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THE PENTEGON'S MEANS FOR GLOBAL ESPIONAGE,(U)
JUL 77 Y YURYEV , L SHEVCHUK

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THE PENTEGON'S MEANS FOR GLOBAL ESPIONAGE

by

Yu. Yur'yev, L. Shevchuk

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere. When written as ё in Russian, transliterate as yë or ë. The use of diacritical marks is preferred, but such marks may be omitted when expediency dictates.

GREEK ALPHABET

Alpha	A	α	*α*	Nu	N	ν	
Beta	B	β		Xi	Ξ	ξ	
Gamma	Γ	γ		Omicron	O	o	
Delta	Δ	δ		Pi	Π	π	
Epsilon	E	ε	*ϵ*	Rho	P	ρ	*ϱ*
Zeta	Z	ζ		Sigma	Σ	σ	ς
Eta	H	η		Tau	T	τ	
Theta	Θ	θ	*ϑ*	Upsilon	T	υ	
Iota	I	ι		Phi	Φ	*φ*	ϕ
Kappa	K	*κ*	κ ϰ	Chi	X	χ	
Lambda	Λ	λ		Psi	Ψ	ψ	
Mu	M	μ		Omega	Ω	ω	

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English
sin	sin
cos	cos
tg	tan
ctg	cot
sec	sec
cosec	csc
sh	sinh
ch	cosh
th	tanh
cth	coth
sch	sech
csch	csch
arc sin	$\sin^{-1}$
arc cos	$\cos^{-1}$
arc tg	$\tan^{-1}$
arc ctg	$\cot^{-1}$
arc sec	$\sec^{-1}$
arc cosec	$\csc^{-1}$
arc sh	$\sinh^{-1}$
arc ch	$\cosh^{-1}$
arc th	$\tanh^{-1}$
arc cth	$\coth^{-1}$
arc sch	sech^{-1}
arc csch	csch^{-1}
rot	curl
lg	log

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EDITED TRANSLATION

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THE PENTEGON'S MEANS FOR GLOBAL ESPIONAGE

(From materials in the foreign press)

Engineer-Colonel Yu. Yur'yev and Engineer-Major L. Shevchuk,
Candidate of Technical Sciences

American imperialism is constantly confirming its striving to play the role of a unique guarantor and protector of the international system of exploitation and oppression. It is striving for dominance everywhere, is interfering in the affairs of other peoples, and is unceremoniously violating their legal rights and sovereignty; by force, bribery, and economic penetration it is trying to inflict its will on states and entire regions of the world. Convincing evidence of the militaristic aspirations of the ruling circles of the United States is the active intelligence and special concern for the improvement of its forms and methods as well as the appropriation of tremendous resources for its needs. The goals of global espionage were graphically demonstrated in the wars in Korea and Indochina and in support of the aggressive course of the Israeli militarists.

Reconnaissance satellites firmly became a means for the Pentagon's global espionage long ago. They are an important part of the strategic intellegence forces of the American military command.

Work connected with the creation of space intelligence means was begun in the United States long before the first artificial satellite was placed in orbit and is being conducted on an ever greater scale.

US reconnaissance satellites are employed for conduct of photo-, signal, electronic, television, and radar reconnaissance and for the detection of nuclear explosions and the launching of ballistic missiles from underground lauchers and submarines. The control center in Sunnyvale (California) which directs the work of the command-measurement complex which includes ground stations located on the territory of the United States and beyond its borders controls the reconnaissance satellites.

Surveillance satellites and satellites for detailed photo reconnaissance which are injected into orbits which are close to polar with an altitude of the perigee of 120-200 km are employed to obtain data of interest to the Pentagon. They are used to conduct regular observation of missile launch sites, airfields, and troop movements, in particular those of tank units.

Surveillance reconnaissance satellites equipped with cameras with wide-angle lenses are intended for the photography of large areas with a relatively low resolution. Such a method permits the conduct of continuous photography of territories which are of interest. The most important objects are determined from the photos which are obtained and satellites for detailed photo reconnaissance are employed for their further study.

