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TITLE: The Interpretation Of Soviet Press Announcements  
Of "Cosmos" Satellite Launchings

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*Everyone his own Sputnik  
watcher.*

## THE INTERPRETATION OF SOVIET PRESS ANNOUNCEMENTS OF "COSMOS" SATELLITE LAUNCHINGS

Edward M. Hinman

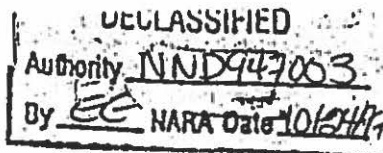
In March, 1962, the Soviet Union announced the initial successful launch in a new series of earth satellite vehicles, the so-called "Cosmos" series. A number of scientific fields were to be investigated by these satellites. Very generally, they were said to have the purpose of carrying out "a program of research in the upper layers of the atmosphere and cosmic space." It was stated that there would be a series of launches in the program from various Soviet cosmodromes. Thus far,<sup>1</sup> 274 space vehicles have been placed in earth orbit by the Soviet Union, all of which have been designated as Cosmos launches, and which have been lumped together under the "program of research."

The format and content of the announcement by the Soviet news agency, TASS, of the launch of the first vehicle, Cosmos-1, established a pattern which has been repeated, by and large, in the announcements of all Cosmos vehicles launched since. For each subsequent launch there has been a TASS announcement which, at first glance, has seemed to conceal the real mission of the operation. Despite the Soviet pretense of putting all the Cosmos launches in a single scientific category, the fact is that different types of satellites with various missions, scientific and military, have been launched ostensibly as part of the program that began on 16 March 1962. These have included reconnaissance satellites, recoverable and non-recoverable scientific satellites, meteorological and navigation satellites, a fractional orbital bombardment system (FOBS), and others.

This analysis of the announcements of all 274 Cosmos launches dwells on the variations among them in content and language with a view of determining the significance to be derived from them. Most of these events can be sorted into groups solely on the basis of the

<sup>1</sup> As of 24 March 1969.

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similarities and differences noted in TASS announcements. These groupings or types conform to conclusions derived from classified information with remarkable consistency. It is a fact, therefore, that anyone who is interested, and who knows the hall-signs, can much more often than not identify the type of any space vehicles the Soviets have launched without benefit of additional information.

The standard TASS announcement of the launching of a Cosmos satellite invariably includes the launch date, the Cosmos number, and the following boiler-plate: "On board the sputnik scientific equipment has been placed, intended to continue the investigation of cosmic space in accordance with the program announced by TASS on 16 March 1962."<sup>2</sup> Finally, these statements give the orbital parameters, usually including period, apogee, perigee, and inclination.

In a majority of cases, certain other elements are also present, including a statement that the vehicle carries a radio transmitter operating on a certain frequency, specified in megahertz, as well as a statement that a radio system is aboard to measure the orbital parameters. The majority of announcements has stated that a radio telemetry system was being used to transmit data to the earth on the operation of the scientific equipment and instruments, and that "the equipment on board the sputnik is working normally," as well as that "the coordinating-computer center is processing the incoming information."

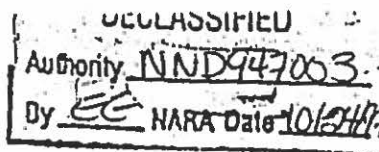
The presence or absence of these elements, and variations in orbital parameters, are the indicators identifying the category of satellite launched.

*Photoreconnaissance Satellites*

There have been 121 photoreconnaissance vehicles designated by TASS as "Cosmos" launches. The announcements for all of these events except one<sup>3</sup> included a reference to the presence of a transmitter, a radio system and a telemetry system. All of the transmitters referred to

<sup>2</sup>The two exceptions were Cosmos 110, which carried two dogs (the only Cosmos satellite ever to have had live animals on board), and Cosmos 261, another unique operation in that it was the only one in which the allies of the USSR were said to have participated.

