







significant intelligence on space developments and trends

Soviets Want to Contact Other Worlds, Seek Help from West

Soviet delegates to a meeting of the International Astronomical Union held a year ago proposed that other nations join the USSR in a 5-year effort to contact other civilizations within 1,000 light years of the solar system.

The setting for this proposal was laid at a conference held at the Byurakan Astronomical Observatory in the Armenian SSR, 20-23 May 1964, the proceedings of which were published in a book entitled, "Extraterrestrial Civilizations." The purposes of the conference, which was attended by some of the USSR's most prominent astronomers, radioastronomers, and electronics experts, were to determine whether it would be desirable to seek contacts with extraterrestrial civilizations and whether the Earth's technology had reached a level which would make the effort feasible, to discuss possible methods and techniques for communicating, and to make any necessary decisions and recommendations.

The conference:

- Decided that an effort to contact intelligent life elsewhere in the Universe would be most desirable because successful communications with other worlds could have enormous scientific, philosophical, and political significance. It was recommended that the project be undertaken.
- Estimated that radioastronomy, electronics technology, cybernetics, and allied sciences had now reached the stage which would make it feasible to begin work on the project.
- Recommended that a planned program of preparatory research be undertaken, to include:
 - Experimental searches for artificial signals from civilizations more advanced than ours within a radius of about 1,000 light years, including the transmission of signals (such as call signs) to potential communicators.



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- The building of radio-interferometers with large bases (on the order of 1-10 million times their wavelengths (in the centimeter band)), using existing antenna types.
- The commencement of theoretical studies toward the development of criteria for identifying artificial signals from outer space, based on statistical analyses.
- The commencement of theoretical studies toward the solution of the linguistic problem, based on studies of the general theories of language, decipherment, and teaching.
- Recommended that specified scientific agencies of the USSR establish special groups to support the program by studying in detail the various specialized tasks involved.
- Recommended that the Astronomical and Radioastronomical Councils of the USSR create a special "Commission on Interstellar Communications," to lay out the over-all program and to draw up a statement of the technical and material support which would be needed.
 - Recommended that the proposed commission consider the advisability of drawing other nations into the program on the basis of an international division of labor.

The Soviets would probably have preferred to go it alone and harvest all the prestige which a successful effort would produce. The costs, however, were viewed as prohibitive. The program could get off to a start with existing equipment -- using present radioastronomy antennas to detect and identify signals from space which satisfy the criteria of artificial signals, e.g., narrow source, narrow beamwidth, modulation not produced by natural radiowave sources. The same antennas, allied with suitable power sources, could also be used to transmit "call signs," alerting other civilizations to our readiness to begin communications.

But modern equipment would not be equal to the next task, that of receiving and processing weak signals which contain information. Antennas would have to be much larger, receiving equipment more sensitive, and processing equipment more sophisticated. Development, deployment, construction, and operation of such equipment would require cooperation on an international scale.

Motivation. Proponents of the program pointed out that there are about 10 billion galaxies in the observable Universe with an average star population of 100 billion each, and that it is highly probable that many of these stars have planetary systems, some of which could support the evolution of intelligent life. They also point out that many of these civilizations could be far more advanced than the Earth's, which is in its technological infancy. Such civilizations, they say, would be willing to communicate with a backward one,

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such as ours, for the same reason that modern man interests himself in primitive societies and even in the communities of ants, bees, and so on. Moreover, motivated by vanity or altruism, such civilizations would be willing to pass information to us about their own achievements.

Some conferees pointed out that communications with superior civilizations could have exceptional scientific, philosophical, and political value. As an obvious example, they could advance the Earth's science and technology at an unprecendented rate if more advanced civilizations should freely hand us the solutions to difficult current problems and, perhaps, to problems which we have not even dreamed about.

The conferees did not explain the philosophical and political benefits, but these have been alluded to in other Soviet writings.

• The Soviets hope that the discovery of other intelligent beings can be used as a weapon against theologies which view man's ethical problems and his spiritual salvation as the central problems of the Universe.

