

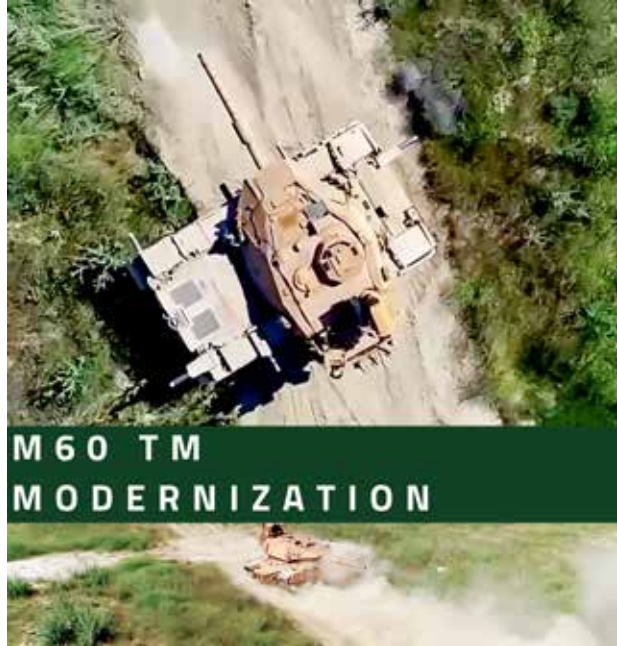
Modernized M60TM MBTs will be a Force Multiplier in Theatre

by Cem AKALIN

On July 12, 2020 Presidency of Defense Industries (SSB), the procurement authority under the Turkish Presidency, disclosed that they have modernized all of the M60T Main Battle Tanks (MBTs) in Turkish Armed Forces (TAF) inventory and upgraded them to M60TM configuration. President of Defense Industries (SSB) Prof. İsmail DEMİR examined the modernization activities on site and said, “By modernizing our tanks with an Active Protection System (APS), we have become one of three countries in the world that have this capability.”

President of Defense Industries Prof. İsmail DEMİR examined the cutting-edge technologies and capabilities integrated into an M60TM MBT that modernized within the scope of the FIRAT-M60T Program. During his visit to Aselsan, SSB President Prof. DEMİR received detailed information from Aselsan’s Chairman of the Board & CEO Prof. Haluk GÖRGÜN and other officials.

SSB Prof. DEMİR made a detailed statement on the subject and underlined that the tank had to be modernized (M60T) in Israel in times where there was a foreign dependency in the defense industry and added that many more components were presently integrated into the tank far beyond that modernization process. Mentioning that threat detection



systems, alarm systems, warning systems, various imaging systems, and countermeasure systems have been integrated to the tank with the activities conducted by Aselsan, Prof. DEMİR continued, “More importantly, the Active Protection Systems that are owned by only three countries in the world have already been integrated to this tank, and this is a great demonstrator of the level achieved by our defense industry. With all its features, this tank was upgraded to increase survivability and these tanks are amongst the tanks of highest capabilities in the world.”

SSB Prof. DEMİR continued: “With the protection and warning systems, the fire control system and particularly the Active Protection System employed which is beyond armor, presently

we are standing in front of a modern tank. As a country, we are going through a process where the tanks with outdated technology in Turkey’s inventory are equipped with multiple capabilities through modernization. The modernization of the Leopard MBTs in our inventory is in progress parallel with the modernization of the M60s. During this modernization, certain improvements were achieved far ahead of the schedule that was determined for the procurement of certain components, for instance, regarding the procurement of the armor, and these components were applied to the tanks. In this way, while we continue to conduct the serial production activities of our ALTAY MBT, the modernization of our Leopard tanks will be completed, and they

will enter the league of tanks with the highest capabilities in the world. I would like to thank Aselsan, TÜBİTAK- Sage, Roketsan, and other defense industry companies, platform manufacturers, and the companies producing armored vehicles and tanks.”

FIRAT-M60T Modernization Project

The SSB launched the FIRAT-M60T Project on September 26, 2016 in order to equip the main battle tanks in the inventory of Turkish Land Forces with Active Protection Systems against anti-tank threats and to provide the existing systems with new outstanding capabilities.

The feedback received from Operation Euphrates Shield paved the way for the development of a solution

by Aselsan to improve the self-protection system of the existing tanks. Within the scope of the FIRAT-M60T Project, a contract worth €109.245 million + TRY 25 million was signed on May 11, 2017, between the SSB and Aselsan during IDEF '17. It was declared that the Laser Warning System, Remote Controlled Weapon Systems, Close-Range Surveillance System, Robust Spall Liner, Air Conditioning System would be integrated. In the aftermath, as part of other urgent requirements defined by the procurement authority, Contract Amendment No 1, valued at €96.7 million + TRY 25 million, was prepared and signed on July 24, 2018. With Contract Amendment No 1, the total amount of the Project contract reached € 206 Million + TL 50 Million. In accordance with the amendment to the contract, the AKKOR PULAT Active Protection System (APS) will be integrated on 40 of the 169 M60TM MBTs. Out of the 169 tanks dubbed M60TM that were designated for modernization as part of the FIRAT-M60T Project, would integrated the Telescopic Periscope System (TEPES) on 73 of these tanks. Moreover, 90 40mm automatic grenade launchers were procured in 2018 to be used on the M60TM MBTs.

