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NORTH AMERICAN AIR DEFENSE COMMAND

WIR

WEEKLY INTELLIGENCE REVIEW (U)

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NORAD Weekly Intelligence Review

Issue No. 35/65, 27 August 1965

The WIR in Brief

Portion identified as non-responsive to the appeal

Portion identified as non-responsive to the appeal

Portion identified as non-responsive to the appeal

Space

COVER: Soviet airfield scene (from Red Star) (OFFICIAL USE ONLY)

NOTE: Pages 31, 32, 34, 35, 38, 39, 42, and 43 of this issue are blank.

Portion identified as non-responsive to the appeal

Missile Range Firing Log

US radar or acoustic stations detected the following space/missile launches during the period 2-24 August 1965:

Approximate Time & Date of Launch	Launch Vehicle	Launch Site	Range
02 Aug	Unidentified missile	Kapustin Yar	500 n.m.
0211Z, 03 Aug	Unidentified ICBM	Tyuratam	Failure
1518Z, 05 Aug	SS-4 MRBM	Kapustin Yar	1050 n.m.
0730Z, 06 Aug	SS-4 MRBM	Makat	825 n.m
1255Z, 06 Aug	SS-5 IRBM	Kapustin Yar	2000 n.m.
1850Z, 13 Aug	SS-5 IRBM	Spassk Dalniy	1311 n.m.
13 Aug	SS-9 ICBM	Tyuratam	4500 n.m.
1057Z, 14 Aug	Cosmos 78*	Tyuratam	Orbital

*Launched by SS-6 ICBM booster-sustainer, injected into orbit by light Lunik upper stage.

(Shemya & Diyarbakir RADINT; various ACOUSTINT & ELINT sensors)
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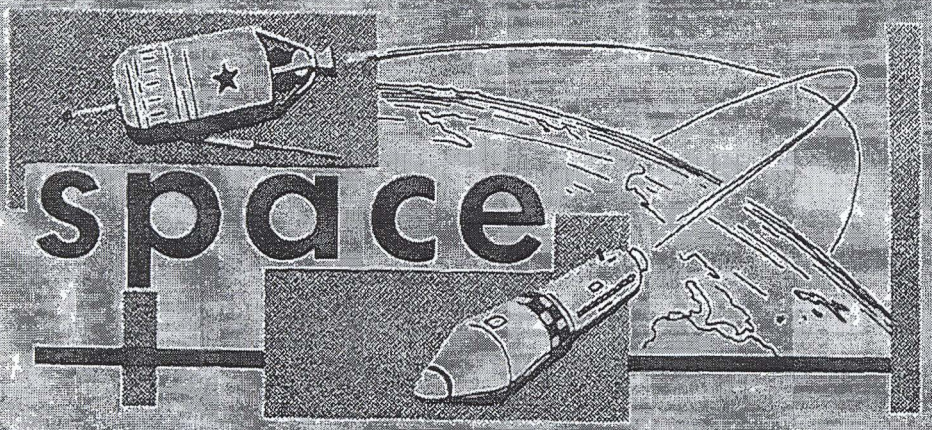

significant intelligence on space developments and trends

Electrosleep, in Which Soviets Lead, May Be Key to Long Manned Space Voyages

The Soviets appear to be more advanced than the West in the development of electrosleep. Electrosleep has already been used in the clinical treatment of traumatic injuries of the brain, arterial hypertension, mental disturbances, and neurologically related disorders. It may also have potential uses in controlled levels of anesthesia and possibly in anesthesia for battlefield traumatic surgery.

It could be particularly useful on long space voyages if it proves to be the key to artifically induced hibernation. Hibernation would reduce the potential psychological hazards of solitude over protracted periods of time and could reduce payload weight associated with life-support equipment and supplies, since the body's energy requirements are lessened during hibernation.

Electrosleep is the inducement of a sleeplike state by passing an electrical current through the brain. It is used to induce a biocurrent depression which can be automatically controlled and is completely reversible. As therapy, it reportedly has the advantages of simplicity of use, gentleness of application, and lack of traumatic effects, unpleasantness, or complications. The conditions under which it should not be used are extremely limited.

The Soviets are accumulating a growing volume of data in an area not extensively developed in the West. Their research predates 1950, and they reportedly used electrosleep as early as 1954 for the treatment of certain children's diseases. US machines have been described by Geddes, Baylor Medical School, but these have had drawbacks, such as the production of convulsions or rapid inducement of anesthesia. The Soviets reportedly have obtained US Patent No. 3,160,159 on on electrosleep machine which is described as portable, that is, may be used by

patients in transit, at home, or under field conditions. (CIA)

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Cosmos 78 Brought Down After Usual 8 Days in Orbit

Cosmos 78, a photoreconnaissance satellite which the Soviets launched at about 1057Z, 14 August, was deorbited at about 0838-0843Z, 22 August, on Revolution 127, after nearly 8 days in orbit. Almost all Soviet photorecce satellites have been brought down after about 8 days in space.

