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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Soviets Take a New Look at Space Spending

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SR IM 70-29

October 1970

Copy No. 269

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
8 October 1970

INTELLIGENCE MEMORANDUM

Soviets Take a New Look at Space Spending

Summary

Expenditures for the Soviet space program increased every year after the first Sputnik was launched in 1957 to an all-time high in 1969--probably the equivalent of 7 billion dollars. There are recent indications, however, that during the next few years Soviet expenditures for space will not increase significantly and may even decline.

One indication that the Soviets may now be considering curtailing the growth of their space expenditures is an evident concern over the cost of the space program. The clearest indication of this concern is a December 1969 press article by Boris Petrov, a senior official Soviet spokesman on space, in which he explains the need for strict economy in funding Soviet space activities.

reported that the scientific aspects of the Soviet space program in particular are suffering from budget cuts. Other reports from a variety of sources both classified and

Note: This memorandum was produced solely by CIA. It was prepared by the Office of Strategic Research and coordinated with the Offices of Economic Research, National Estimates, and Scientific Intelligence, and the Foreign Missile and Space Analysis Center.

unclassified indicate that the Soviets are concerned about space program costs and may be taking action to reduce them.

The number of space launches declined slightly during the first nine months of 1970 compared with the first nine months of 1969. This suggests that some cuts in space spending may have already taken place, possibly in reaction to current economic problems. Soviet economic growth has slowed perceptibly recently and the space program, which along with Soviet defense industries has siphoned off highly skilled manpower and sophisticated machinery, may have contributed to this slowdown.

Technical problems which the Soviets are encountering also could be a factor in the curtailment of space spending. The poor record of the SL-12 and J launch vehicles may be causing a stretchout or deferment of the programs these vehicles were to support, leading to a decline in annual outlays.

In any case, pressures to arrest the growth of Soviet space expenditures almost certainly will not result in a large cutback in Soviet space programs. The Soviets will probably continue to mount a strong space effort--especially in the area of military applications.

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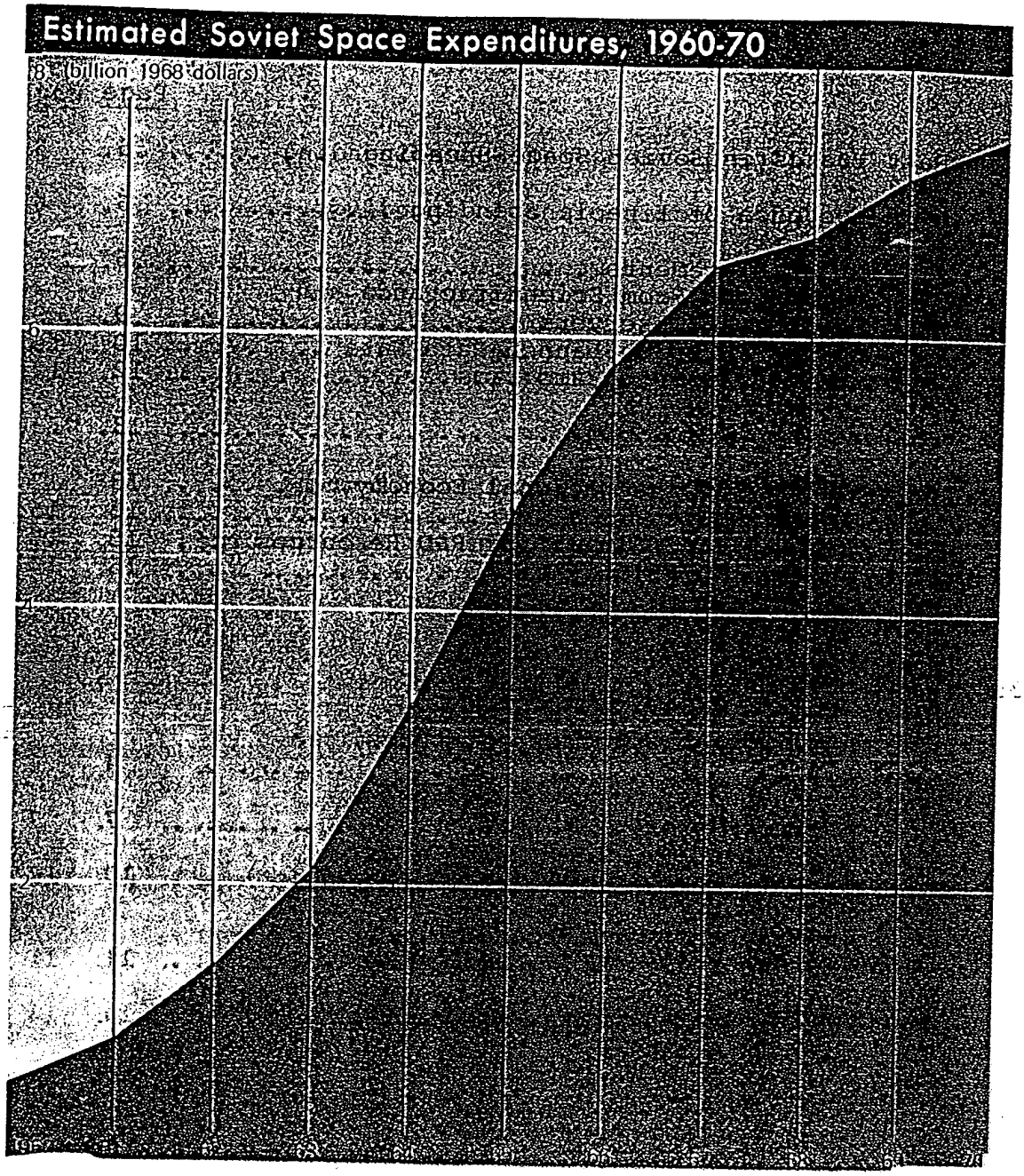
Illustrations


