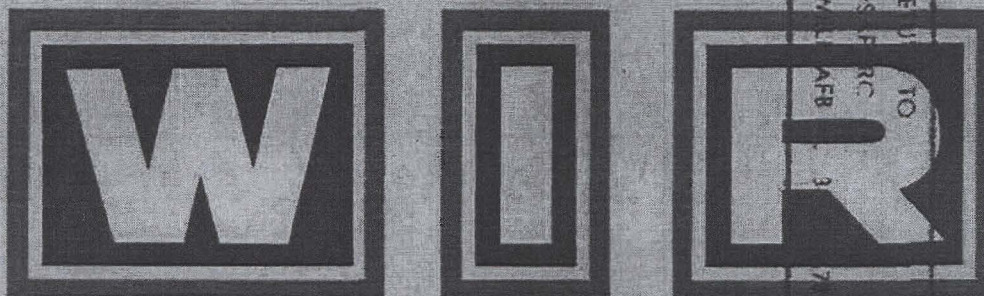




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DECLASSIFICATION DATE: February 25, 2015

NORTH AMERICAN AIR DEFENSE COMMAND



WEEKLY INTELLIGENCE REVIEW (U)

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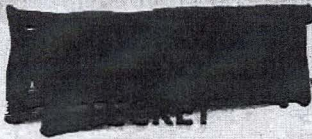
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# NORAD

**Weekly  
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Issue No. 12/66, 25 March 1966

## The WIR in Brief

Portion identified as non-responsive to the appeal

### MISSILE-RANGE FIRING LOG

Missile firings at low level, perhaps because of ending of R&D programs.

Portion identified as non-responsive to the appeal

### Space

#### MULTIPLE-PAYLOAD COSMOSES SHOW DISPERSION/CONVERGENCE ORBITAL PATTERN

But convergence tendency diminishes after 2d-3d cycle, before 80 days.

#### SOVIETS MAY TRY ANOTHER LUNAR LAUNCH 31 MARCH OR 1 APRIL

Another softlanding attempt or lunar orbiter possible. Circumlunar flight would occur only during "new moon."

#### COSMOS 110 AND ITS 2 DOGS DE-ORBITED ON REVOLUTION 329

Spacecraft probably of nearly standard Vostok/Voskhod recovery configuration.

#### COSMOS 112, PROBABLE PHOTORECCE CRAFT, FIRST SPACE LAUNCH FROM PLESETSK

Backtracking indicates launch from ICBM complex. Several minor peculiarities noted.

#### COSMOS 113 ALSO A PHOTORECCE SATELLITE

Launched from Tyuratam.

#### PLESETSK MAY SPECIALIZE IN MILITARY SPACE LAUNCHES

Expansion of missile and space programs may have required opening of new ranges.

Portion identified as non-responsive to the appeal

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COVER: Soviet radar site in the Arctic (from Red Star) (OFFICIAL USE ONLY)

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



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## Missile Range Firing Log

US radar stations detected the following Soviet space/missile launches during the period 14 February-21 March 1966:

| <u>Approximate Time<br/>&amp; Date of Launch</u> | <u>Propulsion System</u>      | <u>Launch Site</u> | <u>Range</u> |
|--------------------------------------------------|-------------------------------|--------------------|--------------|
| 0850Z, 19 Feb 66                                 | Cosmos 109*                   | Tyuratam           | Orbital      |
| 2005Z, 22 Feb 66                                 | Cosmos 110*                   | Tyuratam           | Orbital      |
| 0700Z, 26 Feb 66                                 | Unknown (solid<br>propellant) | Kapustin Yar       | 1050 n. m.   |
| 1105Z, 01 Mar 66                                 | Cosmos 111*                   | Tyuratam           | Orbital      |
| 0800Z, 15 Mar 66                                 | Unknown (solid<br>propellant) | Kapustin Yar       | 1050 n. m.   |
| 1030Z, 17 Mar 66                                 | Cosmos 112*                   | Plesetsk           | Orbital      |
| 1610Z, 17 Mar 66                                 | SS-7 ICBM                     | Tyuratam           | 3400 n. m.   |

\*Launched by SS-6 ICBM, injected into Earth orbit by Lunik or Venik 3d stage.