A system solution was prepared with the subsystems designed as part of the ALTAY project within this project that was launched to enhance the survivability of the M60T tanks, which were used intensely during Operation Euphrates Shield in particular. In light



of the detailed information shared in the 105th edition of Aselsan magazine published in May 2020, the project was launched immediately during the operations. As a result of devoted efforts, the very first system was integrated into the prototype tank in a very brief amount of time, such as 20 days, and was rendered available for Ballistic Qualification Tests. Following the first tank integration completed at the Base Zone at the center of Operation Euphrates Shield, the tank went through Ballistic Qualification Tests at the border zone with the participation of the SSB, Land Forces Command, and Aselsan staff. The terrorist groups were located 2 kilometers away from the area where the Ballistic Qualification Tests took place, and the tests were completed successfully despite the firing of numerous harassing ammunition nearby. The modernized tank was immediately deployed to the front line, and serial production activities gained momentum with

the effective utilization of particularly the SARP Stabilized Advanced Remote Weapon Platform and Tank Laser Warning Systems at the front line, the extension of the lifecycle of the tank engine and thermal system with the Auxiliary Power System and the Telescopic Periscope System and verification of the systems' reliability by the tank staff. Serial production was launched after a short time, about three months after the accomplishment of the required verifications, the systems started to be integrated into the tanks. In the Aselsan presentation "FIRAT-M60T Project: Force Multiplier in Cross-Border Operations" given on the 2nd day of the 4th Land Systems Seminar held on November 5-6, 2018, it was stated that the system integration activities were started at the military bases inside the region of Operation Euphrates Shield approximately eight months in advance of the signing of the main contract and more than ten tanks were upgraded by the time the main contract was

signed at IDEF '17.

With the written statement made by the SSB on July 12, 2020, completion of the modernization of 169 M60T MBTs by Aselsan was announced. In this way, all M60T MBTs in the inventory were upgraded to the M60TM configuration which ensured a high level of close and medium-range firing capability, as well as short and long-distance survivability and defense capability, and also enhanced the capacities regarding tank maintenance and staff efficiency through technological advances.

Thanks to the integration of the Telescopic Periscope System (TEPES) the M60TM MBTs gained the capability to conduct secure surveillance and target acquisition while in the defilade position. With Aselsan's TEPES mast-mounted sighting system, which is to be integrated into a total of 73 M60TM MBTs, the tanks gain superior target acquisition and surveillance capabilities with high precision under all types of weather and geographical conditions.

The capabilities of TEPEs, such as motion detection, target tracking, sectoral scanning, integrated operation with other systems (Laser Warning System, Remote Controlled Weapon System, etc.), acquisition of the target coordinates and video/image recording will dramatically increase the survivability of the M60TM. The system is capable of capturing thermal images and TV images via its E/O sensors and is capable of conducting laser distance measuring up to 20 kilometers. TEPEs can reach a height of 2.5 meters with the telescopic elevation system (mast) over the M60TM turret and is capable of calculating the coordinates of the target detected through INS integration and then submits them to the operator. Survivability of the Turkish Armed Forces has reached the highest levels due to the integration of critical systems such as the telescopic periscope and audio laser warning to these tanks for the first time.

The AKKOR PULAT APS is capable of physical destruction, and it can cope with multiple threats simultaneously while providing 360-degree protection capability. The system detects RPGs and ATGMs directed towards the M60TM MBT in the air with the help of the high technology radar it features and destroys them at an optimum distance before they hit the tank. Only 6 countermeasure modules (2 on each of the sides, 1 on the front and 1 at the rear) exist on the M60TM. The system can be switched on and off with the help



AKKOR PULAT APS

of the Control Panel in the driver's compartment, and the countermeasure modules can be activated upon request only towards the direction of the threat while other Modules can be deactivated. When the module is activated, the countermeasure munitions over it, in the form of a cylindrical stick, emerges out of its socket and remains outside the hull at a distance of 30-40cm. The sensor of the Triggering Radar remains on the tip of the cylindrical countermeasure munitions. The Triggering Radar can scan up to 180 degrees in azimuth and 35 degrees in elevation and is said to be capable of detecting an approaching threat up to 50m and calculates its angle of approach. After the estimation of the optimum intercept point, when the threat is within range, the warhead located at the back of the millimeter-wave Triggering Radar is activated for the interception. When the cylindrical countermeasure munitions system is activated, it neutralizes the threat using a dense cloud of fast-moving splinters (small fragments

scatter around in the shape of a ring due to the cylindrical form of the tank (small fragments of the countermeasure munitions). The fast-moving splinters directly shoot the warhead of the ATGM that constitutes a threat. After a physical impact, either the warhead on the threat is disabled, or the formation of the gel effect (in the HEAT type warhead) is prevented. According to an Aselsan official, as the high-speed fragments move 35 degrees upwards after the activation, it can, technically, also intercept ATGMs with a top attack capability to a certain extent.

Besides these two critical systems that increase the survivability of the Main Battle Tanks, the following system integrations have also been accomplished during the modernization of M60T tanks to the M60TM configuration: Laser Warning Receiver (LWR), Remote Controlled Weapon Station (RCWS), Position and Orientation Detection System, Close-Range Surveillance System, Tank Driver Vision System, Robust Spall Liner, Air Conditioning System, and Auxiliary Power Unit.

According to the feedback received by the tank crew who participated in Operations Peace Spring, Olive Branch, and Euphrates Shield, the tanks modernized by Aselsan were quite successful against Anti-Tank Guided Missiles (ATGM). It was also declared that the operational capabilities of the tanks in urbanized terrain were enhanced.

Moreover, as part of the FIRAT-M60T project, the product support strategy was identified by the procurement contract under the title of Integrated Logistic Support Service. Within the scope of the FIRAT-M60T project, the MTTR (mean time to respond) is 4-6 hours on average, and the system is guaranteed to be repaired and reactivated within a maximum of 3 days. Spares will be used for the activation of systems during both the guarantee period and the performance guarantee period. The Integrated Logistic Support personnel of Aselsan will support the Turkish Armed Forces as part of the system support activities during cross-border operations ■