

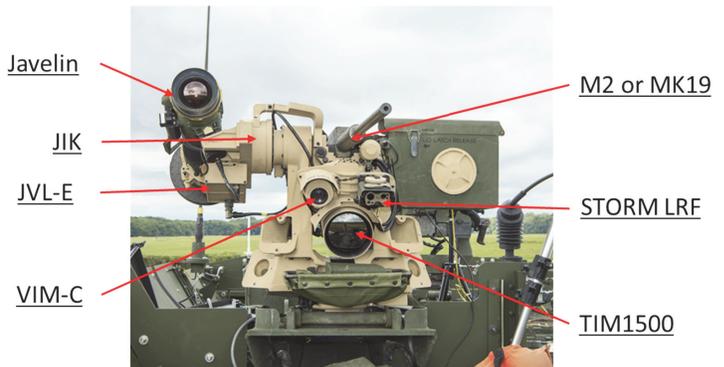
Stryker Common Remotely Operated Weapon Station – Javelin (CROWS-J)

Executive Summary

- The Army developed the Stryker Common Remotely Operated Weapons Station – Javelin (CROWS-J) in response to an Operational Needs Statement submitted in March 2015. It is not a Program of Record. When fielding is complete, the 81 Stryker CROWS-J will comprise 50 percent of the vehicles in the rifle and scout platoons in the 2nd Cavalry Regiment (2CR).
- The Army conducted an Early User Test and Evaluation (EUT&E) from February through April 2018. The EUT&E findings support the Army Program Executive Office decision to field the Stryker CROWS-J to the 2CR.
- When equipped with the Stryker CROWS-J, the majority of infantry and scout platoons from the 2CR were able to engage targets with the Javelin missile and accomplish their assigned tactical task and purpose.
- The Stryker CROWS-J improves unit lethality by enabling crews to detect, identify, and defeat targets at greater ranges and against a wider array of enemy targets than non-equipped crews.
- The platform meets reliability requirements for the weapon station without degrading the reliability of the base chassis.
- Leadership from the scout platoon experienced challenges manning the Long-Range Advanced Scout Surveillance System (LRAS3).
- The Stryker CROWS-J has cybersecurity vulnerabilities that can be exploited.

System

- CROWS-J is an M153 CROWS II system manufactured by Kongsberg that has been modified through the addition and fire control integration of the FGM-148 Javelin Anti-Tank Guided Missile (ATGM).
- In conjunction with the Javelin missile, the CROWS II mounts either a M2 .50 caliber machine gun, M240 7.62 mm machine gun, or an MK-19 40 mm automatic grenade launcher.
- The CROWS II is stabilized, electrically operated, and incorporates a Detached Line-of-Sight (DLOS), which allows the gunner to maintain a stable sight picture independent of weapon or ammunition selection. The CROWS-J replaces the legacy Remote Weapon Station (RWS) mounted on the Stryker Infantry Carrier Vehicle (ICV), and gives infantry and scout soldiers the ability to engage targets with the Javelin missile while under armor. It increases the range and expands



NO M6 SGL



CROWS FCU



RWS CG

FCU - Fire Control Unit

JIK - Javelin Integration Kit

JVL-E - Javelin Vehicle Launcher Electronics

RWS CG - Remote Weapon System Control Grip

SGL - Smoke Grenade Launcher

STORM LRF - Small Tactical Optical Rifle Mounted Laser Range Finder

TIM - Thermal Imaging Module

VIM-C - Visible Imaging Module Color

the target array of enemy vehicles that can be defeated by the Stryker Brigade Combat Team, including armored vehicles.

Mission

Units equipped with the Stryker CROWS-J will provide the Commander, European Command with a medium-weight force capable of rapid strategic and operational mobility to disrupt or destroy enemy military forces, to control land areas including populations and resources, and to conduct combat operations to protect U.S. national interests.

Major Contractors

- Kongsberg Protech Systems – Kongsberg, Norway; Johnstown, Pennsylvania
- Raytheon & Lockheed Martin – Tucson, Arizona

FY18 ARMY PROGRAMS

Activity

- The Army conducted a two-phased EUT&E from February through April 2018, in accordance with DOT&E-approved test plans, and provided adequate data.
 - Phase I testing was conducted at Grafenwoehr (Germany) Training Area and consisted of crew gunnery qualification on an instrumented multi-lane range.
 - Phase II (force-on-force) was conducted at Hohenfels (Germany) Training Area (HTA) from April 10 – 20, 2018. The test unit was an infantry company headquarters, an infantry rifle platoon, and a scout platoon. U.S. Army Training and Doctrine Command (TRADOC) accredited the opposing force (OPFOR) and represented current and near-future threats.
- The Army Test and Evaluation Command (ATEC) conducted a Cooperative Vulnerability and Penetration Assessment of the CROWS-J in July 2017 and an Adversarial Assessment during Phase II of the EUT&E in April 2018.
- DOT&E intends to publish an Early Fielding Report in 2QFY19.

Assessment

- The Stryker CROWS-J improves combat lethality and force protection by enabling crews to destroy enemy heavy armor vehicles while under armor. Platoon-level formations present new tactical dilemmas to opposing forces that increase tactical risk to enemy vehicles and soldiers as a result of these improved capabilities.
- During Phase I, all five crews qualified in accordance with Army gunnery standards. In addition, the crews fired six live Javelin missiles, hitting their targets five times.
- During gunnery, a crew member bent the mounting fork while attempting to align the missile onto it, which prevented the

missile from successfully connecting to the Javelin Integration Kit.

- During Phase II, infantry and scout platoons equipped with the Stryker CROWS-J were able to accomplish their assigned task and purpose in 14 of 16 missions. During this phase, scout platoon leadership stated that relocating the LRAS3 to the back of the scout vehicles created a manning dilemma for the crew. The scout platoon mitigated the problem by adjusting their internal manning.
- The platform met its reliability requirements for the turret and gun system without degrading the reliability of the base Stryker chassis.
- Crews experienced a significant number of software-related essential function failures when using training ammunition that caused them to have to reboot the CROWS system during Phase II missions.
- The design of the mounting fork for the Javelin Integration Kit is not structurally sound.
- Adversaries demonstrated the ability to degrade select capabilities of the Stryker CROWS-J.

Recommendations

The Army should consider the following recommendations:

1. Correct design deficiency in the mounting fork on the Javelin Integration Kit.
2. Correct or mitigate cyber vulnerabilities of both the platforms and government-furnished equipment.
3. Correct the Essential Function Failure rate observed when using training ammunition.