



DCS A-10C



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[**Air Defenses V2.0**]

This document is a guide on how to engage various air defenses.



[Contents]

Symbology

RWR Symbology Meanings 3

Radar Guided Surface to Air Missiles

SA-3 Goa (S-125) 4

SA-6 Gainful (2K12 Kub) 6

SA-8 Gecko (9K33 OSA) 8

SA-10 Grumble (S-300PS) 9

SA-11 Gadfly (9K37 Buk) 12

SA-15 Gauntlet (9A331 TOR) 14

SA-19 Grison (2C6M TUNGUSKA) 15

Infrared Guided Surface to Air Missiles

SA-9 Gaskin (9P31 Strela-1) 16

SA-13 Gopher (9K35M3 Strela-10) 17

SA-18 Grouse (Igla MANPADS) 18

Anti Aircraft Artillery (AAA)

ZU-23 19

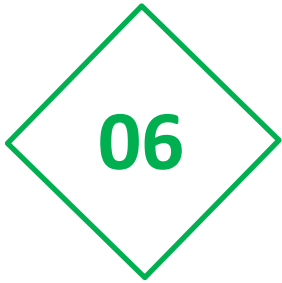
Shilka (ZSU-23-4) 20

Quick Reference RWR Symbols

Ground Threats 21

Air Threats 22

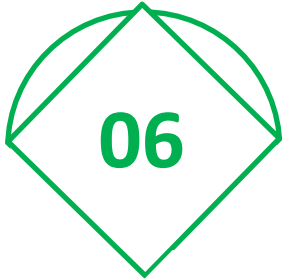
RWR Symbology Meanings



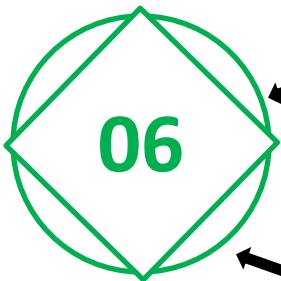
Diamond represents the primary threat.



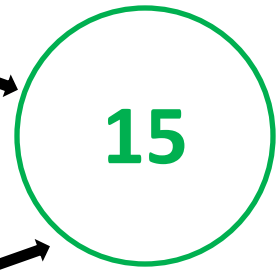
“Roof Mark” over symbol represents an airborne threat.



Upper half-circle represents newest threat.

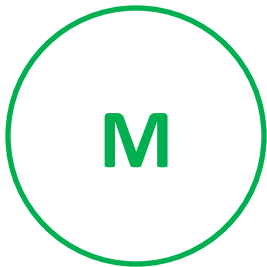


Flashing Circle represents missile launch.



NOTE:

If newest threat, only the bottom half of the circle flashes



When the **Missile Warning System (MWS)** is active and a **missile launch** has been detected, an — **Circle with an M** displayed along the azimuth the launch was detected will appear. The symbol will continue to appear 10 seconds after the launch is no longer detected (missile motor has stopped burning).



When a missile launch has occurred, the Missile Launch (ML) light on the CMSC will turn on

NOTE:

The MWS **CANNOT** distinguish between enemy and friendly missiles or air launched missiles from ground launched missiles.

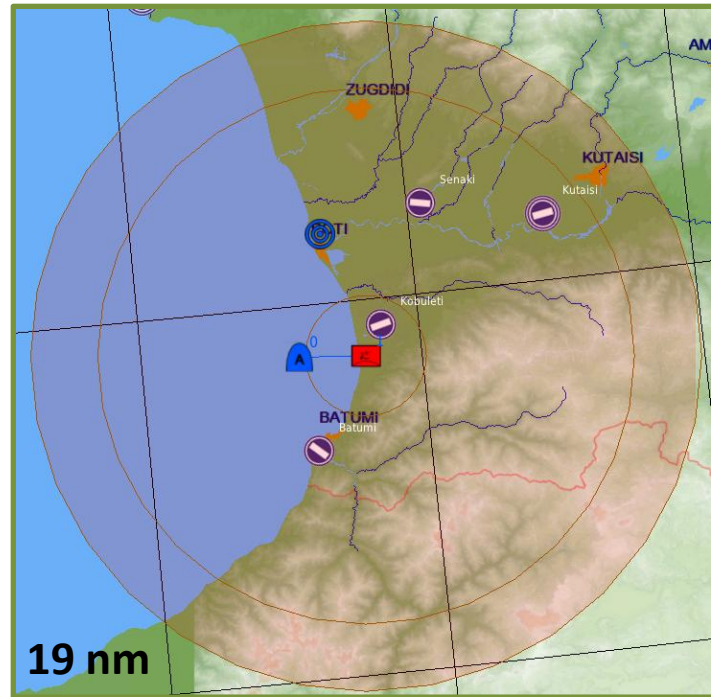
SA-3 Goa (S-125) System – TN SNR



*****HIGH THREAT*****
IF AVAILABLE CALL SEAD



Medium to High Altitude
 System Search/Track Radar
 Operational range: 25km
 Detection range: 75 km azimuth; 10 km altitude
 Tracking range: 28 km



