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NORTH AMERICAN AIR DEFENSE COMMAND

W I R

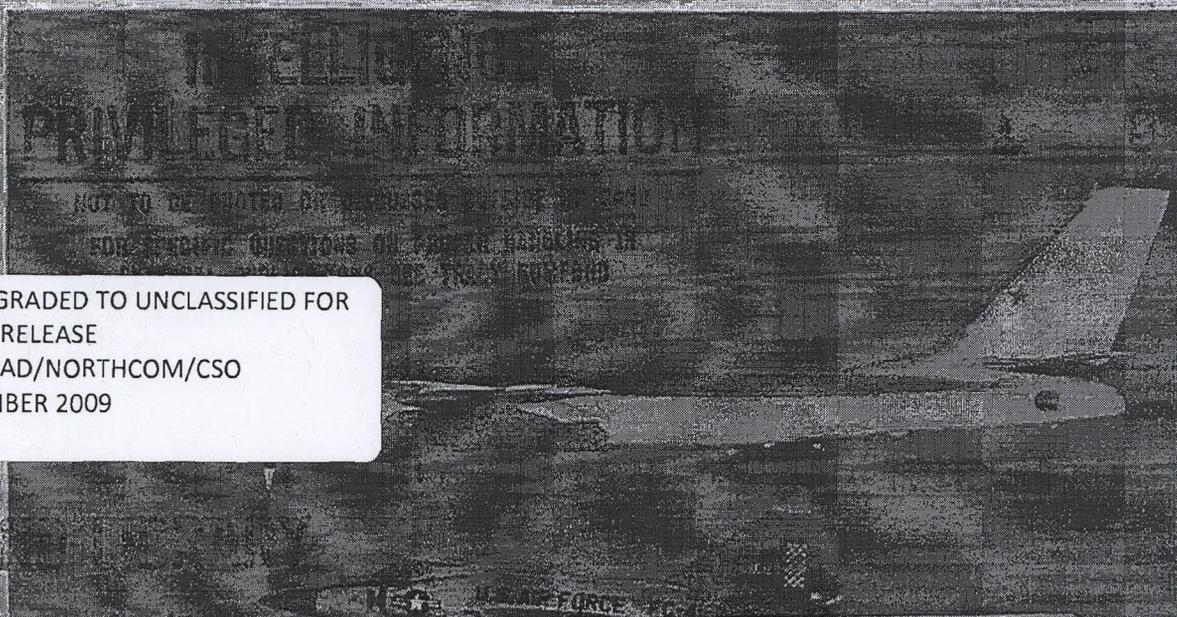
WEEKLY INTELLIGENCE REVIEW (U)

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**NORAD**

Weekly  
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Review

Issue No. 29/64, 17 July 1964

The WIR in Brief

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HQSASAF/IC  
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MISSILE RANGE FIRING LOG PRESENTED  
For week ending 2400Z, 10 July.

**Space**

ALL EARTH SATELLITES ARE SOVIET, MANY  
INDIANS SEEMS TO BELIEVE

Communist propaganda apparently effective.  
COSMOS 34 DE-ORBITED; FLIGHT NEARLY A  
CARBON COPY OF LAST 4 TT COSMOS FLIGHTS

Probably photoreconnaissance vehicle.  
MISSILE RANGE SHIP AT SEA, MAY PRESAGE  
SPACE EVENT

Chukotka sighted in Pacific, heading southeast.  
'ELECTRONS 3 & 4' CARRY ON STUDIES OF  
SPACE ENVIRONMENT STARTED BY NOS. 1 & 2

Essentially same orbital parameters used.  
SPACE SITUATION REPORT PRESENTED

As of 14 July.  
LATEST LAUNCH PROBABLY COSMOS 35, MAY BE  
DE-ORBITED

No Soviet announcement at press time.

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as non-responsive  
to the appeal

COVER: BEAR bomber and Iceland-based  
USAF interceptor (OFFICIAL USE ONLY)  
NOTE: Pages 28, 30, 31, 34, 35, 38, 39, 42  
and 43 of this issue are blank.

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### Missile Range Firing Log Presented

US radar detected the following Soviet missile and space launches during the week ending 2400Z, 10 July 1964:

