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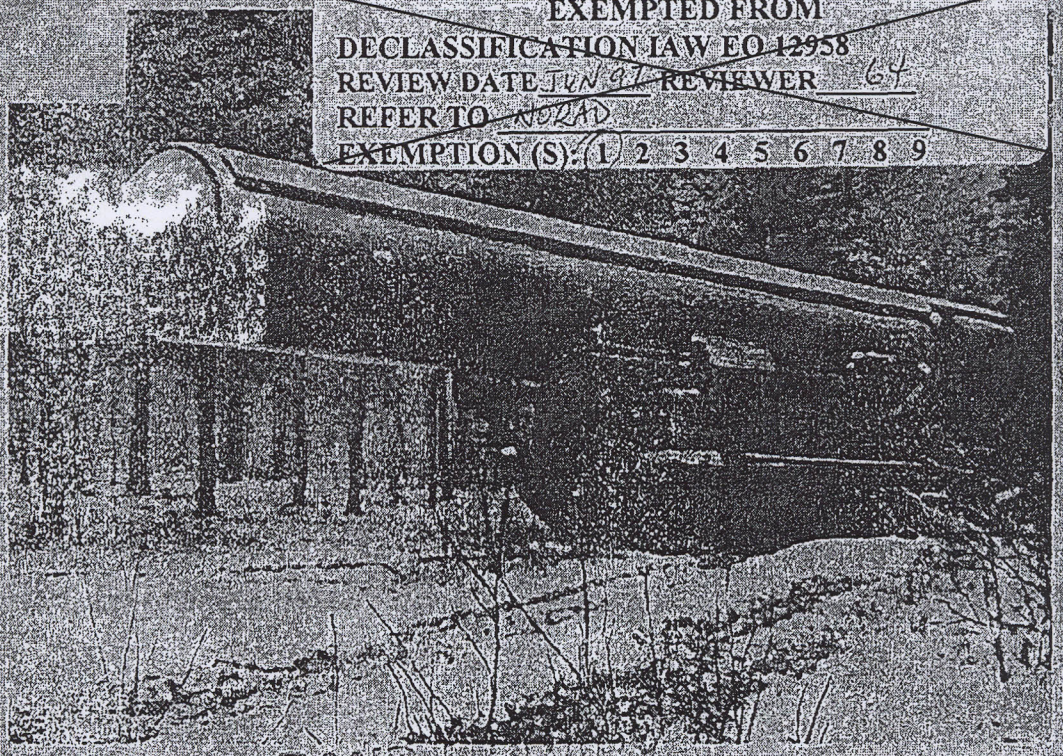
NORTH AMERICAN AIR DEFENSE COMMAND

WIR

WEEKLY INTELLIGENCE REVIEW



WIR 49/65
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NORAD Weekly Intelligence Review

Issue No. 49/65, 3 December 1965

The WIR in Brief

Portion identified as non-responsive to the appeal

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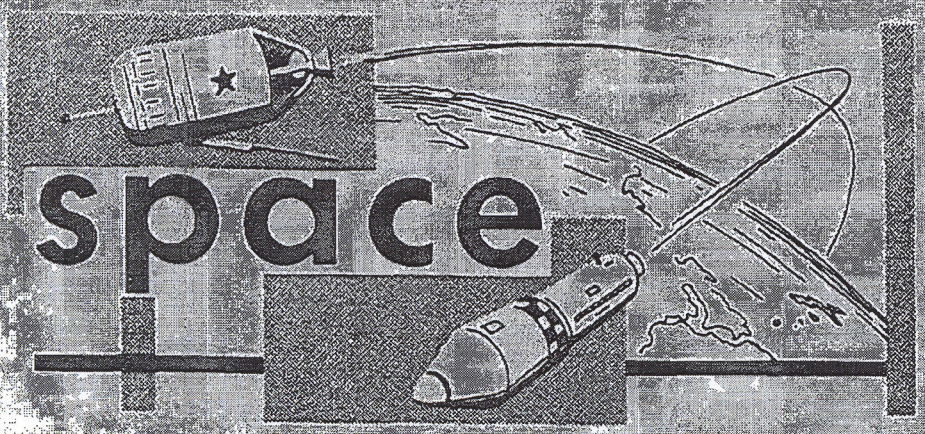
Space

COVER: Missile in a pod (from Red Star) (OFFICIAL USE ONLY)

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



significant intelligence on space developments and trends

Soviet Editors Let Slip True Mission of Cosmos 96

The Soviets announced, some 8 hours and 45 minutes after launch, that their satellite Cosmos 96 was continuing the program of space research which was begun by Cosmos 1 in March 1962. But somebody, somewhere in the line of handlers between the scientists and the propagandists, let slip the true mission of the vehicle when the official release also referred to the new satellite as a "space probe," a term not customarily used in standard announcements regarding Cosmos launches.

