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## Complex training system

### Purpose

The submarine crew complex training system is intended to train crews of the diesel-class submarines in stationary training center in accordance with the basic training course. The system provides phased training, hands-on special and tactical training to individual specialists, battle station, command post, main command post crews and ship's combat crew in individual and group modes.

### Training system components:

- trainee workstations based on eight replicas of ship systems control consoles;
- training command posts and battle stations based on 21 trainee operator workstations;
- three training direction team workstations controlling the training situation and narratives;
- training direction team workstation;
- pre-trainer training classroom;
- surface/air situation visualization system and nonshared and shared information displays;
- computational/modeling complex and network equipment;
- simulated conning tower in the sail;
- loudspeaking intercom system.

At the heart of the system is its integration subsystem that makes it possible to configure function-oriented training sets and special trainers from operator workstations:

- a tactical training set to practice combat and tactical submarine maneuvering and use of weapons;
- a special tactical training set to practice controlling a boat in typical, complex and emergency situations;
- a special training set (a training bridge) to practice safe submarine navigation during surface cruising and snorkeling;
- special training sets and trainers allowing the crew to practice operating weapons and equipment, damage control activities.

Tactical training set is designed to train operators in performing their functions as part of a ship's combat crew when carrying out typical combat missions:

- overcoming enemy ASW capabilities (ASW aircraft, surface ships, submarines, anti-submarine barriers, mines);
- operational use of the torpedoes, missiles and mines, operational use of electronics and EW equipment;
- intelligence/gathering activities;



- deployment in an operations zone and return to home port;
- actions against enemy naval surface forces and convoys as part of task groups (barrages).

The system is capable of simulating and displaying up to 150 targets (including 100 mobile and 50 fixed ones) in the water area of 1,000 × 1,000 km, at a depth up to 11 km and at an altitude up to 35 km above sea level.

Special tactical training set is designed to practice the crew actions in controlling the submarine in routine and emergency situations (descent and ascent, maneuvering in depth and course, snorkeling at periscope depth, water flooding, equipment failure, etc.). Using this training set it is possible to learn the location of equipment in the submarine compartments, its design and operating rules. When emergency situations are simulated, a change in the accident parameters and transient processes are taken into consideration depending on personnel actions.

When ship systems are simulated, the transfer of fluids (water, hydraulic fluids), gases (air, oxygen, nitrogen) and changes in boat equipment status (tanks, pumps, pipes, etc.) are taken into account. The accident points, room characteristics, and the consequences of the fire fighting and flood control efforts are considered.

Special training set (training bridge) is designed to train the commander, watch officer and bridge watch in controlling submarine maneuvering in different navigation conditions. The tactical, navigation, and meteorological situation in the operating area is visualized in the surveillance sector up to 135 deg with a high degree of detail. 100 navigational targets (submarines, surface ships, aircraft, etc.) can be visualized.

Special trainers are intended for hands-on learning and drills of battle stations and command post operators in operational use and maintenance of submarine equipment, as well as in equipment casualty control.

The trainers are trainee workstations of two types:

- training working control consoles and equipment;
- computational models of facilities' controls, their displays and appearance.

The training sets and special trainers can be used in stand-alone mode, which allows their delivery as independent items.

Main characteristics:





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услуг и технологий военного и двойного назначения. Входит в Госкорпорацию Ростех. «Рособоронэкспорт» образован 4 ноября 2000 года и является одним из лидеров мирового рынка вооружений. На долю компании приходится более 85% экспорта российских вооружения и военной техники. «Рособоронэкспорт» взаимодействует с более чем 700 предприятиями и организациями оборонно-промышленного комплекса России. География военно-технического сотрудничества России – более 70 стран.

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