Only pages 190 thru 231 was responsive to the request. Responsive pages sent only.
kel

~~SECRET~~

DEFENSE INTELLIGENCE AGENCY
WASHINGTON, D.C. 20301

(b)(3):10 USC 424

~~S~~-10,178/

24 November 1972

SUBJECT: Changes to DIA Fact Book, Communist World Forces

TO: All Recipients

1. In lieu of a full 1 October 1972 issue of the DIA Fact Book, Communist World Forces (U), enclosed are the revised and new pages for insertion into the 1 April 1972 issue (DI-647-1-72).

2. Each revised page and the one it replaces bear the same page number. Each of the seven new pages has a number followed by a suffix.

3. Superseded pages should be destroyed in accordance with pertinent security regulations. Certificates of destruction should be retained by organizations accomplishing destruction.

4. Your 1 April 1973 Fact Book, Communist World Forces (U) is planned to be a complete issue.

FOR THE DIRECTOR:

(b)(3):10 USC 424,(b)(6)

2 Enclosures
1. List of Pages, (U), 1 Cy
2. 224 Pages, ~~(S/NFD/CD)~~, 1 Cy Ea.

Upon removal of Enclosure 2 this document becomes Unclassified.

~~NATIONAL SECURITY INFORMATION Unauthorized Disclosure Subject to Criminal Sanction~~

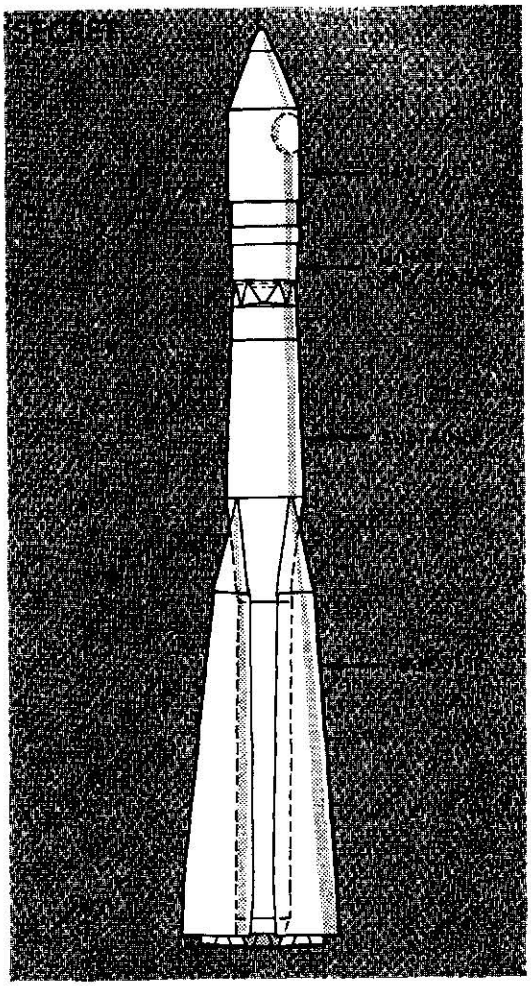
~~NO FOREIGN DISSEM~~

~~SECRET~~

CONTROLLED DISSEM

LAUNCH VEHICLE

SL-3



LAUNCH INFORMATION

This system has been used to launch:

a. All Vostok spacecraft and precursors.
b. Cosmos reconnaissance vehicles.
c. Elektron scientific satellites.
d. All direct-ascent lunar probes.
e. Meteorological satellites.
(b)(1),1.4 (c) f. Intelligence collector [redacted]

First used successfully on 2 January 1959, it has not been observed in the reconnaissance satellite program since 12 May 1967 (Cosmos 157). Since mid-1967 it has been used only for launches of meteorological and [redacted] collection satellites.

CHARACTERISTICS

The SL-3 system is a modified SS-6 ICBM plus an upper stage first used on the Lunar direct-ascent attempts and called the Lunik third stage. The SS-6 has a parallel configuration, i.e., a central sustainer with four boosters symmetrically wrapped around. The boosters and sustainer operate from lift-off, and after booster burnout and separation the sustainer continues as the effective second stage. The SL-3 has the following weights and dimensions:

	Stage Wt (lb)	Prop Wt Used (lb)	Length (ft)	Diam (ft)
Booster (four)	455,250	415,300	62	*27 base
Sustainer	148,800	128,700	87	6.6-9.7
Lunik	18,100	15,000	10	8.5

PROPULSION

Booster (each): Four fixed main chambers fed by a liquid bipropellant turbopump system; propellant, LOX/hydrocarbon; thrust (S.L.), 180,000 pounds (for each booster); Isp (S.L.), 258 seconds.

Sustainer: Single fixed main thrust chamber and four vernier chambers, all fed from a single liquid bipropellant turbopump system; propellant, LOX/hydrocarbon; thrust (vac), 216,500 pounds; Isp (vac), 313 seconds

Lunik: Single main thrust chamber fed by a liquid bipropellant turbopump system; propellant, LOX/TG-02 (50/50 mixture of triethylamine and xylidine); thrust (vac), 11,430 pounds; Isp (vac), 320 seconds.

PERFORMANCE

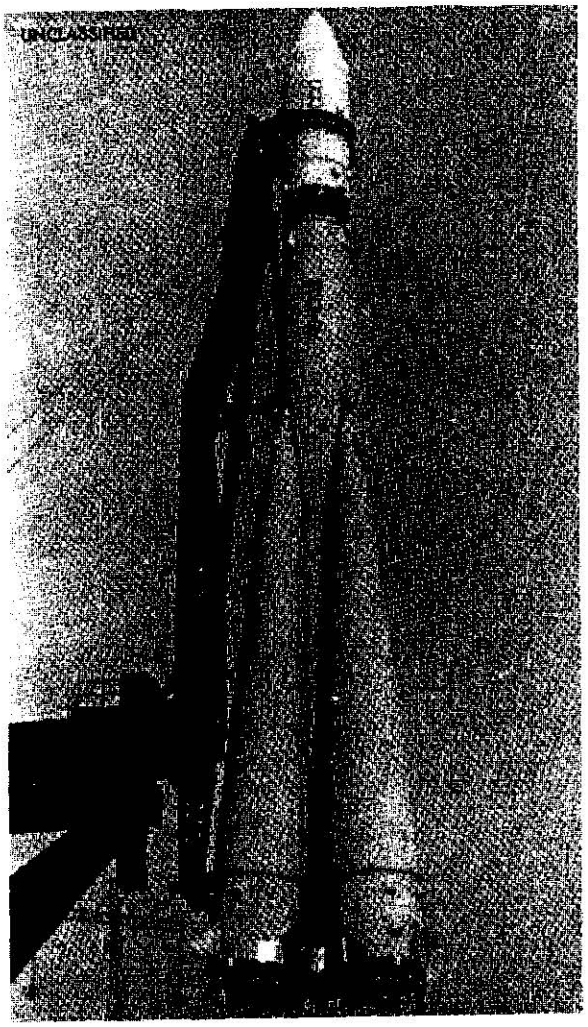
	Burn Time (seconds)
Booster	118.5 (nominal)
Sustainer	185.6 (nominal)
Lunik Stage	310 for earth orbital missions; about 365 seconds for lunar missions (nominal); 421 seconds max.

The nominal payload weight for the Vostok series (launched by this system) is 10,400 pounds. The 100-nm orbital payload capability is approximately 10,000 pounds, NRE. It is capable of placing 800 - 1,000 pounds of payload in the vicinity of the moon.

*Booster and sustainer.

1 October 1972

LAUNCH VEHICLE
SL-4



LAUNCH INFORMATION

This system is used to launch:

a. (b)(1),1.4 (c) photo reconnaissance satellites.

b. Soyuz spacecraft.

First used on 16 November 1963, the system has been launched from both Tyuratam Missile Test Range and Plesetsk Missile and Space Center.

CHARACTERISTICS

The SL-4 system is a modified SS-6 booster/sustainer plus the Venik third stage, so named because it was first used to launch a Venus probe. First and second stage weights and dimensions are basically the same as those of the SL-3.

Venik Stage

Weight -- 54,500 lb
Propellant consumed -- 47,700 lb
Length -- 20 ft
Diameter -- 8.75 ft

PROPULSION

Booster	Same as the SL-3 launch booster.
Sustainer	Same propulsion system as SL-3 sustainer, but with a slightly uprated performance: thrust (vac), 227,000 pounds; Isp (vac) 313 seconds.
Venik Stage	Single main engine with four verniers; propellant, LOX/amine; thrust (vac), 67,300 pounds; Isp (vac), 326 seconds.

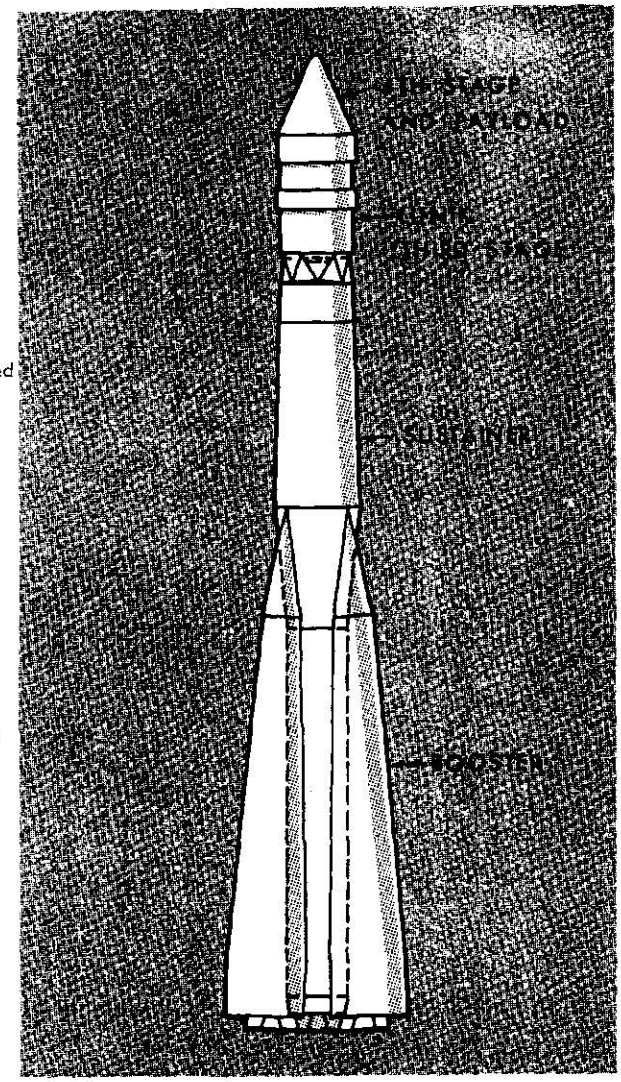
PERFORMANCE

Booster	Burn Time (seconds)
Booster	118.5 (nominal)
Sustainer	172 (nominal)
Venik Stage	231

This system is capable of placing about 13,000 pounds of payload into a 100-nm circular orbit, NRE.

1 October 1972

LAUNCH VEHICLE
SL-5



LAUNCH INFORMATION

This vehicle was used to launch Cosmos 102 on 27 December 1965, and Cosmos 125 on 20 July 1966. These two spacecraft are believed to be tests of a restartable, in-flight propulsion unit, and a new attitude and control system. These vehicles were launched from Tyuratam Missile Test Range. System not expected to be used again.

CHARACTERISTICS

The SL-5 system has basically an SL-3 launch configuration with an added restartable propulsion stage as payload. The weight and dimensions of the fourth stage have not been determined.

PROPULSION

Booster/Sustainer/ Lunik Stages	Same as for the SL-3 system.
Fourth Stage	Type of engine and type of propellant undetermined; thrust (vac), 2,000 pounds; Isp (vac), 235 seconds.

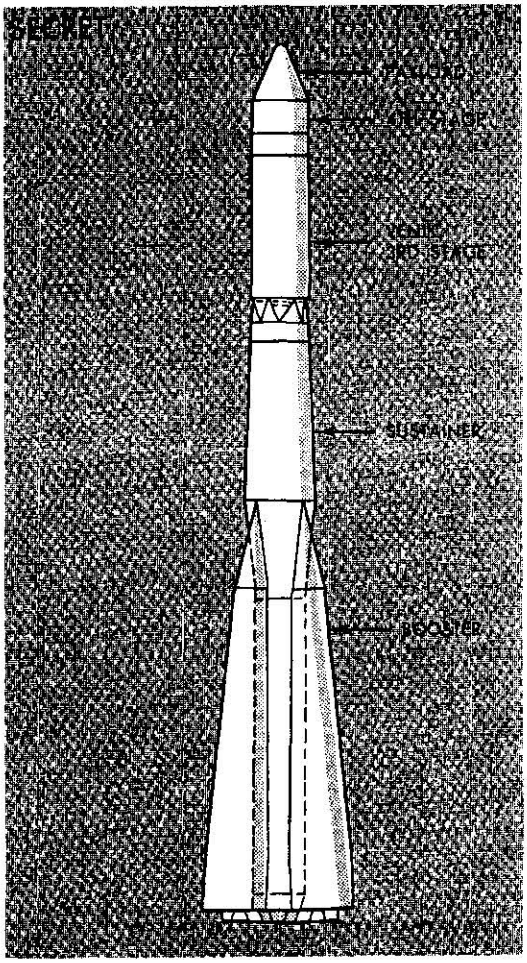
PERFORMANCE

	Burn Time (seconds)
Booster	118.5 (nominal)
Sustainer	188.5
Lunik Stage	365
Fourth Stage	46

This system is estimated capable of placing 10,000 pounds into a 100-nm circular orbit, NRE.