50X1 and 3, E.O.13526

The reason for the 69-degree orbital inclination of this vehicle is not known. All previous Soviet photorecce satellites have had inclinations of 65 or 51 degrees. The 69-degree inclination would give very little additional geographic coverage, and would allow fewer daylight hours over prime reconnaissance targets in the US and southern Canada than the 51-degree inclination. It may have been chosen for some secondary mission, such as ELINT, radiation measurements, infrared experimentation, or some other mission designed to gather data in support of future operations. In connection with possible radiation measurements, it may be significant that the South Geomagnetic Pole is located at about 68 degrees South latitude.

Another aspect of the 69-degree inclination is that Shemya's FPS-17 radar failed to detect passage of Cosmos 78. The use of the 69-degree and 51-degree inclination as well could, to a large degree, deny Zero-Orbit information provided by that radar. (SPADATS; FTD)

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Zond 3 Lunar-Photo Data Described by Red Star

An article in the 17 August issue of Red Star by Dr. Yu. N. Lipsky of Moscow State University indicated that Zond 3's trajectory was carefully timed and planned in such a way that it would take the most useful pictures possible of the Moon's surface.

Zond 3, when it swept by the Moon (diagram on page 37), photographed that portion of the surface of the unseen side of the Moon not covered by the Luna 3 photography of October 1959. This particular area,

at the time of Zond 3's passage, was being illuminated by the Sun and at an angle which afforded maximum relief for photographic purposes. The morning terminator (the dividing line between the illuminated and unilluminated portions of the surface) was close to the edge of the region not previously photographed. The probe also photographed adjacent parts of the visible surface of the Moon for reference purposes. Zond 3 passed by at a distance which would permit large-scale photography of significant parts of the lunar surface.

According to a map which accompanied the Red Star article, about 110 degrees of longitude of the Moon's surface was photographed, between about 56 and 166 degrees, the longitude of the morning terminator.

Lipsky said that Zond 3 made its sweep-by of the Moon 33 hours after launch. Photography commenced at 0424, 20 July, and ended 68 minutes later at 0532. Distance from the Moon at the beginning of photography was 11,600 kilometers (6,260 n.m.); the distance was 10,000 kilometers when photography ceased (5,400 n.m.).

Each video frame consisted of 1,100 lines, with 860 elements per line.

The transmission system was designed to send video signals over distances of hundreds of millions of kilometers. Consequently, 34 minutes were required to transmit each picture, and transmissions did not begin until Zond 3 was 2.2 million kilometers (1,180,000 n.m.) from the Earth, that is, when the angle of visibility of Earth from the station became sufficiently small for precise directivity of the on-board antenna. TASS has said that transmission of pictures will be continued during later communications periods up to the probe's farthermost distance from the Earth; since Zond 3 is in heliocentric orbit (as an individual planet of the Sun), the Soviets will have an opportunity to test the probe's capabilities at transmitting at interplanetary distances.

The Red Star article stated that the unseen side of the Moon is more mountainous and has fewer so-called seas than the visible side and that it is marked by numerous craters, some of them superimposed on other craters. In a single frame embracing 5 million square kilometers, craters were counted as follows:

Number	Diameter
4	More than 200 kilometers
About 20	100-200 kilometers
60	50-100 kilometers
100	20-50 kilometers
400	10-20 kilometers

Lipsky said that the new photographs are being studied and a preliminary catalog of the observed formations is being prepared. (UNCLASSIFIED)

(Begin ~~SECRET~~) Zond 3 is believed to be testing space-vehicle systems in preparation for one or more probes of the planet Venus which the Soviets will launch when the "launch window" for such an event is open, during October and November this year. (Red Star, NORAD)
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Space Listing and Over-All Space Status Report

The over-all space-vehicle status as of 24 August 1965 was as follows: (Cosmos 79, launched 25 Aug, omitted.)

