

S E C R E T

OSA-1572/68

12 June 1968

INTELLIGENCE MEMORANDUM

SUBJECT: Nomenclature of Soviet and ChiCom Air Defense Equipment

The following is a listing of names and designations of certain Soviet and ChiCom equipment used in their air defense network. It is not a complete listing but it does have the most important equipment and also some of the newest.

1. AIR DEFENSE RADARS:

a. EARLY WARNING RADARS:

(1) KNIFEREST: 71-93mc - Old USSR radar deployed in many areas.

(2) DUMBO: 70-75mc - Old USSR radar deployed in many areas.

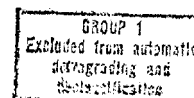
(3) SPOON REST: 146-163mc and 81-86mc - New E.W. and sometimes acquisition radar for SA-2.

(4) MOON CONE: A ChiCom variant of the SCR-270

(5) MOON FACE: A ChiCom variant of the SCR-270

(6) SCR-270: This radar was ChiCom produced from U.S. radar designed SCR-270.

(7) CROSS SLOT: A ChiCom design made from the Soviet TOKEN radar.



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(8) TOKEN: Old S-Band EW/GCI "V" beam type radar deployed in many countries.

(9) BIG BAR: One of the many modifications of TOKEN radar beginning with SLANT MESH, BIG MESH, STRIKE OUT and CROSS OUT.

(10) BAR LOCK: Another modification of TOKEN which, along with BIG BAR, was more successful.

(11) BACK NET: Newest of the EW/GCI radars and the first to use a low S-Band frequency and back-to-back antennas.

(12) CROSS LEGS: A new ChiCom designed L-Band EW radar.

(13) FLAT FACE: 805-914mc - Used for low level EW and acquisition for SA-3 and AAA.

(14) TALL KING: 169-175mc - A large EW radar deployed in Eastern Europe and the USSR.

b. HEIGHT FINDER RADARS:

(1) ROCK CAKE: The first single dish, nodding S-Band Height Finder radar by the Soviets.

(2) STONE CAKE: A further modification of ROCK CAKE.

(3) SPONGE CAKE: Another modification of ROCK CAKE.

(4) SIDE NET: A newer radar with a different construction and better range capability.

(5) THIN SKIN: A newer radar which is the first Soviet Height Finder to operate in the C-Band and it gives a much better low altitude capability.

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(6) RICE CAKE: A new X-Band ChiCom Height Finder radar.

c. FIRE CONTROL RADARS:

(1) WHIFF: Old Soviet FIRE CONTROL radar used with AAA.

(2) FIRE CAN: Newer Soviet FIRE CONTROL radar used with AAA.

(3) FIRE WHEEL: New Soviet FIRE CONTROL radar used with AAA and missile range instrumentation.

(4) FAN SONG: Track-while-scan radar, FIRE CONTROL used with SA-2.

(5) LOW BLOW: Track-while-scan radar, FIRE CONTROL used with SA-3. A naval version which is smaller and mounted on a ship is called PEEL GROUP.

2. FIGHTER AIRCRAFT:

a. FAGOT MIG-15: A single engine, gun armed, day jet fighter. Designed in 1950, this aircraft is obsolete but still in service in some areas of the world.

b. FRESCO MIG-17: A single engine aircraft that comes in five versions. A and B models in 1953 are improved performance of the MIG-15. Model C and D in 1954 added afterburner and AAI radar capability with SCAN FIX and SCAN ODD. The MIG-17 makes up approximately one half the total number of Soviet and Asian Communist Bloc fighter aircraft.

c. FARMER MIG-19: A twin engine aircraft that comes in five versions. Improved altitude performance up to 62,000 feet. Model A, 1955, was basic aircraft,

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Model B was with SCAN ODD and new tail, seen in 1957 along with other modifications Model C and D. Model E was produced in 1959. This was Soviet's first all-weather type fighter.

