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ATD Report 69-86

Surveys of Foreign Scientific and Technical Literature

FOREIGN EXPLOSIVE ORDNANCE MATERIEL

ATD Work Assignment No. A-69-6

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FOREWORD

This report was prepared in response to ATD Work Assignment A-69-6 from Soviet Bloc material available at the Aerospace Technology Division and the Library of Congress. Although an extensive review was made of Soviet Bloc literature from the period 1963 to 1969, little pertinent information was found; therefore, certain articles containing Soviet views of Western developments are included in this report.

ACC NR

AUTHOR: Aleksandrov, I. (Engineer)

ORG: none

TITLE: Chemical Weapon

SOURCE: Voyenniye znaniya, no. 6, 1964, 33-34

TOPIC TAGS: chemical warfare, chemical delivery method

ABSTRACT: The development of chemical warfare agents in the United States, Great Britain, and Canada is discussed. The means of delivering these chemical agents cited are mainly by aircraft, rocket, artillery, and hand grenades. [JW]

SUB CODE: 15/ SUBM DATE: none

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ACC NR: AP8036741

SOURCE CODE: UR/0017/67/000/005/0038/0038

AUTHOR: Baginskiy, Yu. (Engineer; Commander)

ORG: none

TITLE: Underwater offensive weapons

SOURCE: Voyennyye znaniya, no. 5, 1967, 38

TOPIC TAGS: torpedo, underwater weapon

ABSTRACT: The description presented of torpedos and fuses is based on information published in Western literature. It is stated that torpedos are included in the Soviet Naval Fleet's arsenal of advanced weapons. [WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none

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AUTHOR: Baginskiy, Yu. (Engineer; Commander)

ORG: none

TITLE: Underwater Offensive Weapons

SOURCE: Voyennyye znaniya, no. 9, 1965, 33-34

TOPIC TAGS: underwater weapon, sea mine

ABSTRACT: Information published in foreign literature on naval mines and noncontact fuses is described. In the present state-of-the-art, it has become possible to use practically all known physical fields in noncontact fuses. It is believed that the physical fields of ships still have many unknown properties, which can be determined and used in the development of new naval mines or in antimine warfare. Figures 1

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Fig. 1. Deployment of underwater mines



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Fig. 2. The effect of a ship's acoustic field on a noncontact acoustic mine

and 2 show the deployment of underwater mines and the effect of the acoustic field on a noncontact mine. [JW]

SUB CODE: 15/ SUBM DATE: none

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ACC NR: AP9007630

SOURCE CODE: UR/0375/69/000/001/0037/0089

AUTHOR: Belykh, I. F. (Captain 2nd rank)

ORG: none

TITLE: Experience gained in the search for sunken munitions

SOURCE: Morskoy sbornik, no. 1, 1969, 87-89

TOPIC TAGS: mine probe, mine detection equipment, mine clearance

ABSTRACT: The search for and recovery of explosives which were sunk during World War II are described. In most cases, the search for explosives in shallow waters is conducted by divers. An experienced diver can uncover explosive objects buried 40—50 cm in the sea bottom. The NEKMET electromagnetic detector was used for the first time in the postwar period. It was used mainly in shallow waters, bays, rivers, and canals. Later, the ENVI-1 detector was developed for locating explosives by divers. The detector was modified and since 1963 it has been known as the ENVI-1M model. The device has been used for detecting bottom mines with ferromagnetic and nonferromagnetic casings. Explosives located up to two meters

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AP9007630



Fig. 1. The ENVI-1M mine detector mounted on a boat

a: 1 - Tiller; 2 - depth bar; 3 - key; 4 - pulley; 5 - clamps; 6 - ballast; 7 - detector mounting bar; b: 1 - oars; 2 - operator; 3 - power feed block; 4 - storage battery; 5, 6 - recording blocks; 7 - commutator; 8 - detector cable

