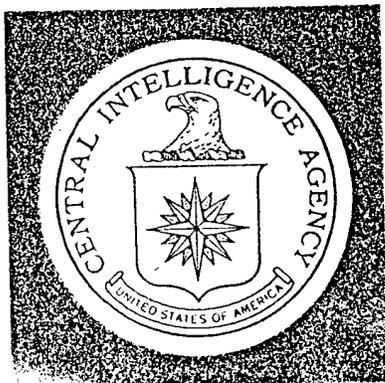


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CIA HISTORICAL REVIEW PROGRAM  
RELEASE AS SANITIZED  
1998

# Intelligence Handbook

## *Soviet Guided Missiles*

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SR IH 69-2  
May 1969

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## WARNING

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
May 1969

INTELLIGENCE HANDBOOK

Soviet Guided Missiles

This handbook describes Soviet guided missiles used in all types of weapon systems including those carried on ships and aircraft. It provides a general summary of the characteristics, performance, and operational status of each missile. User countries in addition to the USSR are noted.

Entries are listed by letter-number designations (e.g. SS-9) and code names (Scarp) used by the US and NATO.

For each deployed weapon system the year of its initial operational capability (IOC) is noted. By this date the first operational unit has been trained and equipped with a few weapons of the given type.

Circular error probability (CEP) indicates the accuracy of the weapon system, stated as the radius of a circle centered on the target. Statistically, half of all warheads fired would impact within this circle.

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*This handbook was produced solely by CIA. It was prepared by the Office of Strategic Research and coordinated with the Office of Scientific Intelligence, the Office of Economic Research, and the Foreign Missile and Space Analysis Center.*

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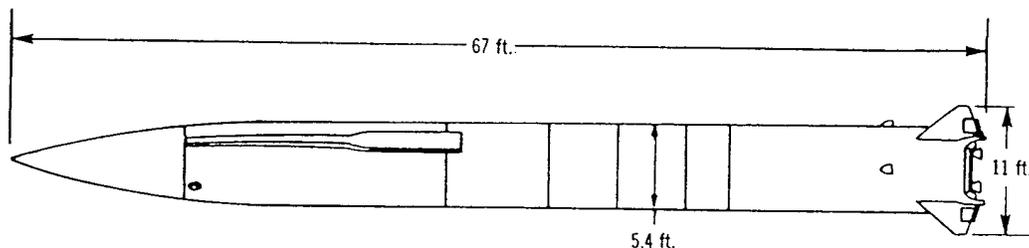
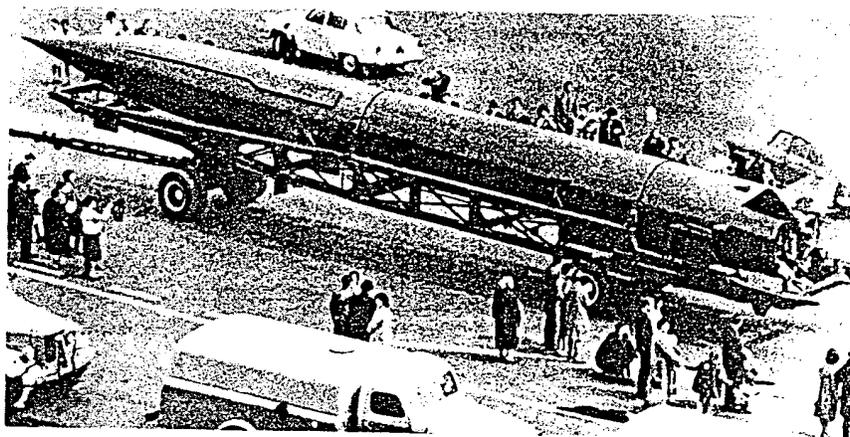
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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-3 Shyster



Medium-Range Ballistic Missile

IOC	1956
Configuration	single stage
Propellant	nonstorable liquid
Launch weight	60,000 lbs
Re-entry vehicle	3,350 lbs
Warhead (nuclear)	2,700 lbs
Maximum range	630 nm
Guidance	radio-inertial
CEP	1.0-1.75 nm

Remarks

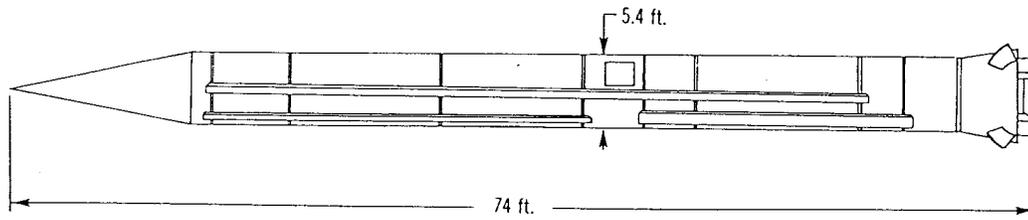
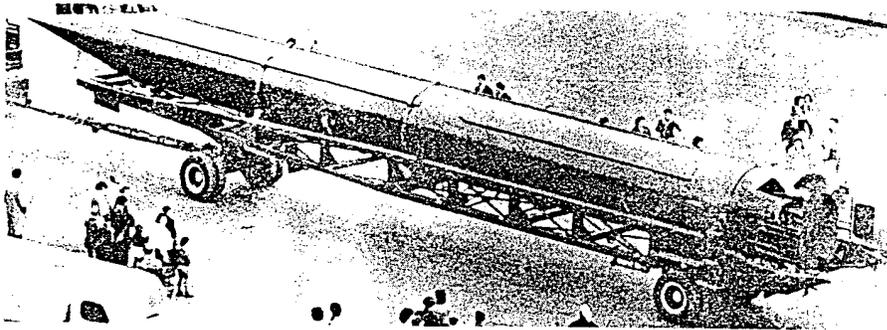
Now obsolete. Possibly operational as late as 1966.  
Flight testing began in 1954.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-4 Sandal



Medium-Range Ballistic Missile

IOC	1958
Configuration	single stage
Propellant	storable liquid
Launch weight	88,000 lbs
Re-entry vehicle	3,300 ± 500 lbs
Warhead (nuclear)	2,200 ± 500 lbs
Maximum range	1,020 nm
Guidance	inertial
CEP	1.25 nm

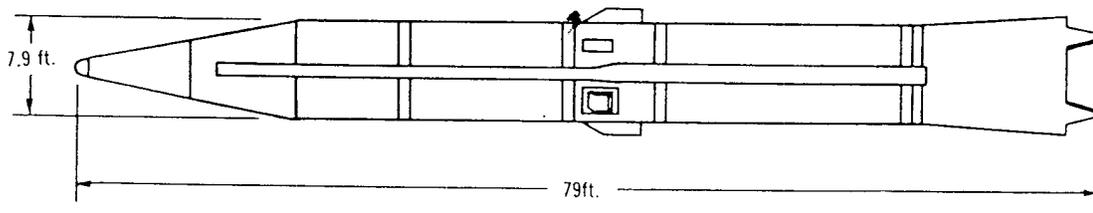
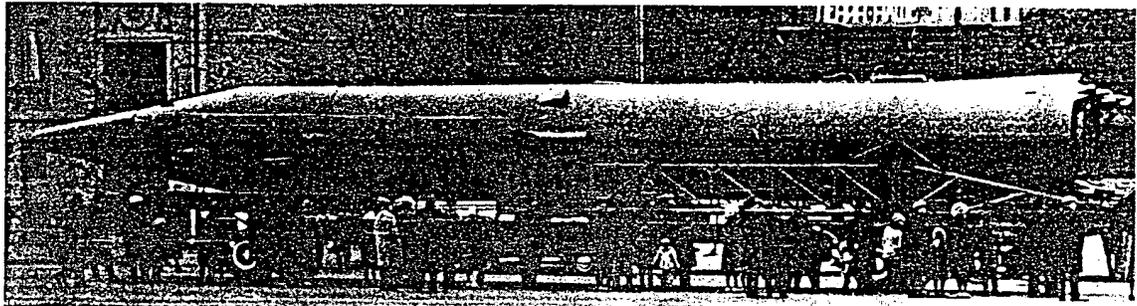
Remarks

Deployed in both soft and hard sites located primarily in the European USSR. First publicly displayed in Moscow parade of November 1960. First flight test in June 1957. Much larger conventional warhead could be delivered to shorter ranges, e.g. about 4,000 lbs to 800 nm.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-5 Slean



Intermediate-Range Ballistic Missile

IOC	1961
Configuration	single stage
Propellant	storable liquid
Launch weight	about 200,000 lbs
Re-entry weight	3,500 ± 500 lbs
Warhead (nuclear)	2,800 ± 400 lbs
Maximum range	2,200 nm
Guidance	inertial
CEP	1 nm

Remarks

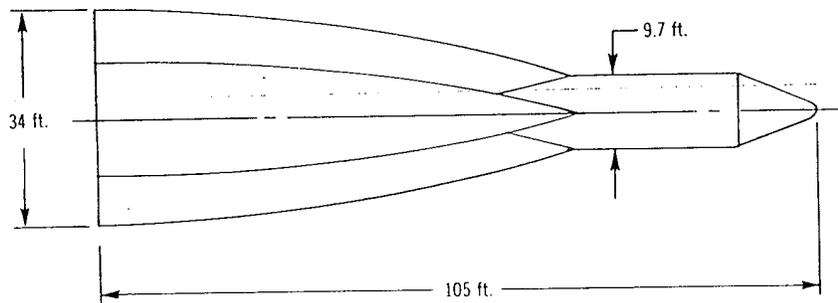
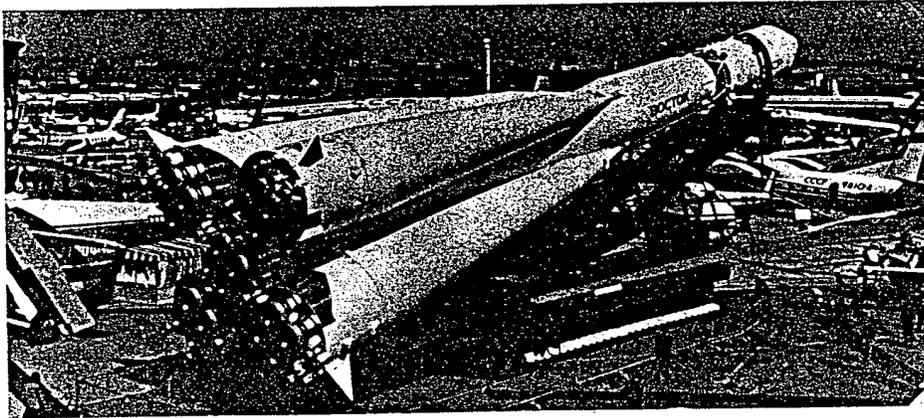
Deployed in both hard and soft sites located primarily in European USSR. First publicly displayed in Moscow parade of November 1964. First flight test in June 1960. Much larger conventional warhead could be delivered to shorter ranges, e.g. 8,000 lbs to 1,500 nm.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-6 Sapwood



Intercontinental Ballistic Missile

IOC	1960
Configuration	1½-stage parallel
Propellant	nonstorable liquid
Launch weight	500,000 lbs
Re-entry vehicle	8,000 ± 1,000 lbs
Warhead (nuclear)	6,000 ± 1,000 lbs
Maximum range	6,000 nm
Guidance	radio-inertial
CEP	2 nm

Remarks

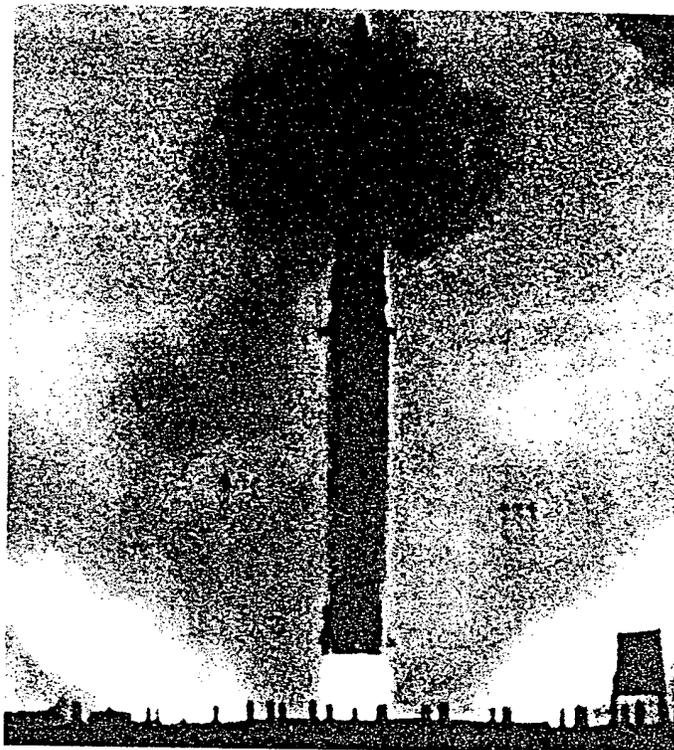
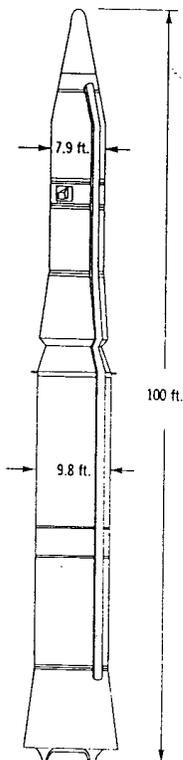
First-generation Soviet ICBM. Not deployed extensively and now probably retired from operational inventory. Continues to be used as basic space booster in configuration displayed in 1967 Paris air show (photograph above).