At present, the United States is using satellites which have been developed in accordance with the "Discoverer" (Fig. 1) and "770" programs for surveillance photo reconnaissance. Their typical orbit is elliptical with an altitude of perigee of 160-200 km and an altitude of the apogee to 450 km with an inclination of 75-90°. The duration of the satellites' existence, as a rule, does note exceed 3-4 weeks. The film which has been exposed in

orbit is ejected from the satellites to the ground in containers which are intercepted in the air by airplanes. Here, the film is ejected in such a way that in case of an unsuccessful interception the container is lowered to the ocean. To facilitate search, the containers are equipped with direction-finding radio transmitters and devices for placing dye in the water at the point of splash-down.

According to published reports, equipment for electronic and radar reconnaissance has been installed on the latest models of the satellites created in accordance with the "770" program in addition to photography equipment. The data from the electronic reconnaissance in the form of records of signals from communication and radar stations on magnetic tape are ejected in the container together with the exposed film. Radar equipment permits conducting reconnaissance under any weather conditions and discovering objects which are concealed by foliage as well as those which are located several centimeters beneath the ground.

Satellites for detailed photo reconnaissance are intended for large-scale photography of individual areas which have been disclosed during the analysis of materials from surveillance reconnaissance. A characteristic feature of these satellites is the low altitude of the perigee (130-145 km).

In combination with the long-focus objective lenses the low altitudes of the perigee provides the opportunity to obtain photos with a resolution of 1.8 - 5.5 meters (according to some sources, even down to 0.3 meters).

During the period 1962-64, 12-14 surveillance reconnaissance satellites were orbited annually. Beginning in 1966, the number of satellites of this type which were launched was reduced to 8-9. Here, photography was already accomplished without overlap since the maps, apparently, were already compiled and it was only necessary to refine them.

The total duration of stay of the photo-reconnaissance satellites in orbit was approximately 180 days per year. The number of satellites for detailed reconnaissance which are orbited reaches 8-9 per year. An exception was 1966 when 15 satellites were launched for detailed reconnaissance.

The development of satellites in accordance with the "647" program became the next step in the development of reconnaissance space systems. These are multipurpose satellites which are intended for the simultaneous accomplishment of such tasks as the detection of launchings of intercontinental ballistic missiles, the conduct of photographic and electronic reconnaissance, the recording of troop movements and the observation of military objects, the determination of the coordinates of nuclear bursts, checking the launching of nuclear strikes, and the conduct of strategic weather reconnaissance. The weight of such a satellite is approximately 800 kg, length 7 m, and diameter 3 m. Launchings were begun in 1970.

The launchings of satellites into synchronous orbits in accordance with the "647" program provide the opportunity to observe not only the areas of equatorial and temperate latitudes but also to check the polar regions of the North and South Poles. Information is transmitted from orbit to ground-based stations over radio links. Furthermore, the film which has been exposed and the magnetic tape can be returned to the ground in containers.

While recognizing the advantages of satellites as a means of strategic intelligence, American specialists can also name their short-comings. One of the basic short-comings of photo-reconnaissance satellites, in their opinion, is the fact that they do not provide the opportunity to obtain real-time information. Even in the best case, several dozen hours pass from the moment of photography to the start of the processing of the photographs and during this time the situation can change substantially. Furthermore,

with surveillance photography a great number of photos are obtained which have no intelligence interest.

Several years ago, attempts to install television equipment in reconnaissance satellites ended in failure primarily because of its low (in comparison with cameras) resolution and difficulties in transmitting television images to the ground. However, since the time of the first experiments television equipment has been improved considerably. Transmitter tubes have appeared which provide resolution which approaches the resolution of photographs. They are already being employed on surveillance reconnaissance satellites.