1 October 1972

LAUNCH VEHICLE
SL-6



LAUNCH INFORMATION

This system launches payloads requiring an ejection from parking orbit. It is used for:

a. Interplanetary probes.
b. Molniya communication satellites.
c. Lunar probes.

This system was first used on 10 October 1960. It was launched only from Tyuratam Missile Test Range until 19 February 1970. At that time it launched Molniya 1 satellites from Plesetsk Missile and Space Center. On 17 August 1970 Venus 7 was successfully launched on a Venus trajectory from Tyuratam Missile Test Range, and made a soft landing on the planet on 15 December.

CHARACTERISTICS

The SL-6 is an SL-4 with a fourth stage. The fourth or interplanetary stage weight is about 13,100 pounds, of which 10,300 pounds are propellant.

PROPULSION

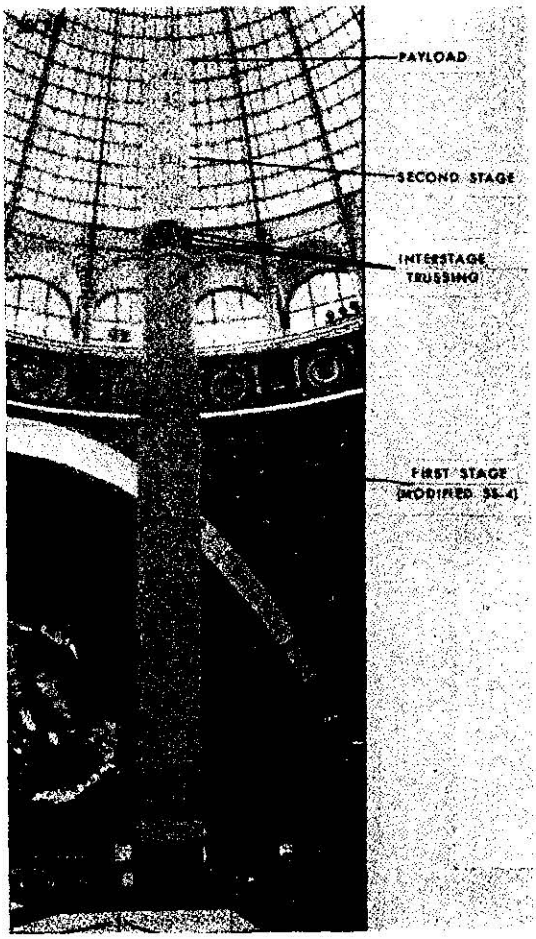
Booster, Sustainer and Venik Stage	Same as for the SL-4 launch system.
Interplanetary Stage	Liquid bipropellant pump-fed single-chamber engine; thrust (vac), 14,800 pounds; Isp (vac), 336 seconds; propellant is probably LOX/amine.

PERFORMANCE

	Burn Time (seconds)
Booster	118.5 (nominal)
Sustainer	172 (nominal)
Venik Stage	231
Interplanetary Stage	234 (nominal)

Three stage capability of placing 13,000 pounds into 100-nm circular orbit, NRE. Fourth stage then ignites and can inject about 2,600 pounds to Mars or Venus.

1 October 1972



LAUNCH VEHICLE
SL-7

LAUNCH INFORMATION

This system has been used to launch:

a. Small scientific earth satellites from Kapustin Yar Missile Test Center and Plesetsk Missile and Space Center.

(b)(1),1.4 (c) b. [redacted] calibration satellites from Plesetsk Missile and Space Center.

First launch was on 27 October 1961 (failure). All launches to date from Kapustin Yar Missile Test Center have been nominal 49-degree inclination orbits. Scientific satellites from Plesetsk Missile and Space Center were 72° and 82°. (b)(1),1.4 (c) [redacted] calibration satellites were 49°, 71°, and 81°.

CHARACTERISTICS

The SL-7 launch system is a two-stage tandem vehicle. The first-stage booster is the SS-4 Sandal slightly modified to adapt to a new type of payload.

The following probable weights and dimensions apply:

	Stage Wt (lb)	Prop Wt (lb)	Length (ft)	Diam (ft)
Booster	88,900	81,300	61.3	5.4
2nd Stage	19,500	16,900	31.2	5.4

PROPULSION

Booster — Turbopump-fed liquid bipropellant engine with four thrust chambers; propellant, nitric acid/amine; thrust (S.L), 136,300 pounds; Isp (S.L), 221 seconds.

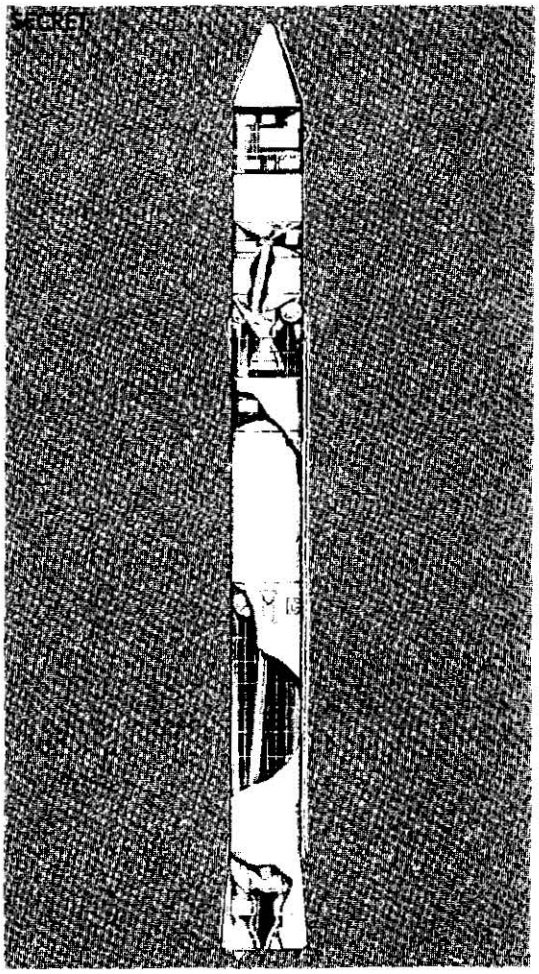
KY Upper Stage — Liquid bipropellant, pump-fed rocket engine with a single thrust chamber; propellant, LOX/UDMH; thrust (vac), 24,100 pounds; Isp (vac), 352 seconds.

PERFORMANCE

	Burn Time (seconds)
Booster	130.5
2nd Stage	243

This system is capable of placing 800 pounds of payload into a 100-nm circular orbit, NRE.

1 October 1972



LAUNCH VEHICLE

SL-8

LAUNCH INFORMATION

(b)(1),1.4 (c)

This system has launched single and multiple satellite payloads from Tyuratam Missile Test Range and Plesetsk Missile and Space Center. It has launched vehicles for navigation, scientific, [redacted] surveillance, and communications missions.

First launch was on 18 August 1964 (Cosmos 38, 39 and 40).

CHARACTERISTICS

The SL-8 launch vehicle is a two-stage tandem vehicle with a second-stage restart capability. The first-stage booster is a modified SS-5 IRBM. The second stage has not been given any particular designation. Probable weights and dimensions are estimated to be:

	Stage Wt (lb)	Prop Wt (lb)	Length (ft)	Diam (ft)	
Booster	219,100	196,800	70	8	
2d Stage	45,900	40,700	20-27	8	(assumed)

PROPULSION

Booster — Consists of two throttleable liquid bipropellant engines, each having two thrust chambers and one turbopump unit; probable propellant is storable nitric acid/amine; thrust (S.L.) 344,000 pounds; Isp (S.L.), 228 seconds.

2d Stage — Consists of a single turbopump-fed liquid engine with one fixed main chamber and probably four vernier/control engines; probable propellants, N_2O_4/acid/amine; thrust (vac), 35,100 pounds; Isp (vac), 300 seconds.

PERFORMANCE

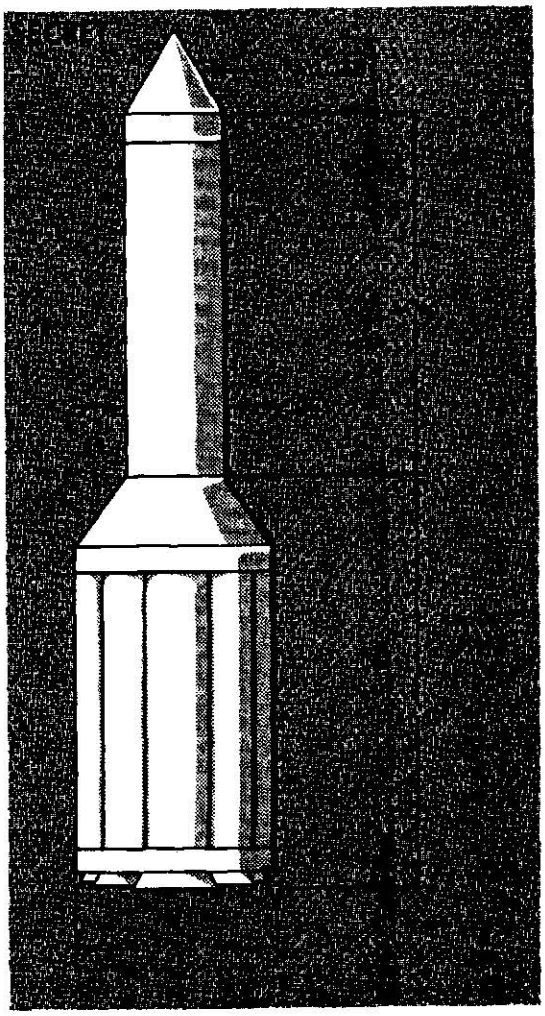
	Burn Time (seconds)
Booster	134.5
2d Stage	353

This system is estimated capable of placing 2,700 pounds of payload into a 100-nm earth orbit, NRE.

1 October 1972

LAUNCH VEHICLE

SL-9



LAUNCH INFORMATION

This system has been used to launch Proton satellites into 63.5-degree orbital inclinations. First launch was on 16 July 1965; all launches have been from Tyuratam Missile Test Range.

CHARACTERISTICS

The SL-9 launch vehicle is estimated to have two stages. The exact configuration of this vehicle is not known. Estimated weights and dimensions are:

	Av. Stage Wt (lb)	Av. Prop Wt (lb)
Booster	1,099,000	994,000
2nd Stage	256,000	229,000

PROPULSION

Booster	Six liquid bipropellant turbopump-fed engines; cryogenic propellants; thrust (S.L.), about 2,600,000 pounds; Isp (S.L.), about 265 seconds.
2nd Stage	Four liquid bipropellant main engines; possibly cryogenic propellants; thrust (vac), about 572,000-600,000 pounds; Isp (vac), about 325 seconds.

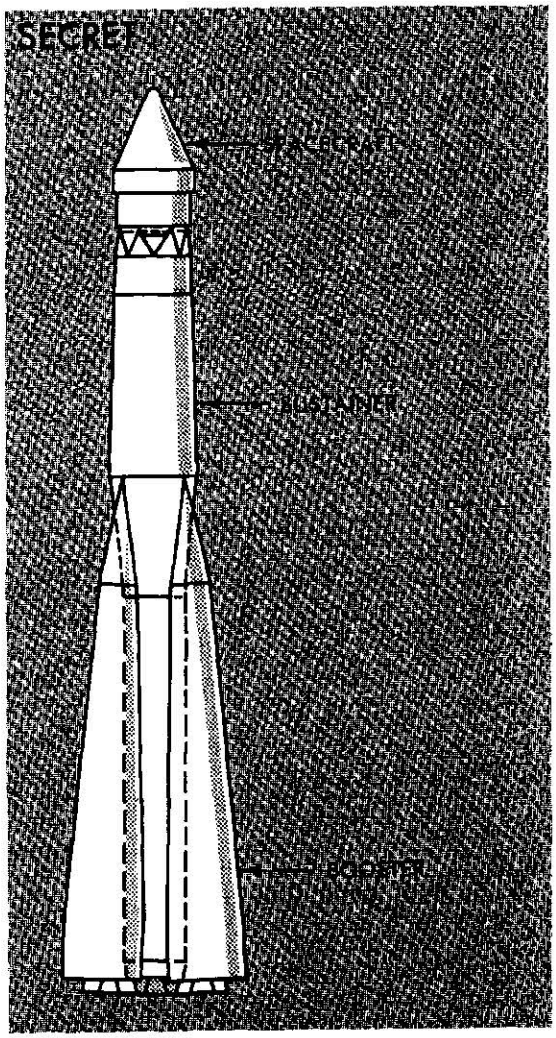
PERFORMANCE

	Burn Time (seconds)
Booster	127
2nd Stage	128

This launch system has placed 26,900-pound payloads into a 340-nm apogee/103-nm perigee orbit. It is estimated that the system could place 27,000 pounds into a 100-nm circular orbit, NRE.

1 October 1972

LAUNCH VEHICLE
SL-10



LAUNCH INFORMATION

Used to launch Polyot 1 on 1 November 1963, and Polyot 2* on 12 April 1964. The SL-10 vehicle is not expected to be launched again.

CHARACTERISTICS

The SL-10 system is dimensionally an SL-1/2 system with the Polyot stage added. This Polyot stage burned to achieve orbital velocity, stopped, and then restarted.

Polyot Stage
Weight - 6,400 pounds
Propellant weight - 1,700 pounds
Length - Unknown
Diameter - Unknown

PROPULSION

Booster and Sustainer - Same as for the SL-1/2 system.