Countermeasures
 ECM Program – SAM1
 Release CHAFF



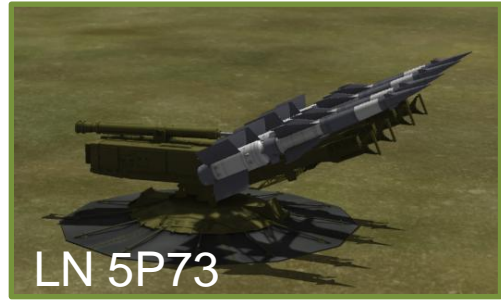
Black Hot

White Hot

SA-3 Goa (S-125) System – con't



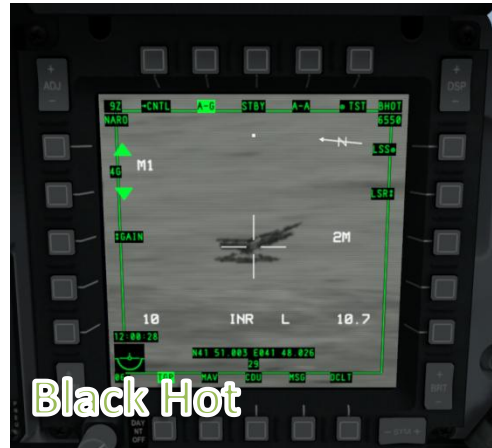
SR P-19



LN 5P73



Black Hot



Black Hot



White Hot

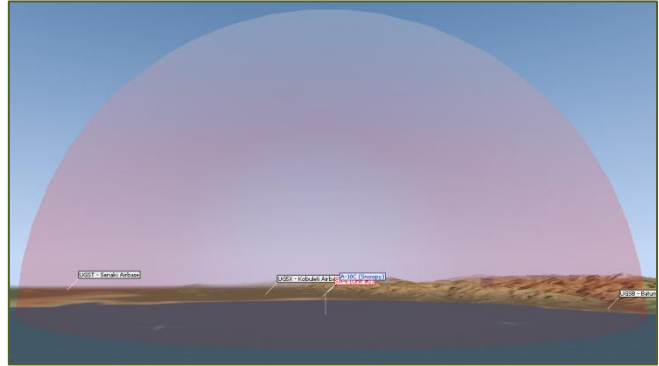


White Hot

SA-6 Gainful (2K12 Kub) System – 9S91



*****HIGH THREAT***
IF AVAILABLE CALL SEAD**



Low to Medium Altitude
System Search/Track Radar
Operational range: 260 km
Max road speed: 44 km/h
Detection range: 75 km azimuth; 10 km altitude
Tracking range: 28 km

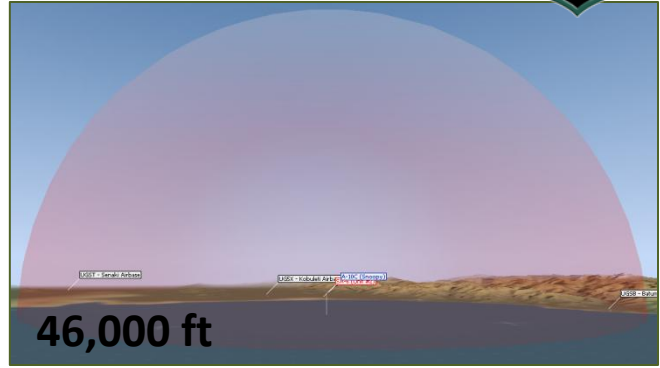


Countermeasures
ECM Program – SAM1
Release CHAFF



White Hot

SA-6 Gainful (2K12 Kub) – 2P25



Low to Medium Altitude

Warhead: 59 kg HE

Reload time (SPU): 10 min

Armament:

3 SA-6 (3M9M) missile

Medium-range, radio command guidance + SARH, surface-to-air-missile for KUB

TNT equivalent, kg: 59

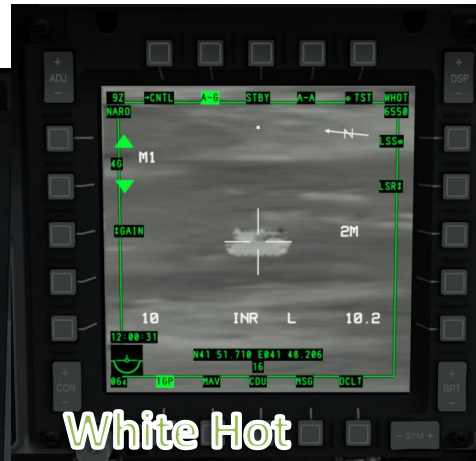
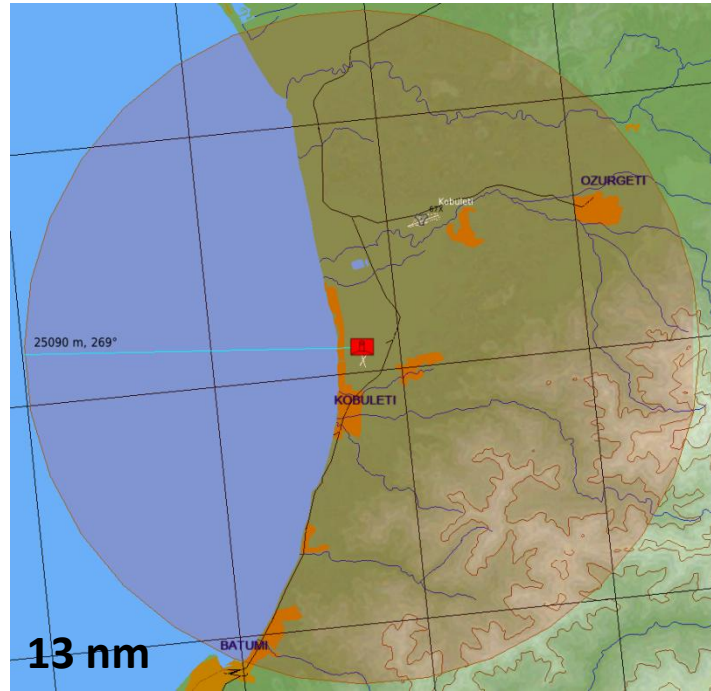
Guidance: Semi-active radar