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-7 Saddler



Intercontinental Ballistic Missile

IOC	1962
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	325,000 lbs
Re-entry vehicle	3,500 ± 500 lbs
	4,200 ± 500 lbs*
Warhead (nuclear)	2,800 ± 400 lbs
	3,300 ± 400 lbs*
Maximum range	6,500 nm
	5,500 nm*
Guidance	inertial
CEP	1.0-1.25 nm

\*Two operational re-entry vehicles

Remarks

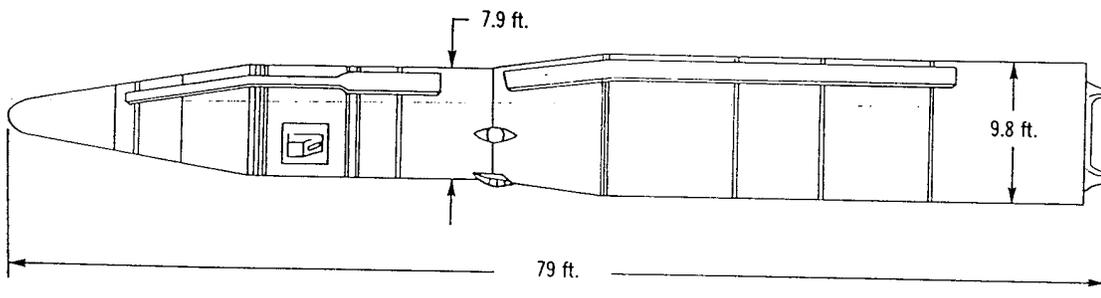
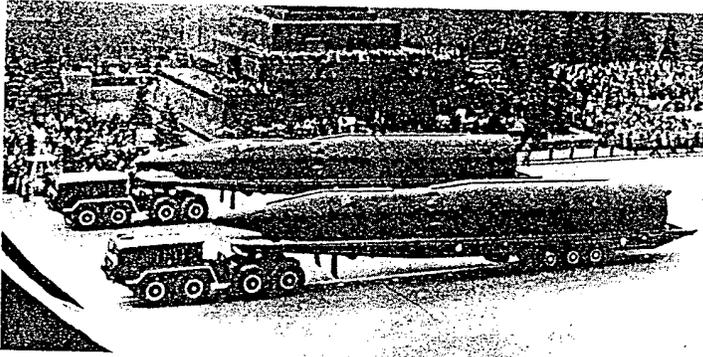
First Soviet ICBM to be widely deployed. First flight test in October 1960.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

**SS-8 Sasin**



Intercontinental Ballistic Missile

IOC	1963
Configuration	2-stage tandem
Propellant	nonstorable liquid
Launch weight	165,000 lbs
Re-entry vehicle	3,500 ± 500 lbs
Warhead (nuclear)	2,800 ± 400 lbs
Maximum range	6,000 nm
Guidance	radio-inertial
CEP	1 nm

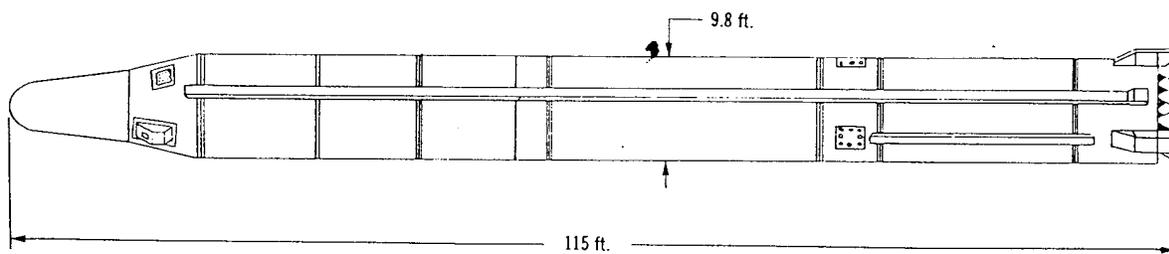
Remarks

Probably given only limited deployment. First publicly displayed in Moscow parade of November 1964. First flight test in April 1961.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-9 Scarp



Intercontinental Ballistic Missile

IOC	1966
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	400,000 lbs
Re-entry vehicle	10,000 ± 1,000 lbs 13,500 ± 1,000 lbs*
Warhead (nuclear)	8,000 ± 1,000 lbs 10,000 ± 1,000 lbs*
Maximum range	6,500 nm 5,000 nm*
CEP, radio-inertial guidance	0.5 nm
inertial guidance	0.75 nm

\* Two operational re-entry vehicles

Remarks

Largest and most accurate Soviet ICBM. Extensively deployed in USSR. First displayed in Moscow parade of November 1967. First flight test in December 1963. Also employed as launch vehicle for SS-X-6 and maneuverable satellites.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-10

Intercontinental Ballistic Missile

IOC	never achieved
Configuration	2-stage tandem
Propellant	storable liquids of unknown composition
Launch weight	about 275,000 lbs
Re-entry vehicle	4,000-8,000 lbs
Warhead (nuclear)	3,200-6,500 lbs
Maximum range	6,000 nm
Guidance	radio-inertial
CEP	probably about 1 nm

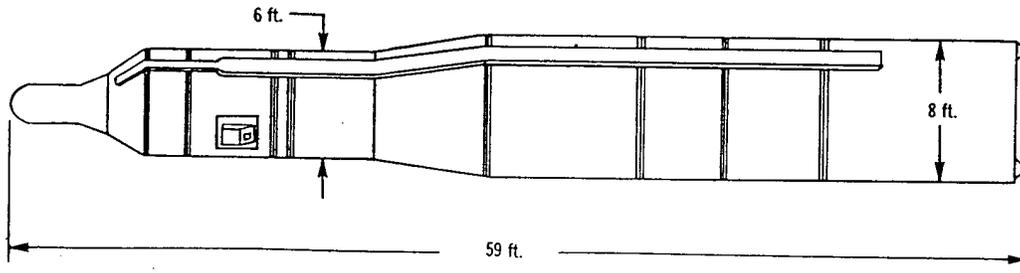
Remarks

Never shown in Moscow parades. First flight test  
in April 1964, last in October 1964.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-11



Intercontinental Ballistic Missile

IOC	1966
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	93,000 lbs
Re-entry vehicle	1,500 ± 300 lbs
Warhead (nuclear)	1,100 ± 300 lbs
Maximum range	5,500 nm
Guidance	inertial (possibly radio-inertial)
CEP	1.0-1.5 nm

Remarks

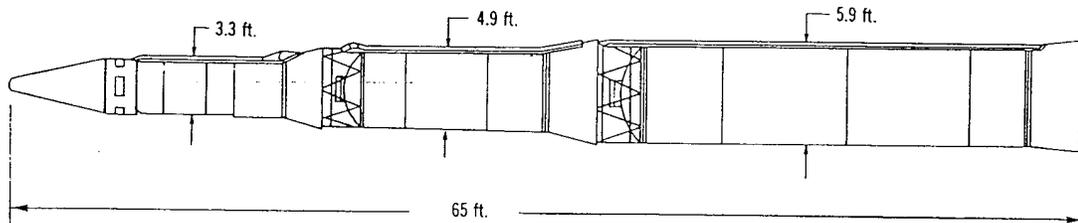
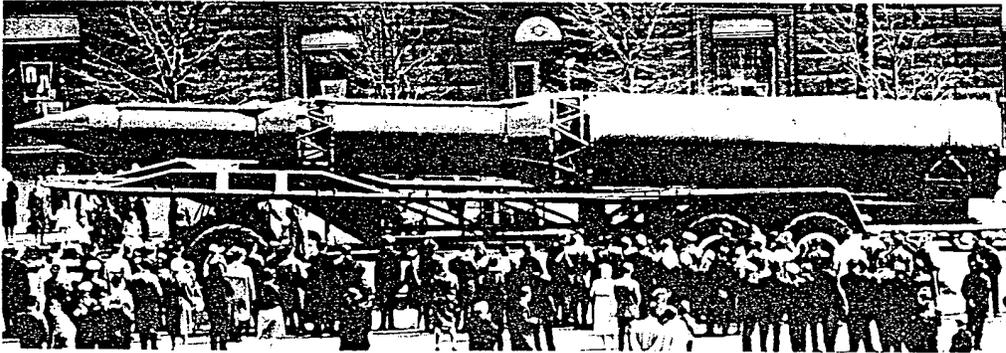
Smallest Soviet ICBM tested to date. Deployed extensively throughout USSR. Never publicly displayed. First flight test in April 1965.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

**SS-13 Savage**



Intercontinental Ballistic Missile

IOC	1969
Configuration	3-stage tandem
Propellant	solid
Launch weight	105,000 lbs
Re-entry vehicle	1,200 ± 300 lbs
Warhead (nuclear)	900 ± 200 lbs
Maximum range	5,000 nm
Guidance	inertial
CEP	about 1 nm

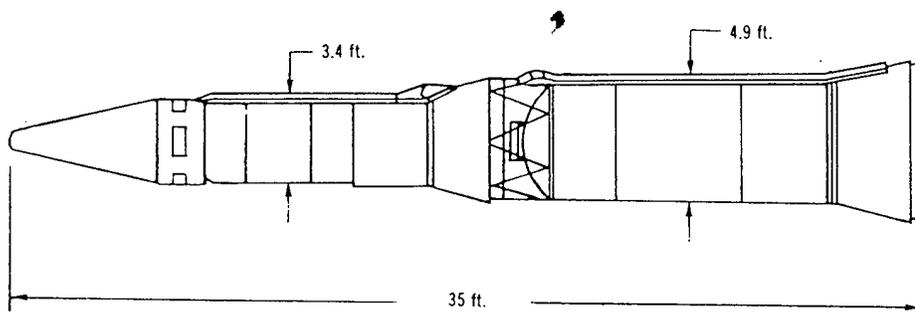
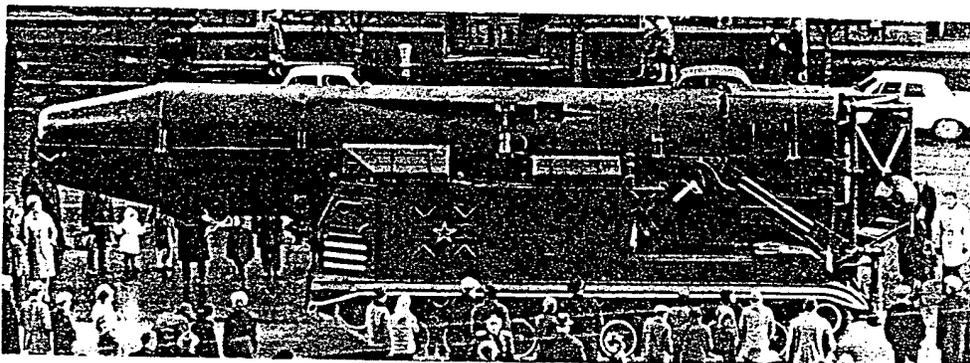
Remarks

Estimated to become operational in fixed sites in 1969. May be deployed later in mobile launchers. First flight test in November 1965. First publicly displayed in Moscow parade of May 1965.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

SS-14 Scamp



Intermediate-Range Ballistic Missile

IOC	1969-70
Configuration	2-stage tandem
Propellant	solid
Launch weight	about 35,000 lbs
Re-entry vehicle	1,200 ± 300 lbs
Warhead (nuclear)	900 ± 200 lbs
Maximum range	about 1,500 nm
Guidance	inertial
CEP	0.5-1.5 nm

Remarks

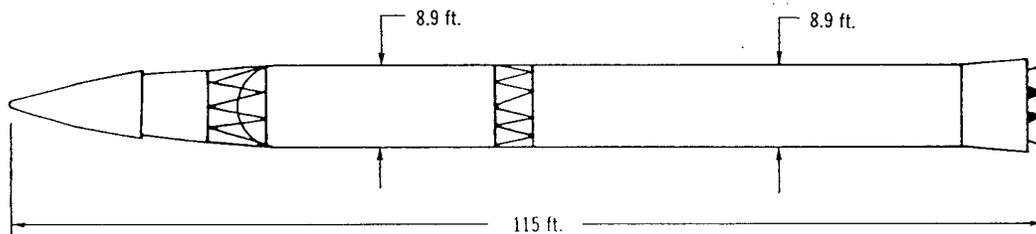
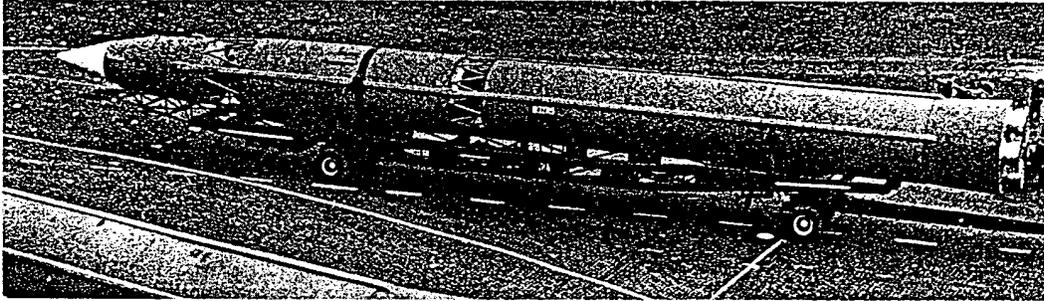
Also designated Scapegoat. Transporter-launcher first displayed in Moscow parade of May 1965. SS-14 missile first shown in May 1968. First flight test in September 1965. Probably will be deployed both in fixed sites and mobile launchers. Resembles second and third stages of SS-13 Savage.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

Scrag



Intercontinental Ballistic Missile

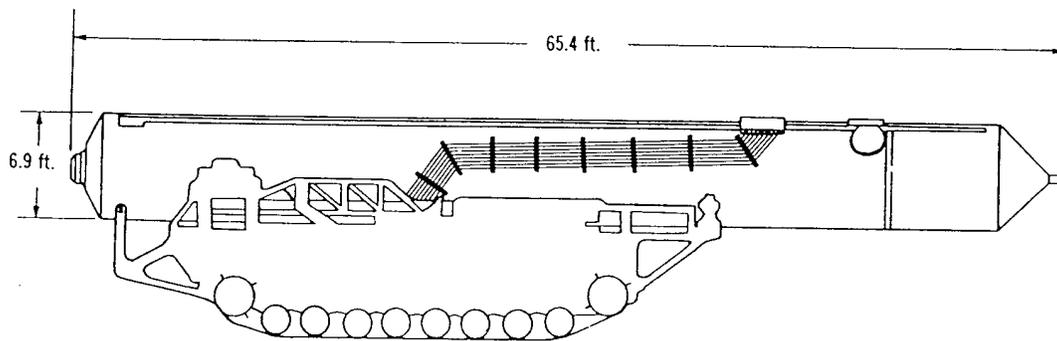
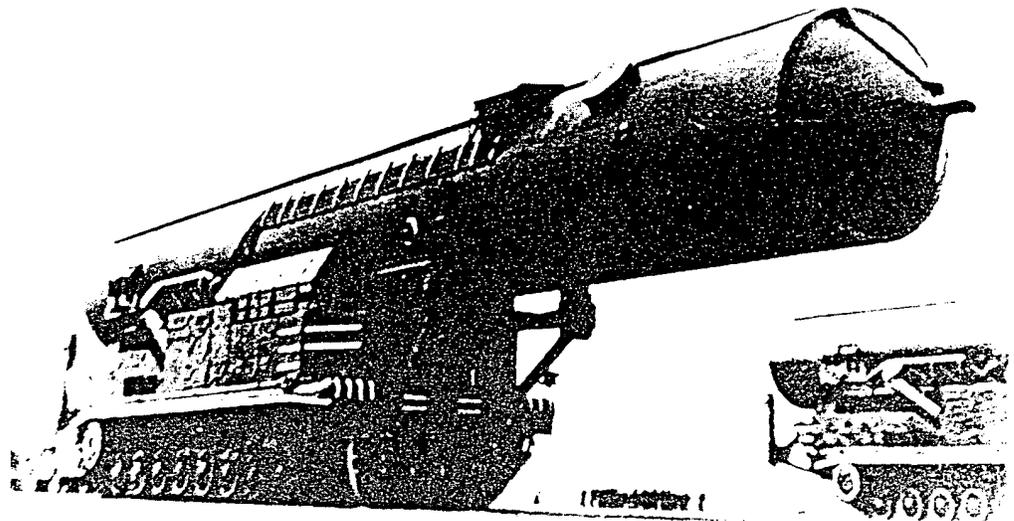
Remarks

First publicly displayed in Moscow parade of May 1965. Not identified with any known flight test program. Soviets claim this is an orbital weapon.

