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#14

Imagery Analysis Report

SA-8 Sam System

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Office of Imagery Analysis

SA-8 SAM SYSTEM

SUMMARY

The SA-8 is a highly mobile, tactical, surface-to-air missile (SAM) system. The essential elements of this system are the SA-8 (Gecko) missile and its transporter-erector-launcher (TEL). The Gecko missile is a relatively small, command-guided missile which will operate at low-to-medium altitudes. The TEL is amphibious and has four missile launch rails, an acquisition radar, and a fire control unit mounted on it. Because each vehicle is a complete firing unit, this system represents a significant design improvement over the SA-4 and SA-6 SAM systems. This unit is more efficient and has improved survivability.

DISCUSSION

The SA-8 Missile

The Gecko missile is a command-guided, low-to-medium altitude SAM. It is about 3.1 meters long, about 0.2 meters in diameter, and has control surfaces on its forward and aft sections. The line drawing of the missile (Figure 1) was prepared from dimensions obtained from hand-held photography acquired during the 7 November 1975 Moscow parade.

The information and judgements presented in this publication were derived principally from analysis of imagery. Although other sources of intelligence may be included, this publication does not reflect an all-source assessment and has not been formally coordinated within CIA.

Comments and queries on the contents of this report are welcomed. They may be directed to [redacted] the Missile Systems Division, OIA, Code 143 [redacted]

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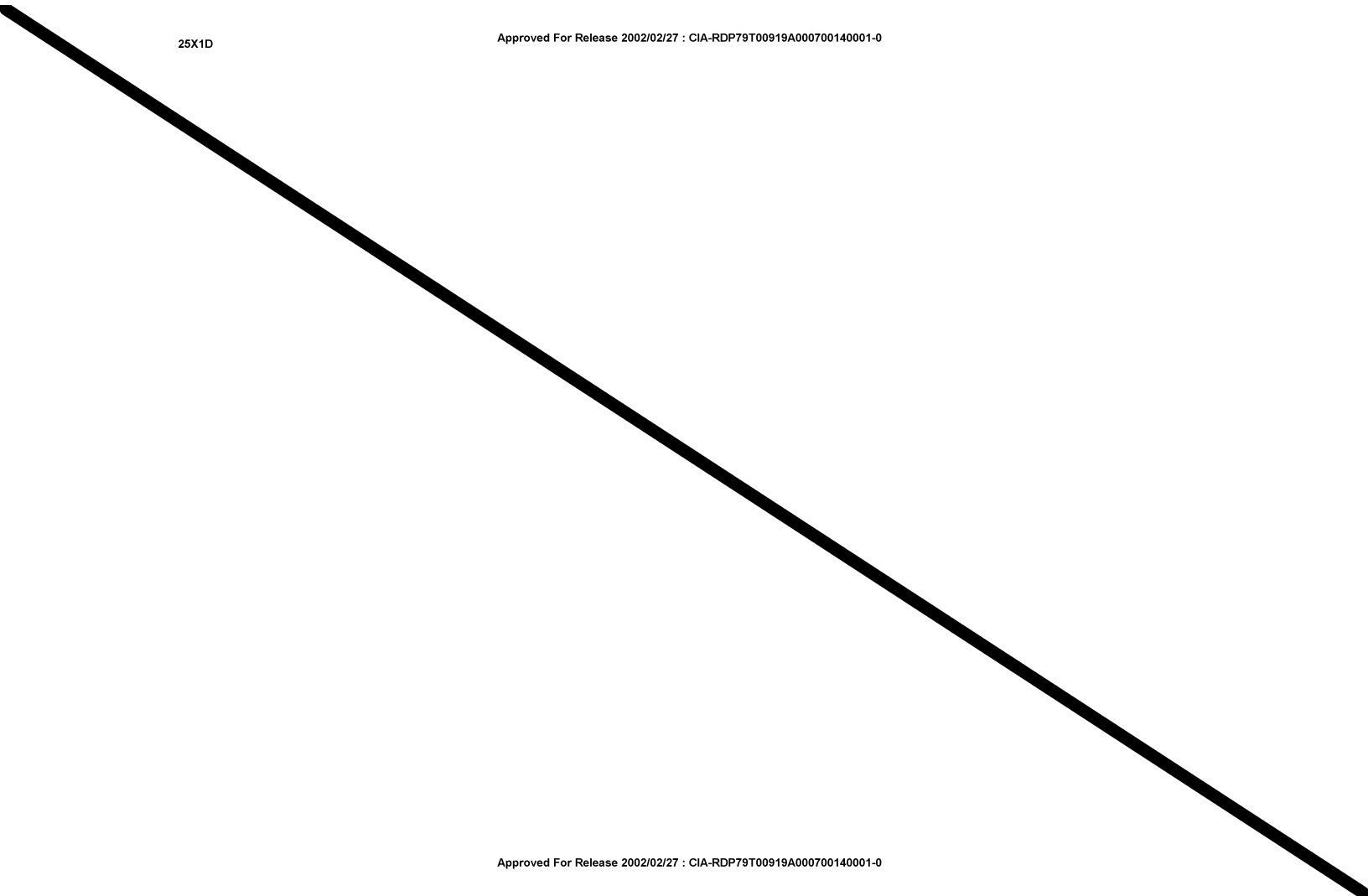