Weight, kg: 600

G limit: 16

Range, km: 16

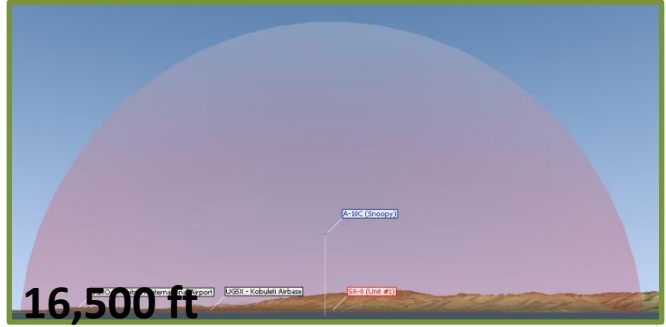
Maximum Mach number: 2.8



SA-8 Gecko (9K33 OSA)



*****HIGH THREAT*****
IF AVAILABLE CALL SEAD

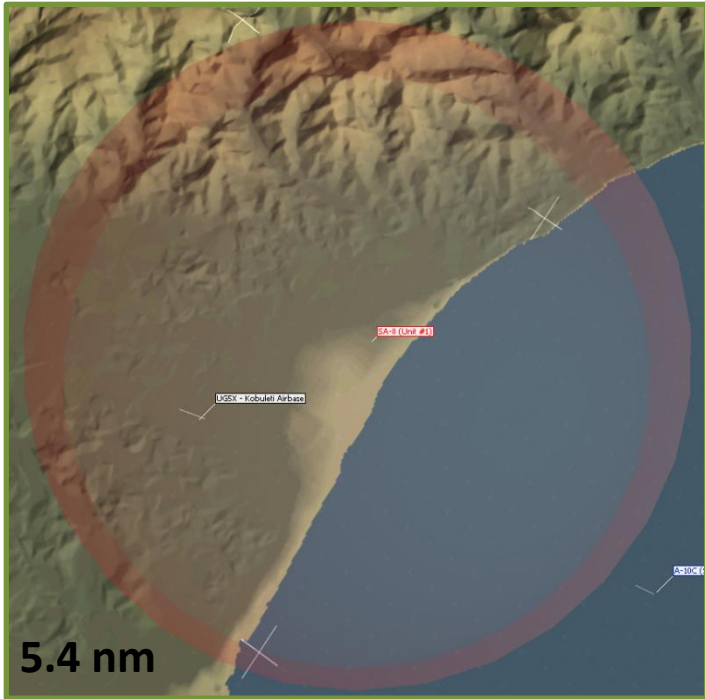


Low Altitude

- Min altitude: 100 m
- Max road speed: 80 km/h
- Max water speed: 8 km/h
- Operational range (road): 500 km
- Reload time (SPU): 10 min

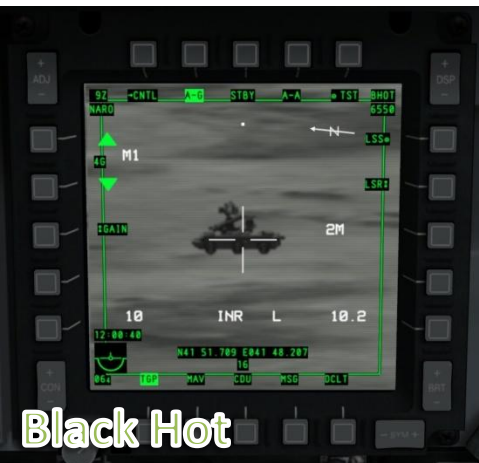
Armament:

- 6** SA-8 (9M33) missile
- Type: Short-range, radio command guidance, TNT equivalent, kg: 20
- Guidance: Semi-active radar
- G limit: 18
- Range, km: 7
- Maximum Mach number: 2.4

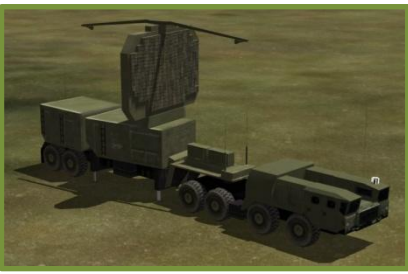


Countermeasures

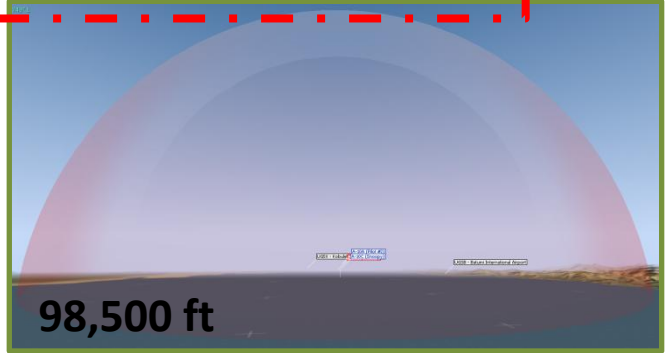
- ECM Program - **SAM1**
- Release - **CHAFF**