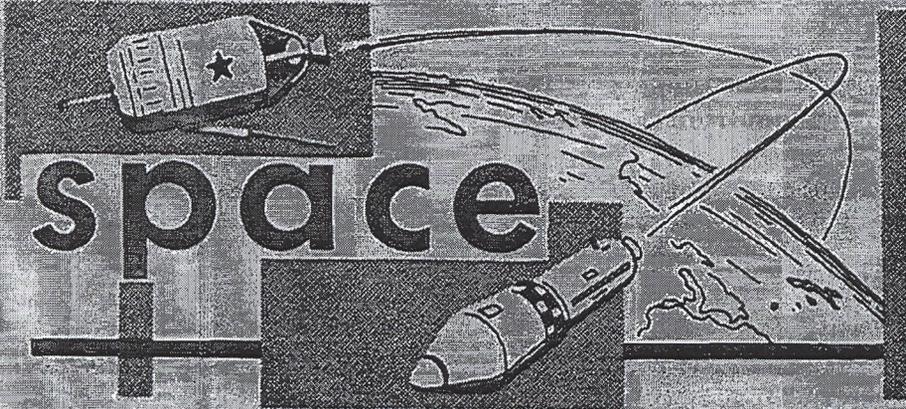
<u>Date &amp; Time of Launch</u>	<u>Type of Vehicle</u>	<u>Launch Site</u>	<u>Estimated Flight Distance</u>
07 Jul, 1132Z	SS-4 MRBM	KYMTR	1050 n.m.
08 Jul, 0904Z	SS-4 MRBM	KYMTR	1050 n.m.
10 Jul, 1533Z	SS-4 MRBM	KYMTR	1050 n.m.
10 Jul, 2151Z	Electrons 1 & 2*	TTMTR	Earth orbit

\* Injected into orbit by an SS-6 ICBM and Lunik 3a stage. See Space section of the WIR for details.

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significant  
intelligence  
on space  
developments  
and trends

### All Earth Satellites Are Soviet, Many Indians Seem to Believe

An American who spent several weeks in India reports that the Indians with whom he talked believed that all the Earth satellites that have been launched to date were Soviet -- a tribute to Soviet and/or local Communist propaganda. One Indian asked the American:

"Did you see the Soviet satellite?"

"Which one?"

"Echo."

Source reports that it was difficult to convince the Indian that Echo is a US satellite.

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### Cosmos 34 De-orbited; Flight Nearly a Carbon Copy of Last 4 TT Cosmos Flights

Cosmos 34, which was launched from Tyuratam (TT) at about 1100Z, 1 July, was apparently de-orbited sometime between 0931-0936Z, 9 July, nearly 8 days after launch, in the early part of Revolution 127.

All the known circumstances of this vehicle's flight were nearly identical with those of the 4 preceding flights of Cosmoes launched from Tyuratam (except for Cosmos 32, which had the unique orbital inclination of 51 degrees). For a comparison of flight parameters of all members of the TT Cosmos series to date, see page 32. (Not included are Cosmoes 21 and 27 which appear to have been assigned Cosmos designations by the Soviets simply to conceal failures or other types of missions. See p. 14, WIR 14/64.)

Photoreconnaissance is believed to be the primary mission of the TT Cosmoes, which now occupy a substantial share of the Soviet space effort. Six of these vehicles have now been launched and de-orbited this year. The USSR has apparently decided on this large investment primarily for acquiring target data for its strategic missiles. Such weapons require precise

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information on the geodetic relationship of the target to the launch point; information of this type on hundreds of targets in the US is obtainable only from satellite photography.

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### Missile Range Ship at Sea, May Presage Space Event

The Soviet missile-range instrument ship (SMRIS) Chukotka was sighted on 8 July at 4850N-16107E, proceeding on a course of 150 degrees at a speed of about 9 knots. SMRISs are used to monitor the re-entry of Soviet ICBMs fired to Pacific Ocean impact areas and to participate in certain Soviet space events, usually deploying in such cases along the Earth-trace of the Zero orbit of the vehicles.

This is the third time this year that one or more SMRISs have put to sea, apparently to participate in some space event.

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### 'Electrons 3 & 4' Carry on Studies of Space Environment Started by Nos. 1 & 2

Electrons 3 and 4, space vehicles which the Soviets launched from the Tyuratam missile test range at about 2151Z, 10 July, are believed to be essentially similar to Electrons 1 and 2 with respect to launch techniques, configuration, orbital parameters, and mission. Electrons 1 and 2 were launched at about 0945Z, 30 January 1964.

The primary mission of Electrons 1 and 2 was to make a simultaneous study of the radiation belts of the Earth and the Earth's magnetic field at various distances from the Earth, registering particles over a wide range of energies. Secondary missions were to study radio and cosmic radiations being received from beyond the solar system, the performance of various materials in the space environment, the problems of communications and reliability of equipment in the space environment, the electron density of the ionosphere, and the micrometeorite density of near-Earth space.

Electrons 1 and 2 are no longer able to perform the joint mission, since Electron 1 has ceased transmitting. The TASS announcement regarding the missions of Electrons 3 and 4 indicate that they are performing essentially the same, or similar, missions as Electrons 1 and 2.

In the launches of both 30 January and 10 July the Soviets injected two payloads into Earth orbit from one carrier rocket. The US has frequently launched multiple payloads from a single rocket but never into orbits of essentially different apogees. The Soviets accomplished this feat by separating the first payload from the carrier rocket while the latter was still providing thrust to the second payload.





