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7 March 1978

MEMORANDUM

COSMOS 954, Crash of a RORSAT:
The Implications of Soviet
and Other Foreign Commentary

Introduction

World-wide attention has been directed to the activities of states in space following the malfunction of COSMOS 954, a Soviet "ocean surveillance radar satellite" that entered the atmosphere and impacted in Canada on 24 January. Most attention given by foreign media has been to the possibility of nuclear contamination and to the drama surrounding the subsequent search for portions of the satellite that survived reentry. Some of the commentary represents the sort of sensationalism that can be expected when any imperfectly understood subject receives sudden and intensive media attention and thus will probably be shortlived and perhaps of little consequence. Other issues raised, however, have the potential for more serious and longer term disruption of the generally benign environment in which the US and USSR have conducted space programs, especially reconnaissance.

Space programs, civilian and military, have for the most part gone unchallenged for some two decades. Almost all nations have apparently determined that either such challenges would be fruitless or that it is to their advantage not to contest the various programs. Most third countries actively share in the benefits of numerous nonmilitary related space programs and institutions--for

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instance, those related to weather forecasting and remote sensing of earth resources. These countries probably also find convincing, arguments that unrestricted space reconnaissance contributes to the stability of US-Soviet and other interstate relations. At the UN Outer Space Committee there even seems to exist a gentlemen's agreement that issues concerning the superpowers' military programs in space, reconnaissance as well as other types, will not be raised.

However, among the many themes that surfaced in available world-wide commentary in the aftermath of the crash of COSMOS 954, have been the following:

--The Soviet satellite was a "spy satellite" designed for radar ocean reconnaissance of surface vessels and submarines.

--An unacceptable level of secrecy surrounds superpower activity in space.

--Either a UN Space Information Agency or some other legislation is needed to prevent programs like the COSMOS 954 from being kept secret.

--A similar incident may occur again but with more dire consequences.

--COSMOS 954 may have been shot down by a US "killer" satellite.

--"Uranium generators" in satellites are in use because they are less vulnerable to destruction than solar panels.

--US satellites with nuclear power units have also crashed.

--The existence of a nuclear powered satellite is analogous to orbital weapons--which COSMOS 954 might have been--a line of reasoning which tends to focus on an issue dormant for a number of years.

--The world in general, and the superpowers in particular, have become inured to the horrors of nuclear catastrophe.

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--The entire event represented a rare display of superpower cooperation and both the US and USSR are to be commended.

It is the purpose of this memorandum to review world commentary on this event and to suggest possible future implications for US space programs.

The Soviet Announcement. The first public acknowledgment by the USSR that COSMOS 954 was in trouble came on 24 January in a TASS announcement, which noted that the satellite was a part of a program for the "exploration and use of outer space." A subsequent TASS announcement, which indicated that it was being carried by "all Soviet newspapers," noted that the satellite "was sharply depressurized for reasons as yet unknown on 6 January, this year, with the result that the satellite began to come down in a unplanned regime." [emphasis added]

Public Commentary

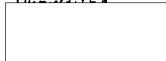
Spy Satellites. COSMOS 954 was generally referred to in Western commentary as a "Russian spy satellite," designed to track by "radar the movements of American Navy ships and submarines." The French, in particular, singled out for criticism the secrecy surrounding Soviet space programs. They noted that the name "COSMOS" merely corresponds to a label with the word 'Secret' written on it" and that the Soviets have so "nicknamed all tests which they wanted to remain unknown to their neighbors."

The East European states, as might have been expected, repeated the TASS announcement noting that the Soviet satellite was part of a program of "space research and utilization." The Yugoslavs, however, used the occasion to assert their independence of Moscow and to support their aspirations to leadership in the Third World. They referenced without comment Zbigniew Brzezinski's announcement that the ill-fated satellite "was a special satellite...intended for military purposes and that the Soviet Union had launched ten of these into orbit." Another Yugoslav commentator alluding to the commonality of superpower interests noted that:

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The two superpowers again do not want to ponder much over what is involved here, even less to inform us better about this [satellite reconnaissance]. Believe it or not they like to protect one another in certain of their secret activities although these secret activities are intended at least to scare one another.