SA-10 Grumble (S-300PS) - 64H6E



*****HIGH THREAT*****
DO NOT ENGAGE
EGRESS AREA

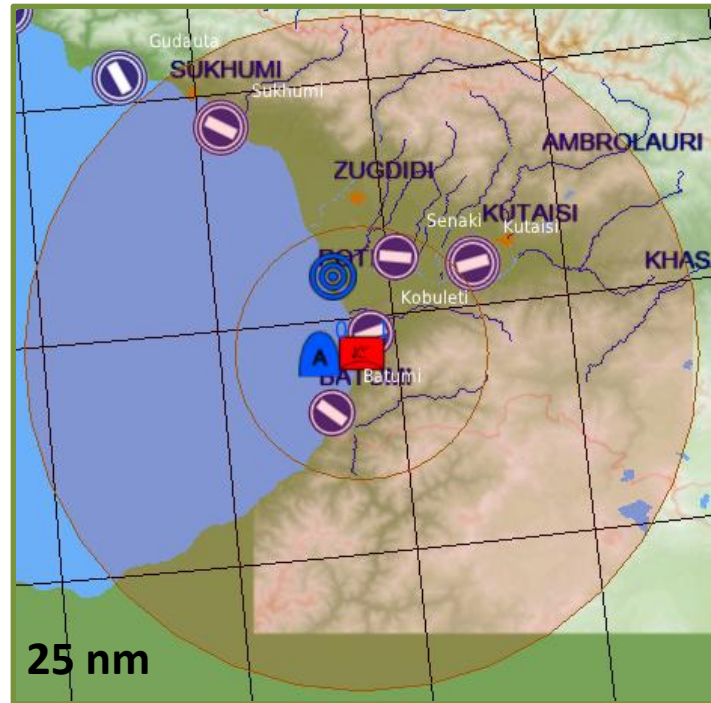


Low to High Altitude

- Long-range surveillance radar
- Detection range: 300 km
- Max number of target tracks: 100
- Tracking rate: 5 rpm
- Time into action/time to close down: 5 min

Armament:

- 4x SA-10 (5V55 or 48N6E) missile
- Warhead: 100 kg HE
- Max speed: Mach6
- Max effective range: (target altitude 2000 m plus) 47 000 m (target altitude 25 m and below) 25 000 m
- Min effective range: n/avail
- Max effective altitude: 30 000 m
- Min effective altitude: 25 m
- Max target speed: 1167 m/s
- Rate of fire: 1 missile/3 s



Countermeasures

- ECM Program – SAM2
- Release - CHAFF



Black Hot

White Hot

SA-10 Grumble (S-300PS) – con't



5P85D



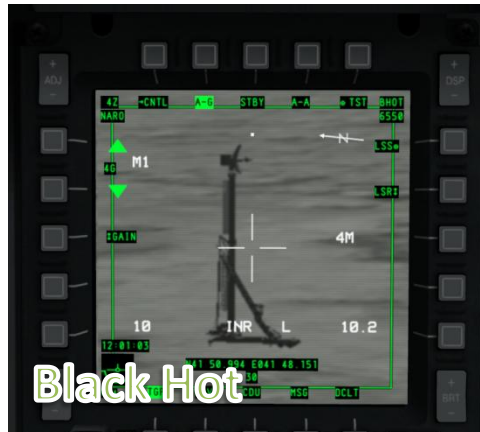
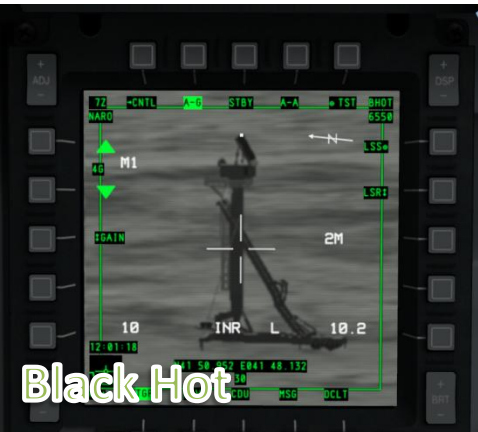
5P85C