The West estimates that Cosmos 96, which was launched from Tyuratam at about 0315, 23 November (last week's WIR), was actually an attempt to launch a Venus probe, an attempt which failed when the interplanetary (fourth) stage suffered an explosion (possibly a low-order one) on ignition. This estimate is based on date of launch (within the launch window for Venus), time of launch (within 3 minutes of optimum time for a Venus launch on that date), use of an apparent parking orbit (low in altitude and relatively circular) preparatory to injection into transfer trajectory, and the orbital inclination of about 51.8 degrees, the same as that used with the Soviets' two announced Venus probes which were launched in the 11 days prior to launch of Cosmos 96.

The Soviets have been making propaganda hay with their Cosmos satellites. When they launched Cosmos 1 on 16 March 1962, they said that it was the first of a series of satellites of that name which would explore near-Earth space. Thus, with their latest launches, they intimate that they have launched nearly 100 scientific satellites of the Cosmos series, as well as 4 in the Electron series and 2 in the Proton series. But only about one fourth of the Cosmoses launched to date are believed to have been primarily scientific satellites. Over half of them appear to have classified missions -- some 40 are military photoreconnaissance vehicles and 23 are multiple-payload launches which appear to have military communications (random-orbit) and/or infrared detection of missile launches as their primary mission(s). The remainder are believed to be

testbeds, precursors of manned flights, or failures of various types, that is, vehicles which entered Earth orbit but failed to accomplish their primary mission. Cosmoses 47 and 57 are believed to have been precursors of the 2 Voskhod flights. Vehicles which appear to have been assigned the Cosmos name as cover for failures include:

Cosmos 21 (Molniya-type communications satellite)
Cosmos 27 (Venus probe)
Cosmos 41 (Molniya-type communications satellite)
Cosmos 60 (lunar probe)
Cosmos 96 (Venus probe)

(NORAD; TASS; FTD)
~~(SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

Cosmos 97 is 6th KY Vehicle this Year; Probably for Research, as Claimed

The Soviets launched Cosmos 97 from Kapustin Yar (KY) at about 1209Z, 26 November 1965. Probably a space research vehicle, as the Soviets claimed about 5 hours after launch, the new satellite is the Soviets' 6th Cosmos-series vehicle launched from KY this year, the 25th since launch of Cosmos 1 in March 1962. Its initial orbital parameters have been reported as follows:

Inclination	49 degrees
Period	108.8 minutes
Apogee	2100 kilometers (1,134 n.m.)
Perigee	220 kilometers (119 n.m.)

Cosmos 97 is the first of the KY Cosmoses to reach an altitude greater than 900 n.m. Two of the 1962 launches had apogees of over 800 n.m., after which interest in the high altitudes apparently lapsed, as far as KY Cosmoses were concerned, until this year, when 2 of them exceeded 600 n.m. in apogee. Last year, however, the Soviets launched 4 Electron-series research vehicles from Tyuratam to much higher altitudes -- 2 with apogees of about 3800 n.m., 2 with apogees of about 35,500 n.m.
(NORAD; DIA)
~~(SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

Cosmos 98 Apparently a Photorecce Satellite, But Has Unusually High Apogee

The Soviets launched Cosmos 98 from Tyuratam at about 0820Z, 27 November, into an orbit having the following parameters:

Inclination	65.027 degrees
Period	92.062 minutes
Apogee	549 kilometers (295 n.m.)
Perigee	221 kilometers (119 n.m.)

The new satellite, which was launched by the SS-6 ICBM booster-sustainer and injected into orbit by the LUNIK upper stage, is believed to be a photoreconnaissance satellite, although it could easily carry other equipment as well for testing and development or for space research. Its apogee, however, is much higher than that of any previous Soviet photo-recce satellite. Apogees of these vehicles usually range from 250-350 kilometers, or only 46-64% of the apogee of Cosmos 98.

Cosmos 98, if it is a photorecce satellite, is the 16th such vehicle launched by the Soviets this year -- 4 more than were launched in 1964. (NORAD)

(~~SECRET~~ NO FOREIGN DISSEMINATION -- Releasable to US, UK & Canada)

Flexibility a Keynote in Design of Gear for Satellite/Rocket Assembly, Checkout

Soviet design philosophy for equipment to support transport, assembly, and checkout of satellite/rocket systems stresses flexibility and interchangeability. This is evident in photographs of some steps in assembling Vostok/Voskhod manned space vehicles which the Soviets released earlier this year.

Ladders, stands, dollies, cranes/hoists, portable illumination, and power outlets used in assembly and checkout of manned space vehicles seem to be available in profusion and in variety for any assembly/check-out need.