Estimated Soviet Space Expenditures, 1960-70
$ (billion 1968 dollars)

Past Trends in Soviet Space Spending

Early Soviet space efforts paid major dividends in national prestige in 1957 with the launching of Sputnik I. The space program did not become a major claimant of resources until about 1962, however, when space expenditures for the year reached the equivalent of over a billion dollars.* Prior to that time, the program was able to achieve most of its goals at a relatively low cost through the modification of launch vehicles originally developed for use as ballistic missiles.

After 1962 the payloads became heavier and development of larger boosters designed specifically for space applications became necessary. Coupled with manned space flight activity, this drove expenditures up rapidly until the mid-Sixties (see facing chart).

Estimated space expenditures continued to grow after 1964, but the rate of growth decreased markedly because much of the development work on large space boosters and spacecraft for manned flight was nearing completion. The declining growth rate also reflected slackening demands for construction funds as the three space launch centers--Tyuratam, Plesetsk, and Kapustin Yar--and tracking facilities neared completion.

** Soviet space expenditures estimated in this report include both civil and military programs. The scope of these programs roughly matches the combined work of the National Aeronautics and Space Administration (including the Communications Satellite Corporation) and the space related components of the Department of the Interior, the Atomic Energy Commission, the National Science Foundation, and the Department of Defense. Dollar values are estimates of what the Soviet space program would have cost if conducted in the US.*

A simple projection of the trend in spending since 1965 would yield an estimate that expenditures will continue to increase slightly during the next few years. Other evidence, however, suggests that spending for space has leveled off and may even decline.

