

## Polish live-firing debut for Rafael's Spike-LR

The Polish land forces have for the first time conducted a live firing under real operational conditions with the Rafael-developed Spike-LR Dual anti-tank guided missile. The event took place on 21 February 2005 at the Torun training centre. The missile, fired and guided by an instructor, penetrated the bottom right part of the turret of a T-72 main battle tank. There was no explosive-reactive add-on armour installed on the tank.

The launch took place during a meeting of representatives from all future Polish users of the missile, from the depots as well as from industry. The last included ZM Mesko, the primary manufacturer of the Polish system. There were also representatives from Poland's research and development community that will adapt the missile system for specific applications, such as on the HMMWV utility vehicle for the 18th Air Assault Battalion and on the Patria/WZM Rosomak (XC-360P) AMV 8x8 armoured vehicle. Up to 96 Rosomaks are planned to be equipped with twin Spike-LR launchers mounted on their Oto Melara Hitfist 30 lightweight turrets.

According to the Polish national armament director, the Polish Ministry of National Defence (MND) plans to launch up to 25 live missiles annually.

Data provided by the MND suggested that the Spike-LR Dual missile flies to the target at a speed of 130-180 m/s, reaching a target located 4 km away in approximately 26 seconds. The Spike-LR may penetrate more than 700 mm of rolled homogeneous armour (RHA) -- the Spike-ER penetrates around 1,000 mm of RHA.

The weight of the complete launcher with a missile reaches 26.2 kg. The missile may be used at temperatures between -32°C and +49°C (storage temperatures are between -45°C and +71°C).

Poland officially accepted the Spike-LR system during a ceremony attended by the defence ministers of Poland and Israel, Jerzy Szmajdzinski and Shaul Mofaz, on 16 November 2004. On that day the state-owned ZM Mesko missile and ammunition company (part of the Bumar Group), the primary Polish partner of the Rafael Armament Development Authority, officially delivered the first batch of Spike-LR systems.

The batch consisted of two launchers, 20 missiles, a single indoor simulator (IDT) and two outdoor man-portable simulators (ODTs), all manufactured in Israel.

In October 2004, 20 Polish instructors from the CSUiA training centre and the 6th Air Assault and 25th Airmobile Brigades had been trained and qualified by Israeli instructors. The three-week conversion took place in Poland, at CSAiU in Torun.

Poland has ordered 13 IDT devices for class-based training and conversion and 33 ODT trainers, useful for field familiarisation with the system.

In early 2005, Poland received another batch of missiles. In its 2005 defence budget draft, US\$34.2 million has been reserved for Spike procurements. ZM Mesko is expected to deliver

24 launchers and around 60 missiles in 2005, followed by 32 launchers and 200 missiles in 2006.

The contract for the delivery of 264 launchers and 2,675 missiles with dual-band charge-coupled device/imaging infrared (CCD/IIR) seeker was signed between the defence ministry, ZM Mesko and Rafael in December 2003. The total value of the agreement is close to ZI 1.49 billion (US\$397 million) including VAT, of which US\$250 million to US\$260 million goes to Rafael. The value of a single command-and-launch unit was described by Poland's MND as around ZI 1million, while a missile is worth ZI 300,000 to ZI 400,000.

A further 90-96 systems, each with two launchers, should eventually be installed on Hitfist 30 lightweight turrets of Patria/WZM XC-360P Rosomak wheeled infantry fighting vehicles. However, this programme has not yet been launched, although partners Rafael, Oto Melara and WZM have reached agreement on timescale and cost of the Spike system integration into the Hitfist 30 turret's fire-control system.

ZM Mesko will eventually manufacture eight key elements of the missile (including the launch booster and main rocket engines; the precursor and main warheads; high-pressure titanium components; the composite launch tube; and missile integration), and will be responsible for final assembly and delivery of the system as well as for the in-service maintenance. In 2006, ZM Mesko should be fully prepared for the start of local assembly of the system. Under the offset agreements, ZM Mesko will deliver 2,000 warheads and motors to Rafael. The company will also be able to use some technologies received from Rafael to improve or develop other indigenous projects.

Poland was the sixth publicly acknowledged country, after Finland, Israel, the Netherlands, Romania and Singapore, to procure the Spike system. IDR believes that at least one other European customer has concluded the procurement of a limited number of systems for light forces, and that another significant customer has entered advanced discussions about a future contract.

According to Spanish press reports, Rafael is working closely with General Dynamics Santa Bárbara Sistemas (GD-SBS) to jointly offer Spike missiles to meet a Spanish armed forces requirement. If awarded the contract, GD-SBS could receive manufacturing rights for significant parts of the missile and the system.

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Poland receives first Spike-LR missiles, *Jane's Defence Weekly*, 18 November 2004



*Spike-LR firing post immediately prior to the firing.*  
(Source: Grzegorz Holdanowicz)



*Close-up of the penetration achieved by the Spike-LR warhead.*  
(Source: Grzegorz Holdanowicz)



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