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ACC NR: AP9007630

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below the sea bottom can be located with this device. The detector apparatus is suitable for distinguishing mines from other objects and for determining their size and configuration. It can be used for detecting different mines or a special type of mine. The apparatus can be adjusted for detecting specific models of mines, artillery shells, antipersonnel mines, land mines, bombs, etc., with metallic mass of not less than 5 kg. The ENVI-1M is used for searching for explosives buried in silt or sand, in murky water, and at sea depths up to 50 m. Because of the devices high selectivity, sweeping is reduced substantially. The detector of the ENVI-1M apparatus has a length of 2.8 meters, which makes it more effective, e.g., the sweeping width is increased to 4 m. In recent years, the ENVI-1M has been successfully used for clearing harbors, outer harbors, and berths of many ports. The principal characteristics of the ENVI-1M are given in Table 1. In all cases the apparatus operated reliably without missing any metallic objects. To reduce the searching and to relieve divers of excessive stress, the ENVI-1M has been modified to scan the bottom from a boat (see Fig. 1). Although this method has not been widely used, it is expected that after certain modifications, the apparatus can be mounted on a power boat, and the scanning depth will be increased to 15-20 m. It is expected that

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Clearing region	Type of	Current,	Depth,	Cleared	Total clearing	
	surface	knots	m	area,	time, hrs	
				m ²	ENVI-IM	Conven-
						tion
						detector
Harbor mooring						
front	silt to 1-1.5m	3.0	10.0	1600	25	100
Shallow bay	silt to					
	0.3-0.5 m	3.0	4.0	60 0	6	22
Outer harbor	sand	0	0-7.0	4000	45	137

Table. 1. Some characteristics of the ENVI-1M mine detector

the maximum scanning depth of this apparatus can be increased to 30-50 m. Orig. art. has: 1 table and 1 figure. [WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none

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AUTHOR: Chernyshev, Yu. (Candidate of Military Sciences)

ORG: none

TITLE: Is there a "dry" gasoline?

SOURCE: Voyennyye znaniya, no. 5, 1964, 33-34

TOPIC TAGS: motor vehicle gasoline, gel fuel, petroleum fuel

ABSTRACT: The use of gasoline in a solid state is discussed. The reasons cited for using gasoline in this form are: a) to prevent evaporation; b) to facilitate handling; c) to reduce danger of explosion; and d) to facilitate its use under varying climatic conditions. Concentrated gasoline may be obtained by several methods: by soaking it into a porous sponge-like material, by coagulating it in a mixture with gelatin, soap, etc., or by making an emulsion of high-molecular compounds in which the gasoline is preserved in a droplet state during the emulsion's solidification. In the Soviet Union, briquettes of concentrated gasoline with a casein base were produced in the Groznensk Plant in 1940, however these briquettes began to decompose when kept too long. In recent years, white or yellow foam plastic has been used as the base to hold the gasoline droplets which account for 95% of the briquette weight. These may be stored in paper sacks or plywood boxes and are stable under a wide range of

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ACC NR:

climatic conditions. These briquettes offer little fire danger and eliminate evaporation completely. They may be used as a solid fuel by troops in the field, e.g., 30 grams of concentrated gasoline boils 1 liter of water. They may be used to power vehicles by grinding them up and squeezing them in regenerators, thereby separating the liquid gasoline from the base. Losses of 5--6% and more occur during this regenerative process and this together with their high cost makes their extensive use impractical. However, in extreme climatic conditions i.e., in the Arcuic and in desert regions, "dry" gasoline is proving itself to be useful. [WA-A-69-6] [TN]

SUB CODE: 15/ SUBM DATE: none

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ALC" NR: AP9007214

SOURCE CODE: UR/0018/69/000/001/0087/0088

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AUTHOR: Fidelev, E. (Major)

ORG: none

TITLE: Laying of mines in the winter

SOURCE: Voyennyy vestnik, no. 1, 1969, 87-88

TOPIC TAGS: minelaying, land mine warfare

ABSTRACT: A method of laying antitank mines in arctic regions is described. The method (see Fig. 1) was suggested by lieutenants Belous and Dudko. In this method, the commander places reference points at 8 m intervals. Crew No. 1 places a mine 4 m to the right of an orientation cable. Another mine is placed at the end of the cable. As they return toward the trench along the cable, a third mine is placed 3 m to the right of the two rings, and a fourth mine is placed 1 m to the left. Crew No. 2 places one mine 1 m'to the right and one mine 3 m to the left of the cable. One mine to the left and one mine to the right are placed even with the three rings and 2 m away from the cable. This method requires less