54K6



SA-10 Grumble (S-300PS) – con't



SA-11 Gadfly (9K37 Buk) – 9S18M1



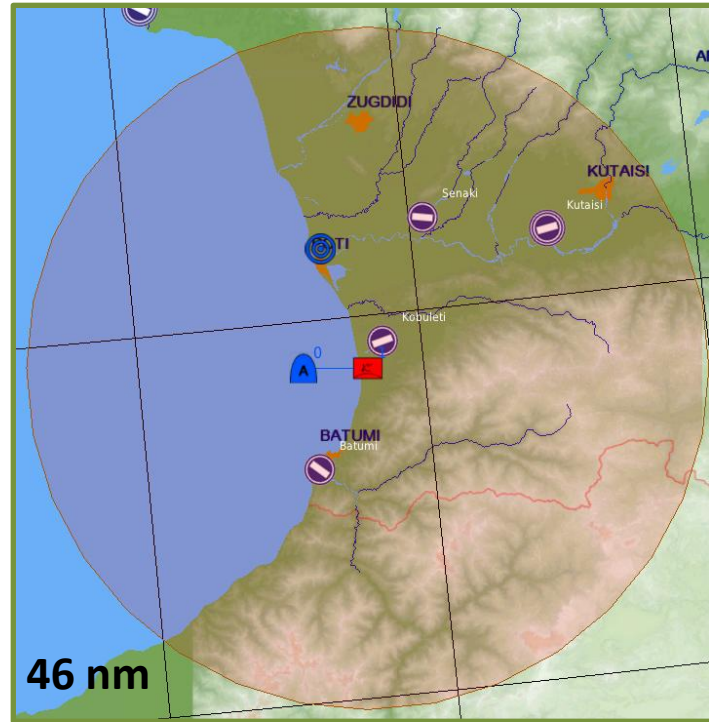
*****HIGH THREAT*****
DO NOT ENGAGE
EGRESS AREA



Low to High Altitude

Coverage zone:
 azimuth, deg. 360
 elevation, deg. 0-40
 instrumented range, km 10-160
 Scan time, sec. 4.5; 6; 12; 60

Resolution:
 in range, m 400
 in azimuth, deg. 3-4.5
 in elevation, deg. 3-4.5
 Maximum non-stop operational time, hrs. 48
 Time to/from combat readiness, min. 5
 Maximum ground speed, km/h. 65



Countermeasures

ECM Program – **SAM2**
 Release - **CHAFF**



SA-11 Gadfly (9K37 Buk) – 9A310M1

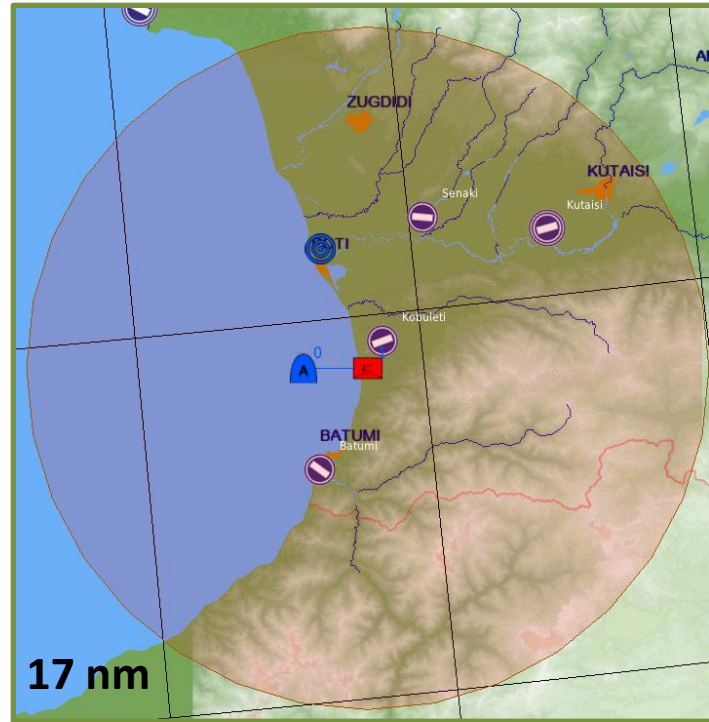


*****HIGH THREAT*****
DO NOT ENGAGE
EGRESS AREA



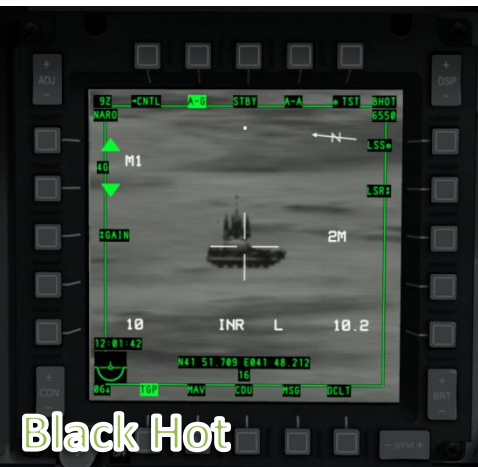
Armament:

- 4x 9M38M1 Medium-range, SARH
- TNT equivalent, kg: 70
- Guidance: Semi-active radar
- G limit: 16
- Length, m: 5.55
- Body diameter, m: 0.4
- Range, km: 3-32
- Maximum Mach number: 3



Countermeasures

- ECM Program – SAM2
- Release - CHAFF

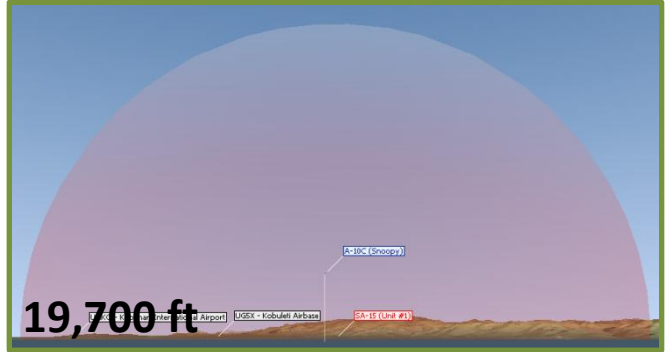


White Hot

SA-15 Gauntlet (9A331 TOR)