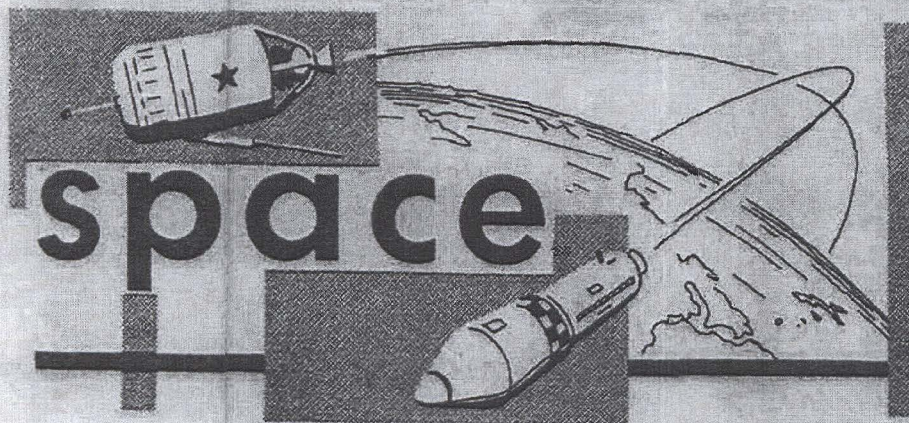


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significant  
intelligence  
on space  
developments  
and trends

### Multiple-Payload Cosmoses Show Dispersion/Convergence Orbital Pattern

The flight paths of two sets of Soviet quintuple satellites, Cosmoses 80-84 and 86-90, show a definite dispersion/convergence pattern which can be described as follows:

- The members of each group tend to converge in space about 26-27 days after launch, after which they tend to disperse, and then reconverge about 51-52 days after launch.
- When one set of satellites (Cosmoses 80-84) is converging, the other set (Cosmoses 86-90) is near maximum dispersion, and vice versa.
- The tendency to converge diminishes after 2-3 cycles.

It thus appears that for about 51-77 days, the two sets of multiple payloads form parts of a larger system, each set compensating in some manner for the other.

Because the mission of the quintuple satellite systems is not known, it cannot be determined whether greatest operational effectiveness is achieved when the payloads are at maximum dispersion or at maximum convergence. It is not even known whether the dispersion/convergence cycles are intentional or accidental.

It has been suspected that the missions of the multiple-payload Cosmoses are to provide medium-altitude random-orbit communications and/or to detect missile launches.

(FTD; NORAD)

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## Soviets May Try Another Lunar Launch 31 March or 1 April

If they have a payload ready, the Soviets may make another lunar-probe attempt on 31 March or 1 April when the customary Soviet launch "window" reopens for such an event. Optimum launch times for Soviet lunar attempts, assuming a mission of soft-landing and use of a 52-degree-inclination parking orbit, will be:

1050Z, 31 March

1119Z, 01 April

The Soviets have made 2 soft-landing attempts so far this year: the successful Luna 9 event of early February and an abortive launch of 1 March which was named Cosmos 111 when it achieved parking orbit but failed to go into transfer trajectory.

The Soviets may try, instead, a lunar orbiter. Optimum launch times for such events would be similar to those given above. A circum-lunar flight with earth reentry is another mission that is probably high on the Soviet priority list. Optimum launch days for this type mission are near new moon (to permit further study of the side of the moon that is unseen from earth but which is in daylight at new moon.)