The most outstanding examples of flexibility are the use of:

- Standard 5'-gauge trackage within the assembly/checkout buildings.
- Short, flatbed "handcar"-like rail-riding dollies, with axles supported on outboard bearings in keeping with freight-car design practice.
- Adjustable Y-mount saddles on the dollies to handle various types of loads.

The Soviets, who have always depended primarily on their rail lines for overland transport, have extended their standard 5-foot trackage right into the assembly/checkout buildings. The rails are used not only for receiving payload/rocket staging and supplies and equipment but also as primary reference planes for interstage mating and convenient access and parallelism for transfer of assembled space vehicles to rail-car erectors or transporters for delivery to the launch pad. A particular section of track thus might, at various times be used to receive components and supplies from factory sources, to serve as an alignment fixture for mating of stages mounted on dollies, and to guide a completed space vehicle on its rail-car transporter.

Each individual dolly, although basically of modular design, carries a Y-mount saddle adapted to a specific stage diameter or mounting surface. Short in length, the dollies can be linked in a variety of combinations to accommodate any mix of payload staging configurations, over-all vehicle lengths, or saddle diameters. Thus, a "custom-built" fixture can be quickly assembled for almost any configuration from these modular units.

For aligning the sections to be mated, the dollies are capable of imparting pitch, roll, or yaw movement to the supported unit, while the Y-post cradling the saddle can be raised or lowered or the whole assembly moved transversely.

Controls for all these adjustments are at the disposal of a single operator, who can thus rapidly and smoothly coordinate all movements with less danger of operational mishap. To supplement the operator's view, observers are stationed on the ground and on work stands. Communication between them and the operator apparently is by voice or other audible signal, since no headsets are visible in the photography and line-of-sight is blocked by the vehicle.

(FTD)

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Cosmos 94 May Have Tested Missile Detection System

The Soviets' photoreconnaissance satellite Cosmos 94, which was launched from Tyuratam on 28 October and de-orbited on 5 November, may have tested an infrared (IR) or ultraviolet (UV) system for detecting missile launches and/or missiles in flight. This vehicle was 450 n. m. to the north of Kapustin Yar when an SS-4 MRBM was launched from that location at about 0848Z, 3 November, and it was within line of sight of the missile throughout the latter's powered flight. It was the 6th Soviet photorecce satellite known to be within line of sight of Kapustin Yar when SS-4 MRBMs were launched. All 6 were injected into orbit by heavy Venik upper stages, which, when teamed with the SS-6 ICBM booster-sustainer, can orbit payloads of about 14,000-15,000 pounds. The other 5 vehicles were Cosmoses Nos. 45, 67, 77, 85, and 91.
(NORAD)
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Lunar Window Opens Again on 2 December

The next date time for a Soviet launch of a lunar soft-lander occurs on 2 December 1965. The USSR has made 5 such attempts previously this year -- in March, April, May, June, and October.

The Soviets, if they do launch a probe on 2 December, may inject it into a 51-degree parking orbit, as they did with their 3 Venus probe attempts in November, instead of the customary 65-degree orbit. Use of a 51-degree instead of a 65-degree orbit reduces thrust requirements by only a minuscule amount, but it does make it more difficult for the US to detect and track the vehicle on its initial (Zero) orbit.

Optimum times for a 2 December launch are 0738Z, if a 65-degree parking orbit is used, 0932Z if a 51-degree orbit is used.
(NORAD)
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Space Listing and Over-All Space Status Report

The over-all space-vehicle status as of 1200Z, 30 November, was as follows:

	US	UK	Can	Fr	Italy	USSR	Total
Payloads orbiting Earth	154	2	2	1		43	202
Payloads orbiting Sun	8					10	18
Payloads impacted on Moon	5					3	8
Debris orbiting Earth	497	1	2	1		148	649
Debris orbiting Sun	8					1	9
TOTALS	672	3	4	2		205	886
Payloads decayed or de-orbited	168				1	94	263
Debris decayed	118					538	656
TOTALS	958	3	4	2	1	837	1,805

A listing of Soviet payloads still orbiting the Earth as of 29 November is shown on page 44.
(NORAD Space Defense Center)
(OFFICIAL USE ONLY)

Soviet Vehicles in Earth Orbit as of 1200Z, 29 Nov 65 (Data as of 1200Z, 26 Nov, except for Cosmoses 97 & 98)