*****HIGH THREAT***
IF AVAILABLE CALL SEAD**

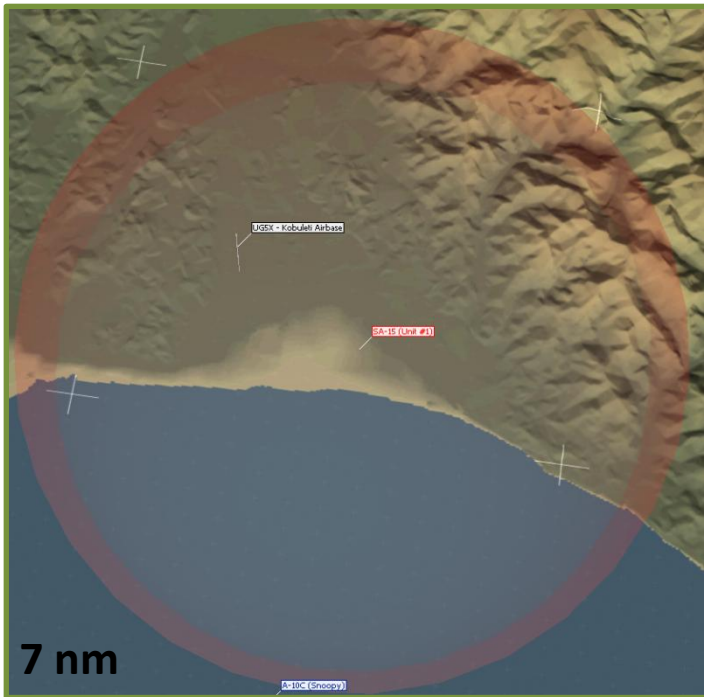


Low to Medium Altitude

Max road speed: 60 km/h
Fuel distance: 500 km
Turret traverse: 360°

Armament:

2x4 SA-15 (9M330) missiles
Type: Short-range, radio command guidance, surface-to-air-missile for TOR
TNT equivalent, kg: 14.5
Guidance: Semi-active radar
Weight, kg: 165
G limit: 20
Length, m: 3.5
Body diameter, m: 0.22
Range, km: 12
Maximum Mach number: 2.7



Countermeasures

ECM Program – **SAM2**
Release - **CHAFF**



Black Hot

White Hot

SA-19 Grison (2C6M TUNGUSKA)



*****HIGH THREAT*****
IF AVAILABLE CALL SEAD

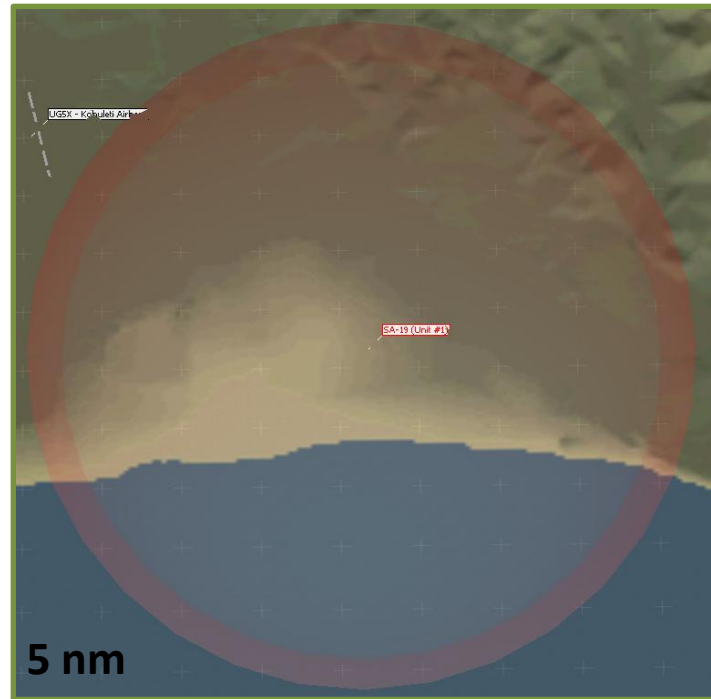


Low to Medium Altitude

- Max road speed: 65 km/h
- Operational range: 500 km
- Gun elevation/depression: $+80^{\circ}/-6^{\circ}$
- Launch weight: 165 kg
- Warhead: 15 kg HE
- Max speed: 850 m/s

Armament:

- 2x 30 mm 2A38M cannon
- 2 x 4 SA-19 SAM (9M311)
- Short-range, radio command guidance, surface-to-air-missile for Tunguska
- Guidance: Semi-active radar
- G limit: 18
- Range, km: 8
- Maximum Mach number: 2.82



Countermeasures

- ECM Program – SAM2
- Release - CHAFF



SA-9 Gaskin (9P31 Strela-1)



Low Altitude

Operational range: 750 km

Max road speed: 100 km/h

Max water speed: 10 km/h

Armor: 5-14 mm

Armament:

4 x 9M31(SA-9) missile

Guidance: Infrared seeker

G limit: 20

Range, km: 4.2

Maximum Mach number: 1.8

Min effective range: 800 m

Max effective range: 4200 m

Min effective altitude: 30 m

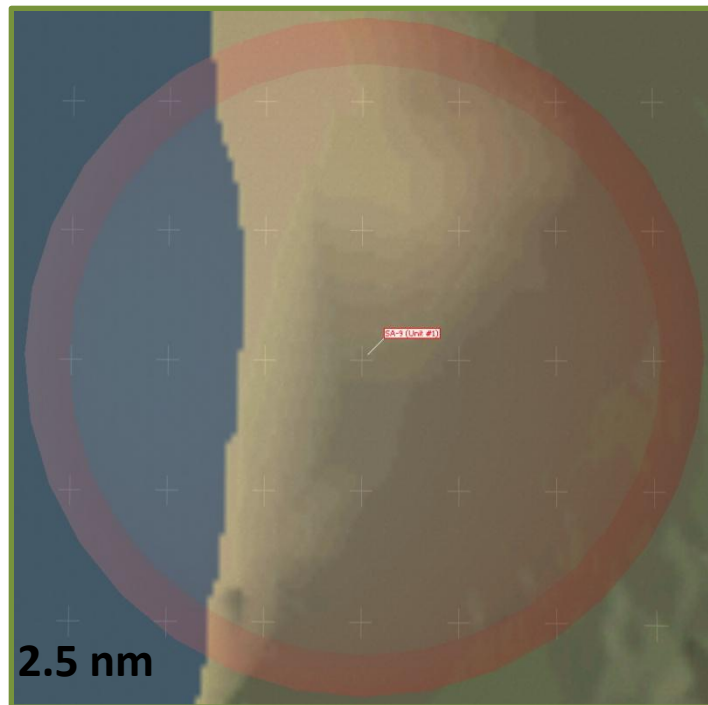
Max effective altitude: 3500 m

Max target speed: 300m/s

Tracking rate: 15-20°/s

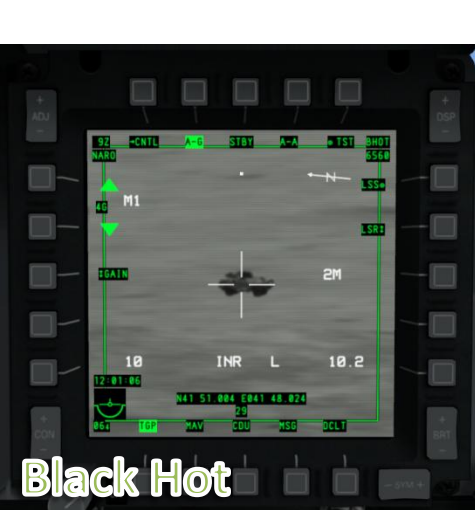
Traverse: 360°

Elevation: +20° to +80°



Countermeasures

Release – FLARE



Sa-13 Gopher (9K35M3 Strela-10)



Low Altitude

Max road speed: 61.5 km/h

Max water speed: 6 km/h

Operational range: 500 km

Armament:

4 x 9M333 (SA-13) missiles

Guidance: Infrared seeker

Unit of fire: 8 missiles

Max speed: Mach 2

Min effective range: 200 m

Max effective range: 5000 m

Min effective altitude: 10 m

Max effective altitude: 3500 m

Elevation/depression: +80°/- 5°

Max target speed: 420 m/s

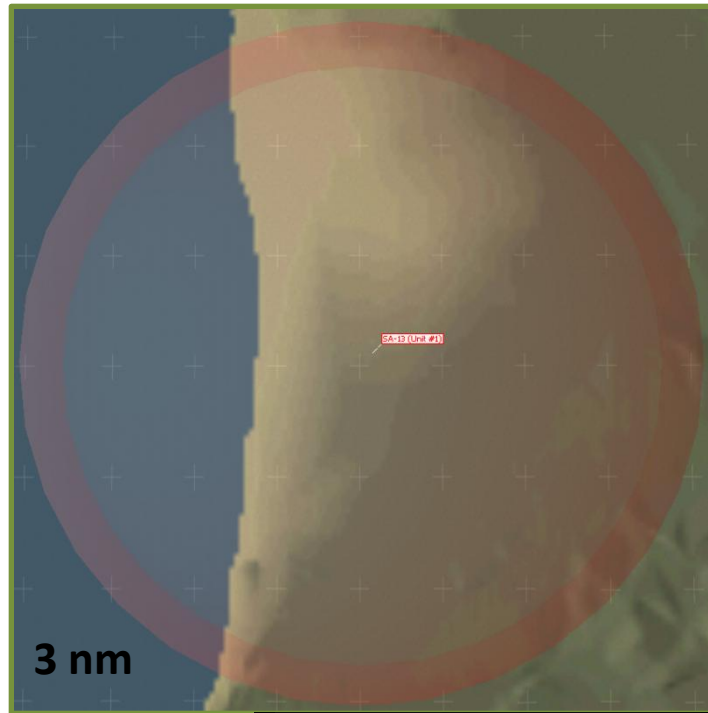
Turret traverse: 360°

Tracking rates:

(elevation) 0.3-50°/s

(azimuth) 0.3-100°/s

G limit: 16



Countermeasures

Release – FLARE



SA-18 Grouse (Igla 9K38; MANPADS)