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Soviet Guided Missiles  
SURFACE-TO-SURFACE STRATEGIC MISSILES

Scrooge



Intercontinental Ballistic Missile

Remarks

First publicly displayed in Moscow parade of November 1965. At that time a Soviet colonel told a US attache that this was a solid-propellant weapon with range in excess of 2,700 nm and operational since 1963. Not yet identified with any known flight test program.

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Soviet Guided Missiles  
SURFACE-SURFACE STRATEGIC MISSILES

**SS-X-6**

Depressed Trajectory  
Intercontinental Ballistic Missile

Configuration	2-stage and deboost
Propellant	storable liquid
Launch weight	400,000 lbs
Re-entry vehicle	2,000-4,000 lbs
Warhead (nuclear)	1,600-3,200 lbs
Maximum range	about 6,000 nm
Guidance	inertial
CEP	1-2 nm

Remarks

SS-X-6 weapon system is composed of SS-9 ICBM and deboost stage with warhead. First flight test in December 1965. Operational status undetermined. As DICBM, SS-X-6 in its current configuration is capable of striking US.

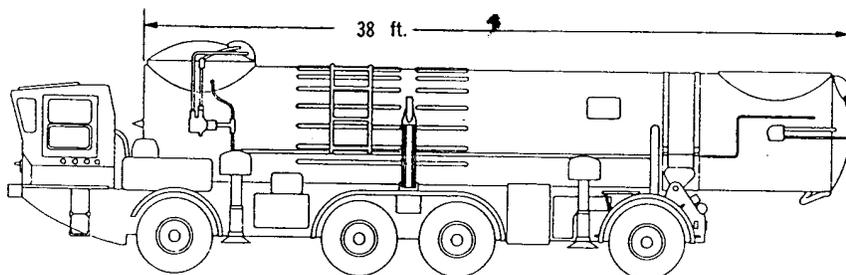
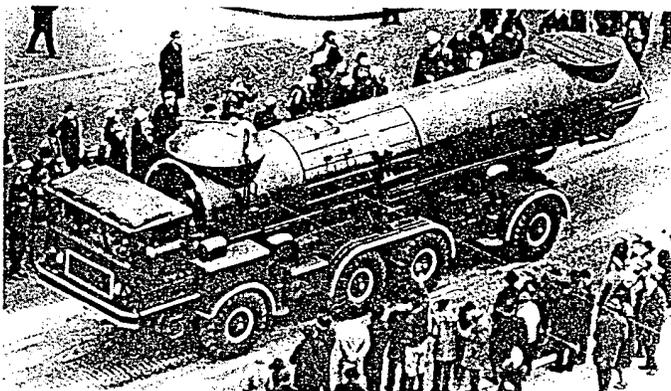
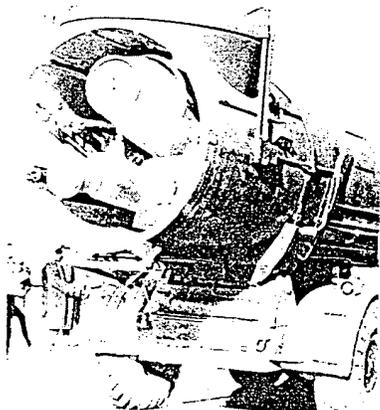
May also be used as fractional orbit bombardment system (FOBS) which places warhead in low earth orbit about 100 miles high. Deorbit engine kicks warhead out of orbit toward target before weapon has completed one revolution of earth. System lacks necessary energy to make it effective orbital weapon against US. Major changes in either warhead size or booster are necessary.

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Soviet Guided Missiles  
GROUND TACTICAL MISSILES

SS-C-1A Shaddock



Short-Range Cruise Missile

IOC	1963
Propulsion	rocket-boosted turbojet
Launch weight	10,000 lbs
Warhead (HE, nuclear)	1,000-2,000 lbs
Maximum range	300 nm
Trajectory	low altitude
Speed	low supersonic
Guidance	autonomous with possible radio link

Remarks

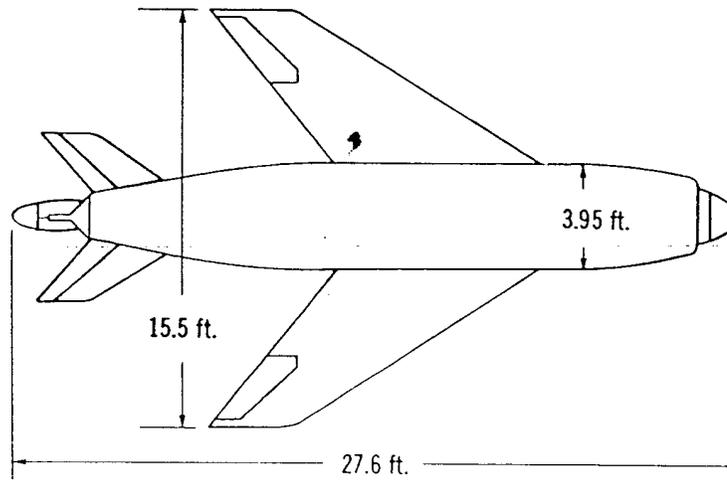
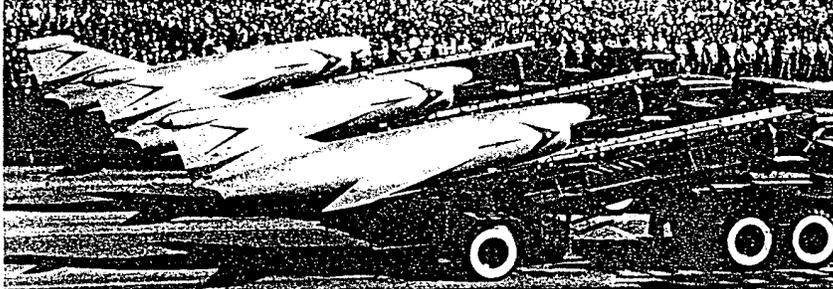
Ground force version of SS-N-3 naval cruise missile. First displayed in Moscow parade of November 1961. Extent of deployment unknown. Operation at full range requires information on targets beyond the horizon.

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Soviet Guided Missiles  
GROUND TACTICAL MISSILES

**SS-C-2A Salish**



Short-Range Cruise Missile

IOC	1957
Propulsion	rocket-boosted turbojet
Launch weight	6,000 lbs
Warhead (HE, possibly nuclear)	2,200 lbs
Maximum range	60 nm
Cruising altitude	under 1,500 ft
Cruising speed (sea level)	Mach 0.8
Guidance	probably beam rider
CEP	300-500 ft

Remarks

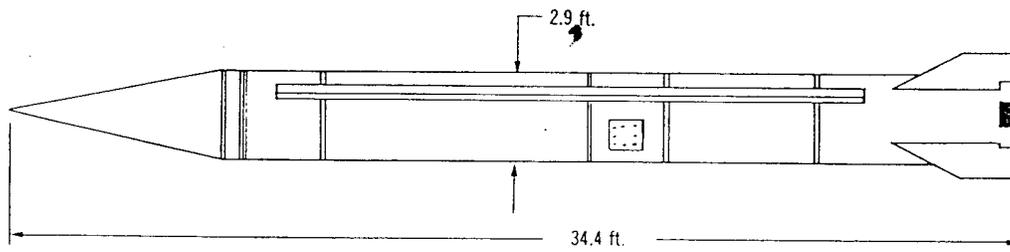
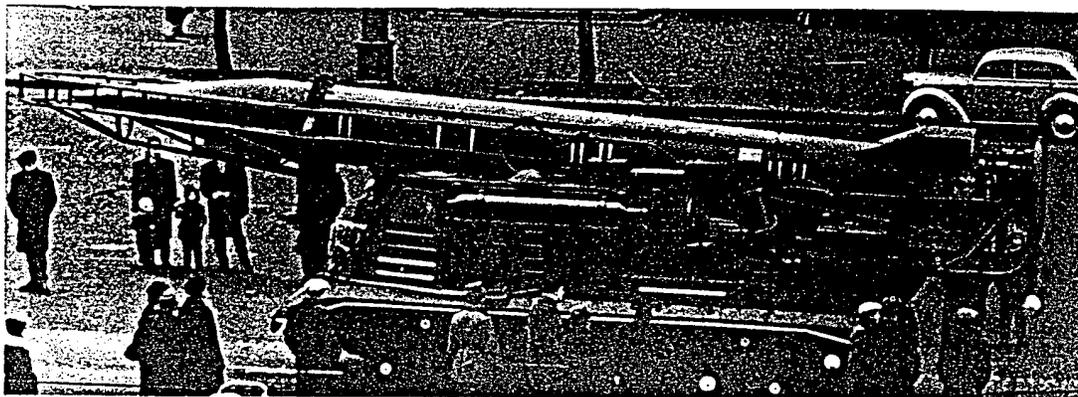
Ground force version of AS-1 Kennel air-to-surface missile. First publicly displayed in Havana parade of January 1965. Observed with Soviet forces in East Germany and assumed to be deployed in USSR.

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Soviet Guided Missiles  
GROUND TACTICAL MISSILES

SS-1B Scud-A



Short-Range Ballistic Missile

IOC	1957
Configuration	single stage
Propellant	storable liquid
Launch weight	12,500 lbs
Warhead	
HE, chemical	1,200 lbs
nuclear	1,600-2,000 lbs
Maximum range	
with lighter warhead	160 nm
with heavier warhead	80 nm
Guidance	inertial
CEP	0.3 nm

Remarks

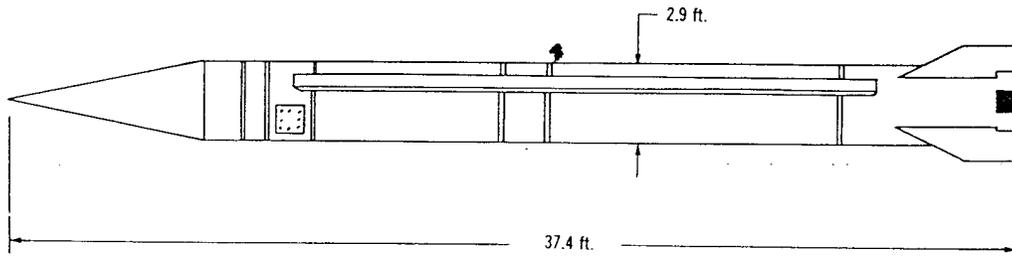
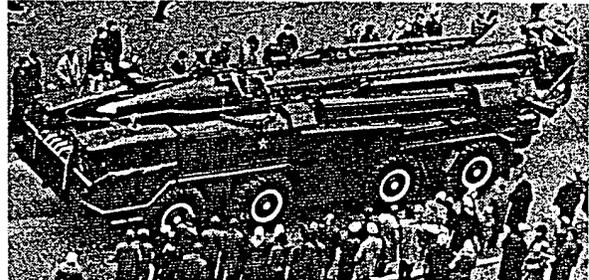
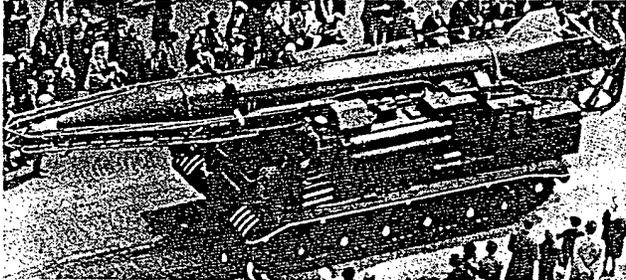
First displayed in Moscow parade of November 1967.  
Used by East European forces with conventional warhead.  
Only Soviet forces have nuclear version available.  
Naval version of Scud missile developed for surface  
launching from modified Z-class submarines.

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Soviet Guided Missiles  
GROUND TACTICAL MISSILES

SS-1C Scud-B



Short-Range Ballistic Missile

IOC	1961
Configuration	single stage
Propellant	storable liquid
Launch weight	13,400 lbs
Warhead (HE, nuclear)	1,600-2,000 lbs
Maximum range	160 nm
Guidance	inertial
CEP	about 0.3 nm

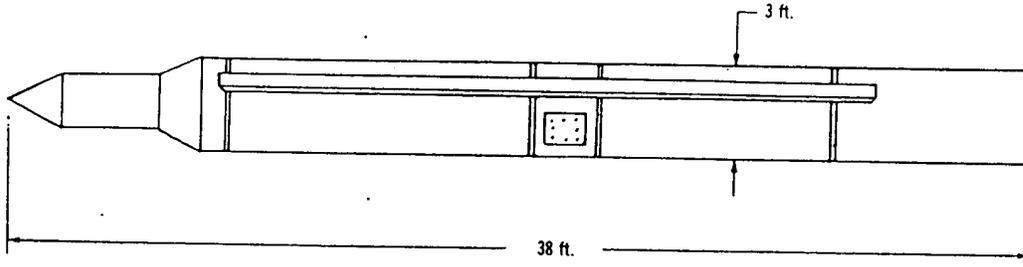
Remarks

First displayed in Moscow parade of November 1961. Eight-wheeled transporter-launcher first shown in November 1965. Scud-B deployed extensively with Soviet forces. East Germany only other country known to have this missile.