Electrons 3 and 4 were injected into Earth orbits very similar to those, respectively, of Electrons 1 and 2, as can be seen in the following tabulation of early SPADATS - announced data:

	<u>30 January launch</u>	<u>10 July launch</u>
	<u>Electron 1</u>	<u>Electron 3</u>
Inclination to Equator	60.8 degrees	60.9 degrees
Orbital period	169.3 minutes	169.0 minutes
Apogee	7,120 kilometers 3,845 n.m.	7,321 kilometers 3,950 n.m.
Perigee	399 kilometers 215 n.m.	387 kilometers 209 n.m.
	<u>Electron 2</u>	<u>Electron 4</u>
Inclination to Equator	60.82 degrees	60.77 degrees
Orbital period	1,346.6 minutes	1,317.2 minutes
Apogee	67,616 kilometers 36,510 n.m.	66,400 kilometers 35,700 n.m.
Perigee	424 kilometers 229 n.m.	454 kilometers 244 n.m.

TASS has announced that Electrons 3 and 4 are transmitting on the following frequencies: 19.943, 19.954, 20.005, 30.007, and 90.022 mc/s. Intercepts have been made on the following frequencies: 19.994-mc/s beacon, 19.954-mc/s beacon, 20.005-mc/s beacon, [redacted]

[redacted] These are essentially similar to transmissions intercepted from Electrons 1 and 2, except that one of the latter [redacted]

The radar signature of Electron 3 indicates a more or less cylindrical body with several flat sides, apparently about 4 feet in diameter and 6-8 feet long, with evidence of 2 antennas, each about 20 feet long. The dimensions are quite similar to those estimated for Electron 1, except for the antennas. No radar signature data for Electron 4 is available yet.

The weight of these vehicles is not known; however, CIA has estimated that Electrons 1 and 2 may have weighed about 1,000 pounds each, basing this estimate on the thrust capabilities of the rocket carrier used -- the SS-6 ICBM booster and sustainer and the Lunik upper stage.

The Electron program appears to be a logical step in the Soviets' continuing study of the space environment, in preparation for the development of an orbital laboratory and/or developments leading to advanced manned space flight.

50X1 and 3, E.O.13526





The data obtained, which will supplement that obtained from other Soviet research vehicles, such as the Cosmoses launched from Kapustin Yar, will also contribute to the Soviets' participation in the International Quiet Sun Year.

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### Space Situation Report Presented

The over-all space-vehicle situation as of 14 July 1964 was as follows, according to NORAD SPADATS: (See page 33 for 14 July listing of Soviet vehicles.)

	<u>US</u>	<u>UK</u>	<u>Can</u>	<u>USSR</u>	<u>Total</u>
Payloads in Earth orbit	92	2	1	9	104
Payloads in Sun orbit	5	0	0	5	10
Payloads in Earth-Moon orbit	0	0	0	1	1
Payloads resting on the Moon	2	0	0	1	3
Pieces of debris in Earth orbit	314	0	2	11	327
Pieces of debris in Sun orbit	4	0	0	0	4
<b>TOTALS</b>	<u>417</u>	<u>2</u>	<u>3</u>	<u>27</u>	<u>449</u>
Objects decayed or de-orbited	194	0	0	191	385

By comparison, the payload situation about a year ago (12 July 1963) was as follows:

Payloads in Earth orbit	64	1	1	5	71
Payloads in Sun orbit	5	0	0	4	9
Payloads in Earth-Moon orbit	0	0	0	1	1
Payloads resting on the Moon	1	0	0	1	2
Pieces of debris in Earth orbit	254	0	2	7	263
Pieces of debris in Sun orbit	4	0	0	0	4
<b>TOTALS</b>	<u>329</u>	<u>1</u>	<u>3</u>	<u>19</u>	<u>352</u>

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## Latest Launch Probably Cosmos 35, May Be De-orbited

The Soviets launched a space vehicle from the Tyuratam missile test range at about 1128Z, 15 July 1964. As the WIR goes to press, the Soviets have made no announcement concerning the launch, but this vehicle will probably be designated Cosmos 35. It was launched into an orbit having a nominal inclination of 51 degrees, the second Soviet vehicle to have such an orbital inclination; the first was Cosmos 32, which was launched 10 July and de-orbited 18 July.

The new vehicle is probably performing a photoreconnaissance mission, as have other Cosmoses launched from Tyuratam. The 51-degree inclination is better for photoreconnaissance than the 65-degree inclination usual for Tyuratam-launched Cosmoses.