The Pentagon is also attaching great significance to the means for electronic reconnaissance from space. Special satellites are being employed to determine the characterisitics and locations of ground-based radars and communication stations and to intercept radio signals which ground-based signal intelligence means can detect only in the zone of direct visibility. One of the means for orbital electronic intelligence most widely employed by the Americans is the "Ferret" satellite. It weighs more than one ton with a length of 6.7 meters and a diameter of 1.5 meters and is intended for electronic and signal intelligence, in particular for the intercept of conversations from ships and submarines located at sea and even of conversations of headquarters with various troop subunits. According to some reports, the satellites can receive information from low-power transmitters, for example from transmitters which are used by intelligence agents. The information which has been received is recorded onboard and is transmittted to the ground when the satellite flies above the tracking stations. A typical orbit of the "Ferret" satellites is close to circular with an altitude of about 500 km and inclination of 75-82°.

Approximately the same missions are accomplished by electronic intelligence satellites of the R-11 type (Fig. 2.) whose weight is 60-160 kg and whose maximum dimension is 0.9 m. These satellites are inserted into orbit together with the solar reconnaissance satellites as an additional payload.

In order to increase the efficiency and precision in collecting information about electronic means, the Lockheed Corporation, on contract with the U. S. Air Force, is developing a new satellite for photo-and electronic intelligence, the "Sidzhint" [as transliterated] which should replace not only the "Ferret" and R-11 satellites but also reconnaissance aircraft and ships which are constantly flying and sailing along the border of the Soviet Union. The satellite is equipped with a system for orientation in three axes, a high-precision stabilization system, a power plant which uses solar elements and chemical batteries, and equipment to create jamming. The weight of the satellite is more than 10 tons. The satellite is injected into circular polar orbits with an altitude of about 185 km for the conduct of reconnaissance over foreign territories.

The orbit of the "Sidzhint" should pass over Buckley Air Force Base (Colorado) twice a day where special equipment has been installed to receive information from onboard the satellite.

Since 1963, the United States has begun the launching of satellites to detect nuclear bursts on the earth's surface, in the atmosphere, and in outer space. Detectors of X-ray and gamma radiation and neutron fluxes, for the measurement of background radiation, and an electron-proton spectrometer have been installed onboard such satellites. This equipment is used to record radiation and the fluxes of particles which arise not only during nuclear explosions of artificial origin but also with an increase in solar activity. Therefore, the information obtained from the satellites is also used in preparing the "Apollo" space ships to ensure the safety of the astronauts.

A special feature of the method used to check for nuclear explosions and solar flares consists of the paired launching of satellites into orbits with an altitude of 90,000-110,000 km. According to published reports, the system which is presently functioning includes 12 satellites which permit round the clock observation of the entire surface of the earth and near-earth outer space.

Despite such a variety of means for space reconnaissance, the work of the United States in this field is not limited to special-purpose satellite systems. The military-industrial circles of the United States have posed the problem of the possibility of using space complexes of any purpose for military goals.

For example, in the course of flight of the "Gemeni" manned space craft methods for detecting launches of ICBM's were studied. Using special equipment, the "Gemeni" crews repeatedly recorded the launching of ballistic missiles from ground ranges and recorded the infrared radiation from the flames of the rocket engines in flight and on special benches. In photographing the Earth's surface from the "Apollo" space ships the same supersensitive film was used as is used in reconnaissance satellites. It is not by chance that the US Secretary of Defense and the Atomic Energy Commission prohibited the publication of the majority of photographs. Reports appeared in the press to the effect that specialists of the US Department of Defense review films obtained using the "Tiros" and "Nimbus" weather satellites of NASA. The military circles of the United States are also displaying great interest in satellites which are intended for experiments in the preparation of charts for land use in the United States, geological-soil maps, and maps of agricultural lands and on the collection of data from observation posts concerning the continental shelf, gulfs, mouths of rivers, and other areas where tides are observed as well as about the coastline and areas which are dangerous for navigation. These satellites will be equipped with color television cameras whose resolution during photography from a polar orbit with an

altitude of about 900 km and recording of information on video tape will comprise approximately 60 meters. In the case of the real-time transmission of information, the resolution of this equipment will be approximately doubled. Therefore, the Pentagon is also interested in these satellites.