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Soviet Guided Missiles  
GROUND TACTICAL MISSILES

SS-12



Short-Range Ballistic Missile

IOC	1965
Configuration	single stage
Propellant	storable liquid
Launch weight	18,800 lbs
Re-entry vehicle	1,500 ± 500 lbs
Warhead (HE, nuclear)	1,200 ± 500 lbs
Maximum range	about 500 nm
Guidance	inertial
CEP	0.25-0.5 nm

Remarks

Tactical mobile system designed to fill gap between 150-mile and 1,000-mile systems. Flight testing began in March 1964. May be deployed with front ground forces to supplement coverage of battle zone.



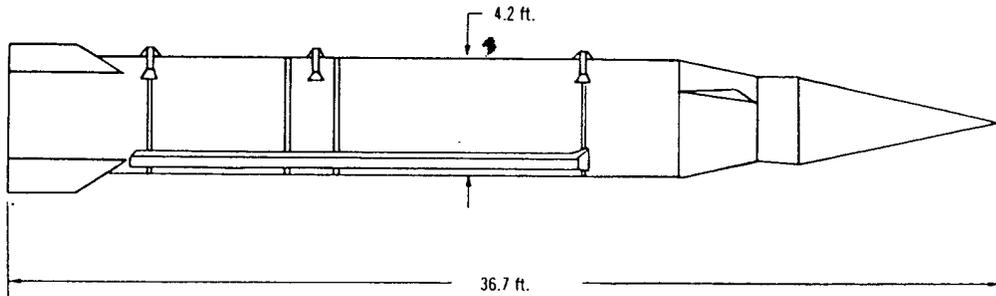
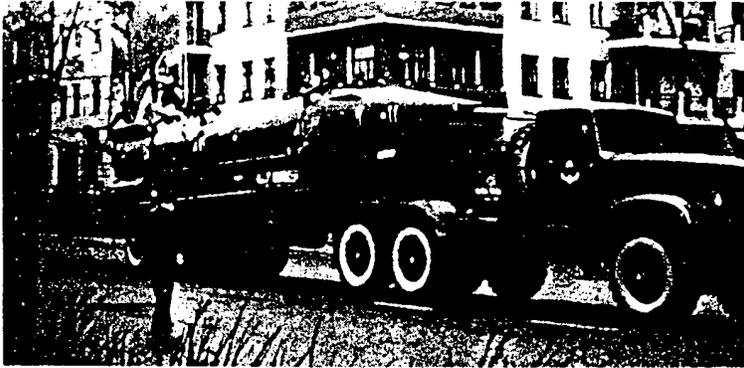
SS-12 may be associated with Scaleboard mobile system (photograph) first displayed in November 1967. Scaleboard is deployed at three locations along Soviet border with China.

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Soviet Guided Missiles  
SUBMARINE MISSILES

SS-N-4



Short-Range Ballistic Missile

IOC	1960
Configuration	single stage
Propellant	storable liquid
Launch weight	25,300 lbs
Re-entry vehicle	about 2,700 lbs
Warhead (nuclear)	about 2,200 lbs
Maximum range	300 nm
Guidance	inertial
CEP	1-2 nm

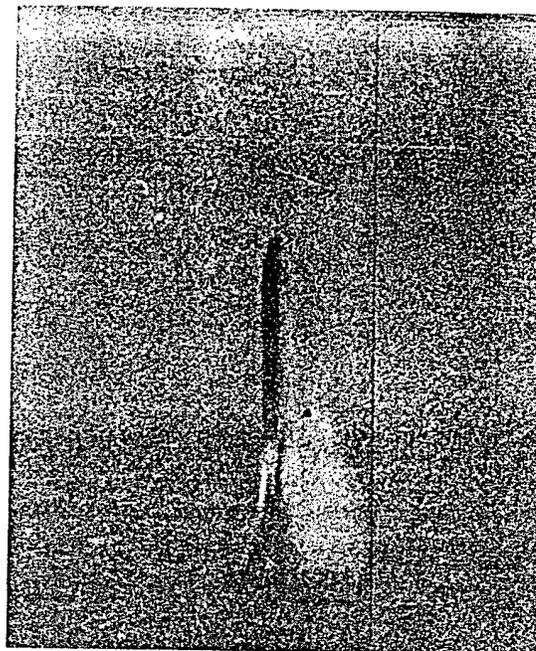
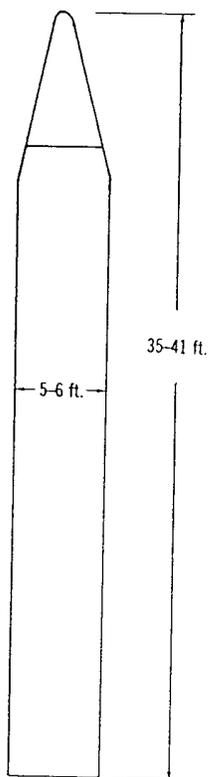
Remarks

Launched from G-I and converted Z class submarines. Submarine surfaces prior to launch. Was also launched from H-I class submarines. First confirmed public appearance in Murmansk parade in November 1967. May have been shown on Soviet-East European TV and movies since 1965.

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Soviet Guided Missiles  
SUBMARINE MISSILES

SS-N-5



(Possible SS-N-5)

Medium-Range Ballistic Missile

IOC	1963
Configuration	single stage
Propellant	storable liquid
Launch weight	39,000 lbs
Re-entry vehicle	2,400 ± 400 lbs
Warhead (nuclear)	2,000 ± 400 lbs
Maximum range	650 nm
Guidance	inertial
CEP	1-2 nm

Remarks

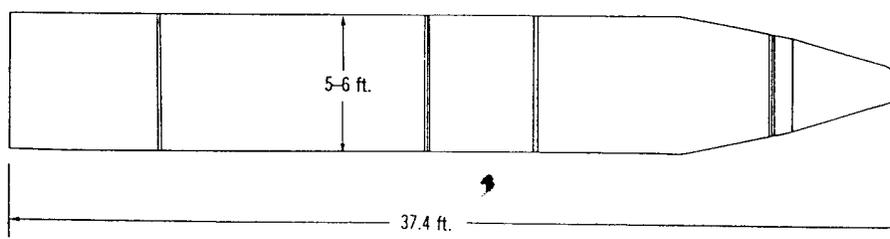
Launched submerged from G-II and H-II class submarines.

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Soviet Guided Missiles  
SUBMARINE MISSILES

SS-N-6



Medium-Range Ballistic Missile

IOC	1968
Configuration	single stage
Propellant	storable liquid
Launch weight	unknown
Re-entry vehicle	1,500 ± 500 lbs
Warhead (nuclear)	1,200 ± 500 lbs
Maximum range	1,500 nm
Guidance	inertial
CEP	about 1 nm

Remarks

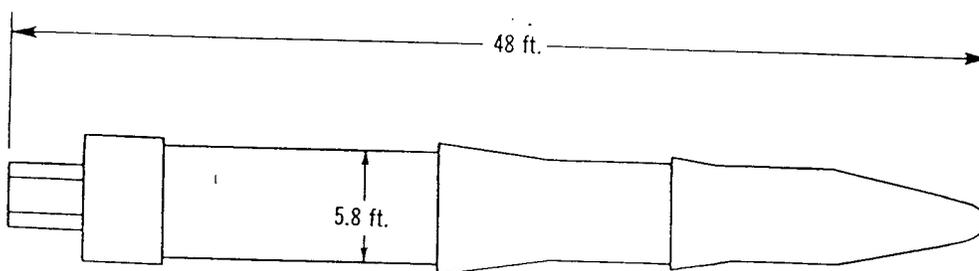
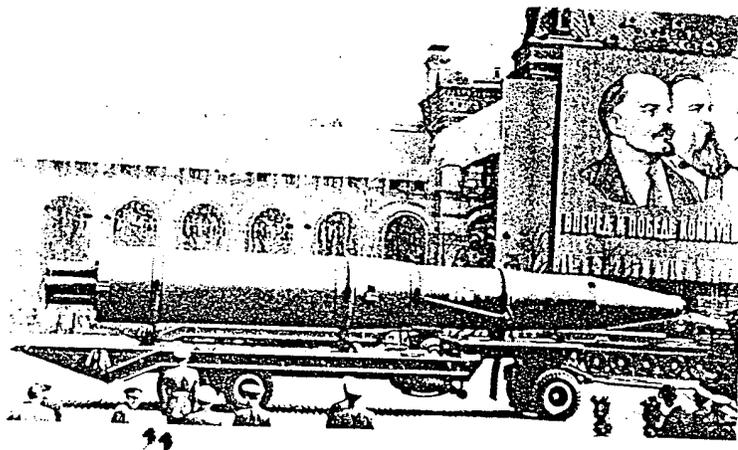
Probably carried by 16-tube Y class ballistic missile submarine. Launched submerged.

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Soviet Guided Missiles  
SUBMARINE MISSILES

Sark



Medium-Range Ballistic Missile

Remarks

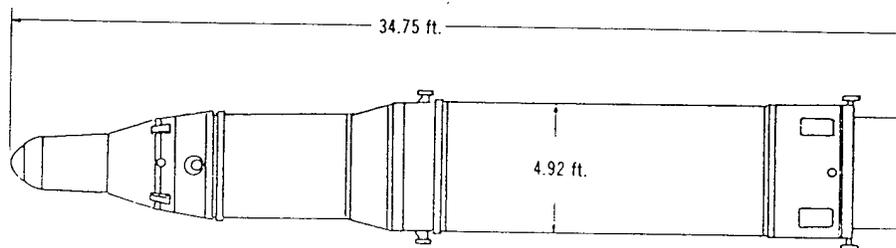
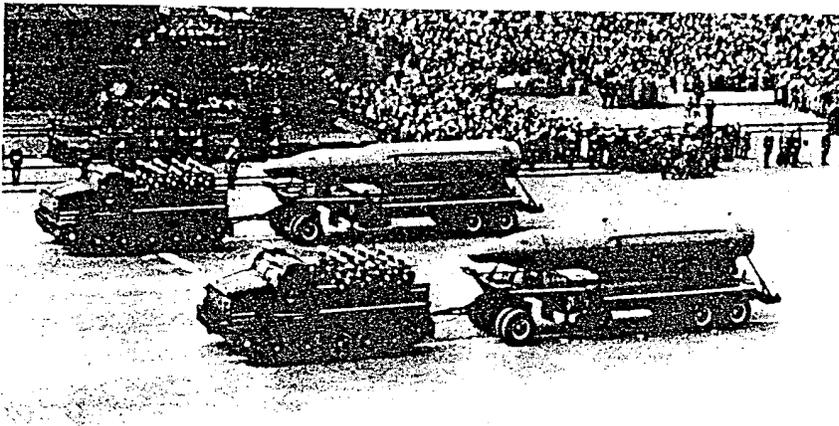
First publicly displayed in Moscow parade of November 1962. Never identified with any test flight program. Probably prototype for Serb. Soviets claimed this missile can be launched from submerged submarines, but its length appears to rule out use on current submarines.

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Soviet Guided Missiles  
SUBMARINE MISSILES

Serb



Medium-Range Ballistic Missile

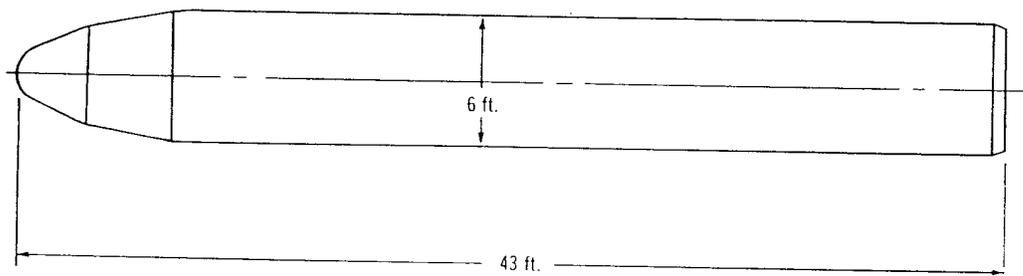
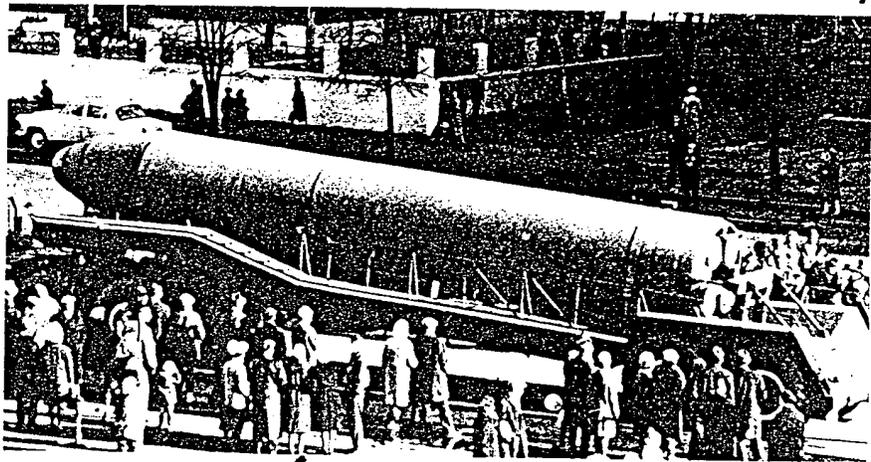
Remarks

Probably a development of Sark. Did not become operational in this configuration. First publicly displayed in Moscow parade of November 1964. Test launch of what was probably a modified Serb was shown on Soviet-East European television in 1965.

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Soviet Guided Missiles  
SUBMARINE MISSILES

Sawfly



Intermediate-Range Missile

Remarks

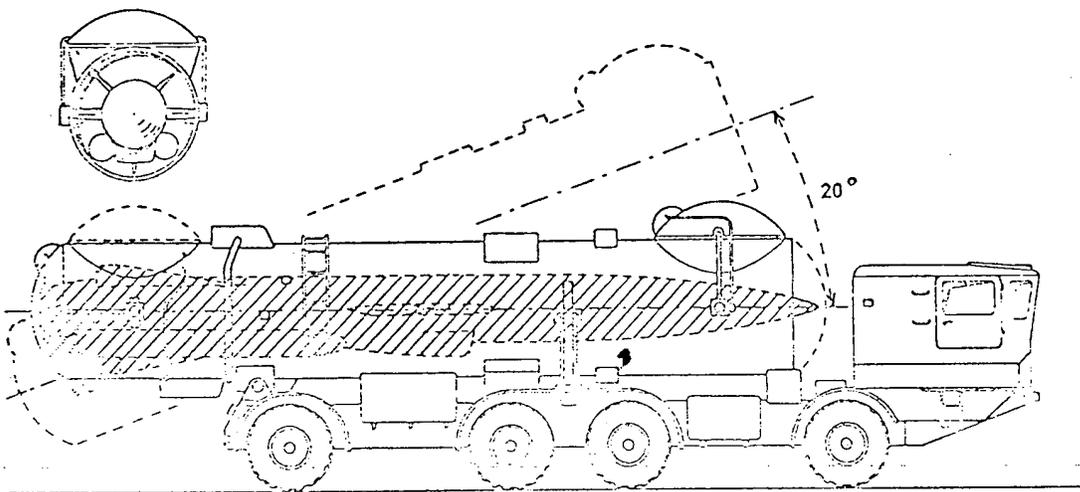
First publicly displayed in Moscow parade of November 1967. Probably two-stage, solid-propellant test vehicle. Status unknown.