<sup>3</sup>The one exception was Cosmos 45, which had a life of less than five days. Although there is no evidence that this vehicle was unsuccessful, its abbreviated mission does set it apart from the norm. Only the reference to a transmitter was missing.



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in the announcements were said to be operating on a nominal frequency of 19.995 MHz. (Two reconnaissance satellites launched recently, Cosmos 251 and Cosmos 264, were said to have transmitters on board operating on a frequency of 19.150 MHz. These two vehicles were probably test flights of a new high-resolution reconnaissance satellite being developed.) All the announcements of the reconnaissance satellites have contained the statement concerning the normal operation of the equipment and the coordinating-computer center. A final identifier for this group of satellites is the fact that in the great majority of instances, the perigee has been in the 200-220 km range and the apogee in the 200's or 300's.

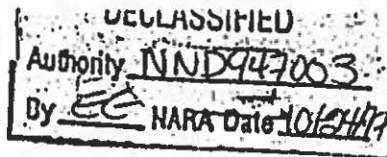
### SS-X-6 (FOBS)

There have been eleven tests of the SS-X-6 system announced by TASS as Cosmos launches. These announcements have consistently omitted any reference to the presence of a transmitter, radio system, or a telemetry system on board, and have not included the usual statement that the equipment was working normally, and have made no reference to the coordinating-computer center. These have been the only Cosmos announcements omitting all these elements. The parameters also provide a clue. This is the only group of satellites for which no "orbital period" is provided, and the announced perigee is always below 150 km.

### Recoverable Scientific Satellites

Ten recoverable scientific satellites have been launched given the Cosmos designation by TASS. For half of these events, including four of the last five, no problem of identification has arisen since the TASS announcements have specifically referred to animals on board, special equipment, development of new systems, or docking exercises. Seven of the announcements, including one of the two satellites in both docking operations, have included references to a transmitter, radio system, and telemetry system. The announcements of four of these seven events, and the announcement on Cosmos 238 (the only one of the group not to refer to a transmitter) provide no clues as to the type of vehicle involved. The scheduled use of a frequency of 20.008 MHz on three of the most recent operations, may serve as an indicator for future events of this type. Another possible aid can be found in the parameters which have both an apogee and perigee in the 175-300 km range.

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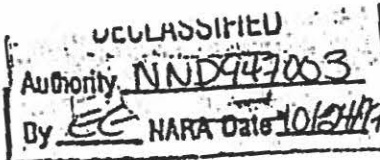
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*Navigation Satellites*

Seven navigation satellites and three possibly related satellites with unknown missions have been announced by TASS as Cosmos events. The announcements all have included references to radio and telemetry systems, plus the elements normally associated with a standard earth satellite vehicle. The parameters given by TASS provide the tip-off for this group. These are the only satellites launched at the announced inclination of 74 degrees, and hence can always be easily identified. In addition, these satellites tend to take orbits that are either circular or near-circular.

*Maneuverable Satellites*

Nine maneuverable satellites have been launched by the USSR and designated Cosmos vehicles. The first two used the SL-5 (SS-8 booster plus LUNIK third stage) launch configuration while the remainder have used the SL-11 system (SS-9 first and second stages). All nine have included a telemetry system and radio equipment, according to TASS. The first two were said to carry a transmitter as well, operating on a frequency of 19.735 MHz. This unusual frequency had been listed only once before, on Cosmos 27, which was apparently a Venus probe that failed, and is the only distinguishing feature of these announcements. Except for the four most recent, announcements concerning the seven SL-11-launched maneuverable satellites have shown no common distinguishing feature. Cosmos 248, 249, and 252, which were launched as part of an exercise in the fall of 1968, had one unique element in the announcements of their launchings. Instead of the customary radio system (*sistyema*), in all three instances reference was made to the presence of radio facilities (*sredstva*). Although the significance of this change is not clear, it is unique to these three maneuverable satellites. In addition, the TASS announcements concerning the two "active" vehicles in this operation, Cosmos 249 and 252, did not contain the usual statement on normal operation of equipment nor on the coordinating-computer center. Instead, each was described as having fulfilled its scientific research. It is of interest to note that Cosmos 217, the maneuverable satellite immediately preceding the above three, also was not said to have been operating normally, nor was there any reference made to the coordinating-computer center. Thus, it may be that these omissions will be the signs to look for in the future to identify this type of vehicle.