Soviet Designation	Object No.	Date of Launch	Inclination to Equator (degrees)	Period (minutes)	Apogee (kilometers)	Perigee (kilometers)	Number of Revolutions	Estimated Life Expectancy or Decay Date
Polyot 1	683	01 Nov 63	58.95	102.2	1384.0	344.2	10642	Over 50 years
| Electron 1	746	30 Jan 64	60.99	169.2	7102.9	412.3	5666	Over 50 years
| Electron 2	748	30 Jan 64	58.50	1356.3	66765.1	1655.4	707	Over 50 years
Polyot 2	784	12 Apr 64	58.08	91.2	373.9	288.3	9297	4th Qr, 1966
| Electron 3	829	10 Jul 64	60.90	168.1	7018.3	404.3	4313	Over 50 years
| Electron 4	830	10 Jul 64	59.12	1313.8	65600.8	1115.2	551	Over 50 years
Cosmos 41	869	22 Aug 64	64.06	714.4	39304.1	789.9	930	Over 50 years
| Cosmos 42	864	22 Aug 64	48.89	91.0	401.9	206.1	6981	Jan 1966
| Cosmos 43	867	22 Aug 64	48.90	91.1	426.5	211.1	6982	Jan 1966
Cosmos 44	876	28 Aug 64	65.10	99.5	872.2	599.8	6581	Over 50 years
Cosmos 53	983	30 Jan 65	48.72	95.7	884.2	215.6	4443	3d Qr, 1967
| Cosmos 54	1089	21 Feb 65	56.15	103.9	1622.5	263.6	3835	Over 10 years
| Cosmos 55	1090	21 Feb 65	56.11	104.0	1625.1	267.2	3827	Over 5 years
| Cosmos 56	1091	21 Feb 65	56.12	103.1	1539.2	260.5	3858	1969
Cosmos 58	1097	26 Feb 65	65.03	96.8	633.9	575.6	4066	Over 50 years
| Cosmos 61	1267	15 Mar 65	56.03	103.9	1619.6	259.8	3529	Over 5 years
| Cosmos 62	1268	15 Mar 65	56.06	103.9	1629.6	257.8	3534	Over 5 years
| Cosmos 63	1269	15 Mar 65	56.05	103.1	1544.7	259.1	3555	Over 5 years
1st Molniya 1	1324	23 Apr 65	65.35	720.2	39786.5	688.1	439	Over 50 years
Cosmos 70	1431	02 Jul 65	48.75	97.3	1036.6	220.6	2168	1968
| Cosmos 71	1441	16 Jul 65	56.05	95.3	539.6	522.5	2016	Over 50 years
| Cosmos 72	1442	16 Jul 65	56.06	95.9	584.1	541.0	2007	Over 50 years
| Cosmos 73	1443	16 Jul 65	56.06	95.6	554.0	539.5	2009	Over 50 years
| Cosmos 74	1444	16 Jul 65	56.04	96.2	612.8	542.1	1996	Over 50 years
| Cosmos 75	1445	16 Jul 65	56.03	96.5	641.1	542.5	1990	Over 50 years
Cosmos 76	1464	23 Jul 65	48.78	91.5	436.9	247.5	1981	Jun 1966
| Cosmos 80	1570	03 Sep 65	56.10	115.0	1542.0	1366.0	1051	Over 50 years
| Cosmos 81	1571	03 Sep 65	56.10	115.3	1552.5	1388.8	1048	Over 50 years
| Cosmos 82	1572	03 Sep 65	56.08	115.7	1566.2	1406.4	1045	Over 50 years
| Cosmos 83	1573	03 Sep 65	56.08	116.1	1587.8	1419.1	1041	Over 50 years
| Cosmos 84	1574	03 Sep 65	56.09	116.4	1580.0	1461.1	1038	Over 50 years
| Cosmos 86	1584	18 Sep 65	56.06	115.1	1638.7	1277.9	866	Over 50 years
| Cosmos 87	1585	18 Sep 65	56.07	115.5	1644.7	1308.3	863	Over 50 years
| Cosmos 88	1586	18 Sep 65	56.10	115.8	1683.8	1303.4	860	Over 50 years
| Cosmos 89	1587	18 Sep 65	56.09	116.2	1679.5	1344.8	857	Over 50 years
| Cosmos 90	1588	18 Sep 65	56.09	116.7	1693.5	1368.3	854	Over 50 years
2d Molniya 1	1621	15 Oct 65	65.86	710.6	39509.6	492.5	87	Over 50 years
Cosmos 93	1629	19 Oct 65	48.34	90.8	412.0	206.5	604	Feb 1966
Proton 2	1701	02 Nov 65	63.46	92.0	559.0	181.3	374	Mar 1966
Cosmos 95	1706	04 Nov 65	48.40	91.3	451.8	211.2	350	Feb 1966
Cosmos 96	1742	23 Nov 65	51.88	89.7	275.7	221.6	54	18 Dec 1965
Cosmos 97	1777	26 Nov 65	49.00	108.3	2100.0	220.0		
Cosmos 98	1780	27 Nov 65	65.03	92.1	549.0	221.0		

\| Multiple launches

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