

EXTRA guided rocket offered as a naval weapon

MIROSLAV GYÜRÖSI

Israel Military Industries (IMI) is offering a shipboard version of its extended range artillery (EXTRA) guided rocket.

Designated Trigon, and shown for the first time at the 2014 KADEX exhibition in Astana, Kazakhstan, the system is intended for use against off-shore targets.

The launcher consists of a simple deck-mounted open frame that mounts a single pack of EXTRA rockets at a fixed angle. Each pack contains four

ready-to-fire rockets in individual transport/launch containers with a circular cross-section.

The EXTRA rocket is 4.4 m long and 306 mm in diameter. It was developed by IMI as a private venture, and first announced in 2005. It is provided with target information prior to launch and on the land-based system this data is uploaded from a fire-control system mounted in the cab of the launch vehicle. For the Trigon application, this data will be provided by the ship's combat system.

Once in flight, EXTRA is guided to its target by an Israel Aerospace Industries GPS-augmented inertial navigation system resulting in a circular error probable (CEP) of 10 m. Maximum range is 150 km.

For the naval application, the rocket will carry a 120 kg explosive-fragmentation warhead. Various types of warhead

weighing up to 120 kg have been proposed for the land-based version, including high-explosive or cargo-carrying submunitions. It is estimated that about 500 IMI Bantam submunitions could be carried.

EXTRA is also being offered as an armament for IMI's newly developed Coastal and Island Defence System

(CIDS), which is being offered to Kazakhstan as the Protivokorabelniy Raketniy Kompleks Beregovoy Okhrani (PRKBO).

One type of the launcher is a remotely controlled stationary design, while the second is IMI's truck-mounted Lynx MRL (multiple rocket launcher).

Both launchers can be armed either with EXTRA, or the smaller 160 mm calibre Accular guided rocket.

Accular is smaller than EXTRA, measuring 4 m long and weighing 139 kg at launch. It can carry a 35 kg explosive-fragmentation warhead to a maximum range of 40 km.

Course corrections are conducted via GPS-based guidance and an array of 80 side-ways-firing thrusters.

The CIDS system is flexible. It can obtain targeting information from unmanned aerial vehicles

or coastal surveillance radars. At

KADEX 2014, IMI teamed it with the mobile Elta EL/M-2226 Advanced Coastal surveillance radar.

First published online: 09/06/14



Left: The shipboard IMI Trigon launcher is armed with four of the company's EXACT tactical rockets. **Right:** This remote-controlled rocket launcher is offered for IMI's CIDS.



Bulava launches to resume in September

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Flight testing of the Russian R-30 Bulava (SS-NX-32) submarine launched ballistic missile (SLBM) will resume in late September 2014 with a firing from the submarine *Vladimir Monomach*, according to an early June statement by Russian Deputy Defence Minister Yuri Borisov. The third boat of the Borey class, *Vladimir Monomach*

will conduct sea trials over the next few months, and has not yet attempted a Bulava launch. The planned Bulava firing will form part of its acceptance trials.

Bulava flight testing had been halted following an unsuccessful test from the ballistic missile submarine *Alexander Nevsky* on 6 September 2013. After the 2013 launch failure, a series of five "practical test launches" were announced, to be carried

out before resuming the formal testing programme.

The second 2014 launch announced by Borisov is expected to take place in November. The submarine to be used has not been identified, but will probably be *Alexander Nevsky*. Due to serve with the Pacific fleet, *Alexander Nevsky* was formally accepted into Russian Navy service on 23 December 2013, but its sole

attempt to launch a Bulava missile ended in failure.

As originally planned, the 2014 Bulava flight test programme was to have started in mid-year, and would have consisted of four single launches from *Alexander Nevsky* and *Vladimir Monomach*. These missiles would be launched from the White Sea, impacting on the Kara test range on Kamchatka.

First published online: 09/06/14

IMI reveals Predator Hawk long-range guided artillery rocket

MIROSLAV GYÜRÖSI

Israel Military Industries has showed the newest guided rocket for its Lynx multiple rocket launcher for the first time during the KADEX 2014 exhibition in Astana, Kazakhstan.