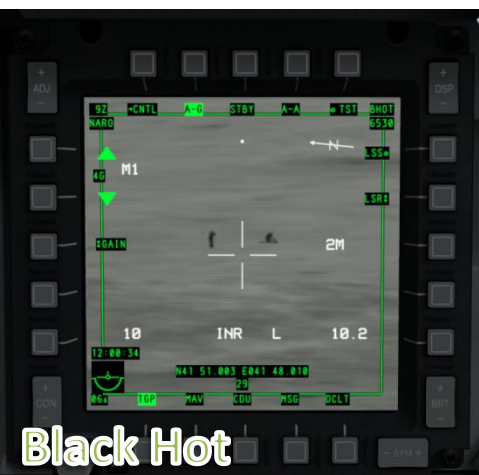
Low Altitude

- Overall dimensions: 1.1x0.4x0.2 m
- Launcher tube length: 1.876 m
- Warhead weight: 3.5 kg
- Weight (in firing position): 19.5 kg
- Fuze type: impact/proximity
- Max target engagement speed:
 - approaching: 340 m/s
 - receding: 290 m/s
- Min effective target altitude: 10 m
- Max effective target altitude: 3000 m



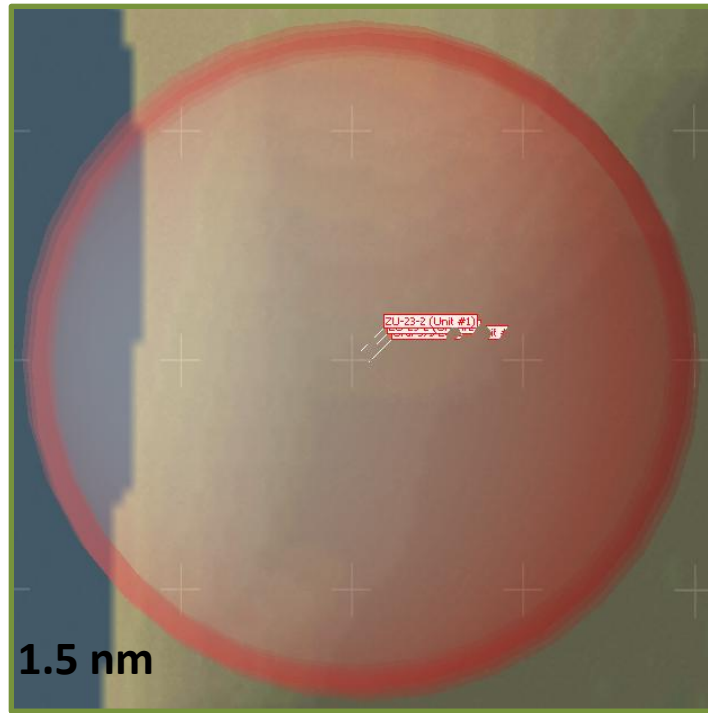
Countermeasures

Release – FLARE



White Hot

ZU-23



Short Range AAA

Armament:

2 x 2A14 Afanasyev-Yakushev (23x115mm) autocannons

Effective range: 2 - 2.5 km

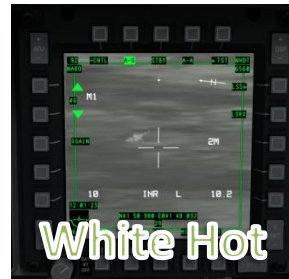
Effective altitude: 1,5 - 2 km



White Hot



White Hot



White Hot



Black Hot



Black Hot



Black Hot

Shilka (ZSU-23-4)



*****HIGH THREAT*****
IF AVAILABLE CALL SEAD



Self-propelled Anti-aircraft Gun System

Max road speed: 44 km/h

Fuel distance: 450 km

Armament:

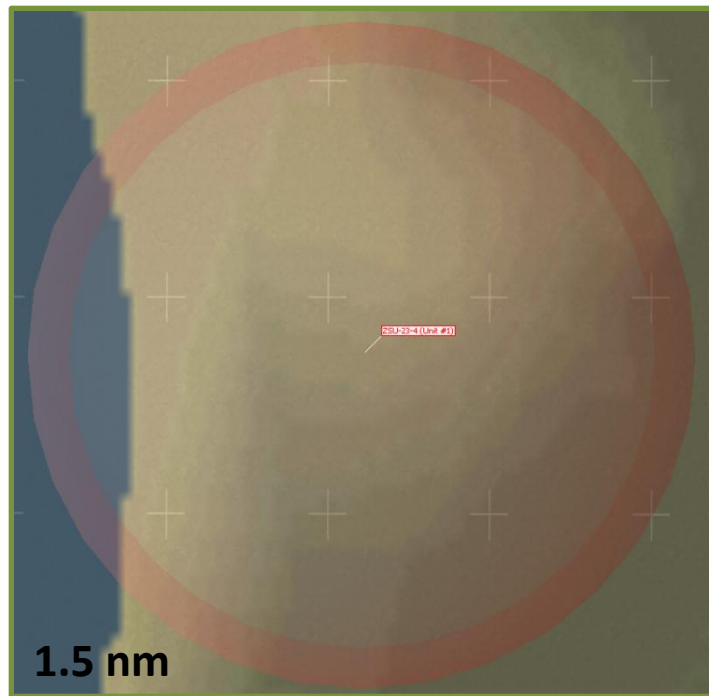
4x23 mm AZP-23M cannon

Ammunition: 2000 rounds

Gun elevation/depression: +85°/-4°

Turret traverse: 360°

Max effective range: 2500 m



Countermeasures

ECM Program – AAA