	US	UK	Canada	Italy	USSR	Totals
Payloads orbiting Earth	150	2	1	1	28	182
Payloads orbiting Sun	8				8	16
Payloads impacted on Moon	5				2	7
Debris orbiting Earth	387	1	2		89	479
Debris orbiting Sun	8					8
TOTALS	558	3	3	1	127	692
Payloads decayed or de-orbited	155				84	239
Debris decayed	112				477	589
TOTALS	825	3	3	1	688	1,520

A listing of Soviet payloads which have not decayed or been de-orbited is shown on page 40, along with pertinent orbital data. (SPADATS)
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Cosmos 79 is 11th Soviet Photorecce Satellite This Year

The Soviets launched Cosmos 79, their 11th photorecce satellite of 1965, from Tyuratam at about 1010Z, 25 August, only 3 days after de-orbit of its predecessor, Cosmos 78. It will probably be de-orbited

2 September, after nearly 8 days in orbit, if the established pattern is adhered to.

Orbital parameters of the new vehicle have been reported as follows:

	By SPADATS
Inclination	64.94 degrees
Period	90.19 minutes
Apogee	387.6 kilometers (208 n.m.)
Perigee	201.5 kilometers (108 n.m.)

It was launched by the SS-6 ICBM booster/sustainer and injected into orbit by the heavy Venik upper stage, an indication that a high-resolution camera system is carried. The use of the Venik on this vehicle and of the lighter Lunik on Cosmos 78 adheres to the pattern established earlier this year of alternating the use of these two upper stages. Lunik-injected payloads are believed to carry a camera system of lesser resolution than that carried by Venik-injected payloads.
(SPADATS; NORAD)
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Zond 3's Motion While Photographing the Moon

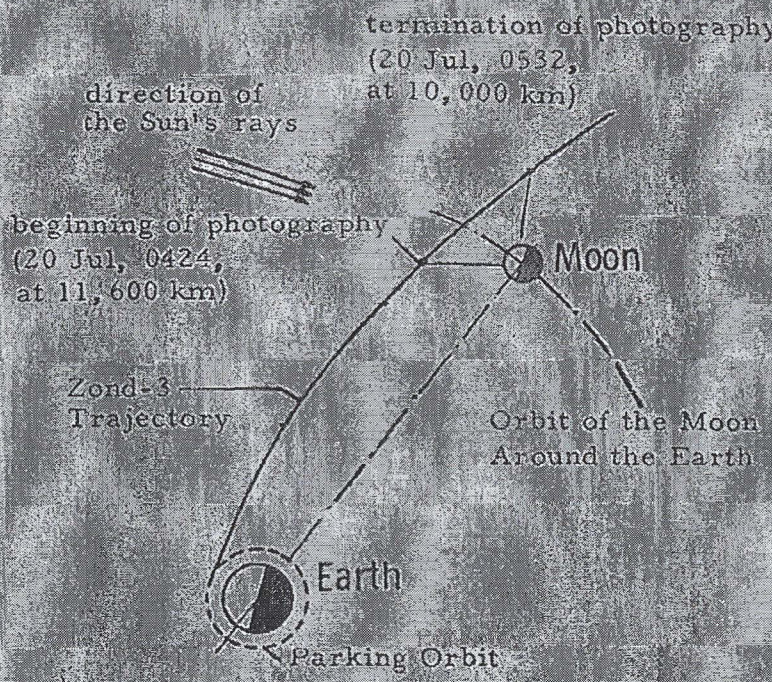

Figure 1

Схема движения станции «ЗОНД-3» около Луны при фотографировании.

Region of Moon Photographed by Zond 3, 20 July 1965

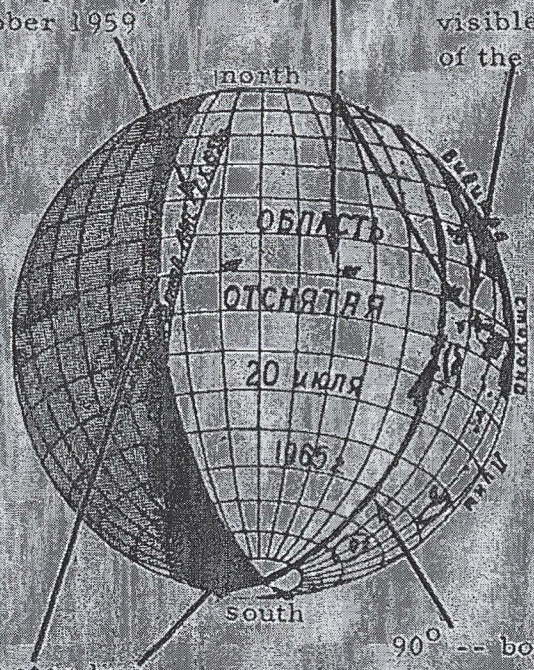

Figure 2

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Soviet Payloads in space, as of 1200Z, 20 Aug 1965