Polyot Stage - This stage demonstrated a zero-G start and a multiple restart capability. It has a pressurized propellant feed system using storable, hypergolic propellants. Thrust (vac) is unknown; Isp (vac) was about 300 seconds.

PERFORMANCE

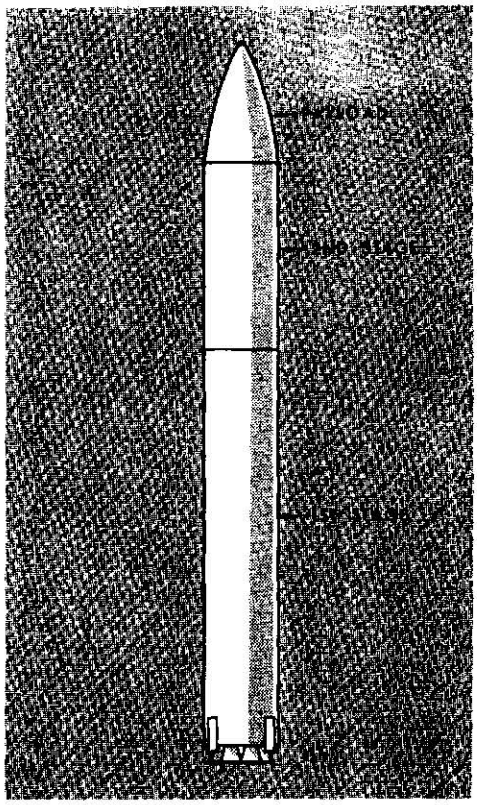
	Burn Time (seconds)
Booster	118.5 (nominal)
Sustainer	193.5
Polyot Stage	Unknown

This system is capable of placing about a 6,000 pound payload into 100-nm circular orbit, NRE.

(b)(1),1.4 (c)

1 October 1972

LAUNCH VEHICLE
SL-11



LAUNCH INFORMATION

This system has been used to launch suborbital and orbital payloads with nominal 49-degree, 62.2-degree, and 65-degree inclinations. First suborbital launch was on 16 December 1965. First orbital launch was on 17 September 1966. Launches were accomplished at Tyuratam Missile Test Range. Three uses that have appeared are in the SS-9 Mod 3 (FOBS), the orbital antisatellite system, and "maneuverable" spacecraft with unknown missions.

CHARACTERISTICS

The SL-11 is a two-stage tandem vehicle that consists of a slightly modified SS-9.

	Stage Wt (lb)	Prop Wt (lb)	Length (ft)	Diam (ft)
1st Stage	282,000	265,000	63	9.8
2nd Stage	114,000	106,500	32.4	9.8

PROPULSION

1st Stage — Three fixed liquid bipropellant engines, fed by a turbopump system; propellant, MON/MMH;* thrust (S.L.), about 186,300 pounds (for each engine); Isp (S.L.), 264 seconds.

2nd Stage — Single liquid bipropellant engine and four vernier engines fed by a turbopump system; propellant, MON/MMH;* thrust (vac), 223,000 pounds; Isp (vac), about 315 seconds.

PERFORMANCE

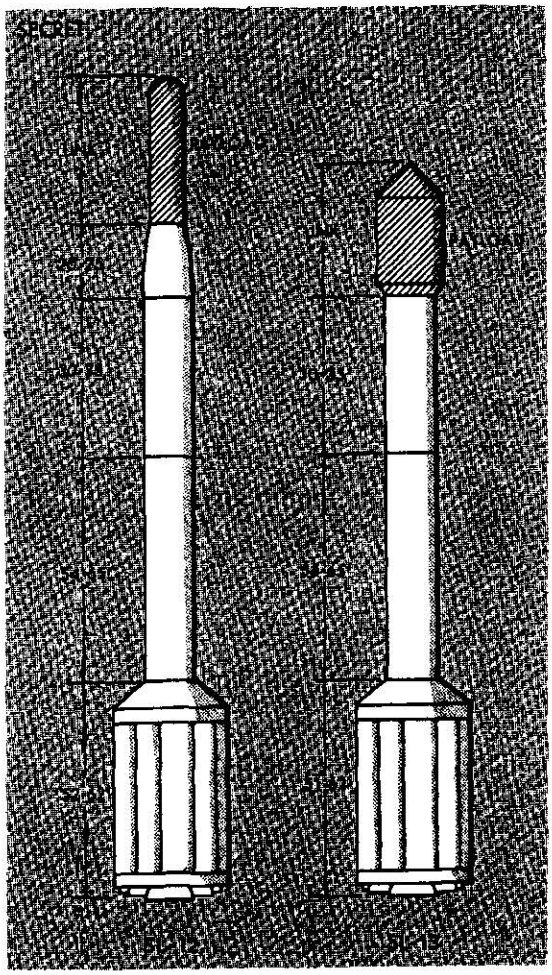
	Burn Time (seconds)
1st Stage	115.5
2nd Stage	148

This system is capable of placing about 6,200 pounds into a 100-nm circular orbit, NRE. The demonstrated payload is 9,000 pounds into a 49.6-degree orbital inclination with a 113-nm apogee and a 73-nm perigee. It has demonstrated a nominal 6,500-pound payload at 62.2 degrees inclination in a 150-nm apogee and an 80-nm perigee.

*MON: Mixed Oxides of Nitrogen
MMH: Monomethylhydrazine

1 October 1972

LAUNCH VEHICLE
SL-12/13



LAUNCH INFORMATION

The SL-12 is used to launch Zond (circumlunar), Luna (unmanned orbiter/lander) and planetary vehicles. The SL-13 was used to launch Proton 4 (16 November 1968) and the Salyut space station (19 April 1971). System initial launch was made from Tyuratam Missile Test Range in March 1967. Through February, 1970, there were 7 successes in 17 flights. Since the August 1970 engineering test there have been 11 successes in 12 flights.

CHARACTERISTICS

The SL-12 is a four-stage vehicle consisting of the two-stage SL-9 (with modified second stage) plus a third stage. The fourth stage is used for final injection and orbital maneuvers.

The SL-13 comprises the first three stages of SL-12.

Stage	Step Wt 1,000 Lbs	Prop Wt 1,000 Lbs	Length (ft)	Diam (ft)
1st	1,044-1,155	940-1,040	51-62	25
2nd	398- 427	398-427	54-65	13
3rd	120- 129	108-116	30-35	13
4th	42.9	37.8	20-25	Unk

PROPULSION

1st Stage - Six engines; propellant, LOX/amine or N_2O_4/amine. Thrust (S.L.) is 2,010,000-2,180,000 pounds; Isp (S.L.) 315 seconds.

2nd Stage - Four liquid bipropellant main engines; propellant, LOX/amine or N_2O_4/amine. Thrust (vac) is 572,000-600,000 pounds; Isp (vac), 330 seconds.

3rd Stage - Single-engine; propellant, LOX/amine or N_2O_4/amine. Thrust (vac) is 153,000- 160,000 pounds; Isp (vac), 330 seconds.

4th Stage - Single-engine; propellant, LOX/amine. Thrust (vac) is 22,000-28,400 pounds; Isp (vac), 343 seconds.

PERFORMANCE

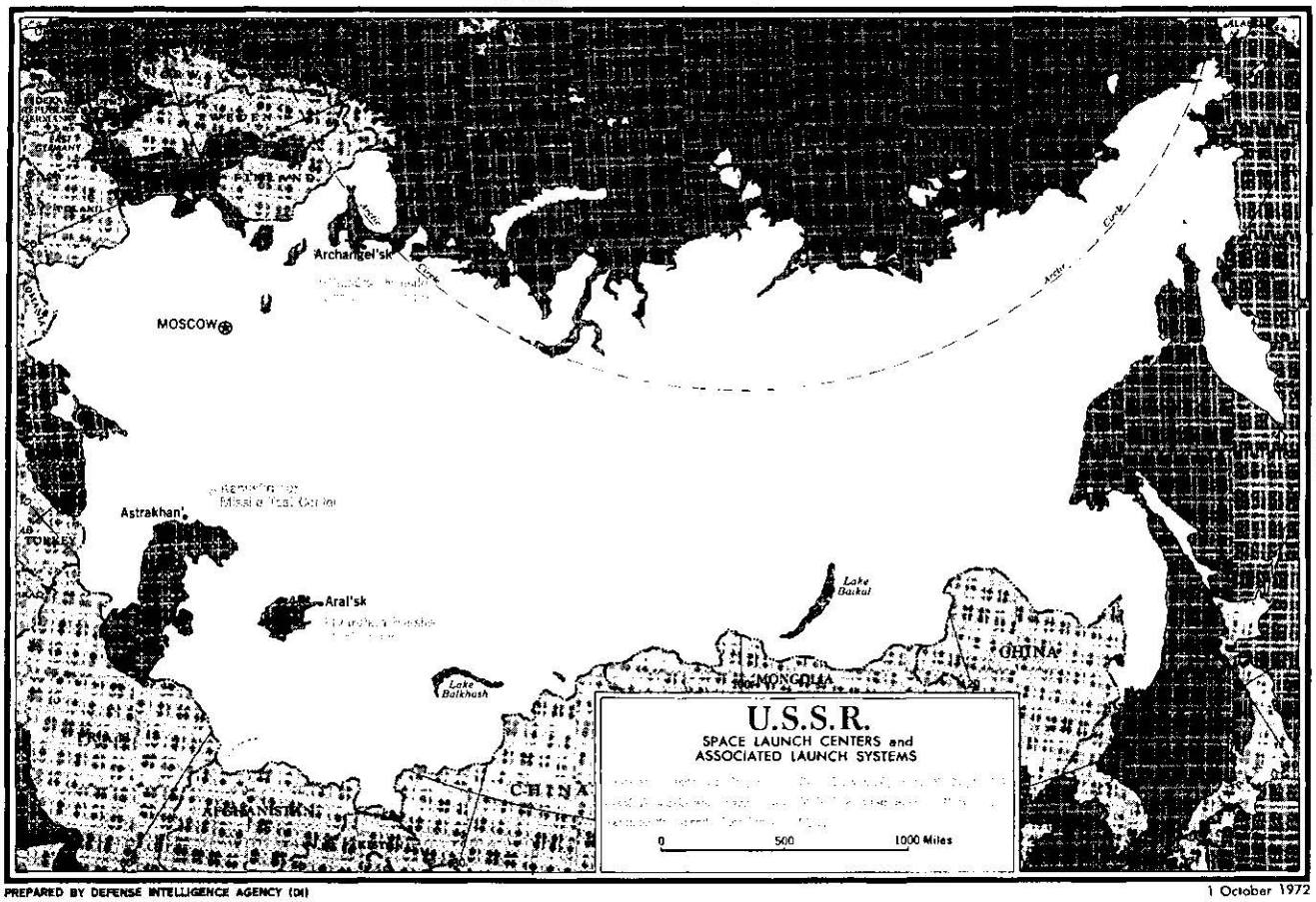
	Burn Time (seconds)
1st Stage	127
2nd Stage	212
3rd Stage	235
4th Stage	108 (injection to parking orbit)

In demonstrated launches to date, a 260-second coast preceded fourth-stage ignition.

This system is capable of injecting 50,000 pounds into a 100-nm circular orbit or 15,000 pounds earth escape, or 7,000 pounds to geo-stationary orbit.

1 October 1972

SOVIET SPACE LAUNCH CENTERS



PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972

SPACECRAFT

RECONNAISSANCE (b)(1),1.4 (c) PHOTO (b)(1),1.4 (c)

MISSION

(b)(1),1.4 (c) To collect [redacted] photographic (b)(1),1.4 (c) intelligence.

RESPONSIBILE AGENCY

USSR Ministry of Defense

LAUNCH INFORMATION

1962 - 1968 - 64

1969 - 12

1970 - 12

1971 - 8 (7 successes, 1 failure)

1972 - 8 as of 1 October 1972*

Launch Sites - Tyuratam Missile Test Range.

Plesetsk Missile and Space Center.

Launch Vehicle - SL-4.

CHARACTERISTICS

Flight Duration - 12 days (since mid-1970).

Type - Recoverable unmanned vehicle.

Weight - Nominal 11,000 pounds (probably modified Vostok spacecraft).

Stabilization - Earth-stabilized using horizon sensors, and controlled by gas jet pulses.

Apogee - 180 nm nominal.

Perigee - 110 nm nominal.

Period - 90 minutes nominal.

Inclination - Nominal 51, 65, 72, and 81 degrees.

Power - Internal battery.

(b)(1),1.4 (c) [redacted]

(b)(1),1.4 (c)

* As of 1 October the 1972 record for photoreconnaissance launches is: 8 successful [redacted] 15 successful [redacted] 1 [redacted] failure.

(b)(1),1.4 (c)

(b)(1),1.4 (c)

1 October 1972

490-849 O - 72 - 14

SPACECRAFT

RECONNAISSANCE (b)(1),1.4 (c) PHOTO)

MISSION

To collect (b)(1),1.4 (c) photographic intelligence.

RESPONSIBLE AGENCY

USSR Ministry of Defense

LAUNCH INFORMATION

1963 - 1968 - 48

1969 - 20

1970 - 17

1971 - 20 successes

1972 - 15 as of 1 October 1972 *

Launch Sites - Tyuratam Missile Test Range; Plesetsk Missile and Space Center.

Launch Vehicle - SL-4.

CHARACTERISTICS

Flight Duration - Nominal 13 days (since mid-1970).