(NORAD)

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## Cosmos 110 and Its 2 Dogs De-orbited on Rev 329

The Soviets de-orbited their space kennel, Cosmos 110, and apparently recovered the animals successfully on 16 March shortly after the satellite began orbit 329. The vehicle crossed the Equator northbound at about 1346Z, probably impacting in the USSR at about 1407-1412Z, about sunset in the area of touchdown. The vehicle would have not re-entered the Earth's atmosphere until next year had the Soviets allowed it to remain aloft until it suffered natural orbital decay.

In announcing the recovery of the satellite, TASS said that the dogs were recovered in good condition and that the results of the experiments in which they participated would be made public later. The Soviets said that an upset in the dogs' heart rhythms had been detected while they were still in flight. However, the only trouble [redacted] was the degeneration of electrical contact through electrodes implanted in the animals. (See Space section, WIR 10/66).

Despite early radar-signature indications that Cosmos 110 was a relatively small vehicle, it is now believed that the spacecraft configuration was identical to that of the standard Vostok/Voskhod manned recovery

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vehicles except for the minor interior modifications necessary to mount the dogs' cabins securely. Variations in antenna configurations can easily complicate radar-signature analysis.

(NORAD; TASS; DIA)

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## Cosmos 112, Probable Photorecce Craft, First Space Launch from Plesetsk

The Soviets inaugurated their third spaceport when they launched Cosmos 112 from Plesetsk (6300N-4000E) at about 1030Z, 17 March. All previous Soviet spacecraft were launched from the missile test ranges at Tyuratam or Kapustin Yar. Plesetsk is the site of an operational ICBM complex. (Map on page 36.)

The Soviets did not say that a new launch site had been used. Plesetsk, however, is the most likely candidate. Backtracking of Cosmos 112's orbit passes over Plesetsk, the only known SS-6 ICBM launch site near the Earth trace of the Zero Orbit. (For more about Plesetsk, see the second article following this one.)

TASS announced that the vehicle was performing the usual Cosmos mission of studying the near-Earth space environment, but telemetry indications of camera-monitoring activity indicate that the vehicle has a photo-reconnaissance mission. If so, it is the fifth one to be launched this year.

Cosmos 112 was launched by the SS-6 ICBM booster-sustainer and injected into orbit by the light Lunik third stage, an indication that the vehicle carries a camera system of medium resolution (20-30 feet).

Orbital parameters have been reported for Cosmos 112 as follows:

|                        | <u>By NORAD Space<br/>Defense Center</u> | <u>By TASS</u>               |
|------------------------|------------------------------------------|------------------------------|
| Inclination to Equator | 72.05 degrees                            | 72 degrees                   |
| Period                 | 93.4 minutes                             | 92.1 minutes                 |
| Apogee                 | 664.2 kilometers<br>(360 n.m.)           | 565 kilometers<br>(305 n.m.) |
| Perigee                | 214.9 kilometers<br>(116 n.m.)           | 214 kilometers<br>(115 n.m.) |

Several aspects of this launch are unusual in some degree. For instance:

- The 72-degree inclination to the Equator is the highest for any Soviet spacecraft to date. Of course, all vehicles launched from Plesetsk would have orbital inclinations equal to or greater than its latitude of about 63 degrees unless a dogleg maneuver





were used. However, an inclination of 65 degrees is normal for Soviet photorecce launches.

- Cosmos 112's apogee is about 115 kilometers higher than that of any previous Soviet photorecce vehicle. The higher apogee offers no advantage for scientific research, for it is still within the regime of the other photorecce launches -- below the Van Allen radiation belts.
- Cosmos 112 was launched later in the day -- but not significantly so -- than would have been expected for a photorecce vehicle launched at this time of year. (See chart on page 33.)
- Cosmos 112's flight overlaps that of another Soviet photorecce satellite, Cosmos 113 (see next article), which is most unusual. It may be noted in the chart on page 33 that as of this writing (22 March), the Soviets have launched 2 photorecce vehicles each month this year -- on

07 and 22 January,  
10 and 19 February, and  
17 and 21 March.