Although some commentators did treat US-Soviet cooperation in positive terms, most were more circumspect. An English newspaper, the Guardian which referred to the incident as "a rare display of super-power cooperation on an issue where both sides have a vested interest in dangerous new technologies" noted, however, that "it took the Americans almost three weeks after first becoming aware of the possibility of a nuclear accident in space to tell other governments." The Parisian Le Figaro noted that Dr. Brzezinski "became much less talkative" when questioned about the satellite's mission.

It Could Happen Again. There seemed to be a general concern, that although the superpowers were reassuring about the low probability of a nuclear catastrophe, such could indeed happen. The London Daily Express, for instance suggested that the world had been given "a glimpse of the dangers that lurk in space" and that:

No ship has been designed that cannot sink, no aircraft that cannot crash, no manufacturing process that cannot go wrong, no engine that cannot seize up, no rocket that cannot explode, and we now know no orbiting satellite that cannot fall from the sky.

An Argentinian newspaper, the Buenos Aires Herald, suggested that:

To judge by the reactions of government officials in Washington, Moscow, and Ottawa, the unscheduled descent of a nuclear-powered Soviet satellite near the Canadian town of Yellowknife was a routine matter, certainly nothing to get worked up about. Less directly involved people, not inured yet to the possibility of dangerous radioactive material being dumped on them from

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the skies, are unlikely to be quite so sanguine. The chances of a major mishap may be slight, but they do exist nonetheless. What is dangerous is the rapidly increasing casualness with which the big powers' appear to be handling the colossal destructive power at their disposal.

Killer Satellites. A number of press treatments raised the spectre of "killer satellites," a subject that was receiving much public attention even before the crash of COSMOS 954, albeit in a different context. A Chilean commentator suggested the Soviets were looking at the possibility that COSMOS 954 "was shot down by another satellite, perhaps a US satellite." Still another Chilean report suggested that the failure of a "self-destruction mechanism on board the satellite was particularly embarrassing" presumably because this suggested some inherent weakness in the Soviet ASAT program--the Soviet ASAT has been frequently reported in open sources, to self destruct on command thereby "killing" the target satellite. A Yugoslav commentator indicated that it is impossible to say what had caused the satellite to cease functioning. Interestingly, he seemed to imply some behind-the-scenes contention over the reasons for the failure of COSMOS 954 when he claimed that:

The supposition that this [the object which collided with COSMOS 954] could have been, say, another artificial satellite--and I do not suggest one launched for this purpose, but simply another artificial satellite--of which there are hundreds orbiting the earth, is very unlikely.

A subsequent Yugoslav press report on 28 January, however, indicated that both the US and the USSR "for several years now have been intensively working on the production and constant improvement of 'satellite killers'" and that:

Several 'mysterious' crashes of satellites and space vehicles indicate that, in actuality, experimental work on antisatellite weapons is being carried out. Meanwhile, since up to now

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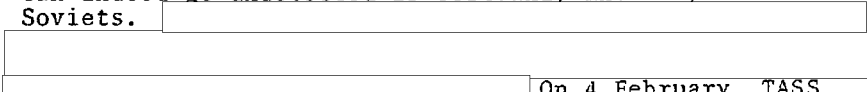


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both the 'attacking' and the 'attacked' satellites have belonged to one of the space powers, these 'accidents' have not gotten any publicity. The fact that COSMOS 954 experienced decompression...at the moment when it entered...the area where contact with it could not be maintained from Soviet territory, has evoked speculation that it was a 'casualty' of an American anti-satellite weapon... Why the decompression occurred--whether due to a defect in the covering of the satellite, an accidental collision with some meteor or a portion of an earlier launched satellite, or due to damage from some American 'satellite killer'--for now remains a mystery.

The commentary of senior US officials as presented by the American media has probably served to strengthen speculation about a connection--at least among the uninitiated--between the crash of COSMOS 954 and a US ASAT program. The New York Times on 30 January linked the growing "arms race in space", the "Soviet spy satellite that accidentally entered the Earth's atmosphere over Canada", and the development of Soviet and US ASATs. The Washington Post in an article that headlined Secretary Brown's proposed "near doubling the US expenditures for outer space weaponry" indicated that the US "Vought program is only one of many satellite killer devices to be developed."

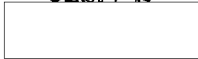
Although there is no explicit evidence that the Soviets believe or are even studying the possibility that COSMOS 954 was the victim of a US attack, it is likely that the possibility has been suggested by some in the Soviet Ministry of Defense. Secretary Brown in the previously cited Washington Post article noted that "An attack on an American satellite deep in space might go undetected..." The fact that momentary "probing," to detect a satellite's capabilities and vulnerabilities can indeed go undetected is certainly known by the Soviets.