Type - Recoverable unmanned vehicle

Weight - 12,600 pounds (probably modified Vostok spacecraft)

Size - 7 feet in diameter, 14 feet in length

Stabilization - Earth-stabilized using horizon sensors, and controlled by gas jet pulses

Apogee - 140-180 nm

Perigee - 80-110 nm

Period - 90 minutes nominal

Inclination - Nominal 51, 65, 72, and 81 degrees

Power - Internal battery

(b)(1),1.4 (c)

*See footnote on page 7-15

1 October 1972

SPACECRAFT

SOYUZ

SOYUZ

MISSION

To perfect rendezvous and docking techniques, and manned earth orbital tests, in support of manned space stations operations.

RESPONSIBLE AGENCY

Possibly Soviet Air Forces.

LAUNCH INFORMATION

Cosmos 133 and Cosmos 140 - Launched 28 November 1966 and 7 February 1967. First and second unmanned flight test of the Soyuz spacecraft.

Soyuz 1 - Launched 23 April 1967. First manned flight in over 2 years. The flight failed after 1 day in orbit, causing the death of Cosmonaut Komarov.

Cosmos 186 and Cosmos 188 - Launched 27 and 30 October 1967. First successful rendezvous and docking mission utilizing two unmanned versions of the Soyuz spacecraft (Cosmos 186 rendezvoused and docked with Cosmos 188, before Cosmos 188 had completed one full orbit). First flight of the Soyuz spacecraft since the death of Cosmonaut Komarov.

Cosmos 212 and Cosmos 213 - Launched 14 and 15 October 1968. Second successful unmanned rendezvous and docking mission. A repeat of the Cosmos 186/188 mission.

Cosmos 238 - Launched 28 August 1968. Further man-rating tests of the Soyuz spacecraft.

Soyuz 2 and Soyuz 3 - Launched 26 October 1968. Soyuz 2 (unmanned) and Soyuz 3 (manned) rendezvoused but were not successful in docking attempts.

Soyuz 4 and Soyuz 5 - Launched 14/15 January 1969. The three-man Soyuz 5 successfully rendezvoused and docked with the one-man Soyuz 4. Two men transferred through space from Soyuz 5 to Soyuz 4.

Soyuz 6, Soyuz 7, Soyuz 8 - Launched 11/12/13 October 1969. Resulted in seven cosmonauts in orbit simultaneously. Experiments were conducted in welding and obtaining earth resources observations and astrophysical data. In addition the Soviets may have attempted orbital observation of SS-7 ICBMs launched when Soyuz vehicles passed over their launch site.

Soyuz 9 - Launched 1 June 1970. Carried two cosmonauts on the longest duration manned space flight ever flown and was deorbited in the USSR on 19 June 1970.

Soyuz 10 - Launched 22 April 1971. Three man crew accomplished rendezvous and docking with Salyut space station launched 19 April 1971. Soyuz 10 deorbited after 32 revolutions, probably due to docking problems.

Soyuz 11 - Launched 6 June 1971. Three man crew successfully docked with Salyut space station and performed various experiments, principally earth observations. Missile launches from Tyuratam Missile Test Range apparently were observed also. Cosmonauts established a record of 23 days in space. All three cosmonaunts died during reentry due to decompression (hatch lost pressure seal).

Cosmos 496 - Launched 26 June 1972. Engineering flight test of unmanned Soyuz capsule performed as result of hatch and other problems encountered with Soyuz 11.

1 October 1972

SPACECRAFT

ZOND

MISSION

To develop a circumlunar and return-to-earth capability applicable to future manned lunar missions.

RESPONSIBLE AGENCY

Possibly Soviet Air Forces.

LAUNCH INFORMATION

Zond 4 - Launched 2 March 1968. Simulated circumlunar mission; partially successful.

Zond 5 - Launched 14 September 1968. First successful circumlunar and return-to-earth mission. First water recovery of a Soviet spacecraft.

Zond 6 - Launched 10 November 1968. Repeat of Zond 5 except for lifting re-entry and recovery in the Soviet Union.

Zond 7 - Launched 7 August 1969. Repeat of Zond 6 flight.

Zond 8 - Launched 20 October 1970. Repeat of Zond 5 except it landed in USSR.

Launch Site - Tyuratam Missile Test Range.

Launch Vehicle - SL-12.

CHARACTERISTICS

Type - Unmanned recoverable space vehicle. Design based on re-entry module and instrumentation compartment of Soyuz spacecraft.

Weight - Approximately 13,000 pounds on lunar trajectory.

Power - Batteries and solar cells.

Stabilization - Earth-stabilized using horizon sensors; controlled by gas jet pulses.

(b)(1),1.4 (c)

SPACECRAFT

SALYUT

MISSION

Station for use by manned crew to perform various experiments, including earth observation.

RESPONSIBLE AGENCY

Possibly Soviet Air Forces.

LAUNCH INFORMATION

SALYUT was launched on 19 April 1971 into a low earth orbit by an SL-13 launch vehicle from Tyuratam Missile Test Range. It was de-orbited and disintegrated during re-entry in October 1971. A probable launch failure of another Salyut occurred on 29 July 1972.

CHARACTERISTICS

Type - Long life nonrecoverable station.

Weight - 41,000 pounds.

Orbit - Initial of 51.5° inclination; apogee 120-169 nm, perigee 108-153 nm; 88-90 min period. Orbit was frequently adjusted to extend life.

Power - Provided by solar cell arrays and batteries.

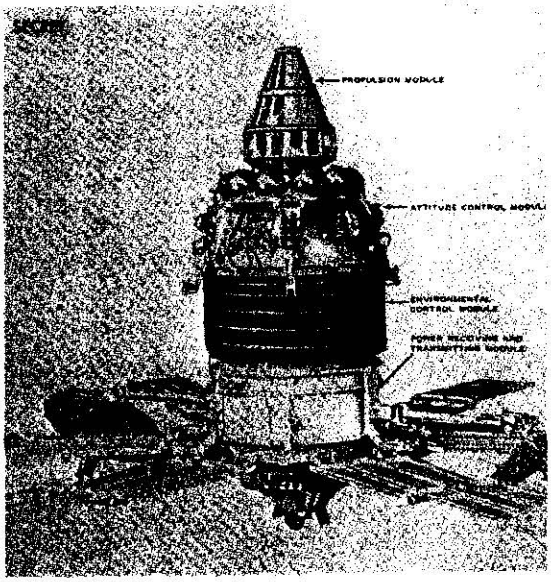
Experiments - Astronomy, earth observation, probable missile launch observation, bio-medical monitoring and testing, stellar navigation.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

MOLNIYA I/II



MISSION

Communications relay satellite for military and civil users. Transmits television programs and long-distance two-way multi-channel telephone, photo-telegraphic, telegraphic, and audio communications.

RESPONSIBLE AGENCY

Probably USSR Ministry of Communications.

LAUNCH INFORMATION

1965 - 1966 - 4

1967 - 4

1968 - 4

1969 - 2

1970 - 5

1971 - 1 (Molniya I); 1 (Molniya II), Latter first launched 24 November 1971.

1972 - 1 Molniya I, 2 Molniya II as of 1 October 1972.

Launch Site - Tyuratam Missile Test Range and Plesetsk Missile and Space Center.

Launch Vehicle - SL-6.

CHARACTERISTICS

Type - Nonrecoverable.

(b)(1),1.4 (c)

Weight - Molniya I (est 2,700 pounds); Molniya II (3,000-4,000 pounds).

Power - solar array and battery.

Stabilization - Sun-oriented satellite with roll-axis momentum wheel control; attitude stabilization and wheel unloading via cold gas nozzles; steerable earth-oriented communications antennas.

(b)(1),1.4 (c)

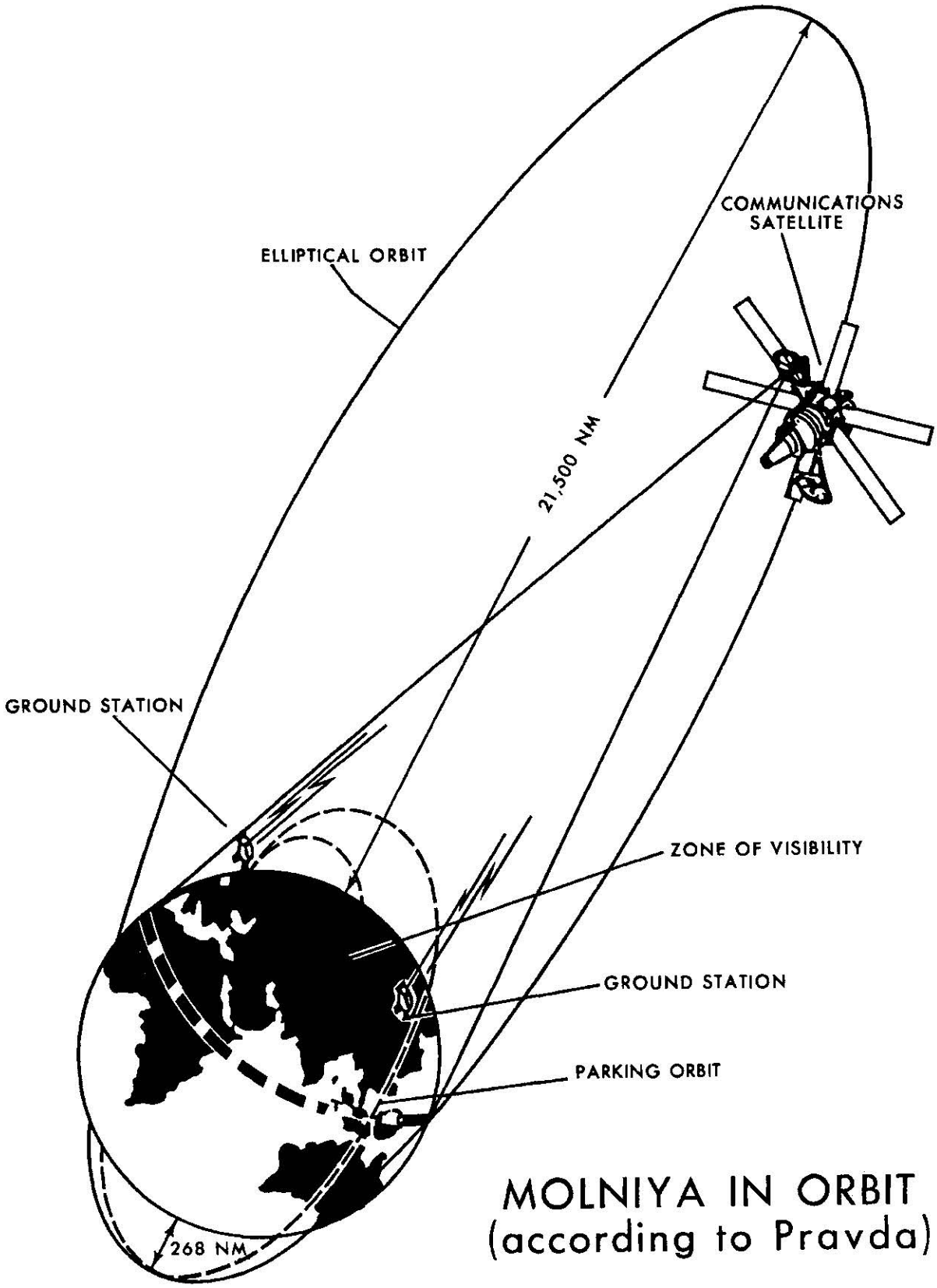
Apogee - Molniya I 21,400 nm (nominal).
Molniya II 21,500 nm.

Perigee - Molniya I 263 nm (nominal).
Molniya II 250 nm.

Inclination - 65 degrees.

Period - 12 hrs.

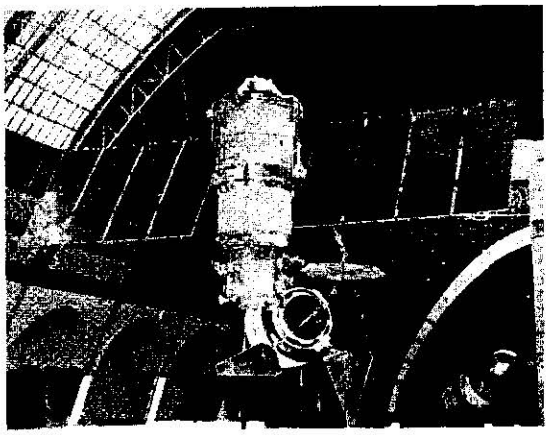
1 October 1972



MOLNIYA IN ORBIT (according to Pravda)

SPACECRAFT

METEOR



MISSION

To provide photographs of cloud cover through television, camera, and infrared photographic equipment on both the light and dark side of the earth. To assist in long-range weather forecasting, and study of the earth's meteorological phenomena.

RESPONSIBLE AGENCY

Probably Main Administration of Hydrometeorological Service of USSR Council of Ministers.

LAUNCH INFORMATION

1964 - 1965 - 3

1966 - 2

1967 - 3

1968 - 2

1969 - 3 (2 successes, 1 failure)

1970 - 4

1971 - 4

1972 - 2 as of 1 October 1972

Launch Site - Tyuratam Missile Test Range and Plesetsk Missile and Space Center.

Launch Vehicle - SL-3.

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 3,000-5,000 pounds.

Power - Solar cells and batteries.

Apogee - 350-500 nm.

Perigee - 320-500nm.

Inclination - 81 degrees.

(b)(1),1.4 (c)

Period - 97 min (nominal).

1 October 1972

SPACECRAFT

NAVIGATION

MISSION

To provide navigational assistance to a variety of users.