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### *Meteorological Satellites*

Ten meteorological satellites have been successfully launched by the USSR and designated as Cosmos events. The first five were launched from Tyuratam and the remaining five from Plesetsk. All ten have had the usual elements of a TASS-announced earth satellite vehicle (radio system and telemetry system). The first two, Cosmos 44 and 58, also reportedly carried a transmitter operating on a frequency of 19.002 MHz. As is the case with the navigation satellites, the orbital parameters appear to be the only elements of the TASS announcements that may point to the identification of this group. The last five satellites of this group have been launched at an inclination of 81 degrees, with orbits that have been circular or near-circular. The orbit tends to be in the 625-650 km range. These two items jointly may permit identification of future "Meteor" satellites.

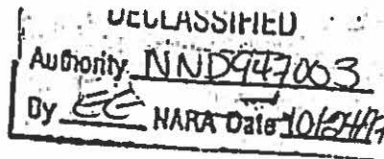
### *Non-Recoverable Scientific Satellites*

Approximately seventy-five non-recoverable satellites have been launched on many different missions. Over eighty percent of these employed the SL-7 (SS-4 booster) configuration. This is the type of satellite originally and legitimately covered by the announcement of March, 1962. When these satellites were first launched, the TASS announcements included all of the conventional elements, including a transmitter operating on 20, 30, or 90 MHz. For the past three years, however, there have been no references to a transmitter being present. Thus, a Cosmos satellite announcement lacking any other distinguishing clue, and which omits a reference to a transmitter on board, is likely to refer to a non-recoverable scientific satellite launched by the SL-7 configuration. If launched at an inclination of 48 degrees, the launch point was probably Kapustin Yar. If not, Plesetsk is the more likely. Finally, in these instances there tends to be a considerable difference between the announced apogee and the perigee, certainly more than for other Cosmos satellite types.

### *Word Order*

There is one other feature of the TASS announcements which seems to provide an additional clue in the identification of some satellites, although it is difficult to offer any acceptable explanation for the clue. It involves the word order of the first sentence in the announcement. The normal opening sentence reads as follows: "On \_\_\_\_\_ in the Soviet Union there was another launch of a scientific earth satel-

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lite 'Cosmos' \_\_\_\_\_" However, in thirty-two instances the sentence reads as follows: "On \_\_\_\_\_ in the Soviet Union there was a launch of another scientific earth satellite 'Cosmos' \_\_\_\_\_" There is, of course, no essential difference in the meaning of the two sentences, either in English or Russian. This variation in word order may be purely accidental or arbitrary, in which case one would not expect to find any consistency or pattern in the use of the second version. On the other hand, it may reflect some stylistic habit of the individual releasing the data to TASS, in which case one might expect to find the altered wording in the announcements of all satellites of direct concern to that person.

Six of the first seven non-recoverable satellites announcements had the second word order, as have eight additional vehicles of similar character. Since May 1966, all announcements of this group have used the standard version. Five navigation-type satellite announcements have used version two, as have all those for meteorological satellites. This seems too regular to be coincidence. Almost without exception, the launches that have been accompanied by the alternate word order are events that are largely, if not exclusively, non-military. Only the announcements of navigation and meteorological Cosmos satellites have used this order of words since Cosmos 119, a non-recoverable scientific satellite launched in May 1966.

*Postscript*

The interesting question, of course, is why the Soviets for so long have clung to formulae which, as we have seen, are after all not very secure—if that object is what they have in mind. This contributor has no ready answer to such a question, but would be happy to entertain any and all suggestions.