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ACC NR: AP9007214

effort and time for laying mines. The mines are transported on small sleds. Orig. art. has: 2 figures. [JW]

SUB CODE: 15/ SUBM DATE: none

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SOURCE CODE: UR/0317/68/000/011/0032/0033

AUTHOR: Kabakchiyev, A. (General colonel, Deputy minister of national defense of People's Republic of Bulgaria)

ORG: none

TITLE: Technological progress in the Bulgarian army [mine detectors]

SOURCE: Tekhnika i vooruzheniye, no. 11, 1968, 32-33

TOPIC TAGS: land mine detector, mine probe, antitank mine, antipersonnel mine, land mine

ABSTRACT: The author discusses the technological progress achieved in the Bulgarian People's Army. As an example, he points to the transistorized mine detector shown in Fig. 1. The detector was developed and built in Bulgaria, and is used not only in units of Bulgarian People's Army but also in the Hungarian People's Army and in India and other countries. It is used to detect antitank and antipersonnel mines with metallic casings and parts. No technical data on the device is given.' Orig. art. has: 3 figures. [WA-A-69-6] [JA]

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ACC NR: AP9002972. Fig. 1 SUB CODE: 19/ SUBM DATE: none

NOT REPRODUCIBL

SOURCE CODE: UP/0017/67/000/011/0014/0015

AUTHOR: Kazakov, V. I. (Hero of the Soviet Union; Marshall of artillery)

ORG: none

TITLE: Homeland protection shield [artillery]

SOURCE: Voyennyye znaniya, no. 11, 1967, 14-15

TOPIC TAGS: artillery weapon, infantry weapon

ABSTRACT: The role of artillery during the Second World War is reviewed. In contemporary warfare, classical artillery will be used to destroy tanks, artillery, various installations, enemy firing centers, and other targets on the battle field. An important new task assigned to the artillery units is the destruction of nuclear tactical [WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none

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ACC NR: AP8036742

SOURCE CODE: PO/0082/68/000/07-/0071/0082

AUTHOR: Klatka, N. (Lieutenant colonel; Master engineer)

ORG: none

TITLE: Trends in the development of mines and mine sweepers

SOURCE: Przeglad morski, no. 7-8, 1968, 71-82

TOPIC TAGS: sea mine, mine warfare ship, acoustic mine

ABSTRACT: The article discusses the development of naval issues and related equipment in the United States, Great Britain, and the NATO countries. In particular, the article covers the development of noncontact mines, mine sweeping gear, and mine detection equipment. A charge used for mine disposal is shown in Figure 1.

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Fig. 1. A charge used in mine disposal

1 - Electric conductor; 4 - unit dissolving in water which delays the explosion; 6 - heat resistant pipe; 8 - electric fuse; 9 - charge; 10 - charge holder; 11 - heat resistant ring; 12 - mine; 14 - explosion discharge nozzle.

[WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none/ ORIG REF: 001

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ACC NRI AP9002645

SOURCE CODE: UR/0017/68/000/012/0029/0030

AUTHOR: Nadin, V. (Engineer, Colonel, Candidate of technical sciences)

ORG: none

TITLE: Familiarization with grenades

SOURCE: Voyennyye znaniya, no. 12, 1968, 29-30

TOPIC TAGS: grenade, defensive grenade, armor defecting grenade

ABSTRACT: The defensive and offensive role of grenades in combat is described. During World War II and in the postwar period, the Soviet army received the RG-42 and RGD-5 offensive grenades, the F-1 defensive grenade with a new design, and various other grenades. These grenades are equipped with the UZRG delayed-action fuse. The RG-42 grenade weighs 420 g, and it carries a 110-120 g trotyl charge. Its effective radius is up to 25 m, and the maximum radius is 30 m. The RGD-5 grenade weighs 310 g with a trotyl charge of 110 g. Its effective range is similar to that of the RG-42 grenade. The F-1 hand grenade is used for defensive purposes only, and its effective radius is 200 m. The RPG-40 and RPG-41 grenades are used against armored vehicles,

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ACC NRI AP9002645

tanks, and to destroy field fortifications. These grenades have high explosive charges. The RPG-43, RPG-6, and RKG-3 anti-tank shaped charge grenades are used for the same purpose. The RPG-6 and RPG-43 grenades weigh 1100 and 1200 g, respectively, and can penetrate armor plates of 100 and 75 mm. Orig. art. has: 3 figures. [WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none