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Soviet Guided Missiles  
ANTISHIP MISSILES

**SS-C-1B Shaddock**



Coastal Defense Cruise Missile

IOC	1963
Propulsion	rocket-boosted turbojet
Launch weight	10,000 lbs
Warhead (HE, chemical, nuclear)	1,000-2,000 lbs
Maximum range	270 nm
Cruising altitude	1,000-3,000 ft
Cruising speed	low supersonic
Guidance	command/terminal homing

Remarks

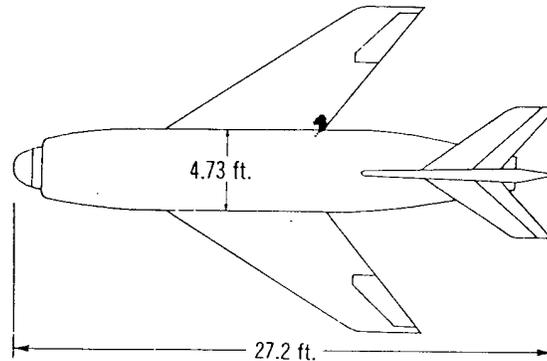
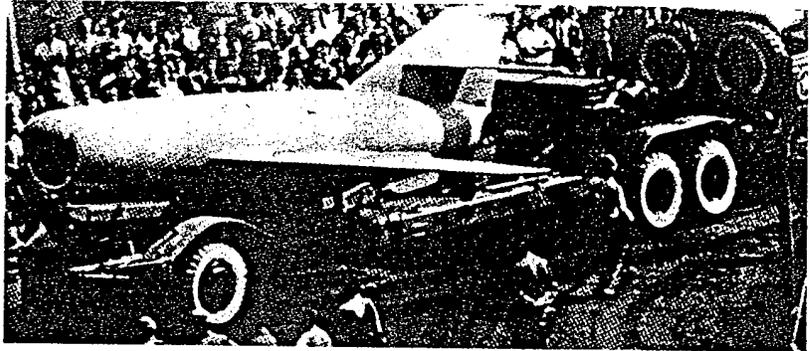
Coastal defense version of SS-N-3 Shaddock. First displayed on Moscow television in mid-1965. Probably intended as replacement for earlier SS-C-2B Samlet. Probably being deployed at principal straits, inlets, and naval bases.

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Soviet Guided Missiles  
ANTISHIP MISSILES

SS-C-2B Samlet



Coastal Defense Cruise Missile

IOC	1956
Propulsion	rocket-boosted turbojet
Launch weight	6,000 lbs
Warhead (HE, chemical)	2,200 lbs
Maximum range	25-45 nm
Cruising altitude	300-1,500 ft
Cruising speed	Mach 0.8
Guidance	beam rider/terminal homing

Remarks

Coastal defense version of AS-1 Kennel air-to-surface missile. Maximum range depends on elevation of guidance radar and height of target ship's superstructure. First publicly displayed in January 1963 parade in Havana. Deployed in coastal areas of USSR in defense of naval installations.

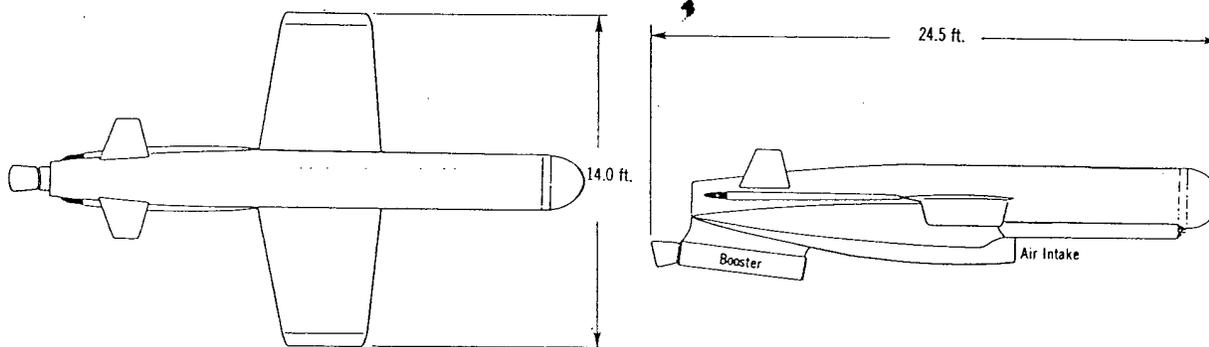
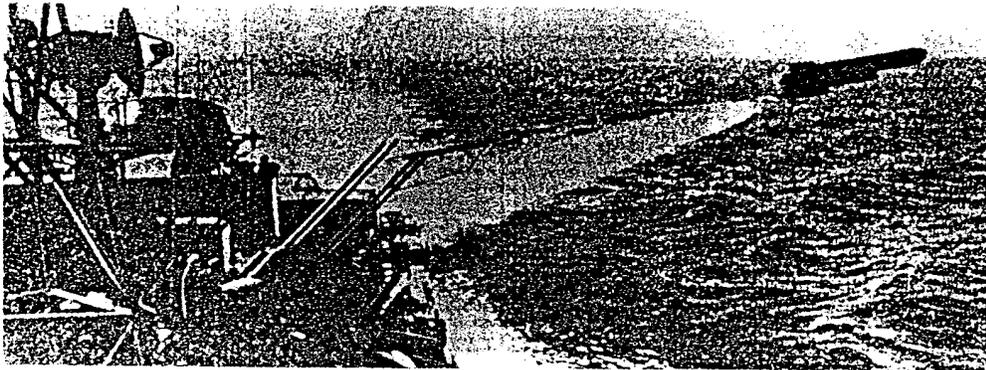
User countries include Bulgaria, Communist China, Cuba, Egypt, East Germany, North Korea, and Poland.

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Soviet Guided Missiles  
ANTISHIP MISSILES

SS-N-1 Scrubber



Naval Short-Range Cruise Missile

IOC	1958
Propulsion	rocket-boosted turbojet
Launch weight	unknown
Warhead (HE, nuclear)	1,000-2,000 lbs
Maximum range	30-80 nm
Cruising altitude	1,000-10,000 ft
Cruising speed (sea level)	Mach 0.75
Guidance	preset autopilot/ possible command over- ride/terminal homing

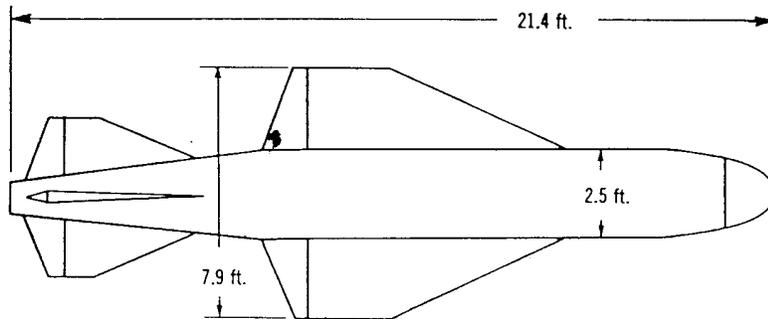
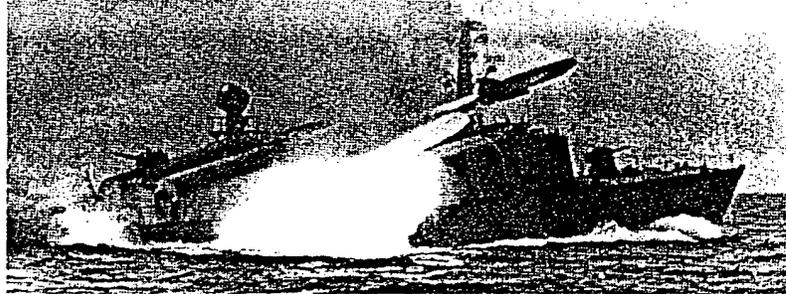
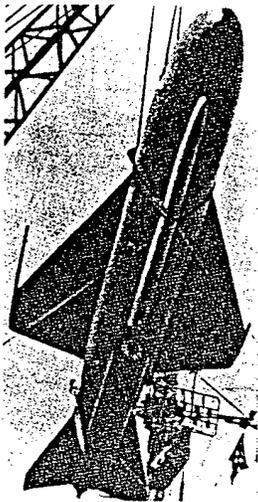
Remarks

Carried by Kildin and Krupnyy class destroyers and used against both ships and shore targets. At ranges beyond approximately 30 nm a target spotter aircraft or surface vessel must supply range and bearing data.

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Soviet Guided Missiles  
ANTISHIP MISSILES

SS-N-2 Styx



Naval Short-Range Cruise Missile

IOC	1959
Propulsion	rocket-boosted storable-liquid-fuel rocket
Launch weight	4,600 lbs
Warhead (HE)	1,100 lbs
Maximum range	25 nm
Cruising altitude	300-1,000 ft
Cruising speed (sea level)	Mach 0.9
Guidance	preset autopilot/ terminal homing

Remarks

Carried by Komar- and Osa-class patrol boats. Primarily antiship missile but can also be used against land targets. There is new version of Osa patrol boat and evidence of modified Styx missile for it.

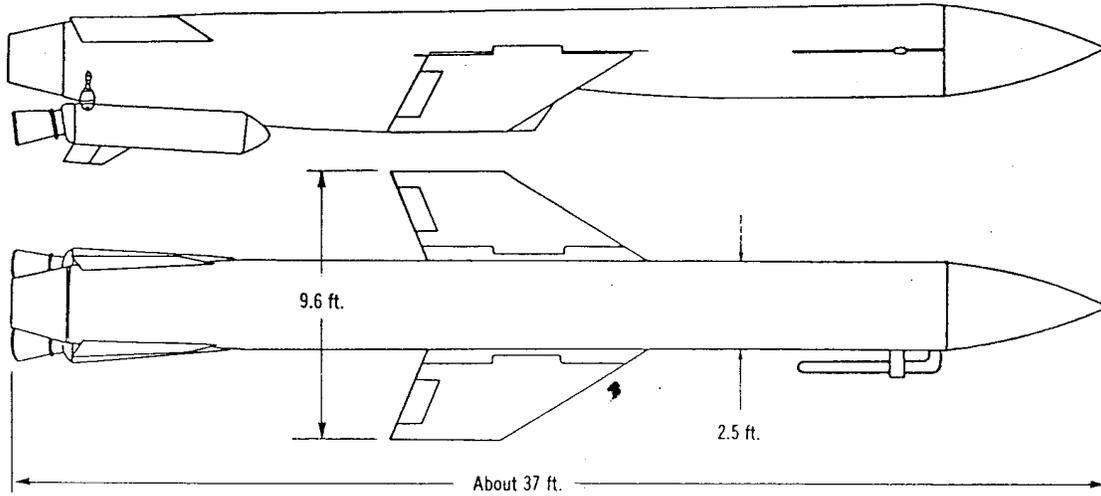
Styx-equipped patrol boats have been exported to Algeria, Communist China, Cuba, Egypt, East Germany, Indonesia, North Korea, Poland, Syria, and Yugoslavia.

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Soviet Guided Missiles  
ANTISHIP MISSILES

SS-N-3 Shaddock



Naval Short-Range Cruise Missile

IOC	1961
Propulsion	rocket-boosted turbojet
Launch weight	10,000 lbs
Warhead (HE, chemical, nuclear)	1,000-2,000 lbs
Maximum range	250 nm
Cruising altitude	1,000-40,000 ft
Cruising speed	Mach 0.9-1.7
Guidance	preset autopilot/ possible command over- ride/terminal homing

Remarks

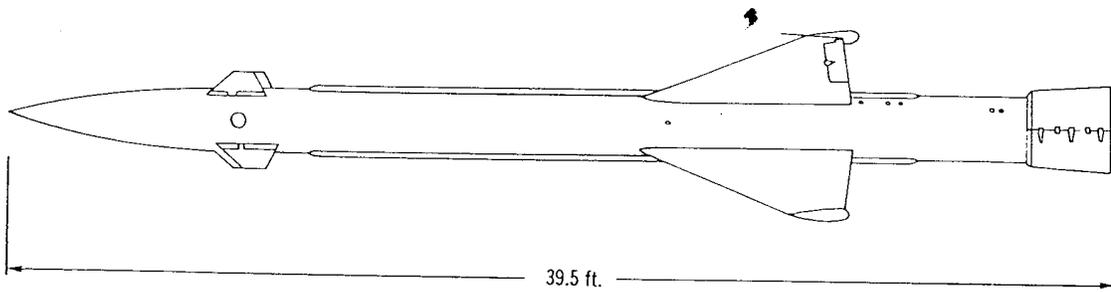
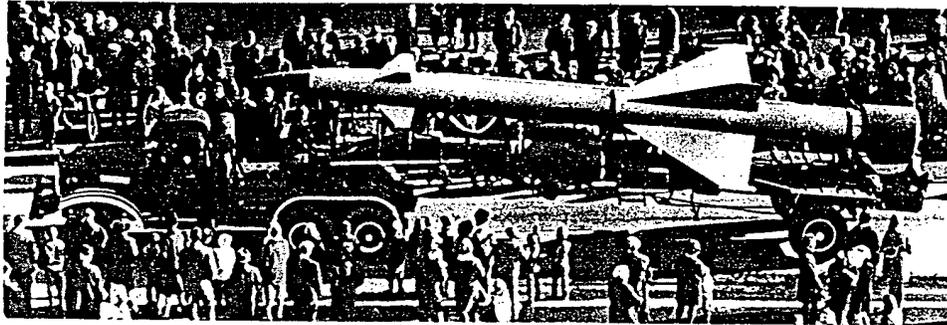
Carried by J- and modified W-class submarines, E-I and E-II nuclear-powered submarines, and Kynda- and Kresta-class cruisers. Submarines must surface to launch.