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The Transporter-Erector-Launcher

The TEL is composed of a three-axle, amphibious vehicle with a rotatable platform mounted on top. A fire control unit is attached to one end of this platform as shown in Figure 2. This unit is composed of radar antennas which provide target tracking as well as missile tracking and guidance. An electro-optical device is attached directly to the top of the relatively large target tracking antenna to aid with the tracking functions in hostile electronic countermeasures environments. Attached to the other end of the platform are four missile launch rails and another radar antenna. This antenna provides short range acquisition data on potential targets. Figure 2 shows the TEL in a travel mode. When in this mode the antenna for the acquisition radar is turned toward the rear of the missile racks and folded down toward the top of the vehicle. Two launch rails are located on either side and below the acquisition radar antenna. Each rail is fixed and inclined at about 30 degrees. All the components on the platform are slaved to its rotation, although some are apparently also capable of independent movement. Two versions of the TEL were noted in the Moscow parade, but the minor differences which were noted on the photography of the TEL's chassis indicate there is little significant difference in capability.

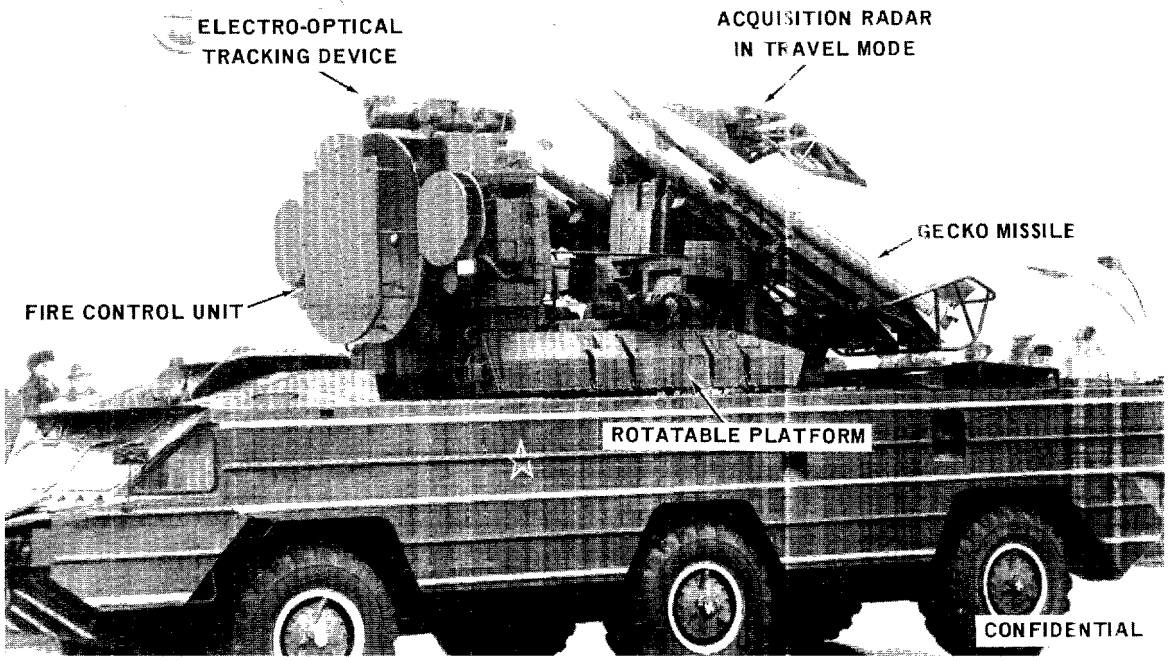

FIGURE 2. THE SA-8 TRANSPORTER-ERECTOR-LAUNCHER, 7 NOVEMBER 1975.