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On 4 February, TASS carried an interview with academician Leonid Sedov on the ill-fated COSMOS 954. Sedov claimed that:

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Inasmuch as the process of depressurization was a fast one, it may be assumed that the *satellite collided in flight with some other object of natural or artificial origin.* [emphasis added]

This sort of rationale for the crash of COSMOS 954 was probably devised for its "face-saving" potential. Failure in this case--a collision with an unidentified object--is attributable to a cause beyond Moscow's control rather than to a mechanical problem which would be squarely within the USSR's responsibility.

The artificial linkage created in the press between the Soviet ASAT and the USSR's radar ocean reconnaissance satellite had other negative implications including some for the US. One Australian newspaper, The Age cited "some American defense officials" who believe that the Soviet Union "has already taken such a lead in military space technology [in space reconnaissance and space weaponry] that the strategic balance has been dangerously tipped against the US." Because of the USSR's purportedly significant lead over the US in space technology, President Carter's initiative on ASAT arms limitation and his call for a total ban on nuclear powered satellites were dismissed as "high flying optimism indeed." Subsequent Soviet press reporting seemed to suggest that the USSR was probably already laying the ground work for rejection of the US initiative on banning nuclear powered satellites.

TASS on two occasions reported favorably on the ongoing deliberations of the Scientific and Technical Subcommittee of the UN Outer Space Committee and singled out for commendation those who have indicated the "necessity" of "artificial earth satellites, including those having nuclear power facilities on board." In this connection, praise was extended to Bulgaria, Hungary, other Socialist states, and a US delegate to the UN, who reportedly said:

the use of nuclear-power plants in outer space is of great interest for the USA, and holds an important place in US outer space exploration programs.

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A Treaty Violation? Some of the more stinging criticisms of the USSR were made by the Japanese Communist Party (JCP). Because of the Japanese public's strong aversion to nuclear weapons and related technology, the JCP is generally impartial when it comes to criticizing the nuclear aspects of superpower policy. The party newspaper Akahata reported that "if this [the COSMOS 954] was launched for a military purpose it violated the 'space agreement.'" The 1967 UN treaty on the Peaceful Uses of Outer Space, however, merely banned the orbiting of nuclear weapons or other means of mass destruction and so COSMOS 954 was not in fact a violation. In this regard the London Daily Express conjectured:

Is the nuclear powerplant the only potentially sinister thing on board? Could the Russians be sending up craft carrying orbital bombs?

Soviet Sensitivities. Soviet press commentary suggests the USSR was concerned over the extent of public condemnation and thus interested in deflecting criticism of its responsibility for the COSMOS 954 incident:

--On 3 February Pravda informed its readers that the US space station, SKYLAB, was gradually losing altitude and "could strike the Earth in an unexpected area."

--Academician Sedov, on 4 February argued that the Soviet Union has strictly observed the provisions of the 1967 treaty on the principles guiding the activities of states in the exploration and use of outer space. He took pains to dispute what he described as "absurd accusations" by "many leading statesmen" and certain foreign media sources that the accident represented a threat to world peace. Assuring the public that there were not and "could not be" any weapons on board the satellite, Sedov charged "some circles" in the West with "undermining" the basic principles of international cooperation and trust.

--Veteran TASS political observer Yuriy Kornilov on 6 February accused "certain Western forces" of

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attempting to use the satellite's fall as a "fresh excuse" for fanning an anti-Soviet campaign. Questioning the sincerity of those in the West who have expressed "concern" over the Soviet COSMOS incident, Kornilov noted that several accidents involving nuclear materials, which often created "real and sometimes very serious danger," could be attributed to failures on the part of the United States.

The Aftermath: First Rumbblings

The initial call for international measures to increase control on space activities centered on the "nuclear aspects" of the COSMOS 954 incident rather than on the broader questions of space reconnaissance in general. The Canadians for instance indicated that they would propose to the UN Outer Space Committee that a "nuclear-free zone in near outer space" be created. The Swedish Foreign Minister expressed concern that "there does not exist any ban on the use of nuclear reactors in space, nor is there any obligation to inform those countries that may be threatened by a crashing satellite."