In primary role as antiship missile, most likely operational range is 250 nm when launched from submarine and 150 nm from surface ship. This weapon could also be used against land targets with CEP of 1-2 nm.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-1 Guild



Surface-to-Air Missile

IOC	1954
Propulsion	single-stage liquid
Warhead (HE)	465 lbs
Maximum operational range	18-24 nm
Effective altitude,	
maximum	60,000-80,000 ft
minimum	3,500 ft
Speed	Mach 3
Guidance	command
CEP	100-200 ft

Remarks

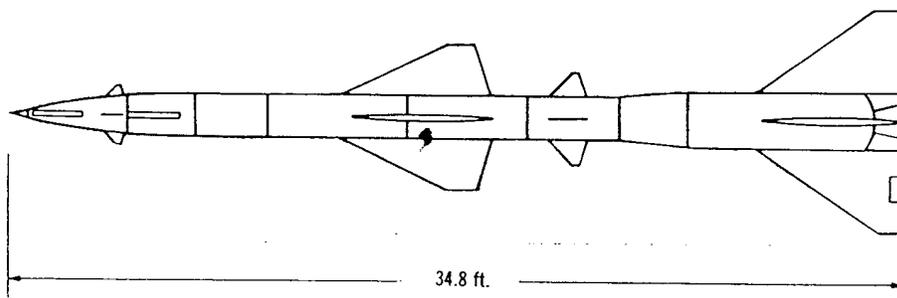
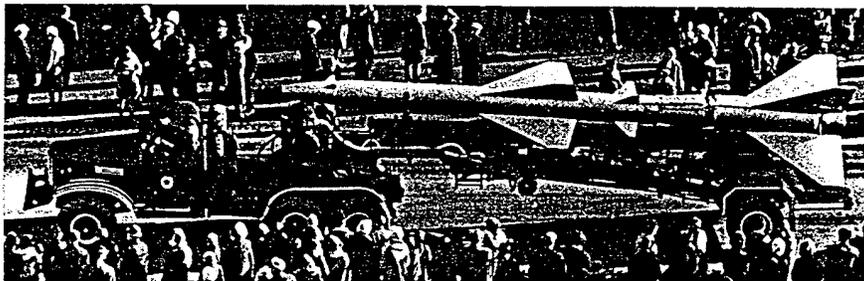
Introduced in 1954 as part of fixed Moscow area defenses. Not deployed elsewhere.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

**SA-2 Guideline  
Mod I, II**



Surface-to-Air Missile

IOC	Mod I 1959, Mod II 1960
Propulsion	solid booster, liquid sustainer
Warhead (HE)	420 lbs
Maximum operational range	Mod I 17 nm Mod II 21 nm
Effective altitude,	
maximum	80,000-90,000 ft
minimum	1,500 ft
Speed	about Mach 4
Guidance	command
CEP	75-100 ft

Remarks

No external features have been identified to distinguish Mod I from Mod II. Mod I is employed with Fan Song B S-band radar, Mod II with Fan Song C C-band radar.

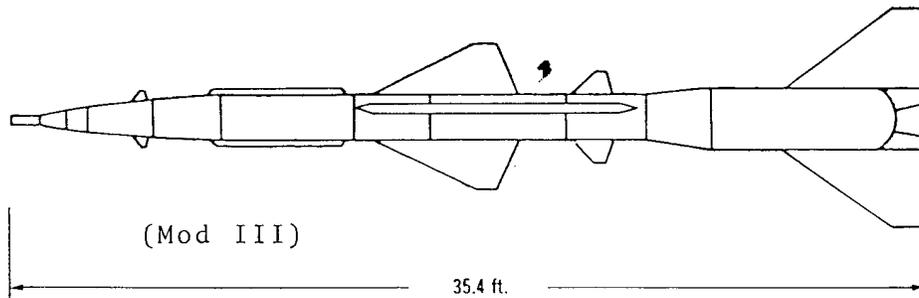
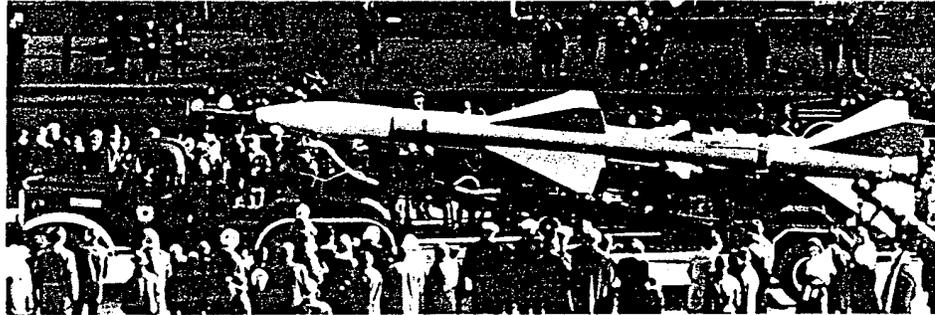
Mod I is no longer operational in USSR. Exported to Warsaw Pact countries and to Afghanistan, Algeria, Communist China, Cuba, Cyprus, Egypt, India, Indonesia, Iraq, North Korea, North Vietnam, and Yugoslavia.

Mod II still operational in USSR. Deployed with Soviet forces in Cuba and exported to some Warsaw Pact countries.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-2 Guideline  
Mod III, IV



Surface-to-Air Missile

IOC	Mod III 1962, Mod IV 1966
Propulsion	solid booster, liquid sustainer
Warhead (HE, nuclear)	about 420 lbs
Maximum operational range	27 nm
Effective altitude,	
maximum	90,000 ft
minimum	1,000 ft
Speed	about Mach 4
Guidance	command
CEP	about 75 ft

Remarks

Employed with Fan Song E C-band radar.

Mod III constitutes primary weapon of Soviet SAM defenses. Exported to most Warsaw Pact countries and Yugoslavia. Also deployed with Soviet forces in Eastern Europe and Mongolia.

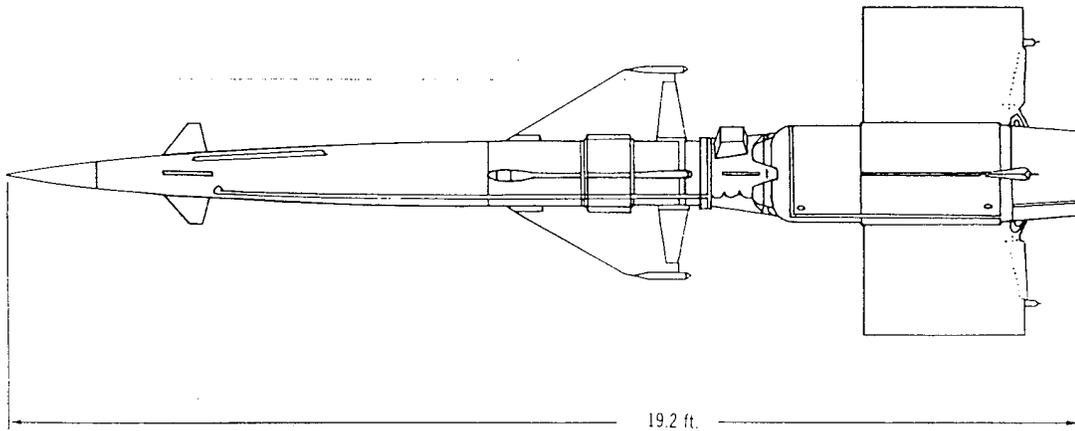
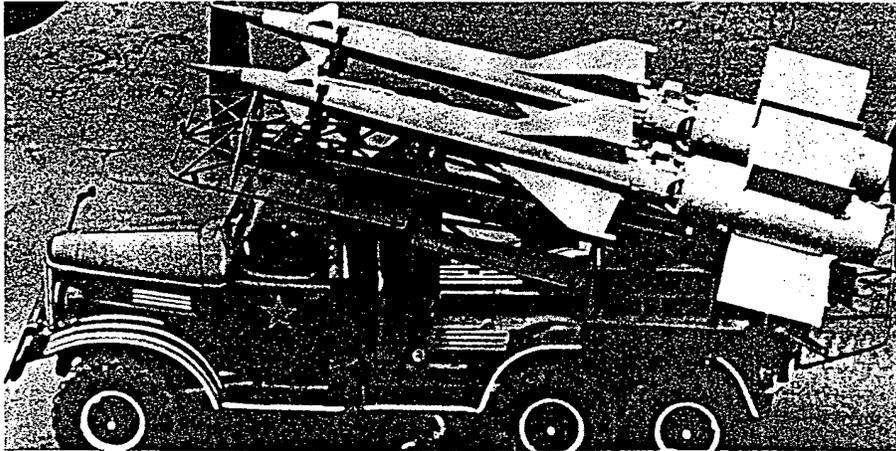
Mod IV, first displayed in November 1967, probably has nuclear warhead. Probably deployed only in USSR.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

**SA-3 Goa**



Surface-to-Air Missile

IOC		1961
Propulsion	solid booster & sustainer	
Warhead (HE)		140 lbs
Maximum operational range		about 13 nm
Effective altitude,		
maximum		about 50,000 ft
minimum		about 500 ft
Speed		Mach 2.5
Guidance		command
CEP		about 30 ft

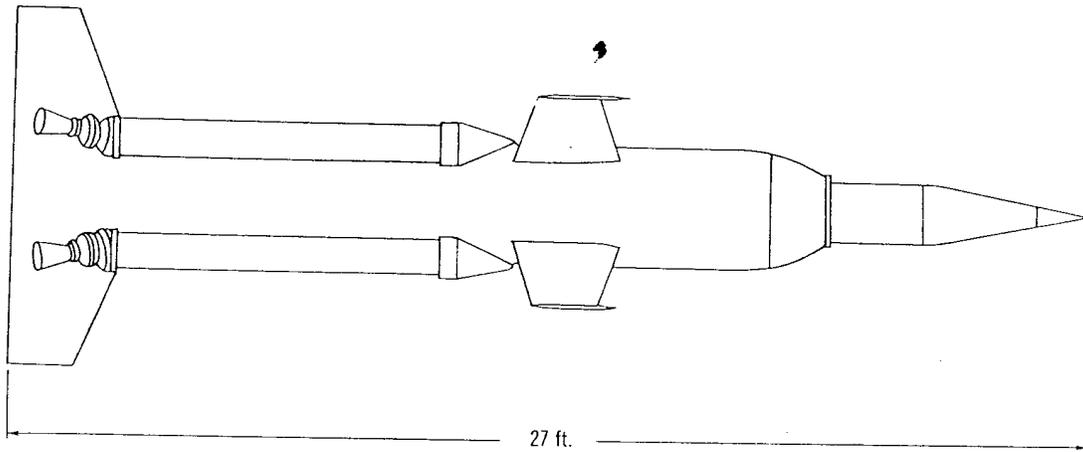
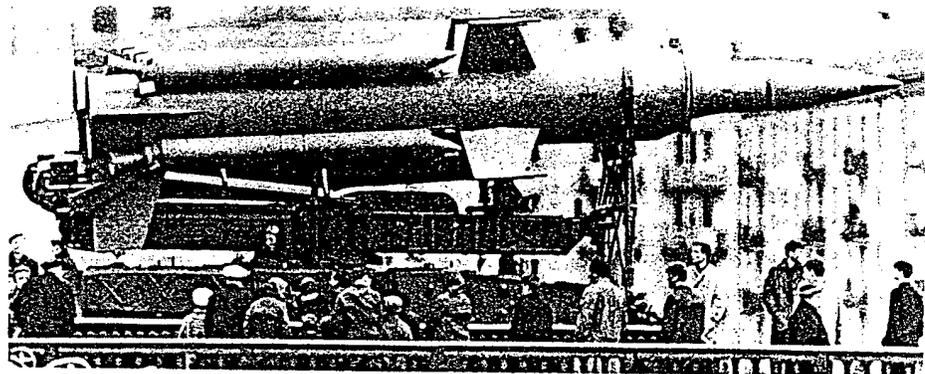
Remarks

Deployed at over 150 sites around Moscow, Leningrad, and some border approaches. Also deployed at Soviet tactical airfields in East Germany, Poland, and Hungary.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-4 Ganef



Surface-to-Air Missile

IOC	1967
Propulsion	4 solid strap-on boosters, ramjet sustainer
Warhead (HE)	400 lbs
Maximum operational range	25-30 nm
Effective altitude,	
maximum	65,000 ft
minimum	1,000-1,500 ft
Speed	Mach 2.6
Guidance	command/terminal homing
CEP	150 ft

Remarks

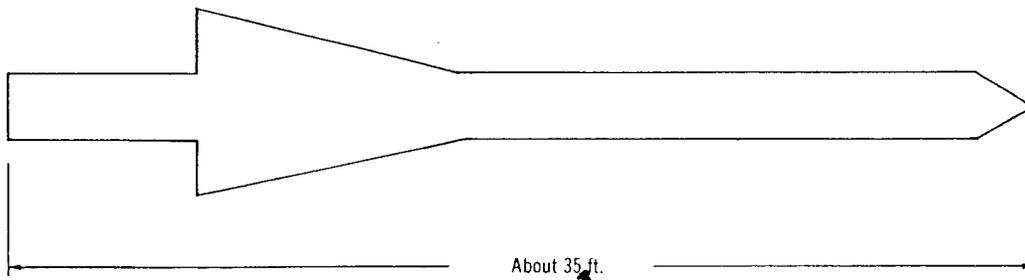
Mobile system used for tactical air defense of Soviet ground forces. First displayed in Moscow parade of May 1964.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-5



Long-Range Surface-to-Air Missile

IOC	1967
Propulsion	solid booster, liquid sustainer
Warhead (HE, nuclear)	700-750 lbs
Maximum operational range	50-100 nm
Effective altitude,	
maximum	110,000 ft
minimum	unknown
Speed	Mach 4.5
Guidance	command/terminal homing
CEP	100-200 ft

Remarks

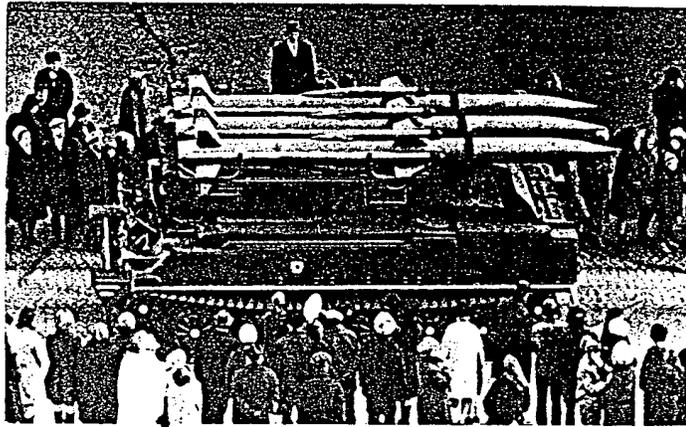
Designed to defend against medium- and high-altitude aircraft and standoff weapons threat. Deployed extensively throughout USSR. Never publicly displayed.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-6 Gainful



Surface-to-Air Missile

IOC	1970-71
Propulsion	unknown
Warhead (HE)	100-200 lbs
Maximum operational range	10-20 nm
Effective altitude,	
maximum	30,000 ft
minimum	under 500 ft
Speed	Mach 2.5
Guidance	command/terminal homing
CEP	20-30 ft

Remarks

Soviets have stated that this mobile system is intended for low-altitude defense. Will be deployed with air defense troops of ground forces.