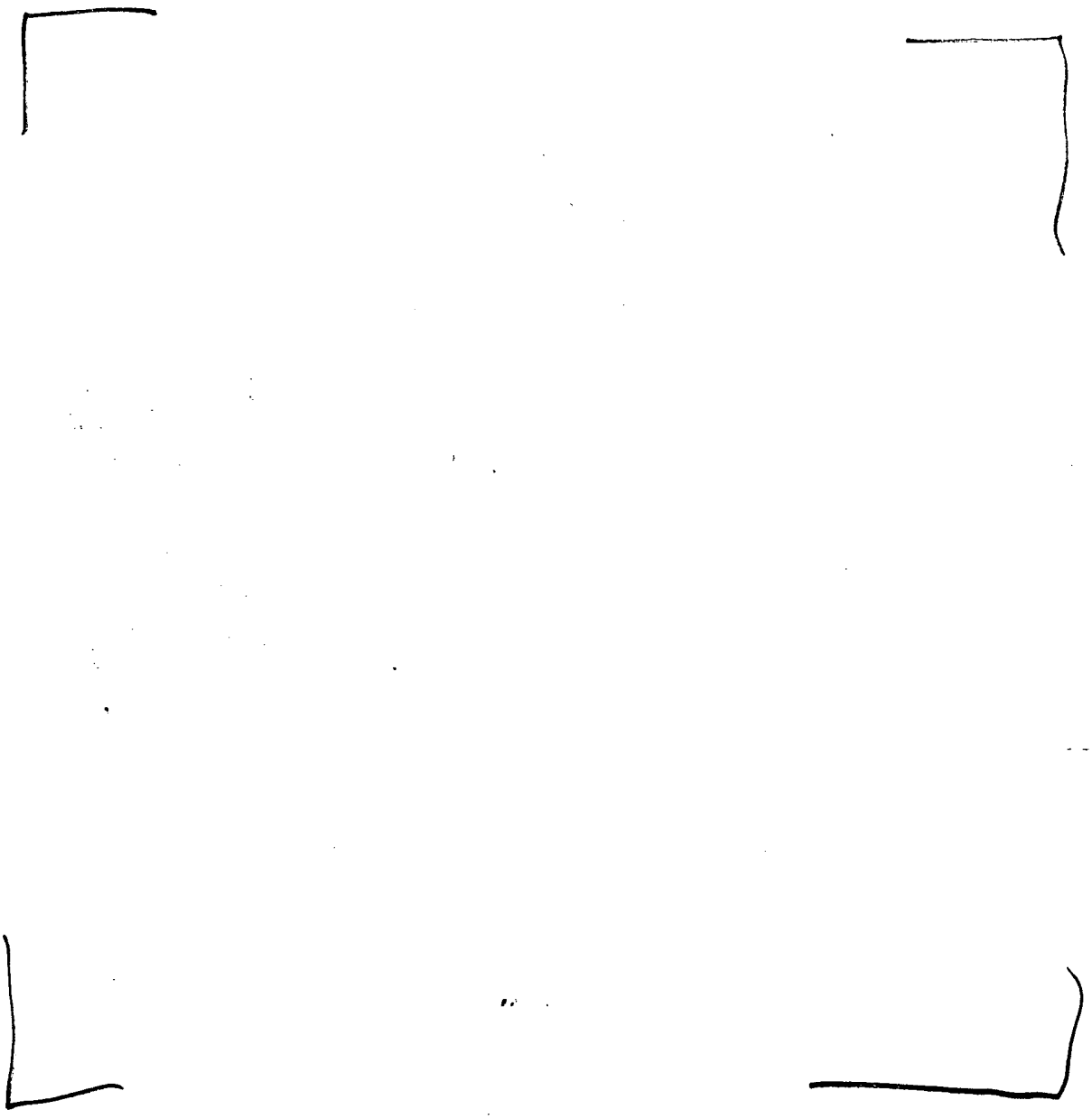
Evidence of a Decline in Spending

There are several indications which, viewed together, suggest an impending reduction in Soviet spending for space. These include articles in the Soviet press, remarks by Soviet scientists, analyses by the US Embassy and Western correspondents in Moscow, and a declining Soviet space launch rate.

Public Statements

A December 1969 article which received wide publicity in the West indicates that the Soviets are seriously concerned with the high costs of their space program. The appearance of this article in the party newspaper *Pravda* and the fact that it included quotations from a speech by Brezhnev give it the earmarks of establishing an official "line."

The article was written by Boris Petrov, who as chairman of the USSR Academy of Sciences Council for International Cooperation in Space Research and Utilization (Intercosmos Council) is a senior official spokesman for the USSR on space. He has written frequently in Soviet journals and his comments are accorded considerable publicity by the TASS news service. Petrov was the only scientist to give speeches at the welcoming ceremonies for the cosmonaut crews of Soyuz 6, 7, and 8. The only



other speakers--besides the crew members themselves--were Leonid Brezhnev and Nikolai Podgorny.