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## Cosmos Satellites Launched from Tyuratam & Later De-orbited\*

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Cosmos No.	Launch Date & Time	REVS DAYS	De-orbited after										NM INCL	NM APO	NM PERIG	PERIOD		
			16	32	48	64	80	96	112	128	144	160						
4	26 APR 62	1003Z				47									65	176	157	90.6
7	28 JUL 62	0918Z					64								65	190	109	90.1
9	27 SEP 62	0940Z					63								65	189	163	90.9
10	17 OCT 62	0903Z					63								65	206	100	90.1
12	22 DEC 62	0924Z										126			65	212	112	90.4
13	21 MAR 63	0830Z										127			65	170	144	90.0
15	22 APR 63	0830Z						79							65	190	90	89.7
16	28 APR 63	0850Z											158		65	209	114	90.3
18	24 MAY 63	1034Z											143		65	151	117	89.4
20	18 OCT 63	0930Z										127			65	167	109	89.6
22	16 NOV 63	1034Z							95						65	213	110	90.3
24	19 DEC 63	0929Z											142		65	219	112	90.5
28	4 APR 64	0945Z										126			65	205	112	90.4
29	25 APR 64	1025Z										127			65	153	119	89.5
30	18 MAY 64	0942Z										126			65	195	111	90.2
32	10 JUN 64	1100Z										128			51	180	109	89.7
33	23 JUN 64	1000Z										127			65	156	113	89.5
34	1 JUL 64	1100Z										127			65	185	111	90.0

\* Does not include Tyuratam-launched Cosmoses 21 and 27 which were launched, respectively, on 11 Nov 63 and 27 Mar 64. These vehicles were not de-orbited and their designation as Cosmoses is believed to conceal either failure of assignment of a non-Cosmos mission. (See WIR-14/64.)

Note the close similarities in perigees and number of revolutions before de-orbit of the last 5 TT Cosmoses. These similarities plus the frequency of launch indicate an operational system, estimated to be photoreconnaissance.

The 51-degree inclination of Cosmos 32 is believed to be even better for photoreconnaissance of the US and southern Canada than the usual inclination of 65 degrees.

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# Soviet Space Vehicle Listing (as of 14 July 1964)

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## Soviet Vehicles in Earth Orbit

International Designation	Common Name	Launch Date	Inclination to Equator	Period (Minutes)	Apogee (kilometers)	Perigee	Life Expectancy or Decay Date	Transmitting Frequencies (mc/s#)
1963-17A	Cosmos 17	22 May 63	48.98 <sup>0</sup>	92.8	569.5	248.6	3d Qr., 1965	50X1 and 3, E.O.13526
1963-43A	Polyot 1	1 Nov 63	58.94 <sup>0</sup>	102.4	1,405.0	337.4	Over 50 yrs	
1964-6A	Electron 1	30 Jan 64	60.86 <sup>0</sup>	169.3	7,120.1	400.3	Over 50 yrs	
1964-6B	Electron 2	30 Jan 64	60.03 <sup>0</sup>	1,356.3	67,838.8	582.6	Over 50 yrs	
1964-10A	Cosmos 25	27 Feb 64	49.03 <sup>0</sup>	91.4	425.2	254.0	Jul 65	
1964-13A	Cosmos 26	18 Mar 64	48.97 <sup>0</sup>	90.3	315.1	251.6	Jan 65	
1964-19B	Polyot 2	12 Apr 64	58.05 <sup>0</sup>	92.3	463.3	305.7	3d Qr., 1965	
1964-28A	Cosmos 31	6 Jun 64	48.97 <sup>0</sup>	91.3	456.4	218.5	Feb 65	
1964-38A	Electron 3	10 Jul 64	60.86 <sup>0</sup>	169.0	7,115	397.5	Over 50 yrs	
1964-38B	Electron 4	10 Jul 64	60.77 <sup>0</sup>	1,317.2	66,400.3	424.3	Over 50 yrs	

## Soviet Vehicles in Heliocentric (Sun) Orbit

			Inclination to Ecliptic	Period (Days)	Aphelion (in AUs)*	Perihelion	
1961 Mu 1	Lunik 1	2 Jan 59	0.01 <sup>0</sup>	449.4	1.315	0.9766	Indefinite
1961 Gamma	Venus probe	12 Feb 61	0.58 <sup>0</sup>	300	1.019	0.7183	Indefinite
1962 B, Nu 3	Mars 1	1 Nov 62	2.683 <sup>0</sup>	519	1.604	0.9237	Indefinite
1964-16	Zond 1	2 Apr 64	(Not Available)				Indefinite

## Soviet Vehicles in Barycentric (Earth-Moon) Orbit

1963-8B Lunik 4 2 Apr 63 (Not Computed)

## Soviet Vehicles Resting on Surface of the Moon

1961 Xi 1 Lunik 2 12 Sep 59 (Not Applicable)

\* AU -- astronomical units, roughly 1 AU = 93 million miles (mean distance from Earth to Sun).

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