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ACC NR: AP8032554

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SOURCE CODE: UR/0017/68/000/010/0036/0036

AUTHOR: Novikov, M. (Engineer; Lieutenant colonol)

ORG: none

TITLE: Mines do not explode immediately

SOURCE: Voyenyye znaniya, no. 10, 1968, 36

TOPIC TAGS: land mine, mine fuse

ABSTRACT: A general description is given of mine fuses with a delayed action. Delayed action mines consist of a special fuse, a charge, and a power source, or a chemical reagent. Delayed-action mine charges can vary from one kilogram to tons or even hundreds of tons. Chemical fuses are most commonly used in such mines. These mines are equipped with various safety devices, and devices to prevent neutralization. The operating principle of chemical fuses is based on the corrosive action of a wire, which holds the striker. The most commonly used corrosive agents are hydrochloric, sulfuric, or other acids. The fuse timing depends on the acid concentration, wire thickness, and the ambient temperature. Chemical short-

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circuiting devices are also used in addition to chemical fuses. During the WWII, Soviet army, and especially, guerillas, used delayed-action mines to destroy trains. The mines most commonly used in combat were equipped with fuses operating on the vibration principle. In the pressure of a vibration, a sphere in such a fuse completes the circuit and causes detonation. Unlike mines with clock mechanisms, mines with plastic chemical fuses cannot be detected with conventional mine detecting equipment. However, these mines can be uncovered by experienced personnel if they are poorly camouflaged.

SUB CODE: 19/ SUBM DATE: none

Card 2/2

AUTHOR: Stepanov, L. (Lieutenant Colonel)

ORG: none

TITLE: Heavy Artillery

SOURCE: Voyennyye znaniya, no. 2, 1964, 36

TOPIC TAGS: artillery weapon, artillery ammunition

ABSTRACT: In the Soviet Army, guns 152 mm and larger are classified as heavy artillery, while guns more than 200 mm are termed "high power and special power" artillery. Shells used in heavy artillery are provided with fuses of instantaneous action (fragmentation shells), inertial action (high explosive shells), and delayed action. Heavy shore artillery is equipped with 200 mm and heavier guns. The range of the shore artillery is usually up to 40 km with the shells weighing up to 1200 kg. Shore batteries are capable of destroying underwater, surface, and ground targets. Today, heavy artillery is equipped with advanced guns, having complex optical, electron-optical, sound measuring, radar, and other instruments. Mechanical propulsion systems provide high tactical mobility. Despite the progress being made in missile development, heavy artillery technology and its use in combat are being improved. It is capable of performing complex combat tasks. [JW]

SUB CODE: 15/ SUBM DATE: none Card 1/1

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SOURCE CODE: UR/0017/67/000/005/0037/0037

AUTHOR: none

ORG: none

TITLE: Fire power [small arms weapons]

SOURCE: Voyennyye znaniya, no. 5, 1967, 37

TOPIC TAGS: infantry weapon, small arm weapon/(U)Kalashnikov rifle

ABSTRACT: Small arms weapons used by motorized infantry are described. These weapons include the following. 1) The Makarov pistol, which is used as either defensive or offensive personal weapon at short range. The pistol is designed for 9 mm caliber ammunition. Its most effective range is 50 meters, and its maximum effective range is 350 meters. The pistol can fire 30 rounds per minute. The fully loaded pistol weighs 810 grams, and the clip holds 8 rounds. 2) The Kalashnikov automatic rifle (AK automatic rifle), which is a personal weapon. It is equipped with either a wooden or a metallic folding stock. The rifle can fire conventional, tracer, armor piercing --incendiary, and incendiary rounds. It is designed mainly for automatic firing with continuous, short, or long bursts. 3) An automatic rifle, which is used against personnel and enemy firing points. It is designed for conventional, tracer, and armor piercing--incendiary rounds. It is fired continuously, in short, and in long

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ACC NR: AP8036740

bursts. The rifle can be used against ground, aircraft, and airborne targets. 4) The 120 mm mortar is generally used to fire fragmentation-high explosive shells. [WA-A-69-6] [JW]

SUB CODE: 15/ SUBM DATE: none

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