Prescriptive admonitions of a broader nature included Cairo's call for the establishment of a "UN Space Information Center" and the need for international legislation "forbidding any state from keeping secret any information such as that kept by the Soviet Union in the COSMOS 954 incident."

The most insistent demands for international legislation have come from the Japanese and in particular the Japanese Communist Party. The JCP on 7 February submitted a resolution to the Japanese House of Representatives that called for a total ban on military satellites. Among the factors cited in the JCP resolution were the following:

--three US "nuclear-loaded" satellites had already crashed; and

--on the average one satellite "falls to earth" every day.

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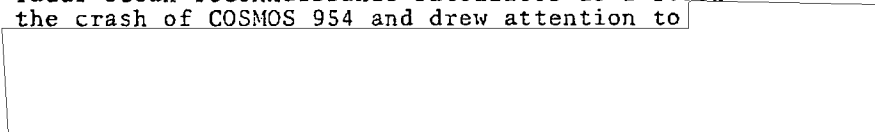
The JCP recommended that Japan raise these and other issues at the UN General Assembly session to be held in May and at other international conferences as well. In particular the JCP argued the need for the following measures:

The [UN] treaty on space (ratified by the Japanese Government in July 1967) should immediately be amended so as to ban totally [the] launching [of] artificial satellites and the military use of space objects,...

The Government should investigate the true picture of all space objects, including satellites for military purposes, nuclear-loaded satellites and other artificial space objects and must make public the results of the investigation. [emphasis added]

At the UN. By and large, the deliberations in the UN Outer Space Committee have been on civil and peaceful uses of outer space. Until the COSMOS 954 incident, any discussion of military and intelligence programs was very carefully avoided. Following the COSMOS 954 crash, several countries, including Japan, Sweden, Canada, and West Germany raised the issue of nuclear satellites in the UN Outer Space Committee. The Japanese initially considered raising the explicit issue of military satellites but were persuaded that US and Japanese security was partially dependent on such systems.

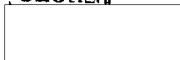
Searching Inquiries. The French, who as noted earlier were critical of the secrecy surrounding Soviet space programs, published a fairly detailed study of radar ocean reconnaissance satellites as a result of the crash of COSMOS 954 and drew attention to



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"Irrational" Reactions. It seems likely that the effects of the COSMOS 954 incident will linger for some time and that many of the effects will be unpredictable

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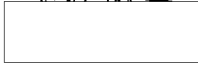
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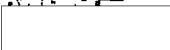
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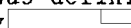
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because of what may be described as the "irrational" reaction of third countries. A Caracas radio station for instance on 15 February, in the aftermath of the failure of COSMOS 954, reported the ostensible crash of a US satellite over Venezuelan territory.

The object entered Venezuelan skies and descended in a parachute. The people of Pregonero went to see the strange descending object and finally located it. It is an object that can be moved by two men with many cables, a motor and a long antenna.

It has US Air Force markings on a rubber protector and could possibly be a satellite for meteorological purposes.

Whatever actually landed--if anything--was definitely not a US satellite. Subsequent inquiries by  who requested the return of any portions of the object that might have survived reentry met with a negative response by Venezuelan government officials, who seemed to know nothing of the incident.

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Despite their clearly expressed interest, many states are not always knowledgeable nor are their positions necessarily rational when it comes to space matters. For example, developing nations interested in eventually having their own communication satellites in geostationary orbit have expressed concern about the possible overcrowding of that special orbit. Although the physical space involved is more than adequate to accommodate a very large number of satellites, the radio frequency interference problem makes proper spacing of satellites vital, thereby limiting the number of satellites that can usefully occupy the space. These countries have indicated the desire to "reserve" slots in geostationary orbit for their potential satellites so that when the satellites are ready, there will be room for them. Colombia, Indonesia and Ecuador have led a protracted debate in the UN Space Committee, on sovereignty over the geostationary orbit, citing it "as a scarce natural resource which exists exclusively by virtue of its physical relation to the gravitational phenomena generated by the earth and particularly by underlying territory." In their view, the segments of the orbit lying above equatorial states were not in outer space but a separate and integral part of their national space.

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Conclusion

COSMOS 954 and the coincident press attention to anti-satellite weapons have served to focus world-wide attention on superpower activity in space. How far such concerns will be carried is difficult to foresee.

