SURFACE-TO-AIR

Tetraedr offers modernised simulator for Osa-AK, AKM

Users of the 9K33M2 Osa-AK and 9K33M3 Osa-AKM (SA-8 'Gecko') self-propelled surface-to-air missile systems are being offered a modernised version of the associated 9F632 and 9F632M simulator, writes *Miroslav Gyürösi*.

Developed by Belarus company Tetraedr, the 9F632-1T incorporates new software and hardware that take advantage of modern signal-processing and other digital and electronic technologies. These changes are intended to improve the performance and mean time between failures and reduce the time needed for maintenance and repairs.

The modernised simulator 9F632-1T is intended to train the crews of 9A33BM2 and 9A33BM3 in the task of engaging targets and handling complex air-defence scenarios. It is mounted in a cabin with air-conditioning, heating and ventilation system that is carried by a MAZ-6517/6317 three-axle truck. The simulator is powered by an SEP-1T electrical generator.

The cabin contains two subsystems: the IVO-1T (air situation simulator) and IBM (combat vehicle simulator), plus communications equipment. The main modules of the IVO-1T include:

- a TO12-1T video signals simulator for the IBM and combat vehicle;
- a TO14-1T echo signals simulator for the IBM;
- a TO14-1TBM echo signals simulator for the combat vehicle;
- a TO19-1-1T training operator console;
- a TO19-2-1T air-situation display and crew work examination;
- an SRP-1T computing unit; and
- a VBU-55 video receiving device.

The simulator can operate in three modes: BR (combat operation); RR (normal operations); and FK (functional check-up).

In BR mode, the simulator can be used autonomously, with the crew trained inside the simulator, coupled to a combat vehicle to allow one crew to be trained in the simulator and a second in the vehicle, or in an 'inserted working' mode in which a crew in the combat vehicle can monitor the real air situation, into which radar targets can be inserted by the simulator.

Crews can be trained in scenarios starting from a single target flying a simple flight path in the absence of enemy jamming. Trainees can be introduced to the effects of target manoeuvres and different types of jamming and instructed in how to engage groups of up to four targets flying at different flight levels and approaching from several directions. Low-flying targets, including helicopters, can also be simulated and engaged. Crews can also practise engagements against an enemy armed with anti-radiation missiles.

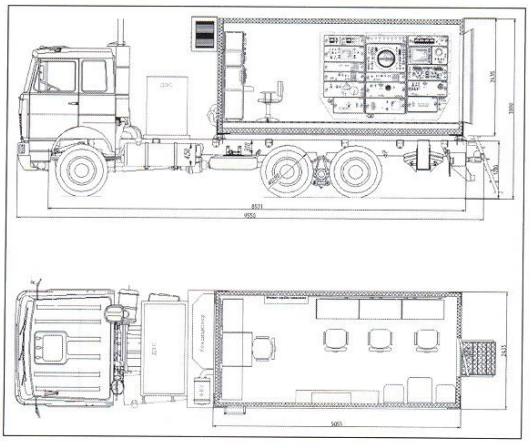
The RR mode is used to set up the IVO and IBM, while the FK mode allows the IVO and IBM to be given a full functional test.

The modernisation process starts with inspection of the original equipment. Production and delivery of the spare parts and other hardware needed to repair and refurbish the equipment takes up to three months, while production and delivery of the KO-1TR modification kit that contains the new hardware can take up to 10 months.

A Tetraedr team of six to eight technicians then carries out the repair, refurbishment and modernisation work at the user's facilities. Repair and refurbishment can take up to a month, while the upgrade can take a further two months. Customer trials and acceptance tests take about 10 days and full manuals and other documentation are provided.

Tetraedr guarantees the rebuilt system for 12 months and claims a useful lifetime of up to 15 years. Under separate contracts, it will supply any spare parts and other hardware needed to keep the system operational.

> The combat vehicle simulator occupies much of the length of the 9F632-1T cabin, while the air situation simulator is mounted across the front end.



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STRATEGIC

Russian SRF facilities face funding shortfall

The Russian Strategic Rocket Forces (SRF) are suffering from a shortage of funding for maintaining research, development, testing and evaluation (RDT&E) infrastructure under current budget plans, its deputy commander for armaments, Lieutenant General Vitaliy Linnik said at a press conference in Russia on 1 April, writes **David C Isby**.

The amount budgeted up to 2011, about RUR1.5 billion (USD60 million), is only a quarter of what is required to sustain a baseline capability.

Modernisation of facilities would require RUR12.5 billion to RUR20 billion. The facilities also need to be reorganised to attract and retain needed personnel, said Lt Gen Linnik. Issues that needed to be addressed include salaries, conditions of work, prestige and housing, he added.

That these issues are by no means limited to the SRF's RDT&E infrastructure was apparent from testimony about the decline in Ministry of Defence (MoD) RDT&E capability given by senior SRF officers and other specialists to a closed session of the Duma Defence and Security Committee on 25 March.

Andrey Tyulin, First Deputy Chief for Weapons of the Armed Forces, identified personnel issues as being especially critical. Personnel working at MoD facilities earn on average between 25 per cent and 40 per cent of the salaries received by their counterparts working for industry.

There are no ministry facilities of this type under 30 years old and in some cases up to 80 per cent of electrically powered equipment is past its required overhaul or servicing dates.

Many facilities have seen a decrease of up to 75 per cent in the number of test engineers in recent years. Many of the remaining specialists assumed their positions during the Soviet era and are due to retire in the near future.

In response, the SRF has announced a new programme in which it will receive about 320 university-trained officers a year, starting in 2008.

The Moscow Aviation Institute; Tomsk State University; St Petersburg State University for Aerospace Instrument-building; Omsk State University of Technology; Moscow State University of Technology; and Siberian State Aerospace University will carry out the training, with 140 officers a year being produced by the last-named school alone.

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