System Design Improvement

The SA-8 system is a significant design improvement over the SA-4 and SA-6 missile systems. The electronic functions of target acquisition and tracking and missile guidance and control are performed by a vehicle other than the TEL in both the SA-4 and SA-6 systems. Therefore, if this one vehicle is destroyed, the collective firepower of the unit is negated. Each SA-8 TEL, on the other hand, possesses the capability to acquire, to track, and to engage targets independently of any other vehicle. This capability would 1) increase the number of engagements which could be conducted at any one time, 2) reduce the minimum amount of time required for an engagement, and 3) increase the survivability of the unit's firepower.

Deployment

An SA-8 regiment appears to be organized in the following manner. Each regiment is composed of five firing batteries. Each battery consists of four TELs, one or two resupply vehicles, and a BTR-60 variant to provide command and control for the battery. A Long Track radar, a Flat Face radar, and a Thin Skin radar are assigned at the regiment level to provide longer range target data for the firing batteries [redacted] five SA-8 regiments were known to be deployed--one in the Moscow area and four along the Sino-Soviet border.

25X1D

REFERENCES

Requirement

C-WI5-89,615

List of Conversion Factors by Classification

UNITS OF LENGTH

IF YOU HAVE	*MULTIPLY BY*	*TO OBTAIN*
MILLIMETERS	0.0394	INCHES
CENTIMETERS	0.3937	INCHES
INCHES	25.4000	MILLIMETERS
INCHES	2.5400	CENTIMETERS
FEET	0.3048	METERS
FEET	0.0003	KILOMETERS
YARDS	0.9144	METERS
METERS	3.2808	FEET
METERS	0.0005	MILES(NAUTICAL)
METERS	1.0936	YARDS
KILOMETERS	3280.8400	FEET
KILOMETERS	0.6214	MILES(STATUTE)
KILOMETERS	0.5400	MILES(NAUTICAL)
MILES(STATUTE)	1.6093	KILOMETERS
MILES(NAUTICAL)	6076.1154	FEET
MILES(NAUTICAL)	1.8520	KILOMETERS
MILES(NAUTICAL)	1852.0000	METERS

UNITS OF AREA

IF YOU HAVE	*MULTIPLY BY*	*TO OBTAIN*
SQUARE CENTIMETERS	0.1550	SQUARE INCHES
SQUARE INCHES	6.4516	SQUARE CENTIMETERS
SQUARE FEET	0.0929	SQUARE METERS
SQUARE YARDS	0.8361	SQUARE METERS
SQUARE METERS	10.7639	SQUARE FEET
SQUARE METERS	1.1960	SQUARE YARDS
SQUARE METERS	1.0000	CENTARES
SQUARE METERS	0.0002	ACRES
SQUARE METERS	0.0001	HECTARES
ACRES	4046.8564	SQUARE METERS
ACRES	0.4047	HECTARES
HECTARES	10000.0000	SQUARE METERS
HECTARES	2.4711	ACRES

UNITS OF MASS

IF YOU HAVE	*MULTIPLY BY*	*TO OBTAIN*
KILOGRAMS	2.2046	POUNDS(AVOIR.)
POUNDS(AVOIR.)	0.4536	KILOGRAMS
SHORT TONS	0.9072	METRIC TONS
METRIC TONS	1.1023	SHORT TONS
METRIC TONS	0.9842	LONG TONS
LONG TONS	1.0160	METRIC TONS

UNITS OF VOLUME

IF YOU HAVE	*MULTIPLY BY*	*TO OBTAIN*
LITERS	0.2642	GALLONS
LITERS	0.0063	BARRELS(POL)
LITERS	0.0010	CUBIC METERS
GALLONS	3.7854	LITERS
GALLONS	0.1337	CUBIC FEET
GALLONS	0.0238	BARRELS(POL)
GALLONS	0.0038	CUBIC METERS
BUSHELS	0.0352	CUBIC METERS
CUBIC FEET	7.4805	GALLONS
CUBIC FEET	0.1781	BARRELS(POL)
CUBIC FEET	0.0283	CUBIC METERS
CUBIC YARDS	0.7646	CUBIC METERS
BARRELS(POL)	158.9873	LITERS
BARRELS(POL)	42.0000	GALLONS
BARRELS(POL)	5.6146	CUBIC FEET
BARRELS(POL)	0.1590	CUBIC METERS
CUBIC METERS	1000.0000	LITERS
CUBIC METERS	264.1721	GALLONS
CUBIC METERS	35.3147	CUBIC FEET
CUBIC METERS	28.3776	BUSHELS
CUBIC METERS	6.2898	BARRELS(POL)
CUBIC METERS	1.3080	CUBIC YARDS

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