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

1967 - 1968 - 5

1969 - 4

1970 - 3

1971 - 4

1972 - 4 as of 1 October 1972

Launch Site - Plesetsk Missile and Space Center.

Launch Vehicle - SL-8.

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 1,250-1,800 pounds.

Stabilization - Unknown.

Power - Probable batteries and solar cells, possible RTG.

Orbit - 550 and 650 nm circular.

Accuracy - Potential of approximately 100 meters, single pass.

Inclination - 74 degrees.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

SS-9 MOD 3

MISSION

Fractional orbital bombardment system (FOBS) or a depressed trajectory ICBM (DICBM).

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

1965 - 1968 - 14 orbital launches and 5 suborbital launches (10 and 3 successful, respectively).

1969 - 1 orbital launch (successful).

1970 - 2 orbital launches (successful).

1971 - 1 orbital launch (successful).

1972 - none as of 1 October 1972.

Launch Site and Vehicle - Tyuratam Missile Test Range; SL-11.

CHARACTERISTICS

Apogee - 110 nm (nominal).

Perigee - 75 nm (nominal).

Inclination - 49.5 degrees (nominal).

Weight - 8,800 pounds; (operational).

Assessed Yield - 3.5 to 5 megatons.

Retro stage velocity - 5,000 ft/sec.

Assessed CEP - 1 to 2.5 nm as FOBS; .8 nm as DICBM.

(b)(1),1.4 (c)

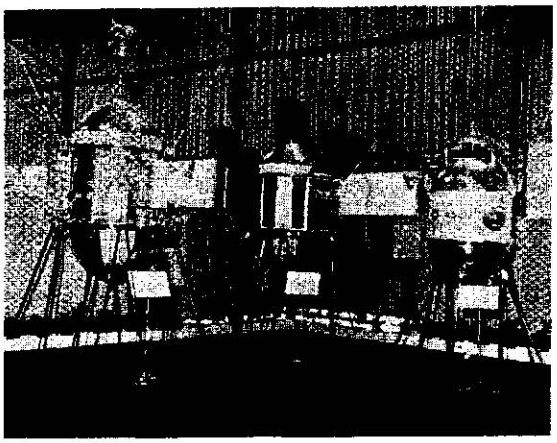
Guidance - Inertial

Reentry stage has a liquid bi-propellant engine driven by a turbopump system; propellant, N_2O_4/NMH; thrust (vac), 11,400-17,000 pounds; Isp (vac), 312 seconds.

1 October 1972

SPACECRAFT

SCIENTIFIC RESEARCH AND MONITORING 1/



MISSION

Satellites used for scientific exploration and environment monitoring of the near earth region of space.

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

1962 - 1968 - 40

1969 - 4

1970 - 10

1971 - 4

1972 - 12 successes as of 1 October 1972

Launch Site - Kapustin Yar Missile Test Center and Plesetsk Missile and Space Center.

Launch Vehicle - SL-7, SL-8, SL-6

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 400-2,500 pounds.

Power - Battery and solar cells.

Stabilization - Slow tumble. Some have had cold gas or aerodynamic control.

Apogee Range - 160 to 110,000 nm.

Perigee Range - 109 to 275 nm.

Period - 90 min to 97 hours.

Inclination - 49, 65, 71 and 82 degrees (nominal).

(b)(1),1.4 (c)

1/ Includes "Intercosmos" series, a joint cooperative program of socialist countries.

1 October 1972

SPACECRAFT

(b)(1),1.4 (c) RECONNAISSANCE

MISSION

Collect data (b)(1),1.4 (c)

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

1967 - 1968 - 3

1969 - 2

1970 - 2

1971 - 6

1972 - 2 as of 1 October 1972

Launch Site - Plesetsk Missile and Space Center.

Launch Vehicle - SL-8.

CHARACTERISTICS

Type - Non-recoverable.

Weight - 2,000 pounds.

Orbit - 74° inclination, 290 nm altitude, 95.3 min period (daily repeat of ground trace).

Deployment - 4 satellites in orbit planes separated by 45°.

(b)(1),1.4 (c)

Life - 12-24 months.

Power - Solar cells and batteries.

Stabilization - None.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

(b)(1),1.4 (c) **RECONNAISSANCE**

MISSION

Collect data (b)(1),1.4 (c)

LAUNCH INFORMATION

1970 - 1971 - 2

1972 - 1 as of 1 October 1972

Launch Site - Plesetsk Missile and Space Center.

Launch Vehicle - SL-3

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 3,000-5,000 pounds.

Power - Solar arrays plus batteries.

Orbit - 350 nm circular, 97.8 min period, 81° inclination.

Stabilization - Earth oriented satellite with sun oriented solar arrays.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

ORBITAL ANTISATELLITE

MISSION

Intercept orbiting spacecraft.

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

Cosmos 185 - Launched 27 October 1967. Performed translation engine tests in the three axis directions.

(b)(1),1.4 (c)

Cosmos 249 - Launched 20 October 1968 to intercept Cosmos 248 but did not acquire target due to misplacement in orbit.

(b)(1),1.4 (c)

Cosmos 252 - Launched 1 November 1968. Acquired, homed on and apparently fired on Cosmos 248 two revs after launch. Target was sent tumbling, orbit perturbed, [redacted]

Cosmos 374 - Launched 23 October 1970 to intercept Cosmos 373 [redacted]

Cosmos 375 - Launched 30 October 1970. Intercepted Cosmos 373 on rev 2. Target was again sent tumbling.

Cosmos 397 - Launched 25 February 1971. Intercepted Cosmos 394, launched 9 February 1971 on rev 2. Only secondary effects noted on this new target design.

Cosmos 404 - Launched 4 April 1971. Intercepted Cosmos 400, launched 18 March 1971, on rev 2. Similar result to Cosmos 394/397 engagement.

Cosmos 462 - Launched 3 December 1971. Intercepted Cosmos 459, launched 29 November 1971, on rev 2. Similar result to Cosmos 394/397 engagement.

Launch Site - Tyuratam Missile Test Range and Plesetsk Missile and Space Center.

Launch Vehicle - SL-11, SL-8 (last three targets).

CHARACTERISTICS

Type - Interceptor spacecraft.

Weight - 5,500-6,500 pounds.

Mode - Co-planar intercept (spacecraft adjusts plane after launch) with relative velocity of 1,300 ft/sec.

Demonstrated intercept altitude - 120-530 nm.

Present altitude capability - At least 2,000 nm.

Test inclinations - 62.2° to 65.8°.

Guidance - Probable radar acquisition and homing set.

Power - Batteries.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

COMMUNICATIONS RELATED VEHICLES

MISSION

Suspected military support delayed communications repeater.

RESPONSIBLE AGENCY

USSR Ministry of Defense.

LAUNCH INFORMATION

1964 - 1965 - 6 (24 satellites)

1970 - 1971 - 5 (24 satellites)

1972 - 1 (8 satellite) as of 1 October 1972

Launch Site - Tyuratam Missile Test Range (before 1970)
Plesetsk Missile and Space Center (since 1970).

Launch Vehicle - SL-8.

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 150 pounds.

Orbit - Earlier sets in 300, 800, and 110/1050 nm orbits, 56° inclination.
Last 3 sets in 850 nm orbit, 74° inclination.

Deployment - Random distribution in orbit plane.

Stabilization - Spin stabilized.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT
LUNA

MISSION

Lunar orbit, soft landing, rover, or earth return.

RESPONSIBLE AGENCY

USSR Academy of Sciences.

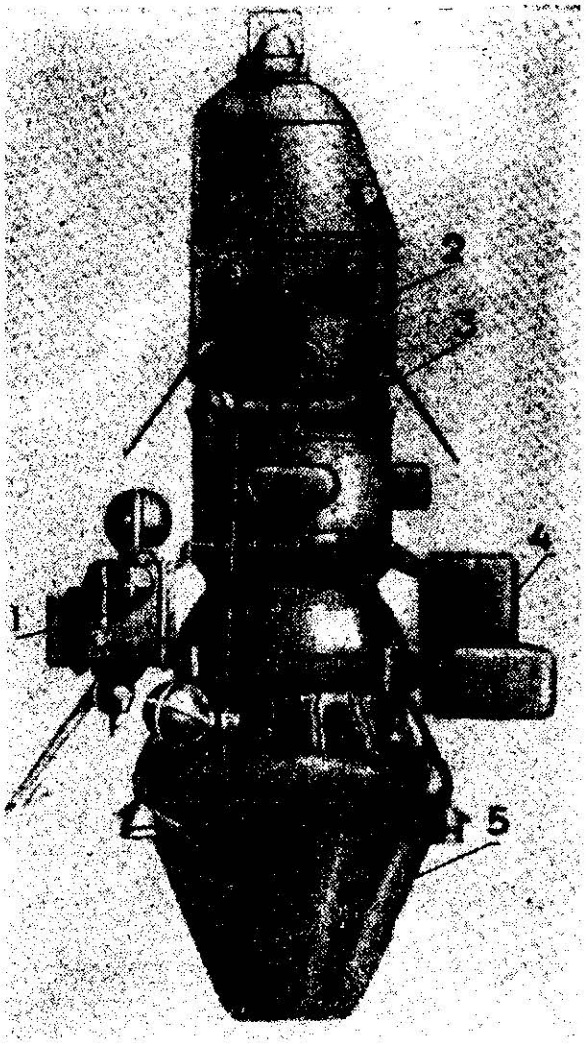
LAUNCH INFORMATION

Luna 4, 2 April 1963 - Missed moon by 5,050 nm. Mid-course guidance maneuver probably failed.
Luna 5, 9 May 1965 - Crashed on lunar surface when retrorockets failed to slow it for a soft landing.
Luna 6, 8 June 1965 - Missed moon by 86,000 nm when mid-course guidance engines failed to turn off.
Luna 7, 4 October 1965 - Crashed on the lunar surface when retrorockets failed.
Luna 8, 3 December 1965 - Impacted moon, but transmissions ceased shortly after touchdown.
Luna 9, 31 January 1966 - Successful soft landing and transmissions of video signals.
Luna 10, 31 March 1966 - Successful lunar orbiter.
Luna 11, 24 August 1966 - Successful lunar orbiter.
Luna 12, 22 October 1966 - Successful lunar orbiter.
Luna 13, 21 December 1966 - Successful lunar soft landing.
Luna 14, 7 April 1968 - Successful lunar orbiter.
Luna 15, 13 July 1969 - Successfully reached orbit. Hard impact on lunar surface.
Luna 16, 12 September 1970 - Successfully reached lunar orbit. Soft-landed on moon and obtained lunar soil samples. Made successful lift-off from moon and returned to earth. Spacecraft was recovered in the USSR.
Luna 17, 10 November 1970 - Successfully reached lunar orbit. Soft-landed on moon with Lunokhod 1 (moon walker), which carried out successive investigations during many lunar days.
Luna 18, 6 September 1971 - Successfully reached lunar orbit. Crashed on lunar surface attempting soft landing.
Luna 19, 28 September 1971- Successfully reached and remained in lunar orbit.
Luna 20, 14 February 1972 - Duplicated mission of Luna 16, except that soil sample was obtained from different location.

Launch Site - Tyuratam Missile Test Range.

Launch Vehicle - SL-6, SL-12.

In addition to the launches listed above, there have been at least 13 failures since the program was initiated on 4 January 1963. The failures which achieved parking orbits have been assigned Cosmos designators (Cosmos 60, 111, 300 and 305).



CHARACTERISTICS

Type - Lunar probes utilizing a parking orbit technique

Payload weight - SL-6 launched, 3,500 pounds on transiunar trajectory. SL-12 launched, 12,000 pounds on translunar trajectory.

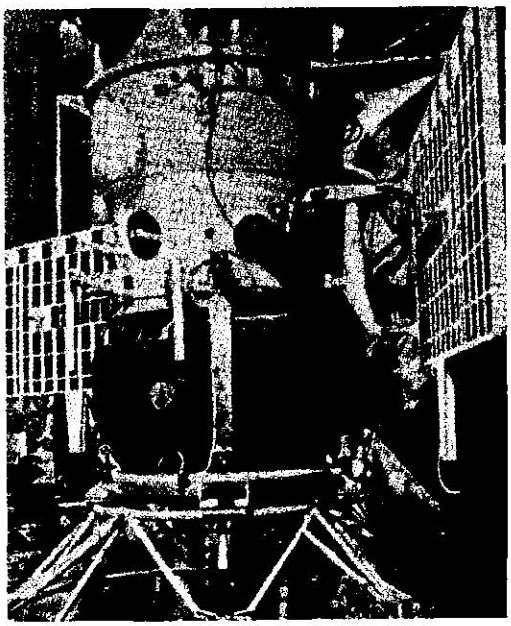
Power - Batteries

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

VENUS LANDER



VENUS 4

MISSION

To collect and transfer scientific data during interplanetary flight. To pass sufficiently close to Venus to allow collection and transmission of environmental data. To land an instrument package on the surface of Venus.

RESPONSIBLE AGENCY

USSR Academy of Sciences.

LAUNCH INFORMATION

Venus 1 - Launched 12 February 1961 (spacecraft had communications failure after 27 February 1961).

Venus 2 - Launched 12 November 1965 (made Venus fly-by at about 13,000 nm - communications failed at Venus encounter).

Venus 3 - Launched 16 November 1965 (intended to soft land and obtain data on the nature of the Venus atmosphere and surface, but communications failed at Venus encounter).

Venus 4 - Launched 12 June 1967 (made a successful soft landing on the Venusian surface on 18 October 1967).