On the one hand, the very real contributions the superpower space programs have made for mankind are difficult to ignore. In addition, of the 157 nations of the world only nine--Andorra, Bhutan, Equatorial Guinea, Gambia, Grenada, Guinea-Bissau, San Marino, Sao Tome and Principe, and Western Samoa--do not use space data in some way at this time.* Thus it is clear that "non-launcher" nations have a real stake in all types of space activities and hence in maintaining the status quo in outer space. On the other hand, interest in space matters does not always imply knowledge or understanding of all the related issues. Should future mishaps occur, irrational overreactions like those generated by the COSMOS 954 incident cannot be ruled out nor is the fragile regime in space likely to withstand that sort of controversy for long. Further, manipulation of growing Third World awareness of space activities is likely. Those underdeveloped nations which generally pursue an independent foreign policy are likely targets for states seeking to use "space"--Yugoslavia for instance--to enhance their leadership credentials in the Third World. Thus, as indicated in world-wide press commentary, incidents like the COSMOS 954 crash carry at least the potential for disrupting the current regime in space and not necessarily because of a "real issue."

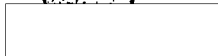
Six nations, in addition to the US and USSR--five of which are US allies--have developed their own launch capability or launch facilities: Australian, China, France, Italy, Japan and the United Kingdom. Analysis of the press reporting available from the US allies in this list

* "Use of space data" is quite broadly defined here, and does not imply that a country has an expressed interest in conducting independent activities in space, nor possesses a governmental body established to promote space research. Membership in organizations such as Intelsat or the World Meteorological Organization was sufficient to qualify a state for inclusion in this category.

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suggests the existence of reservations or concern about the secrecy surrounding space programs. Although there are powerful incentives which will likely convince these nations to accept US guidance on sensitive space questions, other factors, for instance indigenous public opinion, may eventually divert these nations from a course which the US perceives as in its allies' interests. The French apparently intend to call for the creation of an international control agency that would use satellites to monitor disarmament agreements. Citing the failure of the US and the USSR to achieve a satisfactory disarmament agreement after years of effort, French President Giscard d'Estaing suggested that a new approach to nuclear and conventional arms control should involve all the nations of the world--not just the superpowers--under the United Nations. Should he follow through, the question of espionage from space will likely get a more thorough public review than ever before.

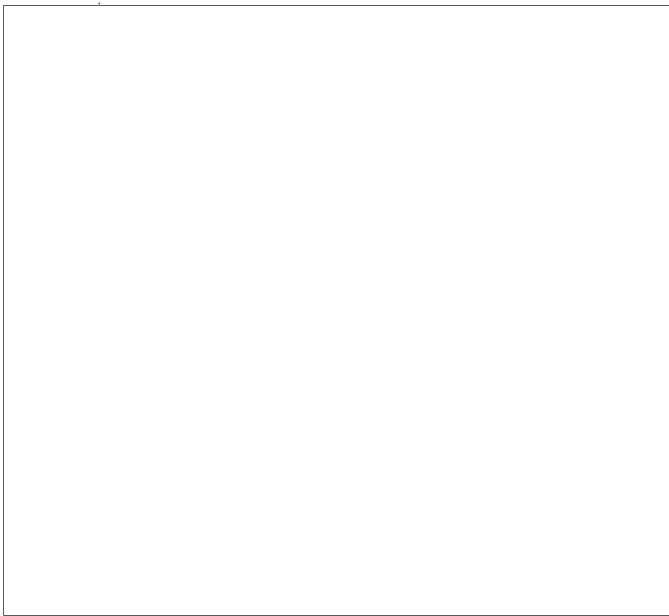
Although only the USSR has the means to destructively interfere with satellites, all states have it within their power to exert pressure on the superpowers through public condemnation of various space activities. Neither the US or the USSR could indefinitely remain immune to that type of pressure. They will find it increasingly difficult to ignore the perceptions held by most other countries of superpower space activities and will probably have to accommodate those views to some extent. Any move towards accommodation, be it public disclosure of sensitive space reconnaissance programs or some other form, is likely to become a contentious issue between the US and USSR. Given the competitive relationship that exists, each is likely to view the others concession as an example of "one-upsmanship" designed to curry favor amongst the Third World. Also the gentlemen's agreement that seems to exist whereby the US and USSR at least refrain from detailed discussion of space reconnaissance would likely fall victim to this sort of accommodation. Whether significantly enhanced world-wide knowledge of space activities will ultimately prove to be stabilizing or destabilizing is difficult to foresee.

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