d. FLASHLIGHT YAK-25: A twin engine, two place fighter designed to search out and destroy U.S. bombers. However, its performance in speed and altitude made it ineffective by the time it was ready to be produced so very few were ever made.

e. FIREBAR YAK-28: A twin engine, two place, all-weather fighter first observed at the air show in 1961, is a more sophisticated version of FLASHLIGHT. More of these type aircraft were produced and deployed.

f. FISHBED MIG-21: The MIG-21 has been observed in six different models. Model A and B were not produced in numbers. Mass production occurred with Model C and D. Model D has SPIN SCAN AI radar. These aircraft are the main export fighters for Communist Bloc countries. Delta wing with 70,000 ft. altitude capability.

g. FISHPOT SU-9: This delta wing aircraft is comparable to the MIG-21 and is judged to be just a little better than the MIG-21. This aircraft is the backbone of the Soviet Union and has not been exported to any other country. It has a 70,000 ft. altitude also.

h. FITTER SU-7: Swept wing version of SU-9, generally used for ground attack but can be used for air defense role. Not as fast or as good an air interceptor as the SU-9.

i. FIDDLER TU-28: Two place, twin jet, extended range fighter. First observed in 1961, and is the largest known fighter. It is expected to have data link and universal attack capability. There are currently about 30 deployed, since they began in 1966.

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j. FLIPPER: This aircraft was first seen in the 1961 air show and was assessed to be a prototype for a future operational aircraft. This aircraft had a high altitude capability but no fuel for range or maneuverability. In the Moscow 1967 air show the E-66 and E-166 were shown. The E-66 was a prototype of the MIG-21, modified as an experimental testing aircraft, as was the E-166 which appeared to be similar to the FLIPPER. An E-266 aircraft set a new record but as yet the Soviets have not shown it. The only aircraft shown which could fit the requirements is FOXBAT, but it is not known for sure if they are one and the same or two separate aircraft.

k. FOXBAT: Four new FOXBAT aircraft were in a fly-by at the 1967 air show. FOXBAT is a large aircraft distinguished by twin vertical tails and large side-mounted air inlets. It has an overall length of 65-70 feet and a span of about 44 feet. It is designed for multi purposes as a reconnaissance vehicle, an interceptor, or as a strike aircraft. This aircraft may be the E-266 or its prototype.

l. FLAGON A: A new twin jet all-weather interceptor designed by Sukhoy, with greatly improved aerodynamic and weapon system performance over the SU-9. It is a high altitude point interceptor. It has flown to altitudes above 72,000 ft. and has a speed of about Mach 2.5, with a search radar range of 20 NM and an effective attack range of 12 miles. It has a rather short combat radius of slightly over 300 NM.

m. FLOGGER: A swing wing aircraft with single engine, with two side inlets. The configuration is similar to the F-111, but smaller in size. It is too early in the program to determine whether this aircraft will be developed into an operational vehicle, but the Soviets are showing an interest in variable geometry aircraft.

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n. FLAGON B: This aircraft is similar to FLAGON A, except for several left engines mounted in the fuselage and on outer wing panel which is longer and has less sweep than the A model. This aircraft is for testing V/STOL type aircraft and will probably not be mass produced.

o. FAITHLESS: This aircraft is a new Mikoyan design employing a single cruise engine and two lifting engines for a developmental prototype STOL.

p. FREEHAND: This aircraft is a VTOL experimental vehicle and put on an impressive flying demonstration, including vertical takeoff, transition to level flight, back to hovering, then landing. It appears, however, to be subsonic and its performance as a fighter aircraft lacks range and payload capabilities.

q. SINO-A: An unidentified aircraft type now designated SINO-A has been noted in ChiCom photography since 1966. The basic configuration of this aircraft is similar to the MIG-19 only it is bigger. If power is by two RD-9B type engines, it could have a maximum speed capability of about Mach 1.8 at 36,000 feet and a dynamic attack ceiling of about 65,000-67,000 feet. Thus, performance is a little bit better than the ChiCom MIG-19 aircraft but not as good as the MIG-21.