(Cosmos 79, launched 25 Aug, omitted)

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Soviet Vehicles in Earth Orbit

Soviet Designation	Object No.	Date of Launch	Inclination to Equator (degrees)	Period (minutes)	Apogee (Kilometers #)	Perigee (Kilometers#)	Estimated Life Expectancy or Decay Date
Polyot 1	683	01 Nov 63	58.90	102.3	1,397.8	333.9	Over 50 years
Electron 1	746	30 Jan 64	60.94	169.3	7,095.8	420.2	Over 50 years
Electron 2	748	30 Jan 64	58.63	1,356.3	67,047.2	1,374.6	Over 50 years
Polyot 2	784	12 Apr 64	58.05	91.5	409.5	286.3	1st Quarter, 1967
Electron 3	829	10 Jul 64	60.83	168.1	7,019.4	405.0	Over 50 years
Electron 4	830	10 Jul 64	59.24	1,313.9	65,902.0	915.7	Over 50 years
Cosmos 41	869	22 Aug 64	66.06	714.4	39,395.0	789.9	Over 50 years
Cosmos 42	864	22 Aug 64	48.96	93.5	669.8	217.0	April 1966
Cosmos 43	867	22 Aug 64	48.94	93.5	669.7	219.3	May 1966
Cosmos 44	876	28 Aug 64	65.07	99.5	872.7	599.4	Over 50 years
Cosmos 51	947	09 Dec 64	48.75	90.9	392.9	242.7	March 1966
Cosmos 53	983	30 Jan 65	48.73	97.0	1,005.2	217.9	1st Quarter, 1967
Cosmos 54	1089	21 Feb 65	56.06	104.3	1,663.8	259.4	Over 5 years
Cosmos 55	1090	21 Feb 65	56.03	104.5	1,677.7	260.9	Over 5 years
Cosmos 56	1091	21 Feb 65	56.04	103.6	1,598.5	258.2	1969
Cosmos 58	1097	26 Feb 65	65.03	96.8	641.1	568.8	Over 50 years
Cosmos 61	1267	15 Mar 65	56.04	104.5	1,672.3	263.1	Over 5 years
Cosmos 62	1268	15 Mar 65	56.04	104.3	1,662.8	261.6	Over 5 years
Cosmos 63	1269	15 Mar 65	56.03	103.7	1,602.5	261.5	Over 5 years
Molniya 1	1324	23 Apr 65	65.29	720.5	39,872.8	615.3	Over 50 years
Cosmos 70	1431	02 Jul 65	48.76	98.1	1,108.8	223.9	Over 5 years
Cosmos 71	1441	16 Jul 65	56.05	95.3	544.1	519.4	Over 50 years
Cosmos 72	1442	16 Jul 65	56.06	95.9	584.7	541.1	Over 50 years
Cosmos 73	1443	16 Jul65	56.07	95.6	556.8	537.5	Over 50 years
Cosmos 74	1444	16 Jul 65	56.04	96.2	614.7	560.7	Over 50 years
Cosmos 75	1445	16 Jul 65	56.04	96.5	642.5	541.6	Over 50 years
Proton 1	1466	16 Jul 65	63.46	91.7	523.3	177.7	Nov 1965
Cosmos 76	1464	23 Jul 65	48.78	92.1	500.9	255.1	1967

Soviet Space Probes in Heliocentric Orbit

			Inclination to Ecliptic	Period (days)	Aphelion (AUs*)	Perihelion (AUs*)	
Luna 1	112	02 Jan 59	0.01	449.5	1.315	0.9766	Indefinite
Venus 1	80	12 Feb 61	0.58	300	1.019	0.7183	Indefinite
Mars 1	450	01 Nov 62	2.683	519.1	1.603	0.9237	Indefinite
Luna 4	566	02 Apr 63	Not computed				Indefinite
Zond 1	785	02 Apr 64	Not computed				Indefinite
Zond 2	945	30 Nov 64		512	1.54	0.9840	Indefinite
Luna 6	1393	08 Jun 65	Not computed				Indefinite
Zond 3	1464	18 Jul 65	Not computed				Indefinite

Payloads Impacted on Moon

			Location (Lunar Coordinates) (Very Approximate)
Luna 2	114	12 Sep 59	3000N-0000
Luna 5	1366	09 May 65	2500S-1800E

1 km equals 0.54 nautical miles or 0.62 statute miles.

*AU = astronomical Units. Roughly, 1 AU = 93 million statute miles (mean distance from Sun to Earth).

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