Venus 5 - Launched 5 January 1969 (made a smooth descent through Venusian atmosphere on 16 May but probably did not continue to transmit from the surface of Venus).

Venus 6 - Launched 10 January 1969 (made a smooth descent through Venusian atmosphere on 17 May but probably did not continue to transmit from the surface of Venus).

Venus 7 - Launched 17 August 1970. Made a soft landing on 15 December 1970 and transmitted signals from the surface of Venus for about 23 minutes.

Venus 8 - Launched 27 March 1972 (successfully injected into interplanetary trajectory).

Launch Site and Vehicle - Tyuratam Missile Test Range; SL-6

CHARACTERISTICS

Weight - Venus 1, 1,416 pounds; Zond 1, 2,000 pounds; Venus 2, 2,112 pounds; Venus 3, 2,119 pounds; Venus 4, 2,000 pounds; Venus 5, 2,492 pounds; Venus 6, 2,492 pounds.

Trajectory - Three-stage powered flight to parking orbit; fourth-stage ejection on orbit one; midcourse maneuvers by spacecraft to pass near planet (Venus 1 did not have midcourse maneuver capability).

Power - Batteries and solar cells.

(b)(1),1.4 (c)

NOTE: Since March 1964, failures have been assigned "Cosmos" designators (Cosmos 27, 96, 167, 359 and 482) by the Soviets if parking orbit is achieved. This is true in other Soviet space programs as well.

NOTE: In addition to the partially successful launches listed above there have been at least ten Venus probe failures since 4 February 1961.

1 October 1972

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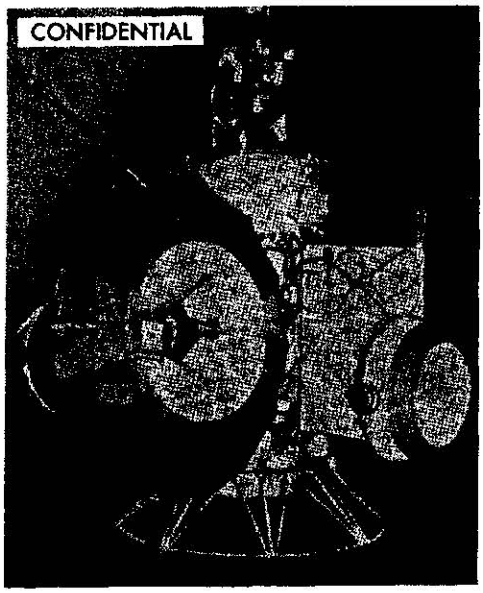


MARS 1

SPACECRAFT

MARS PROBES

MISSION

To collect and transmit scientific data during interplanetary flight. To pass sufficiently close to Mars to allow collection and transmission of environmental data. To orbit/land an instrumented capsule on Mars.

RESPONSIBLE AGENCY

USSR Academy of Sciences.

LAUNCH INFORMATION

Mars 1 - Launched 1 November 1962 (spacecraft communications failure after nearly 5 months of flight).
Zond 2 (30 Nov. 1964), Zond 3 (18 July 1965)
Mars 2 - Launched 19 May 1971.

Mars 3 - Launched 28 May 1971.

There have been seven Mars probe failures since 10 October 1960.

Launch Site - Tyuratam Missile Test Range.

Launch Vehicle - SL-6, SL-12.

CHARACTERISTICS

Weight - Mars 1, Zond 2 and 3 2,000-2,200 pounds; Mars 2 and 3 10,200 pounds

Stabilization - Cold gas jets.

Trajectory - Three-stage powered flight to parking orbit; fourth stage ejection on orbit zero; midcourse maneuvers by spacecraft to pass near planet. Mars 2 and Mars 3 ejected landing capsules as they approached the planet. The Mars 2 capsule impacted and the Mars 3 capsule soft-landed. Both spacecraft are in orbit around Mars.

Power - Batteries and solar cells.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

PROTON

MISSION

Investigation of radiation in space, especially at super high energy levels; e.g., primary cosmic rays up to 10^{14} ev, gamma radiation up to 5×10^{7} ev, solar radiation.

LAUNCH INFORMATION

1965 - 2

1966 - 1

1968 - 1

Launch Site - Tyuratam Missile Test Range.

Launch Vehicle - SL-9 for Protons 1,2,3; SL-13 for Proton 4.

CHARACTERISTICS

Type - Nonrecoverable.

Weight - 27,000 pounds for Protons 1,2,3; 37,400 pounds for Proton 4.

Power - Tass announced solar panels with rechargeable batteries.

Apogee - 340 nm (Protons 1,2,3,); 267 nm. (Proton 4).

Perigee -103 nm (Protons 1,2,3,); 138 nm (Proton 4).

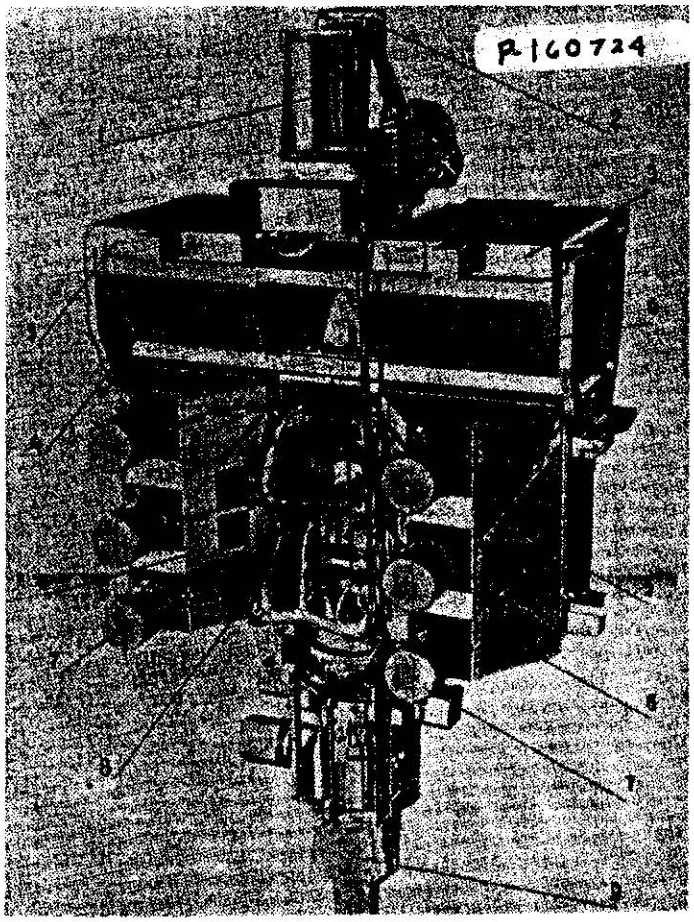
Period - 92 minutes

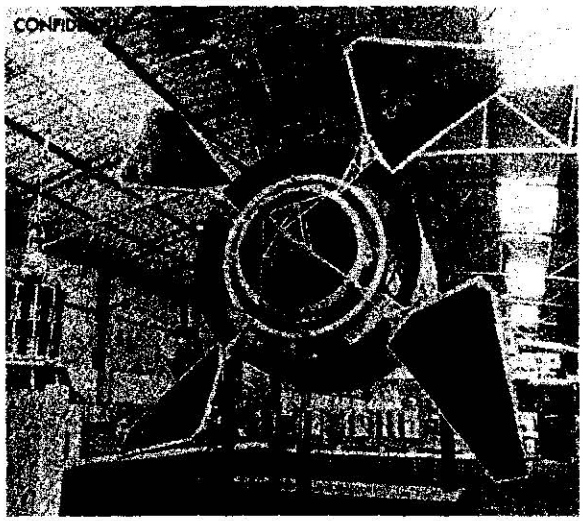
Inclination - 63.5° (Protons 1,2,3); 52° (Proton 4)

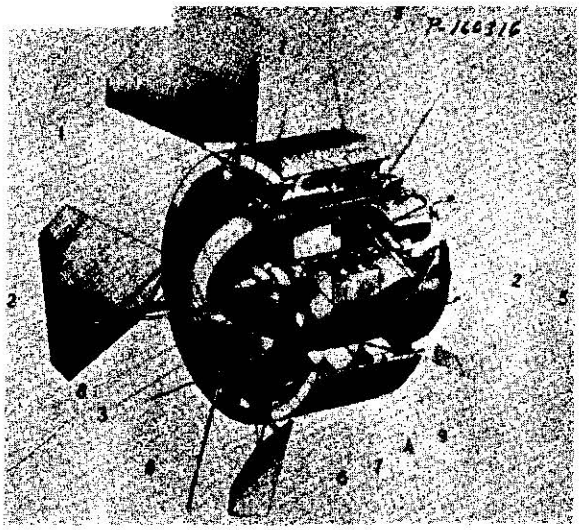
(b)(1),1.4 (c)

PROTON

The scientific package, shown at right, comprises (1) spectrometer for medium-energy cosmic rays; (2) telescope to measure high-energy gamma radiation; (3–8) ionization calorimeter and other equipment to measure the energy and nature of cosmic particles of high and superhigh energy and the characteristics of their interaction with matter; and (9) equipment to study high-energy electrons. View of the satellite (left, below) shows (1) solar panels; (2) hermetically sealed section containing scientific package; (3) pickups for axis orientation system; (4) external cover; (5) antennas; and (6) chemical fuel cells charged by solar panels.







Exposed view of Proton 1 (above, right) shows: (1) solar panels; (2) pickups for axis orientation system; (3) hermetic sealer; (4) outer cover; (5) antennas; (6) chemical fuel cells; (7) scientific package; (8) radio equipment; and (9) heat exchange unit.

SPACECRAFT

(b)(1),1.4 (c) CALIBRATION SATELLITES

MISSION

Provide (b)(1),1.4 (c)

RESPONSIBLE AGENCY

Soviet Defense Forces.

LAUNCH INFORMATION

1962 - 68 - 25

1969 - 12

1970 - 13

1971 - 13

1972 - 8 as of 1 October 1972

CHARACTERISTICS

Type - Nonrecoverable.

Weight - About 500 pounds.

Power - Solar cells and batteries.

Stabilization - Slow tumble.

Apogee - 240-1200 nm.

Perigee - 110-150 nm.

Inclinations - 49°, 71°, 82°.

(b)(1),1.4 (c)

1 October 1972

SPACECRAFT

UNKNOWN MISSIONS

MISSION

Undetermined - Development programs of apparent Soviet interest that the U.S. cannot identify as to function. Two developments are the SL-11 launched 9,000 pound class satellite (Cosmos 198, 209, 367, 402, 469, 516, plus 2 failures) and the SL-8 launched Cosmos 236, 372, 407, 468, 494 series.

RESPONSIBLE AGENCY

Probably USSR Ministry of Defense.

LAUNCH INFORMATION

SL-11	SL-8
Cosmos 198 orbited 27 December 1967	Cosmos 236 orbited 27 August 1968
Cosmos 209 orbited 22 March 1968	Cosmos 372 orbited 16 October 1970
Failure - 25 January 1969	Cosmos 407 orbited 23 April 1971
Failure - 1 November 1969	Cosmos 468 orbited 17 December 1971
Cosmos 367 orbited 3 October 1970	Cosmos 494 orbited 23 June 1972
Cosmos 402 orbited 1 April 1971	Launch Site- Cosmos 198 series, Tyuratam Missile Test Range. Cosmos 236 series, Tyuratam Missile Test Range and Plesetsk Missile and Space Center.
Cosmos 469 orbited 25 December 1971	
Cosmos 516 orbited 21 August 1972	

CHARACTERISTICS

Type - Unknown.

Weight - Cosmos 198 series - 9,000 pounds; Cosmos 236 series - 2,000 pounds.

Power - Cosmos 198 series - probably batteries; Cosmos 236 series - solar cells and batteries.

Stabilization - Cosmos 198 series - platform mounted horizon sensors and cold gas rotation control nozzles; Cosmos 236 series - gravity gradient two axis stabilized.

Orbit - Cosmos 198 series - 65° inclination, 150 nm near circular parking orbit, injected into 500 nm near circular final orbit by the "payload", large objects left in parking orbit. Cosmos 236 series - 56° inclination 320/350 nm orbit; 74° inclination 430 nm orbit.