In his *Pravda* article Petrov gave a candid assessment of the problems posed by the exploration of space. He noted that "space research is not cheap" and that, given the great proliferation of possible space missions which have been advanced and the obvious impossibility of financing all of them, it is most important to "choose what is to be given preference." "In selecting the paramount tasks of scientific research," Petrov said, "we regard as of first-rank importance the interests of science and the importance of the experiments to the national economy."

The implication of these remarks is that space projects which do not have both scientific importance and direct economic benefits will receive lower priority and probably less financial support than those which can meet these criteria.

Other remarks of Petrov in the same article emphasized the importance placed on economies in space operations. He said, for example, that hardware used in the space program must not only be reliable but also "economically justified" and he stressed the fact that the current Soviet effort to explore the moon by automatic devices is far cheaper than exploration by manned flights.

Concern about the cost of the space program was evident previous to Petrov's article, but the subject was not so openly addressed. Throughout the last quarter of 1969 many articles dealing with the Soviet space program emphasized that the aims of the program are governed by the needs of both science and the national economy. Taken together they suggest, in fact, that the greater emphasis is placed on the needs of the national economy.

Indications From Scientific and Diplomatic Observers

Since mid-1969 reports from additional sources have suggested a possible cutback in funding of the Soviet space program.

[redacted] that the Soviet people were dissatisfied with the large expenditures being applied to the space program. The [redacted] related this attitude to the extensive shortage of consumer goods and the success scored by Apollo 11.

[redacted] came to the conclusion that "because of budgetary considerations, the priorities in the [Soviet space] program are being rigidly applied," and that "there will be a definite cutback in the manpower, money, and material allotted to the pure scientific aspec of the space program."

[redacted] observed that the two Soviet cosmonauts who strong endorsed the man-in-space efforts of the USSR in their presentations at the meeting appeared to be "merely defending the space programs which had be criticized severely for heavy expenditures."

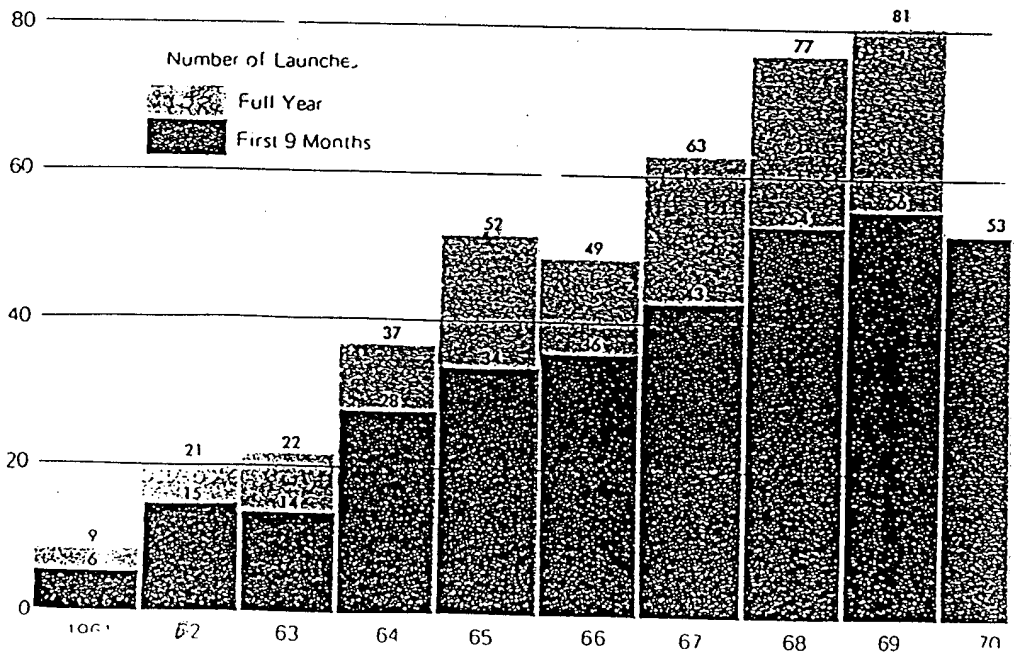
Finally, [redacted] official conversation [redacted], who concluded that "it was clear that the Soviet space program is not going to continue to enjoy expenditures in areas lacking practical application."