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4. AIR-TO-AIR MISSILES:

a. ALKALI AA-1: This is the first operational Soviet AAM which was deployed in 1957. There are three versions, all of which use beam rider principle for control and guidance. These missiles are carried on FRESCO D and E, FARMER E, and FISHPOT B.

b. ATOLL- AA-2: This missile is a copy of the U.S. SIDEWINDER AAM. It became operational in 1959. There are now three versions, two of which use passive IR homing guidance and the third using semiactive radar homing guidance.

c. ANAB AA-3: This missile is the first Soviet attempt to build an operational semiactive radar homing AAM. It became operational in 1961. It was seen on FIREBAR and FISHPOT. An IR version may have been produced also.

d. AWL AA-4: This prototype missile was seen on FLIPPER aircraft in the 1961 air show. It is believed to be semiactive guidance.

e. ASH AA-5: This missile was observed with the FIDDLER aircraft during the 1961 air show and may have become operational when the FIDDLER aircraft were deployed just recently. This missile would be semiactive radar controlled.

5. SURFACE-TO-AIR MISSILES:

a. SA-1: The SA-1 system is a fixed-position SAM designed to counter mass bomber raids. It consists of 56 sites deployed around Moscow in two concentric rings. Some of the sites became operational in 1954 but some have never become operational. The system uses the GUILD missile and the YO-YO track-while-scan radar. Many of the sites are now being used for something else.

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b. SA-2: The SA-2 system, with the GUIDELINE missile and FAN SONG radar, is a mobile system which is usually deployed with six launchers around a central guidance area. This basic system became operational in the USSR in 1959 and then has been deployed in many countries. There are now four variations of both missiles and guidance radar. A naval variant became operational in 1964.

c. SA-3: The SA-3 system is a road transportable short range air defense system effective against high performance, low altitude aircraft. This system uses the GOA missile, the LOW BLOW radar for target and missile tracking. This system was deployed in the USSR in 1961 and is now being deployed in other countries in 1968. This system has been used in naval vessels since 1963. It uses the designation of SA-N-1 and uses PEEL GROUP radar.

d. SA-4: The SA-4 is a medium range, medium altitude system probably designed as a mobile weapon for air defense of Army field units. The system uses the Ramjet powered GANEF missile on a tracked transporter-launcher and probably uses guidance concepts similar to those of the SA-2 system.

e. SA-5: The TALLINN or SA-5 system is now being deployed throughout the USSR. Typical site configurations are six launch positions with interlooping roads, containing usually three of these sites but sometimes five sites together with electronic and support facility. These sites were first believed to be an anti-ballistic missile defense system but are now believed to be a long-range, high altitude SAM complex.

f. GRIFFON: This missile was shown in Moscow parades since 1963. It is a very large GUIDELINE configuration, two stage, 54 ft. long, 2.7 ft. in diameter missile which is assessed to have range of

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100 nm and a maximum altitude of 90,000 to 100,000 ft. This missile was probably intended for three SAM complexes around Leningrad which were later abandoned.

g. GAINFUL: This missile displayed in November 1967 Moscow parade is the second Soviet SAM mounted on a tracked vehicle. It was described as a low altitude tactical SAM. There are three missiles on the vehicle and they are about 19 feet long and 13 inches in diameter. Analysis will be difficult until more is known about its guidance and electronics. Range estimate is probably less than 20 nm. It is probably not operational yet.

h. GALOSH: This missile appears to be an anti-ballistic missile which is a two stage, tandem boost missile contained in a tube from which it is launched. This missile is about 65 feet long, with a 300-400 nm range, designed for the exo-atmospheric interception of re-entry vehicles. Moscow may be the center of the start of construction of these sites for deployment.

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Chief, Intelligence Division
Office of Special Activities

INTEL/O/OSA/ nlm (12 Jun 68)

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