• The also hope to prove that Marxist laws of dialectic materialism are universally and eternally valid, that they govern the social development of all aggregates of intelligent beings. Specifically, they hope to show that civilizations superior to ours have passed through the same stages of social and political development that ours has and that they are now living under Communism. Such findings, they believe, would advance immeasurably the cause of Communism on the Earth.

But a successful program could be both nonproductive and counterproductive for the Soviets -- nonproductive because better-informed theologies are prepared to cope doctrinally with the discovery of intelligent life elsewhere in the Universe, counterproductive because it could easily prove to be that superior civilizations long ago considered or tried Communism and found it wanting. (NORAD)

(UNCLASSIFIED)

Certain RV Studies Probably Concern Craft Returning from Moon, Planets

Certain current Soviet studies of re-entry vehicles (RVs) and techniques appear to be related to spacecraft returning from the Moon or other planets.

The Soviets are studying techniques for predicting the heat-radiation effects on blunt bodies moving through an atmosphere at hypersonic speeds. These studies would not apply to RVs which enter the atmosphere from Earth orbit; in such cases convective rather than radiant heating predominates. Radiant-heat effects could, on the other hand, pose a major design constraint for probes passing through planetary atmospheres and for vehicles which re-enter the Earth's atmosphere at the high speeds of spacecraft returning from the Moon or other planets.



Studies are also in progress on the performance of RVs with lift which fly through a very low-density atmosphere, such as is found at very high altitudes. The Soviets have shown that they do not need lifting RVs for Earth-orbital missions, and it is likely that such RVs have no direct application to maneuvering weapon systems. The maneuverability of an RV with lift would, on the other hand, be very desirable -- if not necessary -- for manned return from lunar or planetary missions, in order to:

Simplify the design of the guidance system.

Provide a wider choice of recovery areas.

(CIA) (SECRET)

Space Status Report

The over-all space status report was as follows, as of 1000Z, 17 January 1967:

| | USA | UK | Can | Italy | France | USSR | Total |
|--------------------------------|------|----|--------|---------|---------|------|-------|
| Payloads in Earth orbit | 207 | 2 | 2 | | 3 | 40 | 254 |
| Payloads in deep-space flight* | 11 | | | 101 131 | | 12 | 23 |
| Debris in Earth orbit | 738 | 1 | 2 | | 11 | 125 | 877 |
| Debris in deep-space flight | 13 | | Gran - | | A State | 5 | 18 |
| TOTALS | 969 | 3 | 4 | | 14 | 182 | 1172 |
| Payloads de-orbited or | | | A Land | | | | |
| decayed# | 225 | | | 1 . | | 143 | 369 |
| Debris decayed | 337 | | | | | 766 | 1103 |
| TOTALS | 1531 | 3 | 4 | 1 | 14 | 1091 | 2644 |

* Includes vehicles in heliocentric (Sun), selenocentric (Moon), and barycentric (Earth-Moon) orbit,

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Includes vehicles which have impacted on Earth, Moon, and Venus.

(NORAD Space Defense Center) (OFFICIAL USE ONLY)





CORRECTION Re Inclination of Plesetsk Launches

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The last sentence of the article, "51° Orbit Better for Photorecce of US than 65° or 72°, "which appeared on pp. 8 & 9, WIR 1/67, is in error. It should read, "Four of the 6 Plesetsk launches had inclinations of 72 or 73°." Cosmoses 129 and 136, which were launched from Plesetsk, had 65° inclinations, as shown in the chart on p. 42, WIR 1/67. (NORAD)

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Details of 1st Stage of SL-9

Space Propulsion System Unknown

Little information is available about the SL-9 propulsion system with which the Soviets orbited their 12.2-metric-ton Proton payloads. Obviously the SL-9 is a large vehicle, but the exact size and its capabilities are not known, ______ It appears to be of 2-stage tandem configuration, but it is not known whether the first stage consists of a single large unit or of several smaller units clustered to give the propulsion of a large unit.

A clustered configuration would seem to be more likely for the first stage, since the builders could then bypass the design limits (20-30 feet in diameter) which are imposed by transport from the factory to the launch site. On the other hand, on-site construction of large units is not only feasible but is becoming necessary in the case of boosters for the launch of very large payloads.

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