detected from Cosmos 51 as follows:

50X1 and 3, E.O.13526

Preliminary analysis indicates that the vehicle is spin-stabilized, which is usual for KY-launched Cosmos vehicles. Its decay date is roughly estimated to occur in May 1965.

Cosmos 51 is the 8th Cosmos vehicle launched from KY this year, although the event was only the 7th launch: Cosmoes 42 and 43 were launched from the same carrier rocket from KY on 22 August.

(SPADATS; various sensors)

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Communications Sessions Still Being Held with Zond 2, Soviets Claim

The Soviets held 11 communications sessions with their space probe, Zond 2, between 4 and 8 December, according to a TASS communique published in the 10 December issue of the newspaper Red Star. Communications were stable, according to the newspaper; scientific information and data about operation of systems aboard the probe were received.

The probe's location at 2200 hours, Moscow time (2000 hours, Greenwich), 8 December 1964, were given as follows:

Right ascension	8 hours, 38 minutes
Declination	Minus 6 degrees, 30 minutes
Distance from Earth	2,470,000 kilometers (1,680,000 statute miles) (1,315,000 nautical miles)

(Red Star)
(UNCLASSIFIED)

Early Polyot Launch a Possibility

There is some possibility of the Soviets launching a Polyot vehicle in the near future. Soviet missile-range instrumentation ships which are apparently





preparing to monitor forthcoming ICBM firings to a Pacific Ocean impact area 7,000 n.m. from the Tyuratam rangehead (see pages 8 and 9) could also probably monitor any Polyot launch that might take place. Both Polyots (No. 1 was launched 1 November 1963, No. 2 was launched 12 April 1964) were injected into orbital inclinations of 59 degrees; the center of the 7,000-n.m. impact area is close to the Earth trace of the Polyot's orbits.

Soviet announcements claimed that the Polyots were maneuverable vehicles and, by their wording, lent the impression that the Polyots were about as free in flight as a fighter aircraft. SPADATS data indicates that Polyot 1 probably did not maneuver at all after initial detection by Shemya radar; any maneuvers that were executed must have occurred within the 6-minute period between 3d-stage cutoff and detection by Shemya. There is evidence that Polyot 2 may have made 2 small changes in orbital inclination, one from 59 degrees to 60 degrees and the other from 60 to 58 degrees.

The development of maneuverability of space vehicles is an important step toward the development of vehicles which can rendezvous -- and this, in turn, is essential to advanced space programs of the future.

(DIA; SPADATS; NORAD)

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Soviets Claim Lunik 4 Now in Heliocentric Orbit

A listing of Soviet space launches which was published in the April 1964 issue of the Soviet Air Force magazine "Aviation and Cosmonautics" remarked as follows on Lunik 4, which was launched 2 April 1963:

"The automatic station on 6 April passed within 8500 kilometers of the lunar surface. In 1963 it revolved around the Earth and then, under the influence of solar attraction, it left the sphere of influence of the Earth and became an artificial satellite of the Sun."

The Soviet statement that Lunik 4 has gone into heliocentric orbit is probably based upon computations of early observations, not upon actual observation of transfer into heliocentric orbit. The Soviets, it is noted, did not specify the date that the probe transferred into its new orbit.

SPADATS data indicates that Lunik 4, after passing near the Moon, went into barycentric (Earth-Moon) orbit. However, a stable barycentric orbit is exceptional. Ordinarily, a vehicle in barycentric orbit is likely, eventually, to come increasingly under the gravitational influence of either the Earth or the Moon, or to leave the gravitational influence of both and take up a heliocentric orbit. In any case, the exact course of events and





their timing will depend mainly on how close the vehicle approached the Moon on its initial pass and on its speed at that time.

The Soviet computations were probably worked out correctly, but the degree of accuracy of the claimed miss distance of 8500 kilometers is not known. SPADATS computed the miss distance at about 15,100 kilometers from marginal data and considerable leeway must be allowed on either side of this value.

It is quite possible that Lunik 4 is in heliocentric orbit, as the Soviets claim, but a definite conclusion cannot be reached on the basis of the limited data available.

(Soviet press; SPADATS)

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