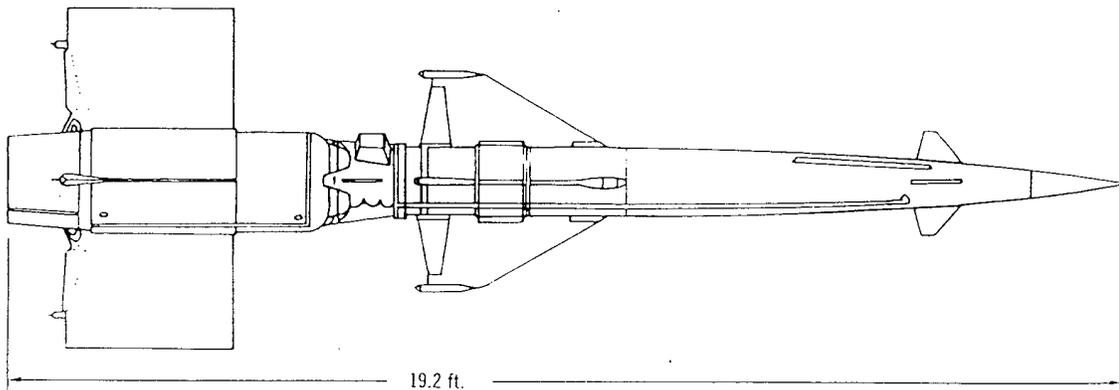
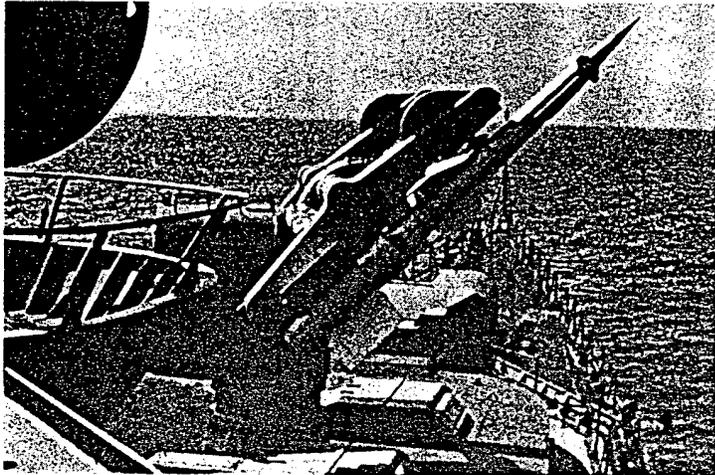
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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

SA-N-1



Naval Surface-to-Air Missile

IOC	1962
Propulsion	solid booster & sustainer
Warhead (HE)	100-200 lbs
Maximum operational range	12 nm
Effective altitude,	
maximum	25,000-50,000 ft
minimum	about 500 ft
Speed	Mach 2.5
Guidance	command
CEP	about 50 ft

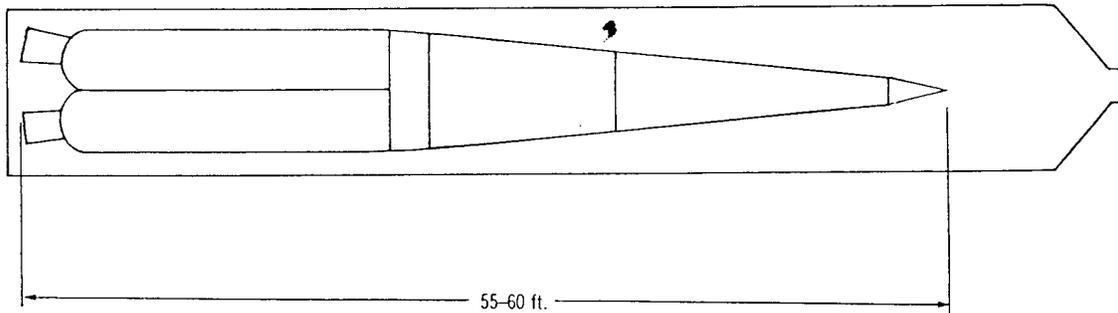
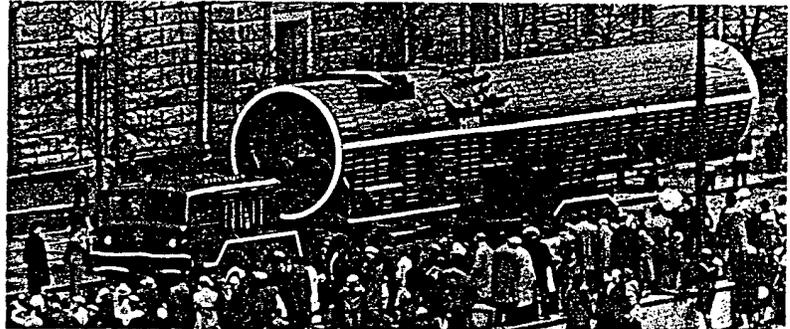
Remarks

Naval version of SA-3 Goa. Carried on Kashin and converted Kotlin class destroyers, and Kresta and Kynda class cruisers.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

Galosh (ABM-1)



ABM Missile

IOC	1968
Propulsion	solid booster with probable liquid sustainer
Warhead (nuclear)	2,000-3,000 lbs
Maximum operational range	350 nm
Effective altitude,	
maximum	200-300 nm
minimum	100,000 ft
Speed	11,500-14,500 ft per second
Guidance	probably command type using small Try Add radars

Remarks

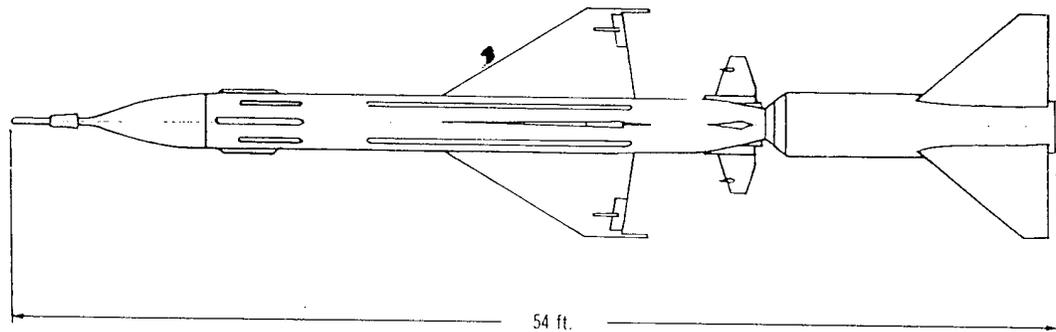
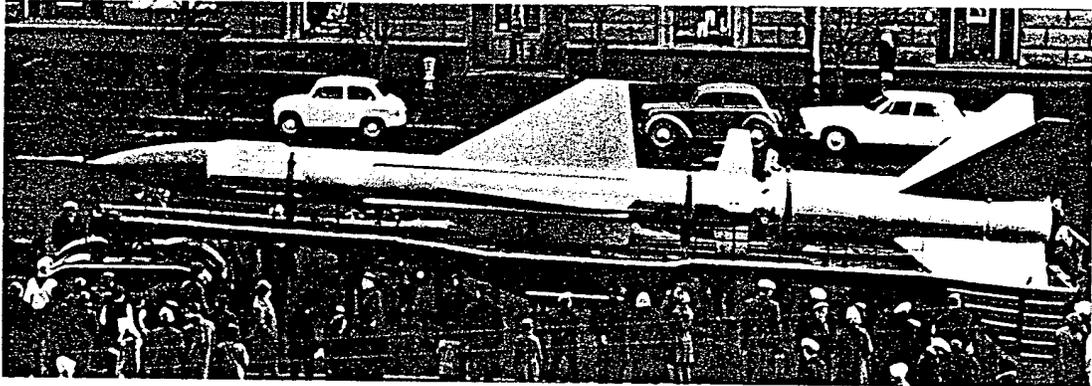
Deployment limited to Moscow area. Estimated to provide limited defense capability against ballistic missile attack.

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Soviet Guided Missiles  
SURFACE-TO-AIR AND ABM MISSILES

**Griffon**



IOC	never operational
Propulsion	solid booster, liquid sustainer
Warhead (HE, nuclear)	600-1,000 lbs
Maximum operational range	about 100 nm
Effective altitude, maximum	about 100,000 ft
minimum	unknown
Speed	5,500-6,000 ft per second
Guidance	command/possible terminal homing
CEP	unknown

Remarks

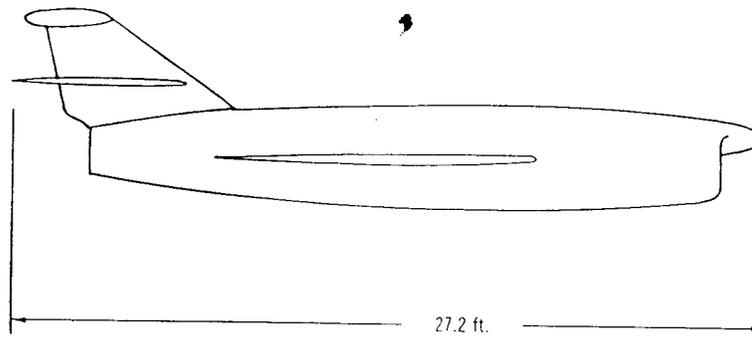
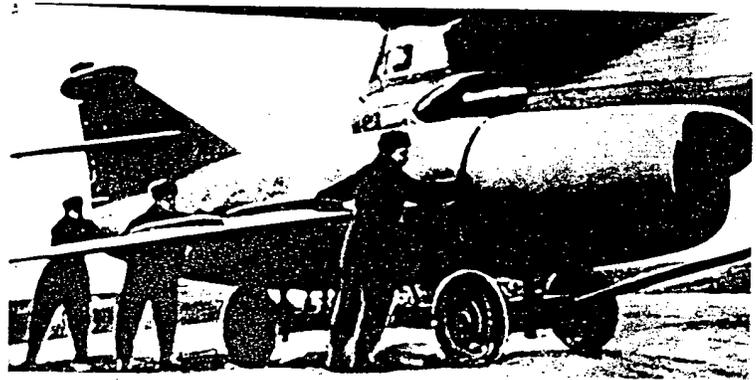
First shown in Moscow parade of November 1963. Described in Soviet literature both as surface-to-air and anti-ballistic missile. Not known to be deployed.

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Soviet Guided Missiles  
AIR-TO-SURFACE MISSILES

AS-1 Kennel



IOC	1957
Propulsion	turbojet
Launch weight	6,000 lbs
Warhead (HE, possibly chemical)	2,000 lbs
Range	50 nm
Speed	Mach 0.80-0.85
Guidance	beam rider/terminal homing
CEP, against ships	150 ft
against land targets	1 nm
Carrier:load	TU-16 Badger B : two

Remarks

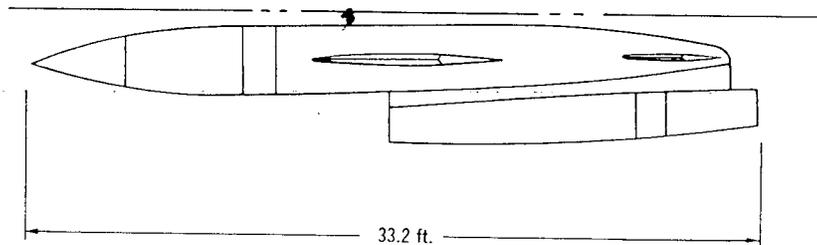
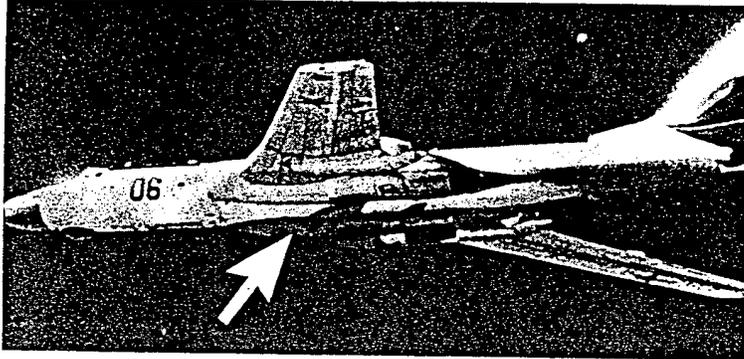
First Soviet antiship missile. Most or all of AS-1s allocated to Soviet naval air forces probably replaced by AS-5s. Exported to Indonesia and Egypt.

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Soviet Guided Missiles  
AIR-TO-SURFACE MISSILES

**AS-2 Kipper**



IOC	1960-61
Propulsion	turbojet
Launch weight	9,100 lbs
Warhead (HE, nuclear)	2,200 lbs
Range	100 nm
Launch speed, at 36,000 ft	Mach .8
Maximum cruise speed,	
high altitude	Mach 1.7
low altitude	Mach 1.2
Guidance	autopilot with command override/terminal homing
CEP, against ships	150 ft
against land targets	1-2 nm
Carrier:load	TU-16 Badger C : one

Remarks

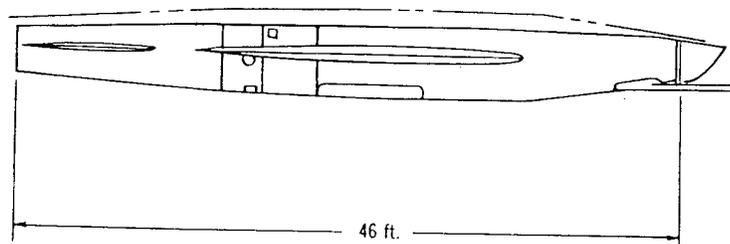
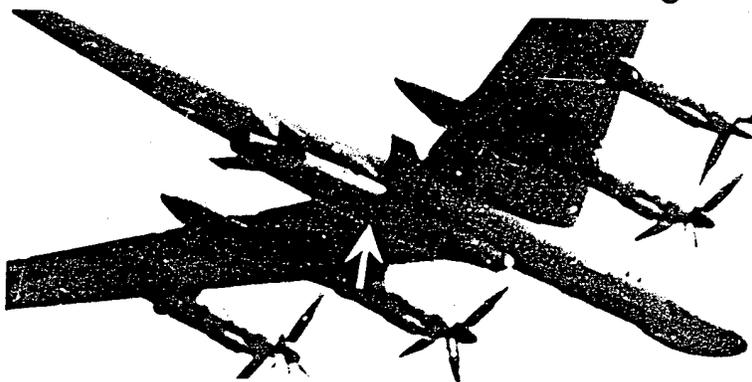
Used only by Soviet naval air forces, primarily in antiship role.