(b)(1),1.4 (c)

1 October 1972

SECTION 8

CIVIL AIR CARRIER SERVICES

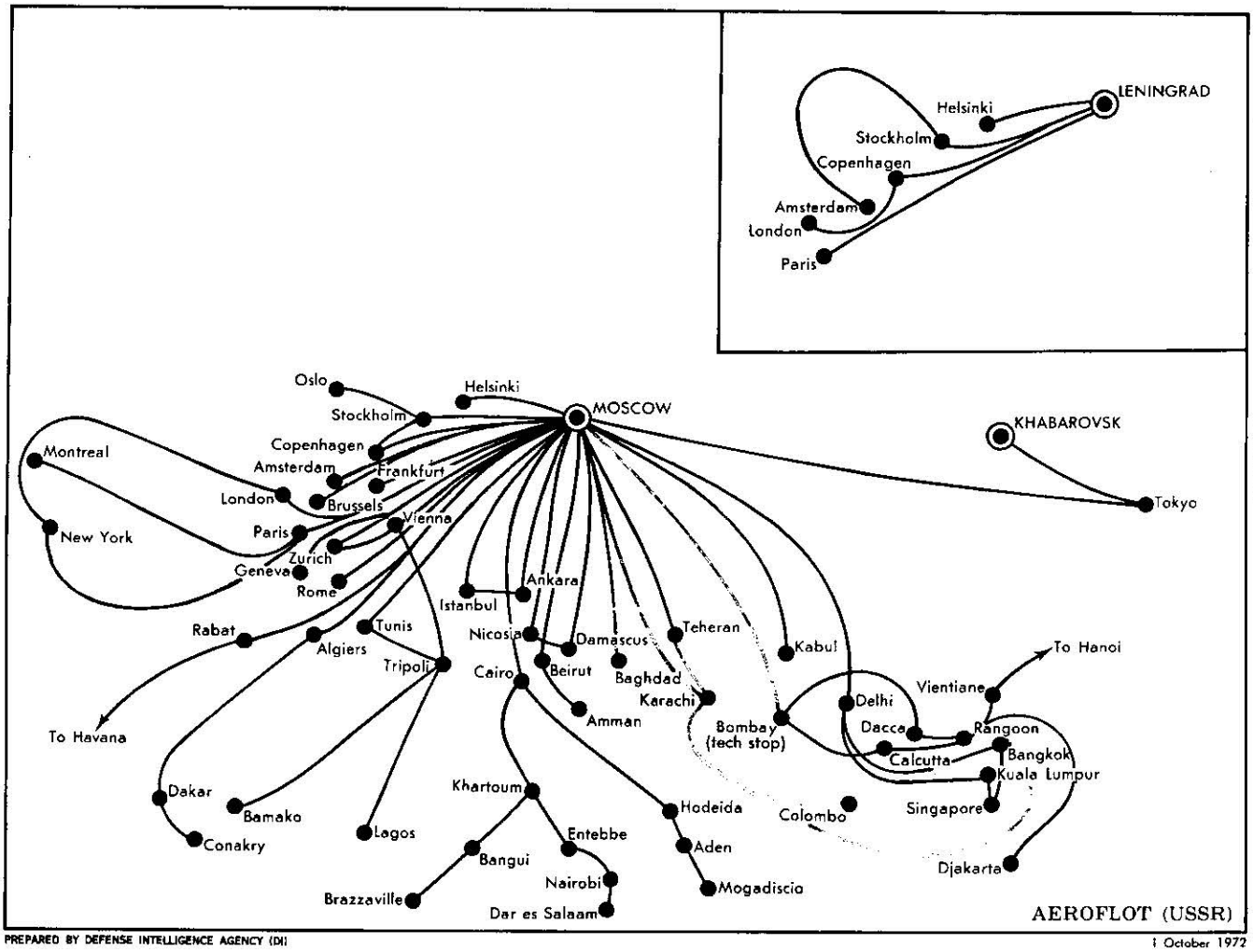
NOTE:

Lines of sketches do not indicate actual flight paths.

En route points within country of origin and routings between Communist countries are not shown; i.e. a stop at Prague en route from Bucharest to Copenhagen would not be shown.

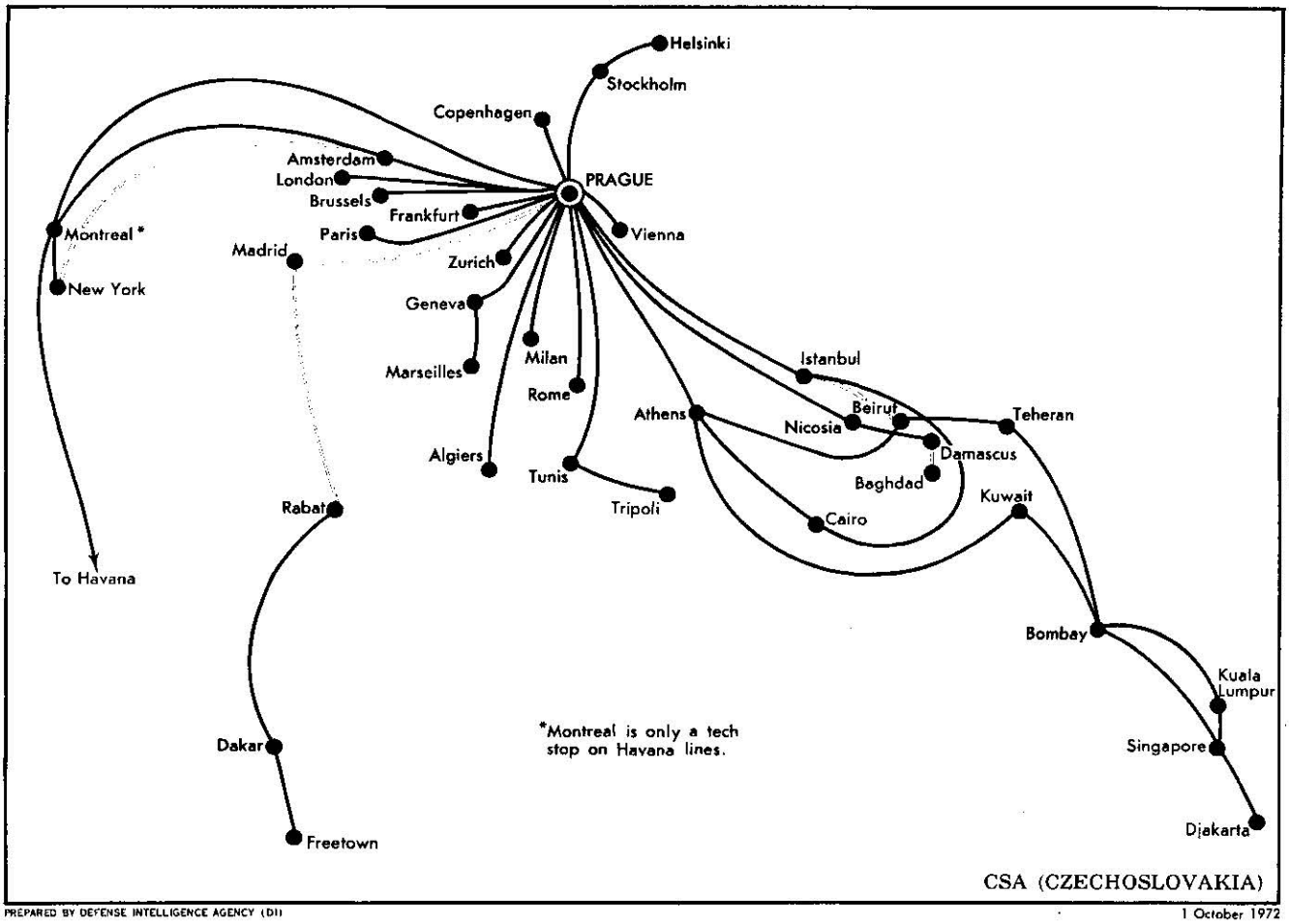
"Tech Stop" indicates landing for technical purposes only (refueling, maintenance); no discharge or pickup of passengers or cargo.

1 October 1972



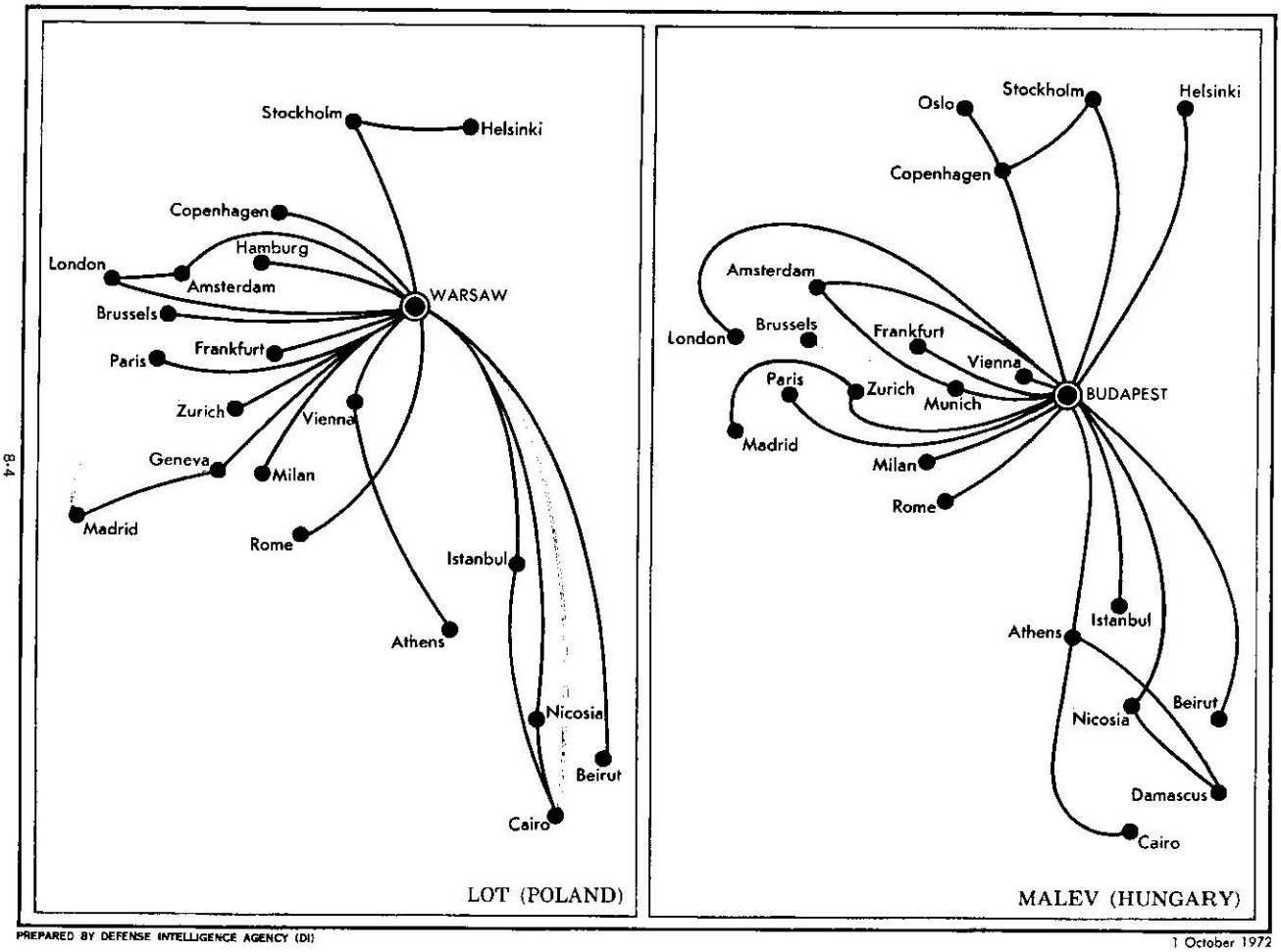
PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972



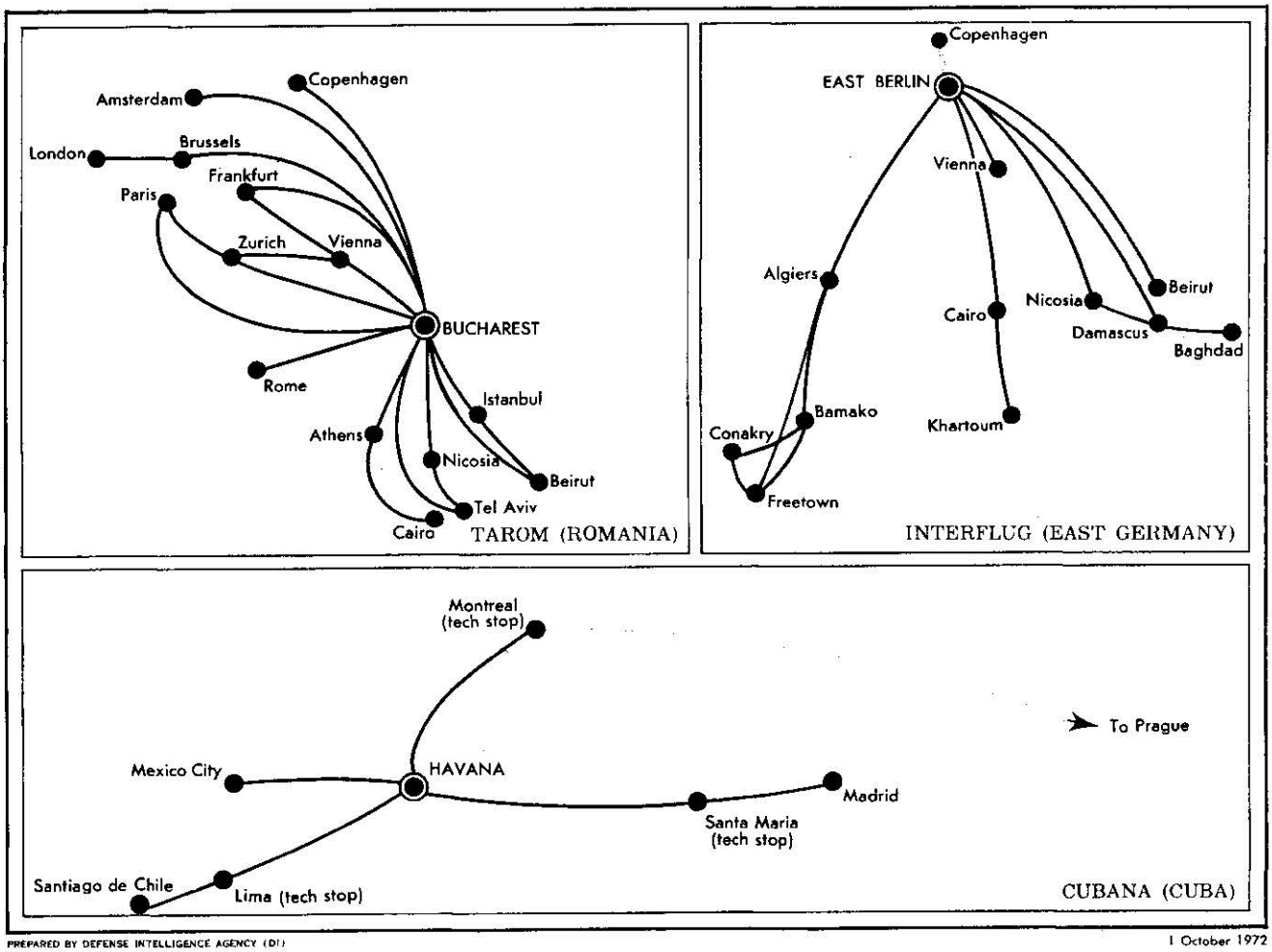
PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972