The Predator Hawk is 5.4 m long, 370 mm in diameter, and carries a 200 kg explosive-fragmentation warhead. Four stabilising fins are mounted around the nozzle of the solid-propellant rocket motor, while four aerodynamic control surfaces are positioned near the nose.

The rocket is guided to the target area by an inertial naviga-

tion subsystem teamed with a combined GPS/GLONASS satellite navigation subsystem. Its maximum range is 250 km, and the declared circular error probable (CEP) is 10 m. Typical targets would include command posts, communication and control nodes, logistical facilities, and other infrastructure.

First shown in 2007, Lynx is a wheeled modular autonomous multiple rocket and missile launch platform adaptable to most high-mobility 8x8 long wheel-base truck configurations. It was originally offered as a launcher for rockets of 122 mm to 300 mm calibre, but the

company has always seen guided rockets as a potential armament.

A Lynx vehicle can carry two pods loaded with alternate calibres of rocket. For long-range strike missions, a payload of two Delilah-GL surface-to-surface cruise missiles, or one missile and one rocket pod were suggested. Delilah-GL has a range of up to 250 km, but the new Predator Hawk may offer a faster and lower-cost method of engaging some targets in this range category.

First published online: 09/06/14

IMI's Predator Hawk long-range guided artillery rocket will provide the company's Lynx system with a 250 km range semi-ballistic weapon.



Miroslav Gyürösi 1520867

F-35B engages two targets with AMRAAM

DOUG RICHARDSON

In one of three separate flight tests conducted on 27 May, a Lockheed Martin F-35B Lightning II fighter engaged two aerial targets in succession with two Raytheon AIM-120 Advanced Medium Range Air-to-Air Missiles (AMRAAMs).

During this weapon delivery accuracy mission flown in the Point Mugu Sea Test Range airspace off the central California coast, test pilot Lieutenant Colonel Andrew 'Growler' Allen tracked and engaged two manoeuvring drone targets in what was the first dual AMRAAM engagement from any version of the F-35, and the first live AMRAAM launch from the F-35B short take-off and vertical-landing (STOVL) variant.

The US Marine Corps is due

to achieve initial operational capability (IOC) with the F-35B in 2015.

Flying from Edwards Air Force Base on the same day, an F-35A flew a 1.9 hour mission that used the aircraft's Block 3i hardware and software for the first time. Block 3i is the standard planned for use when the US Air Force reaches F-35A IOC – a programme milestone scheduled for 2016.

In a third successful F-35 test flown that day, an F-35C – the model designed for aircraft carrier operations – completed a landing at Naval Air Station Patuxent River, Maryland, touching down at its maximum sink speed of 21.4 ft/sec (6.5 m/sec). This was one of five sorties flown to test the aircraft's landing gear, airframe, and arrestment system.

First published online: 02/06/14

Diehl Defence offers GILA for Tiger helos

MIROSLAV GYÜRÖSI

Diehl Defence presented its GILA (Guided Intelligent Light Armament) 70 mm calibre guided rocket for the first time at the ILA 2014 exhibition in Berlin, in late May.

The system, based on the ATK/Elbit GATR (Guided Advanced Tactical Rocket) is being offered for use on Tiger combat support helicopters as a weapon able to fill the gap between the high-performance but expensive PARS 3LR air-to-ground missile and unguided rockets.

The GILA rocket is 1.8 m long, and weighs 14.9 kg. It consists of a solid-propellant rocket motor with six large tail fins, a multi-function warhead section, and front guidance section. The latter incorporates an advanced semi-active laser seeker; a computer-

based guidance and navigation subsystem; and four control surfaces with their associated actuators.

The multifunction warhead is intended for use against a target set that includes stationary or moving soft-skinned or light armoured vehicles, buildings, reinforced bunkers and fortified dugouts, missile launching sites, and small sea-surface targets.

Several stages of integration onto the helicopters are proposed. The first requires no changes to the helicopter or its existing 70 mm calibre rocket launchers, and uses a lock-on-before-launch mode. A second stage requires some adaptation to the launchers, while a third would use a Smart Launcher Unit, and allow Fuze Programming and Laser Code Programming from the cockpit.

First published online: 09/06/14