In sum, these reports probably reflect a Soviet effort to scrutinize more closely the overall space effort and to eliminate programs of questionable value.

Decline in Space Launch Rate

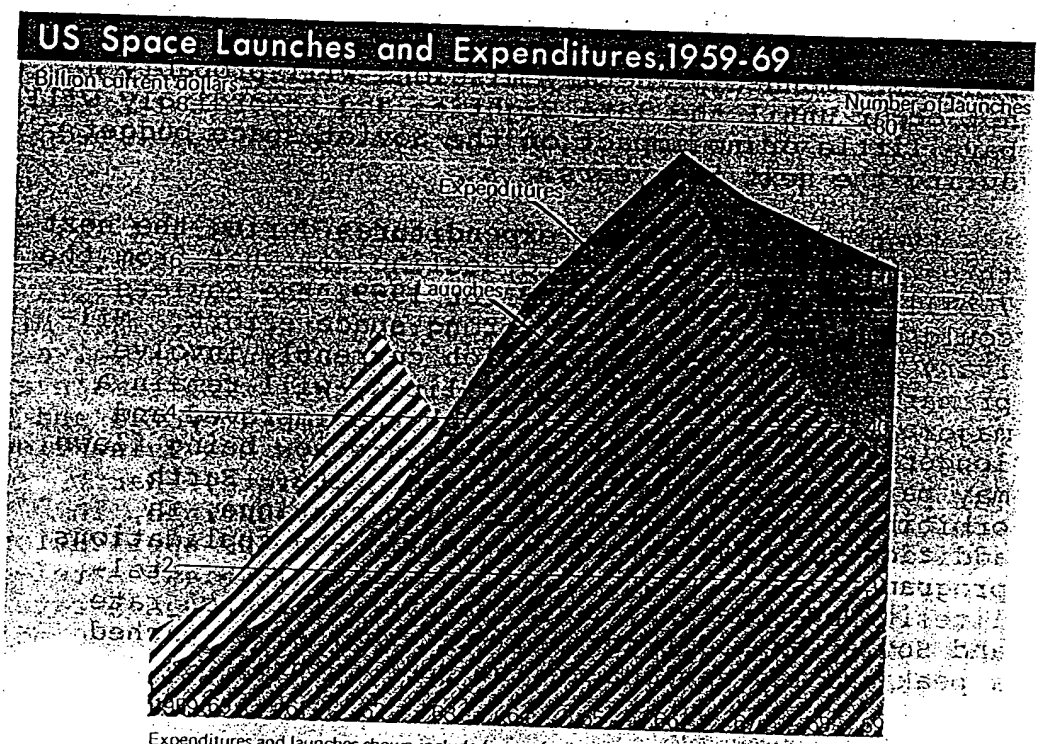
A decline in the rate of space related launches during the first nine months of 1970 provides another indication that the pressures for a curtailment of spending on the space program may be having some effect. Up to the first of October the Soviets conducted only 53 space launches, compared with 56 in the corresponding period of 1969. This contrasts with the general upward trend since 1961 when the Soviets first began launching a significant number of spacecraft. The number of launches conducted during the January-September period over the last ten years is shown in the chart below.

Soviet Space Launches 1961-70



The US launch rate and US annual expenditures for space are related, as illustrated in the chart below. This relationship between launches and spending probably holds for the USSR as well. As in the US, Soviet space launches not only represent a major cost category in themselves but are indicative of the programs under way. It is likely, therefore, that Soviet spending would decrease with a decline in the number of space launches.

Some insight into possible reasons for such a decline can be gained by looking at the US launch rate which began to decline in 1966. The decline in the US launch rate can be attributed, in part, to development of more reliable spacecraft systems. As the payloads operate with greater dependability



Expenditures and launches shown include figures for both the National Aeronautics and Space Administration and the Department of Defense. Launches refer to vehicles achieving escape or orbit.

and with fewer component failures, fewer launches are required to complete a specific mission. The Soviets, too, are probably now at a point where fewer launches will be required to support ongoing programs. Both the Soviet weather satellite system and satellite communications system, for example, will require fewer launches per year to accomplish future missions.