The 21 March launch of Cosmos 113 from Tyuratam is bracketed, as to day of the month, by the second launches of January and February, but the 17 March launch of Cosmos 112 from Plesetsk comes 7-10 days later in the month than the first launches for January and February.

None of these peculiarities is particularly advantageous to the photorecce mission, yet neither does any of them seriously degrade its accomplishment. Another peculiarity, however, is not easily reconciled with the search and detection missions of a medium-resolution photorecce satellite: the 72-degree inclination, combined with the craft's orbital period, causes the satellite to repeat its Earth trace each 2 days.

Cosmos 112, if it is a photorecce vehicle, will be de-orbited on or about 25 March if the operational patterns of the past 2 years prevail. However, because of its 93-minute period, de-orbit is expected on Orbit 123 or 124 instead of on the usual Orbit 127 or 128. Cosmos 98, for instance, which also had a rather long period, was de-orbited on Revolution 124.

(NORAD; TASS)

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## Cosmos 113 Also a Photorecce Satellite

The Soviets launched Cosmos 113 from Tyuratam at about 0940Z, 21 March 1966. TASS issued its usual Cosmos-type announcement, stating that the new satellite is a research vehicle, but all indications are that it is a routine photoreconnaissance satellite, the 6th to be launched this year.

As of this writing (21 March), there are two Soviet photorecce satellites orbiting the Earth; normally there is no overlapping time coverage of these vehicles. The present overlap may have resulted solely from an on-time launch for Cosmos 113 and a delayed launch for Cosmos 112.

The simultaneous flights (but not launches) of Cosmoses 112 and 113 may have been the stimulus which excited Bochum Observatory in West Germany to announce -- incorrectly -- that 2 large, possibly manned spacecraft had been orbited by the Soviets and that a rendezvous would be attempted. There is no indication that either of these vehicles is manned or that a rendezvous will be attempted. Further, the mechanics of rendezvousing these particular vehicles is considered beyond Soviet capabilities.

(NORAD)

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## Plesetsk May Specialize in Military Space Launches

The Plesetsk ICBM Complex, which appears to have launched its first space vehicle, Cosmos 112, on 17 March, may become the site for standard operational launches of Soviet military spacecraft and, possibly, for crew-training firings of operational ICBMs -- functions previously performed mainly by the Tyuratam Missile Test Range. Tyuratam will probably specialize in test firings of missiles and in launches of civilian type (scientific and utilitarian) spacecraft. This division of duties, however, is not likely to be absolute:

- Plesetsk, because of its high latitude, will not be able to launch military spacecraft into orbits with Equatorial inclinations of less than 63 degrees unless a dogleg maneuver is made. Yet the Soviets have found it desirable to launch some of their military photoreconnaissance vehicles into orbits of 51 degrees.
- Also because of its northern location, Plesetsk would be a better site than Tyuratam for Polar or near-Polar orbit launches of civilian-type spacecraft.

The use of the Plesetsk ICBM Complex for launches of certain types of spacecraft was probably scheduled long ago in connection with the long, steady expansion of both missile and space launches by the USSR. Although a lull in missile firings has been evident since the first of the year, the





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rate of launches in 1965 reached a new high, and the number of space launches in 1965 exceeded those of 1964 by 60 percent. Plesetsk would seem to have been chosen for its new mission some time ago: it has conducted more crew-training launches of ICBMs than any other operational Soviet ICBM complex, apparently to raise the firing experience level of supervisory, operational, and support personnel. It is one of the few sites at which SS-6 ICBMs have been sited; this ICBM is still the workhorse of the Soviet space program.

Plesetsk is easily supplied for expanded operations, since it is located on the Moscow-Archangel rail line.