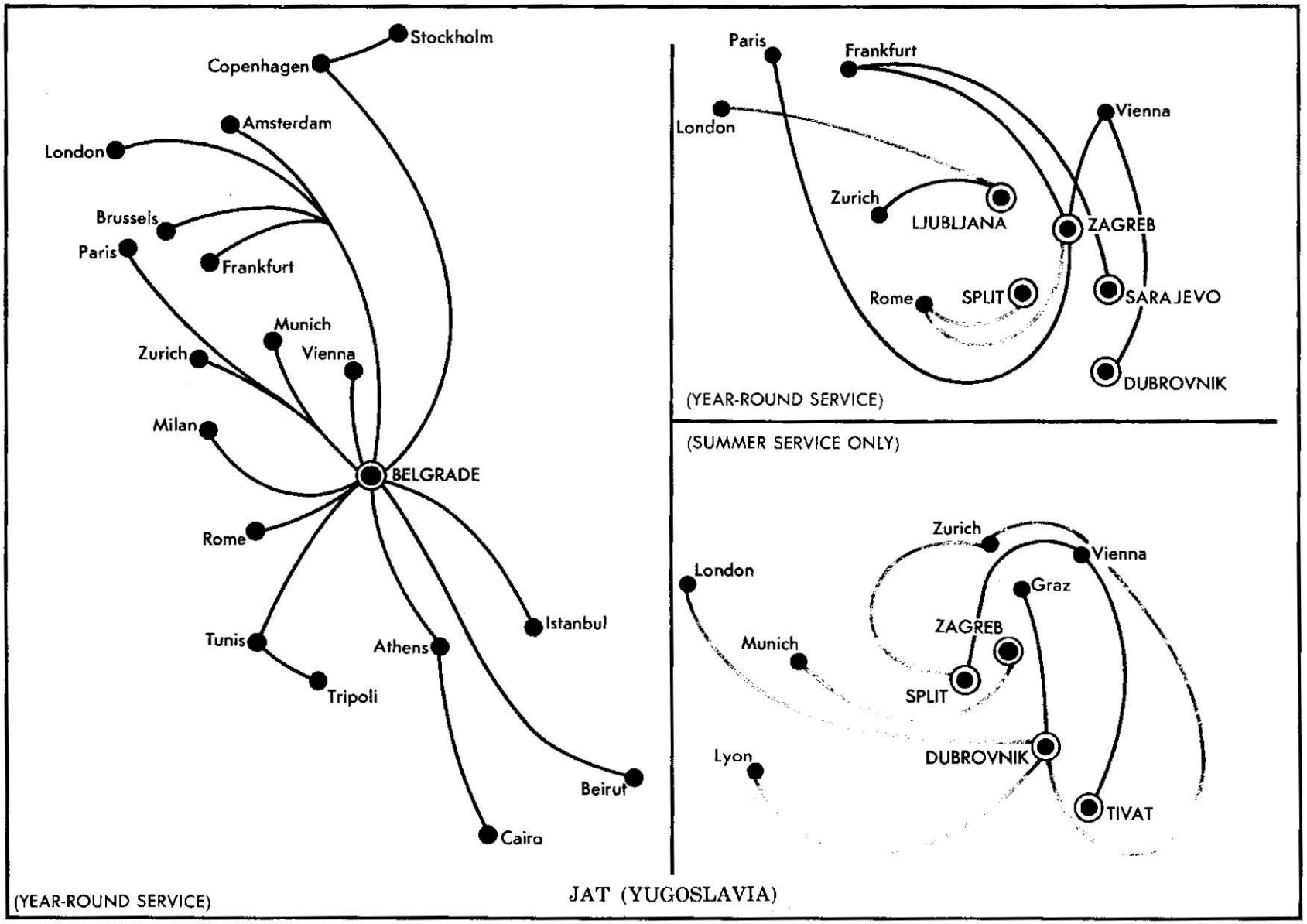
PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972



PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

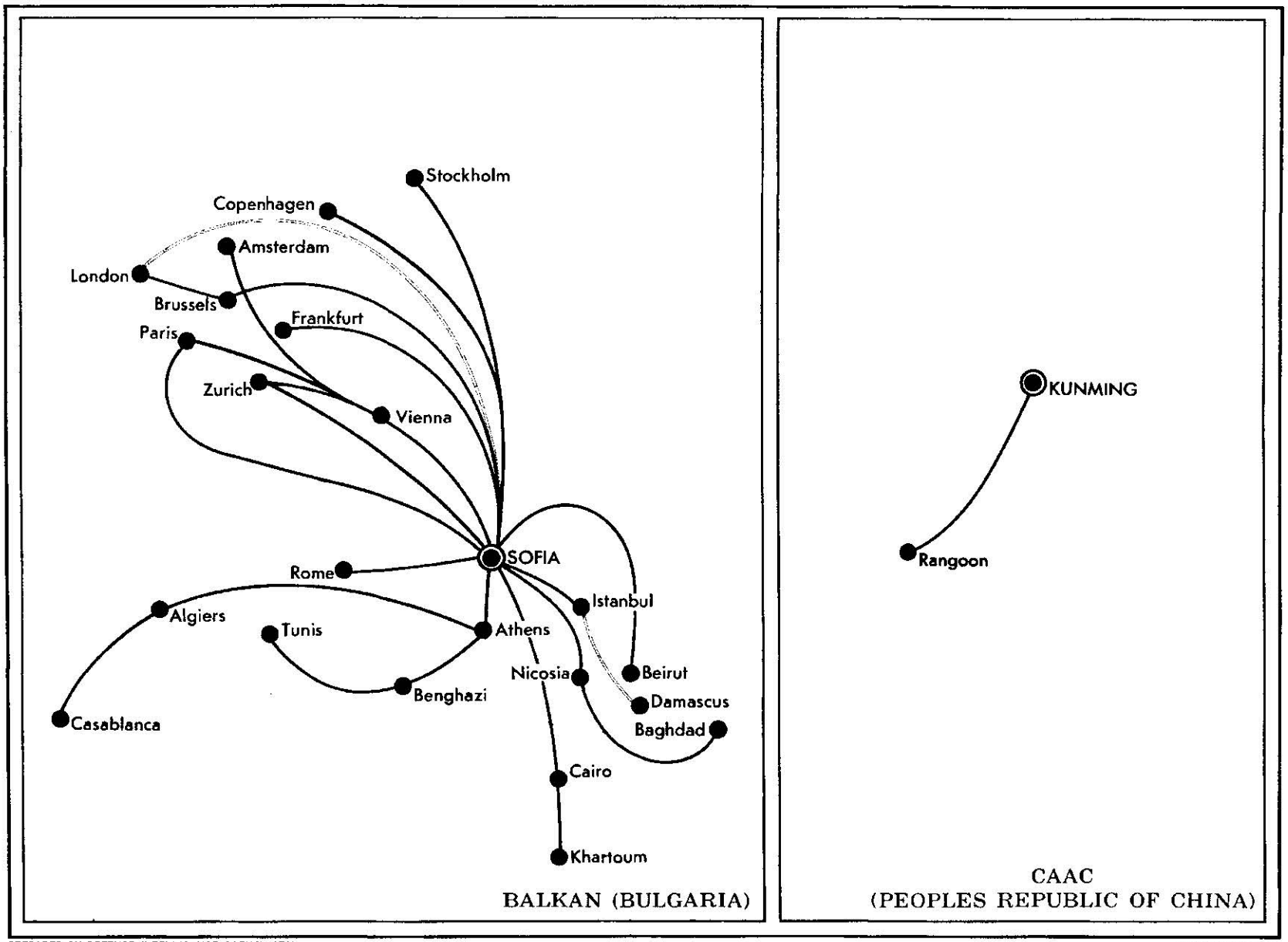
1 October 1972



JAT (YUGOSLAVIA)

PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972



PREPARED BY DEFENSE INTELLIGENCE AGENCY (DI)

1 October 1972

FREE WORLD CIVIL AIR CARRIERS SERVING COMMUNIST AREAS

The following civil air carriers of Free World nations are operating regularly scheduled services to Communist areas:

Code	Carrier Names	Country of Origin
AC	Air Canada	Canada
AF	Air France	France
AH	Air Algerie	Algeria
AI	Air India	India
AY	Finnair - Aero O/Y	Finland
AZ	Alitalia - Linee Aeree Italiane	Italy
BA	British Overseas Airways	United Kingdom
BE	British European Airways	United Kingdom
CS	Cambrian Airways	United Kingdom
FG	Ariana Afghan Airlines	Afghanistan
IA	Iraqi Airways	Iraq
IB	Iberia - Lineas Aereas de Espana	Spain
IR	Iranair	Iran
JL	Japan Airlines	Japan
KL	KLM - Royal Dutch Airlines	Netherlands
LH	Lufthansa - German Airlines	West Germany
LY	EL AL - Israel Airlines	Israel
MS	United Arab Airlines	United Arab Republic
OS	Austrian Airlines	Austria
PA	Pan American World Airways	United States
PK	Pakistan International Airlines	Pakistan
RB	Syrian Arab Airlines	Syria
SK	Scandinavian Airlines System	Norway, Denmark, Sweden
SN	SABENA - Belgian World Airlines	Belgium
SR	Swissair - Swiss Air Transport Co.	Switzerland
TG	Thai Airways International	Thailand

EUROPE

Albania

Tirane: AZ

Bulgaria

Sofia: BE, LH, OS

Czechoslovakia

Prague: AC, AF, AH, AY, AZ, BE, IA, KL, LH, MS, OS, PA, RB, SK, SN, SR

East Germany

Berlin: IA, MS, KL, OS, SK

Hungary

Budapest: AF, AY, BE, KL, LH, OS, SK, SN, SR

Poland

Warsaw: AF, AZ, BE, KL, LH, PA, OS, SK, SN, SR

Romania

Bucharest: AF, AZ, BE, LH, LY, OS, PA, SR
Constanta: AF*

FAR EAST

Peoples Republic of China

Canton: PK

Shanghai: AF, PK

USSR

Moscow: AC, AF, AH, AI, AY, AZ, BA, BE, FG, IR, JL, KL, LH, MS, OS, PA, PK, SK, SR, TG

Khabarovsk: JL
Leningrad: AY, SK, BE
Tashkent: FG, SK

Yugoslavia

Belgrade: AF, AH, AZ, BE, KL, LH, OS, PA, SN, SR, SK

Dubrovnik: AZ, CS

Zagreb: AF, BE, KL, LH, SR, SK, SN

WESTERN HEMISPHERE

Cuba

Havana: IB

*Seasonal service only

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ESTIMATED COMMUNIST NON-MILITARY TRANSPORT AIRCRAFT STRENGTH

(12-Passenger or Greater Capacity)

ALBANIA: None

BULGARIA:

7 Coke
30-40 Colt
9 Coot
6 Crate
6-8 Crusty
2 Cub
5 Hound
1 Careless

PEOPLES REPUBLIC OF CHINA:

25 Cab
5-6 Classic
4 Coach
6-8 Coke
200-217 Colt
11 Coot
47 Crate
2 Cub
2-5 Viscount
14-16 Hound
1 Trident

CUBA:

4 Britannia
8 Coke
4 Coot
10 Crate
2 C-46
1 DC-4
4 DC-3
2 Colt

CZECHOSLOVAKIA:

6 Camel
4 Classic
2 Cookpot
8 Coot
2 Colt
21-22 Crate
2-3 Crusty
4 L-410
1 Hip

EAST GERMANY:

2 Classic
7 Coke
22 Colt
12 Coot
5 Crate
4 Crusty
1 Hip
1 Hound

HUNGARY:

3 Colt
6 Coot
7 Crate
6 Crusty

NORTH KOREA:

3 Cab
10-20 Colt
2-3 Coke
3-4 Coot
1 Crate
2-3 Hip

MONGOLIA:

1 Cab
6-7 Coke
18-20 Colt
6-7 Crate
1 Hip

POLAND:

2 Classic
14 Coke
8 Colt
8 Coot
9-10 Crate
5 Crusty

ROMANIA:

7 BAC III
5-6 Cab
9 Coke
10 Colt
14 Coot
14 Crate

USSR:

375 Cab
160 Camel
10 Careless
80 Cat
40 Classic
30 Cleat
2 Coach
3 Cock
120 Codling
600 Coke
3,200 Colt
85 Cookpot
400 Coot
410 Crate
60 Crusty
200 Cub
30 Hip
55 Hook
595 Hound

NORTH VIETNAM:

Transport aircraft are used for military purposes. See Military AOB, Section 3.

YUGOSLAVIA:

7 Caravelle
25 Colt
9 Convair 440
4 Crusty
2 DC-3
10 DC-9
3 Boeing 707 (leased)

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