Another object which is of interest to the military command of the United States is the "Skylab" orbital station which is being developed under the supervision of NASA. Its launching is planned for 1973 for the conduct of scientific-technical and medical-biological experiments and also several experiments in accordance with the program of the Department of Defense.

The creation of multipurpose transport ships for shuttle flights over the route "Earth-orbit-Earth" is envisioned to service the orbital stations of this type as well as for the accomplishment of independent military missions for the U.S. Air Force. Such a ship will be able to maneuver in space, accomplishing a wide range of military missions (reconnaissance, inspection, and in case of necessity destruction of space objects of the probable enemy in orbit, the repair of friendly space objects without and with their delivery to Earth, and others).

According to the plans of the U. S. Air Force, such space ships should be employed for the launching of reconnaissance satellites and other military apparatuses, should deliver capsules with exposed film to the ground, should inspect enemy satellites, and should accomplish independent military missions with an overall duration of up to two days.

The works which have been listed do not embrace the entire range of interests of the U. S. military-industrial complex which concern the development of reconnaissance space systems. The U. S. intelligence system is constantly developing in the direction of increasing the efficiency and effectiveness of observation to ensure military superiority over the countries of the socialist camp.

But let not the leaders of the Pentagon be distracted by vain illusions. Comrade L. I. Brezhnev declared at the 24th Congress of the CPSU, "We have everything necessary - an honest peace policy, military might, and the solidarity of the Soviet people -- to ensure the inviolability of our borders against any encroachments and to defend the achievements of socialism." At the same time, the men of the Soviet Armed Forces must constantly remember the global espionage of the American imperialists and must display high vigilance and organization.

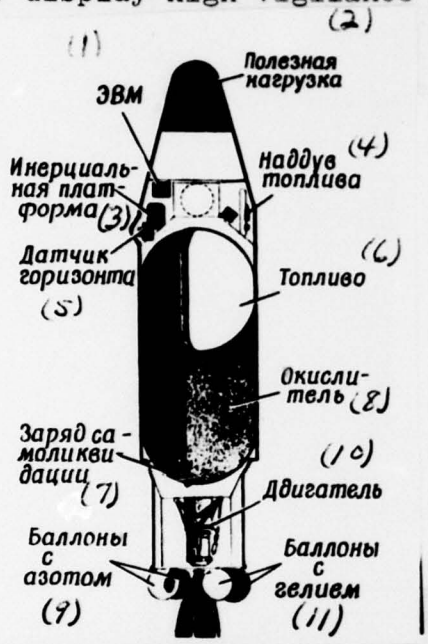

Fig. 1. "Discoverer" satellite for surveillance reconnaissance.

Key: (1) Computer; (2) Payload; (3) Inertial platform; (4) Fuel; pressurization; (5) Horizon sensor; (6) Fuel; (7) Self-destruction charge; (8) Oxidizer; (9) Tanks with nitrogen; (10) Engine; (11) Tanks with helium.

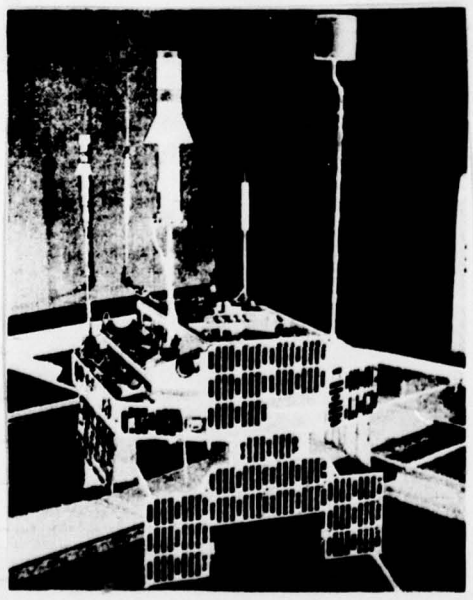

Fig. 2. "R-11" satellite for electronic intelligence.

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