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Soviet Guided Missiles  
AIR-TO-SURFACE MISSILES

AS-3 Kangaroo



IOC	1960-61
Propulsion	turbojet
Launch weight	25,000 lbs
Warhead (nuclear)	4,500-5,500 lbs
Maximum range	350 nm
Speed	Mach 1.8-2.0
Guidance	autopilot with command override
CEP	1-3 nm
Carrier:load	TU-95 Bear B,C : one

Remarks

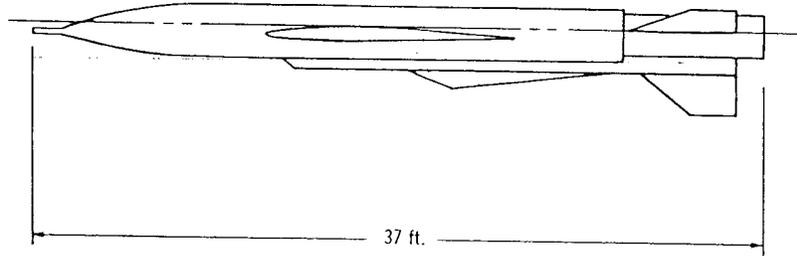
Designed as standoff weapon for strategic attack  
against large land targets.

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Soviet Guided Missiles  
AIR-TO-SURFACE MISSILES

**AS-4 Kitchen**



IOC	1968
Propulsion	liquid rocket
Launch weight	14,000 lbs
Warhead (HE, nuclear)	2,200 lbs
Range, against ships	150 nm
against land targets	250 nm
Speed	Mach 3.5
Guidance	unknown
CEP	1-2 nm
Carrier:load	TU-22 Blinder B : one

Remarks

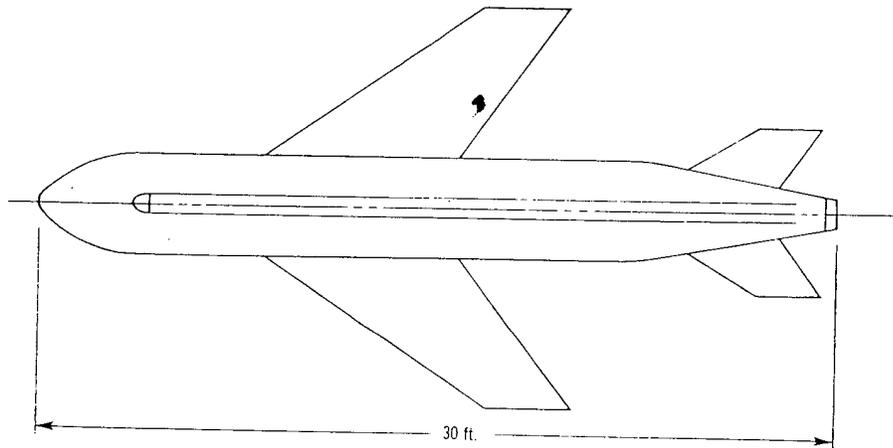
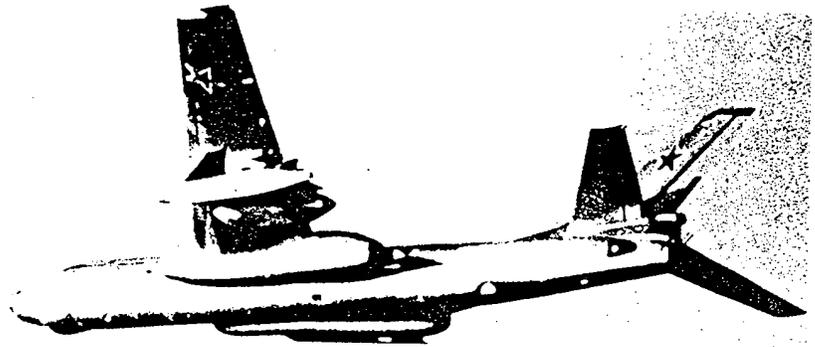
Apparently designed for use against land and ship targets.

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Soviet Guided Missiles  
AIR-TO-SURFACE MISSILES

AS-5 Kelt



IOC	1963-65
Propulsion	liquid-fuel rocket
Launch weight	about 6,000 lbs
Warhead (HE, nuclear)	1,000-2,000 lbs
Range	120 nm
Speed	Mach .9-1.2
Guidance	unknown, possibly preset autopilot with command override/possibly terminal homing in antiship role
CEP, against land targets	1-2 nm
against ships	150 ft
Carrier:load	TU-16 Badger B : two

Remarks

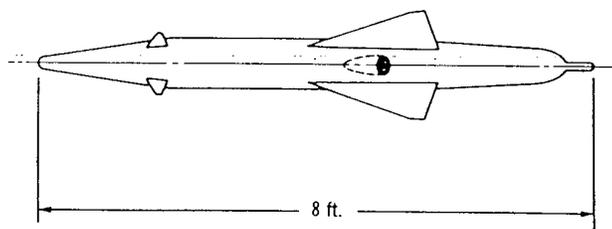
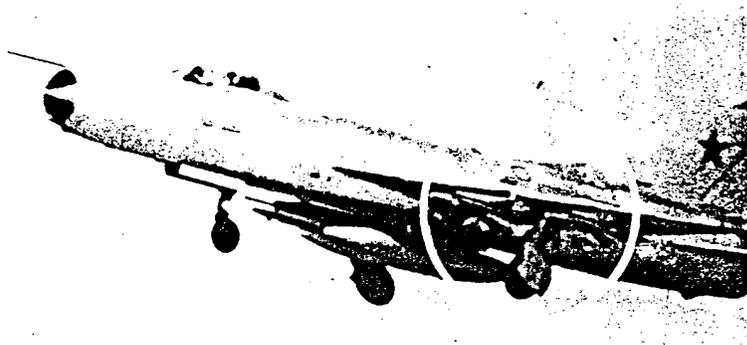
Launch occurs at altitude of 30,000-35,000 feet at about 440 knots. Began to replace AS-1 about 1963. Has extended the useful life of TU-16 Badger B.

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Soviet Guided Missiles  
AIR-TO-AIR MISSILES

AA-1 Alkali



IOC		1957-59
Launch weight, AA-1B		187 lbs
	AA-1C	205 lbs
Warhead (HE)		35 lbs
Maximum range		3-4 nm
Guidance		beam rider
CEP		20 ft
Carrier:load	MIG-19 Farmer E	: four
	SU-9 Fishpot B	: four
	MIG-21 Fishbed D,F	: two

Remarks

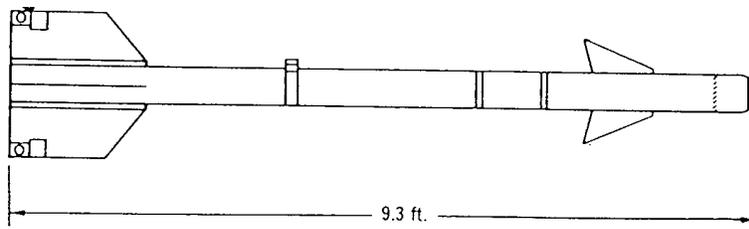
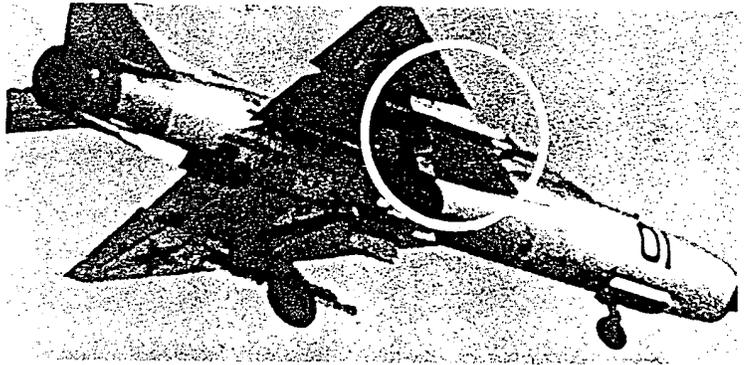
All-weather tail attack system. Has limited attack capability at low altitude down to sea level in fixed beam mode.

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Soviet Guided Missiles  
AIR-TO-AIR MISSILES

AA-2 Atoll



IOC	1959-60
Launch weight	167 lbs
Warhead (HE)	25 lbs
Maximum range	5-6 nm
Guidance	infrared homing
CEP	10-15 ft
Carrier:load	MIG-21 Fishbed C, D,E,F,H : two

Remarks

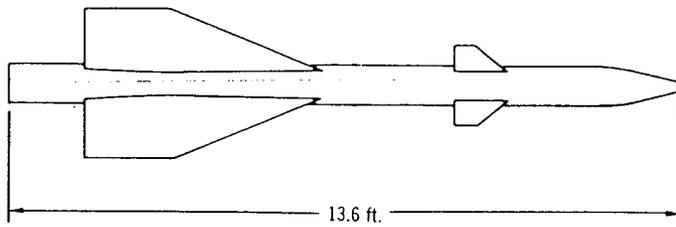
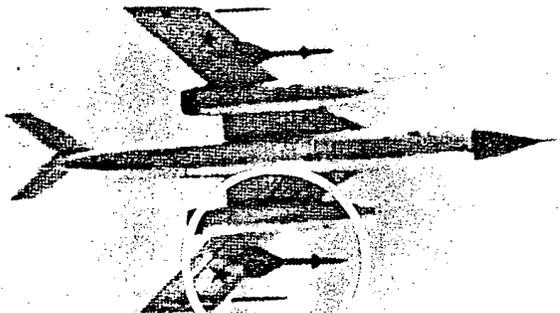
Soviet version of US Sidewinder. Does not have all-weather capability. Exported to Afghanistan, Algeria, Cuba, Egypt, India, Indonesia, Iraq, Syria, and Yugoslavia.

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Soviet Guided Missiles  
AIR-TO-AIR MISSILES

**AA-3 Anab**



IOC	1964
Launch weight	600 lbs
Warhead (HE)	75 lbs
Maximum range	10-12 nm
Guidance,	
AA-3A	radar homing
AA-3B	infrared homing
CEP, AA-3A	20-30 ft
AA-3B	10-15 ft
Carrier:load	YAK-28 Firebar : two
	SU-9 Fishpot C : two
	SU- Flagon A : two

Remarks

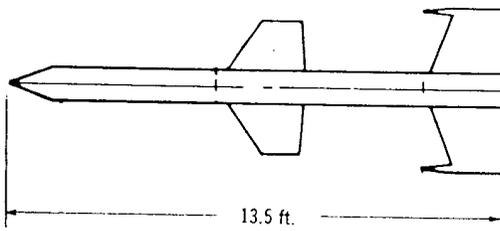
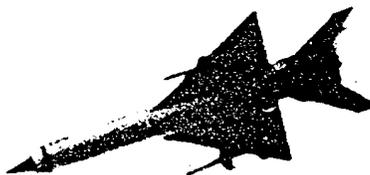
AA-3A is all-weather tail or nose attack system.  
AA-3B is limited to tail attack and does not have  
all-weather capability.

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Soviet Guided Missiles  
AIR-TO-AIR MISSILES

AA-4 Awl



IOC	deployment unlikely
Launch weight	750 lbs
Warhead (HE)	125-150 lbs
Maximum range	9-11 nm
Guidance	unknown
CEP	unknown
Carrier:load	Flipper : two

Remarks

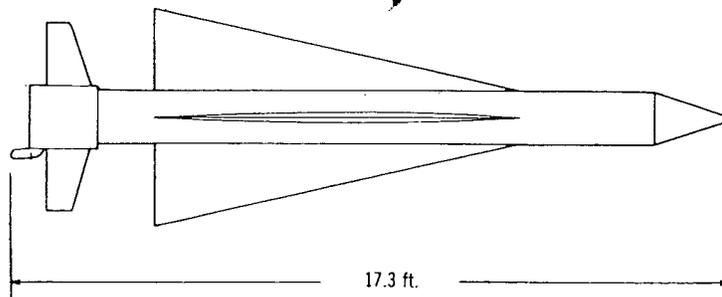
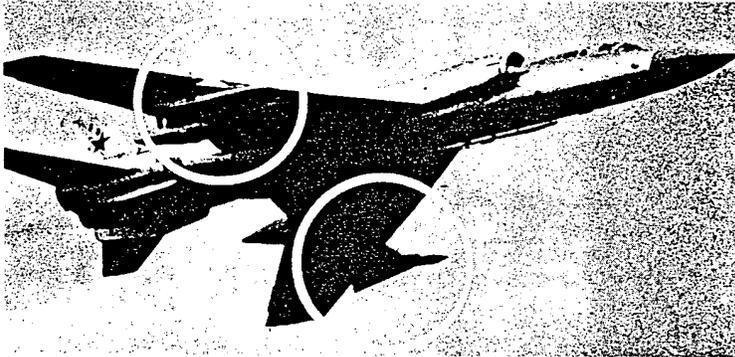
Observed only at 1961 Tushino air show, on Flipper interceptor. Flipper did not reach operational status.

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Soviet Guided Missiles  
AIR-TO-AIR MISSILES

**AA-5 Ash**



IOC	1966
Launch weight	1,000 lbs
Warhead (HE)	150 lbs
Maximum range	12-16 nm
Guidance,	
AA-5A	radar homing
AA-5B	infrared homing
CEP, AA-5A	25-50 ft
AA-5B	20-25 ft
Carrier:load	TU-28 Fiddler : four

Remarks

AA-5A is all-weather system capable of attack from any direction. AA-5B is limited to tail attack and does not have all-weather capability.