Future Space Programs

Authoritative discussions by Soviet scientists of the future of the space effort imply that the Soviets do not envision programs in the near future which would entail large expenditures. Most of the programs discussed in the Soviet press involve unmanned scientific payloads which are relatively inexpensive. The major exception, a large manned space station with a long orbital lifetime, would probably still be less expensive than a manned lunar program. Manned planetary missions will probably not occur until the late Eighties and accordingly will have little or no impact on the Soviet space budget during the next ten years.

Even if Soviet space expenditures during the next three to five years were to decline somewhat from the 7 billion dollars estimated for 1969, the Soviets could continue to mount a strong space effort. Military space applications, which currently involve primarily reconnaissance satellites, will remain a major area of activity, although the improved and longer duration satellites which are now being flown may permit a decline in the launch rate. Earth orbiting manned missions will also continue, in addition to a variety of scientific and applications programs such as weather and communications satellites. Nevertheless, both the overall launch rate and Soviet expenditures for space may have reached a peak and may decline in the near future.

Reasons for a Slowdown

Problems of the National Economy

Current economic problems may have caused Soviet leaders to reevaluate the allocation of resources to the space program. Advanced space programs siphon off many highly skilled engineers and scientists needed in other areas of the economy. Further, the space program is a heavy consumer of scarce strategic materials, sophisticated electronics, and the most advanced industrial processes.

These are the kinds of resources needed to help check the falling growth rate of the economy. For the past few years the Soviets have steadily increased spending on military, space, and consumer programs, largely at the expense of growth oriented investment. At the same time, the economy has experienced diminishing returns on new investment. As a result, the rate of growth of civilian industrial production declined in 1969 for the third year out of the past four, reaching its lowest level since World War II.

The dissatisfaction of the Soviet leaders with the performance of the economy has been increasingly evident in their speeches and press articles in the last year or two. They have appealed for better and more intensive effort from the Soviet workers and have announced new measures to alleviate economic difficulties.

These problems will not be solved quickly, however, because several years are required to bring new growth oriented investment into operation. The slighting of investment in heavy industry for the past few years will continue to affect industrial output for several years to come regardless of policy changes the Soviets may make now. Consequently, the keen competition for resources of the kind required for the space program will probably remain for at least several years.

US Budget Cuts

There are many different factors that influence space expenditures in the two countries, and there is not necessarily a direct relationship between US and Soviet spending trends. Nevertheless, recent cuts in US space spending may have improved the chances of success of those Soviets who are advocating the redirection of expenditures from the space effort to other--primarily civilian--programs.

Military Competition for R&D Resources

If resources allocated to Soviet military and space programs combined are curtailed because of a decision to divert resources to the national economy, it seems likely that the Soviet space program would absorb the major portion of the cut. Although the space program has since its beginning enjoyed a high priority, defense of the Soviet Union has been and undoubtedly will continue to be the Soviets' first priority. Among defense expenditures, military R&D has and probably will continue to be given a prominent place.

Technical Difficulties

Technical difficulties might also contribute to a slowdown in the Soviet space program. The J vehicle--the largest Soviet booster and the counterpart to the Saturn V--failed in its attempted maiden flight in July 1969, blowing up on its pad or immediately after liftoff
There has been no subsequent attempt to launch this vehicle.

The SL-12--considered to have a key role in many of the most ambitious Soviet space projects--has not yet proven to be a reliable launch vehicle. It has exhibited a pattern of random component malfunctions which may be frustrating Soviet attempts to isolate and eliminate the causes. The Soviets suffered a failure of the SL-12 in a mid-August engineering test flight which followed a six month hiatus of SL-12

firings during which efforts were probably undertaken to solve its basic problems. Although the latest SL-12 launch--Luna 16 in mid-September--proved successful, it by no means ensures a continued record of success for this vehicle which has been so sporadic in the past.

Continued problems with these advanced space boosters may result in a stretchout or deferment of programs related to their use, leading to lower annual expenditures for space, even though long run costs for these programs might be higher.

* * * * *

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