(NORAD)

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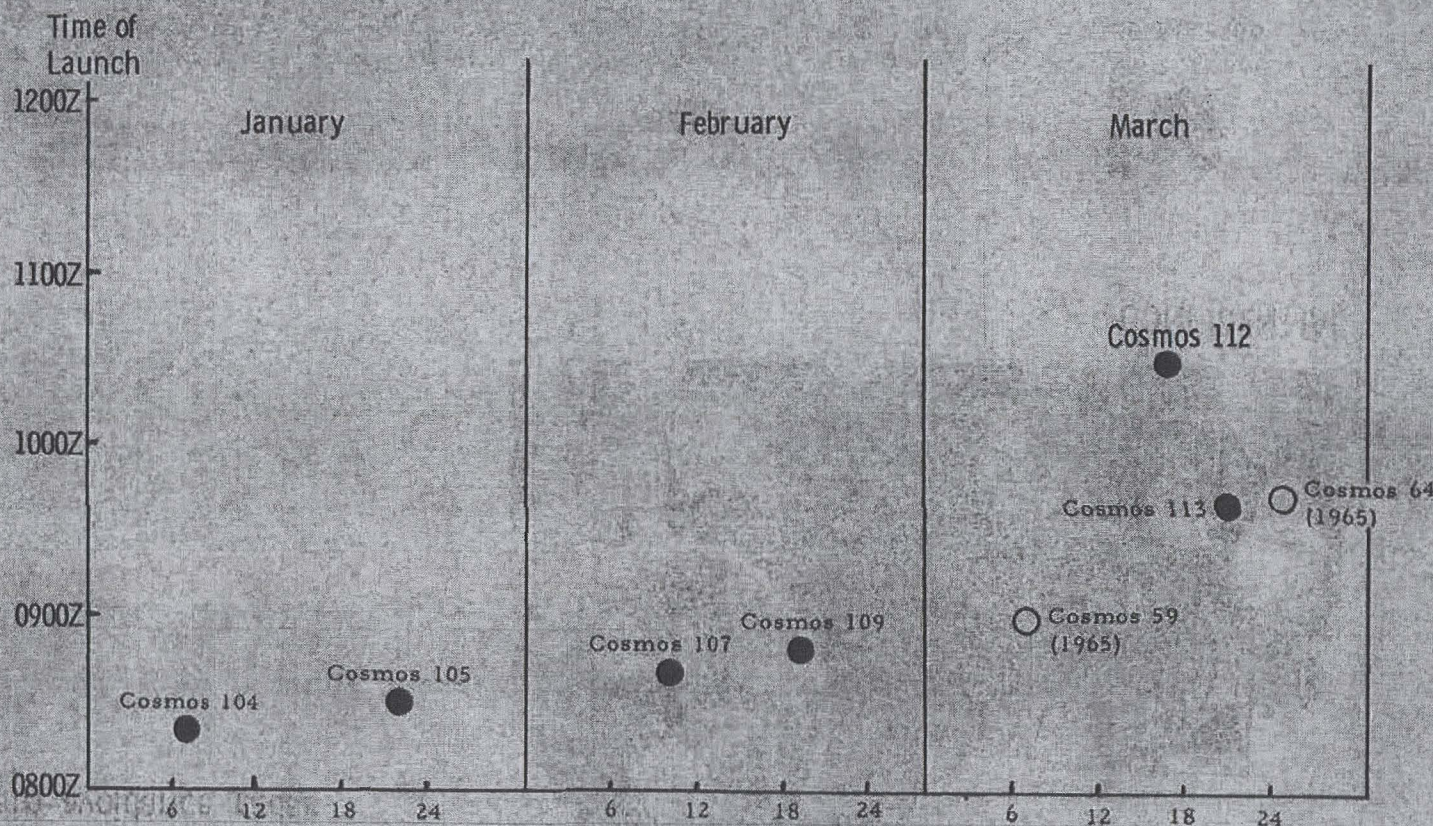
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# Soviet Photoreconnaissance Launches, 1966 (Dates & Times)



