

SPG-9 anti-tank mounted grenade launcher gunner trainer



Purpose

The simulator is designed to educate and train gunners' techniques and firing rules using SPG-9 grenade launcher with use of PGO-9 optical sight and mechanical open sight to engage various targets under different conditions to shape and maintain their stable skills in target detection, the lead selection, and determining the moment of the shot, evaluation of the shooting results, under conditions of classroom.

SIMULATOR TECHNICAL CHARACTERISTICS

1. The number of 3D terrain sections in the simulator library - 5 (including 3 typical and 2 geo-linked).
2. Dimensions of 3D terrain models - 4x4 km
3. The number of static and dynamic targets displayed simultaneously - 10.
4. Area needed for Simulator installation – 15 m².
5. Operating conditions:
 - operating temperature - from +5°C to +45°C;
 - relative humidity at + 25°C - up to 80%;
 - storage temperature limits - from -10°C to +65°C.
5. Performance criterion:
 - preparation time - up to 5 minutes;
 - daily non-stop operation - at least 12 hours;
6. The simulator power supply - single-phase power network of 220 V 50 Hz.
7. Power consumption – up to 1.5 kW.
8. The mass with hardware – 210 kg.
9. Warranty period - 1 year
10. The designated service life of the simulator - at least 8 years.

Simulator functional capabilities

- ❑ Registration of trainees
- ❑ Selecting a section of terrain to perform the exercise
- ❑ Selecting the position of the SPG-9 grenade launcher
- ❑ Developing (editing) a target situation at the selected area in the form of static and dynamic 3D models of tanks, infantry fighting vehicles, armored personnel carriers
- ❑ Selecting (setting) active targets that fire against
- ❑ Selecting (setting) exercise conditions (time of day, weather conditions)
- ❑ Setting munition number and types for the exercise
- ❑ Training gunners to aim at selected targets using an optical or mechanical open sight, taking into account the direction and speed of the targets, the direction and speed of the wind
- ❑ Training gunners direct and indirect aiming at selected targets
- ❑ Simulated firing at targets with a cumulative or fragmentation grenade, taking into account the firing tables
- ❑ Generating SPG-9-specific firing sounds, and battlefield sounds
- ❑ Visual observation of a target hit (miss)
- ❑ Simulating the SPG-9 crew defeat by the enemy in case of a miss on the target
- ❑ Recording the time and accuracy indicators of gunners firing on various targets
- ❑ Maintaining the database for all trainees for the training period

STRUCTURE OF THE SIMULATOR

1. SPG-9 anti-tank mounted grenade launcher mock-up
2. PG-9 round mock-up
3. Instructor's workstation
4. Operational documentation (set)
5. Single SPTA (set)
6. Transportation package

SPG-9 functional grenade launcher mock-up consists of:

- the barrel with the bolt
- functional mock-up of the electric firing mechanism
- PGO-9 or PGOC-9 optical sight mock-up
- mechanical open sight
- mount with horizontal and vertical guidance mechanisms

The design of the simulator uses a mass-dimensional mock-up, which fully preserves the design and overall characteristics of SPG-9 anti-tank mounted grenade launcher



The simulator uses liquid crystal screens and high resolution matrices as means of displaying visual scenes:

- ✓ 55-65" screen - to observe the battlefield, conduct target surveillance, selecting of firing direction;
- ✓ 2.9" video matrix is used in the optical sight.



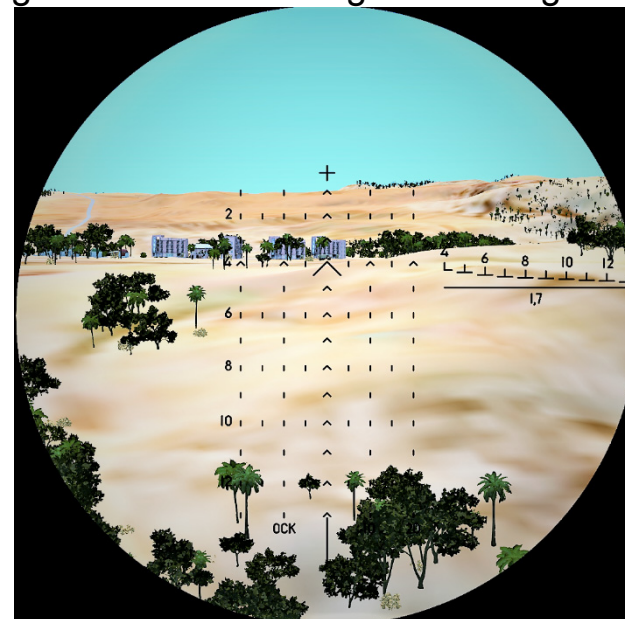
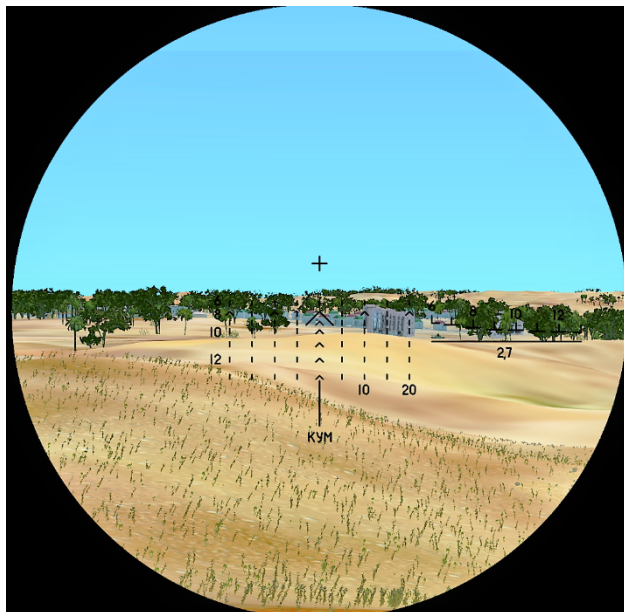
STRUCTURE OF THE SIMULATOR

Instructor's workstation



No	Instructor's workstation outfit	Quantity, pcs.
1	Unifying desk with power supply and protection panel	1
2	24" video monitor	4
3	Computer tower	4
4	General and special software (suite)	1
5	Keyboard	1
6	Optical manipulator	1
7	Laser printer	1
6	Cables (set)	1
7	Interfacing electronic assembly	1
8	Uninterrupted power supply unit	1
9	Audio system	1

PGO-9 (PGOC-9) optical sight field of view when firing cumulative and fragmentation grenades



3D terrain model patterns



3D armored targets patterns



Application of the simulator in the educational and training process

The use of the simulator in the educational process is carried out in the following stages:

Phase I Preparation of initial data for training (selection of a 3D terrain model from an existing library, selection of targets from the library and setting their initial positions, routes and movement parameters, indication of target reference points and sectors-of-fire, setting weather conditions, time of day and season).

Preparatory work is carried out by the instructor before the start of the exercise. All necessary programs are launched by the instructor via the instructor's main menu.

Phase II Training in application of firing rules (theoretical training).

Phase III Simulated grenade launcher firing under different conditions against different types of targets (stationary and moving).



**Developer and manufacturer of the simulator:
LLC "Research and Production Enterprise «Energy 2000»
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The developer and manufacturer of the simulator provides :

- the manufacture of the simulator and its delivery to the place of use for the intended purpose
- assembly, adjustment and acceptance testing of the simulator at the place of use for the intended purpose
- training of technical personnel of the Customer
- warranty maintenance
- post-warranty maintenance of the simulator under a separate contract
- author's support and modernization of the software for the whole period of the simulator operation