Note apparent postponement in date and delay in time of launch of Cosmos 112

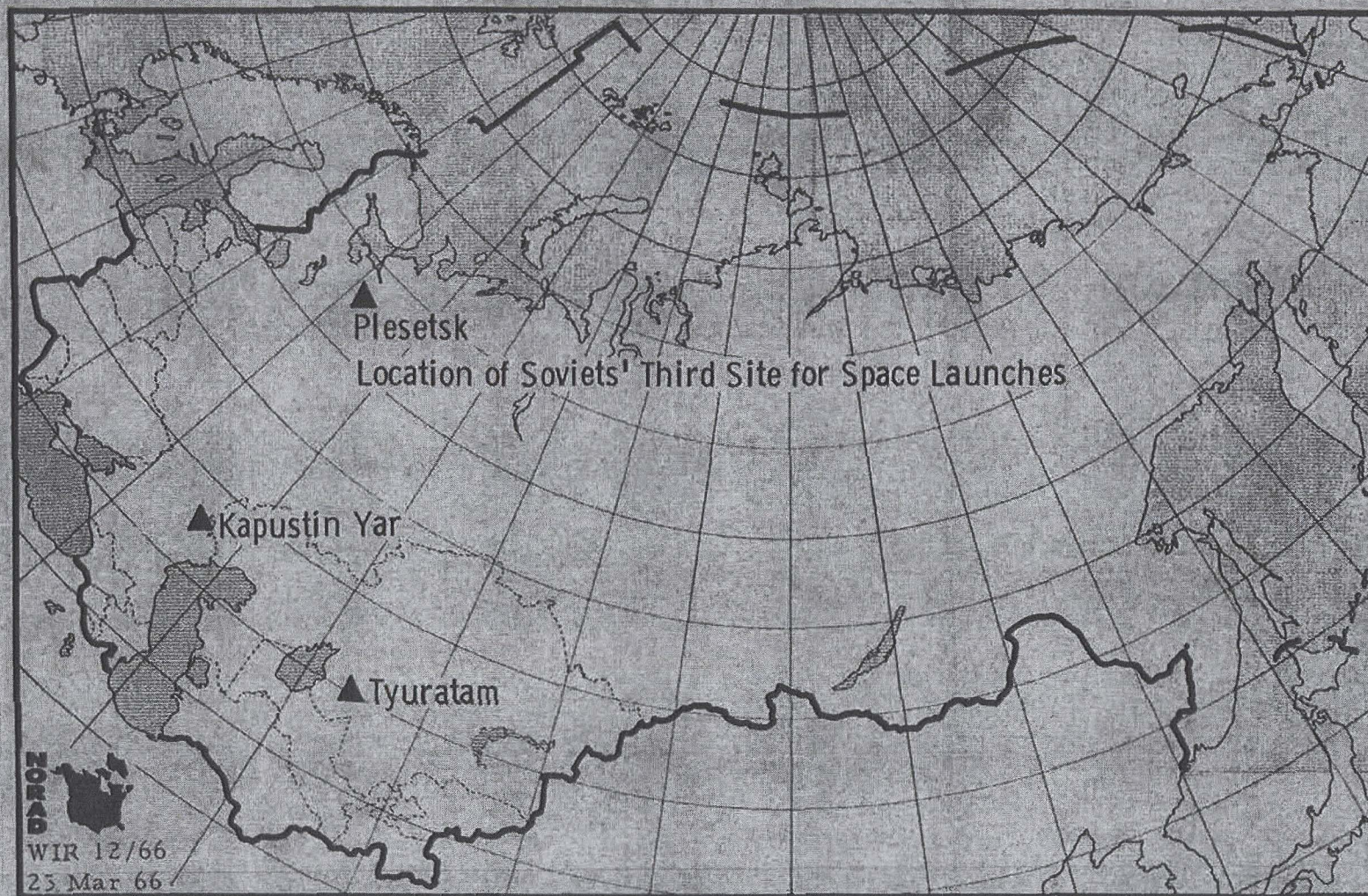


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