

# Combat Vehicle Developments to Propel Army of 2030 – and Beyond

by Dan Heaton

Protection from above, an adaptability for future technology and a reduced logistical footprint are among the transformational capabilities of the new armored vehicles in development for the Army's divisions and armored brigade combat teams (ABCTs).

As the Army moves toward 2030, its 16 ABCTs (11 in the active-duty force and five in the National Guard) are undergoing a once-in-a-generation transformation to bring new capabilities to leaders and Soldiers. The ABCTs of 2030 require new and different capabilities to defeat potential adversaries on future battlefields that will use advanced equipment and cutting-edge technologies in the 21<sup>st</sup> Century. To counter these future threats from peer adversaries, the Army Future Command's Next-Generation Combat Vehicles Cross-Functional Team (NGCV CFT) works with both internal and external partners to develop faster, more survivable and more capable armored vehicles, able to deliver increased firepower to the battlefield.

Transforming the capabilities of ABCT is a team sport. The next generation of combat vehicles is being developed with a partnership that stretches across the Army and beyond:

- The Maneuver Center of Excellence is the Army's centralized planner, manager and integrator for capability development and user activities for Army combat formations.
- NGCV CFT is responsible for developing sound requirements for the highest-priority capabilities, supported by Soldier feedback, to close capability gaps.
- The Maneuver Capabilities Development and Integration Directorate is responsible for determining and developing future-force capabilities for the infantry and armored force of tomorrow and for conducting capability-based doctrine, organization, training, materiel, leadership development,

personnel, facilities and policies assessments, experiments and integration.

- The Ground-Combat Systems Center conducts the foundational research and prototyping required for potential new systems.
- Program Executive Office-Ground Combat Systems acquires the vehicles.

Together, this team – with support from industry and academia – are moving deliberately to deliver cutting-edge capabilities to Soldiers.

To achieve maximum effect, armored and combat vehicles must be able to operate in a formation capable of working with our sister services, allies and partners. Individual platforms must have robust, interoperable communications data links both to other platforms in the formation and to higher-echelon commanders. Real-time communications will allow division-level-and-above leaders to see and understand the big picture and rapidly allocate and employ assets to attack an enemy across all domains, while commanders at the brigade level and below focus on the close fight. Developments underway now in the Army's next generation of combat vehicles will ensure our formations retain overmatch into 2030 and beyond.

The U.S. Army is now delivering its first new tracked armored vehicles in 40 years. In January 2023, the first Armored Multi-Purpose Vehicles (AMPVs) will arrive at 1<sup>st</sup> ABCT, 3<sup>rd</sup> Infantry Division, at Fort Stewart, GA, in what will be the first of a steady stream of AMPV deliveries to ABCTs. Development of Optionally Manned Fighting Vehicles (OMFVs) continues to proceed, with manufacture of prototype vehicles starting in 2023. Experimentation on concepts that will inform future decisions on upgrades to the Abrams tank will continue in 2023, supporting development efforts that could eventually lead to the Next-Generation Main Battle Tank (NGMBT).

While AMPV, OMFV and tank research are all at different stages of development, they share key commonalities: digital design and open systems architectures. OMFV and future tank developments will feature the Ground-Combat Systems' Common Infrastructure Architecture (GCIA), which is also known as Modular Open-System Architecture (MOSA).

The GCIA approach is central to current OMFV design efforts. Simply put, GCIA allows the Army to incorporate today's technology into a vehicle, while its operating system is intentionally designed in such a way that future technology can still be easily incorporated. GCIA also allows future technology from Company X to be incorporated into a vehicle designed by Company Y because of the "open" nature of the underlying system. AMPV is being fielded with a MOSA-compliant system.

"On OMFV, our industry partners are looking at different armor-package considerations, different track configurations, what systems will we be using for targeting and active protection systems [APSS]," said BG Geoffrey A. Norman, director of NGCV CFT. "The science is continuing on all these fronts, and we don't know for certain which technologies will be ready next. But we will have the architecture in place where we can add those technologies when they have reached the appropriate level of maturity."

While science and technology developments are happening in industry and in government labs and test centers, the Army is also closely watching how armored vehicles are being employed in the most recent Russian invasion of Ukraine in 2022, as well as how they were used in the Nagorno-Karabakh conflict of 2020. In both of those conflicts, losses of tanks and other armored vehicles largely appear to stem from lack of combined-arms tactics, compromised logistics, delayed and neglected maintenance,

poor training and even morale issues. Where armor has been properly maintained and employed as part of a mobile combined-arms operation, tanks and other combat vehicles proved their operational value on the battlefield.

In a change from 20<sup>th</sup> Century vehicle-design philosophies, vulnerabilities from unmanned aerial systems or more conventional weapon systems require new approaches. Future U.S. vehicles are therefore being developed with 360-degree defense systems as part of the original design.

Logistics-chain issues are being addressed through several avenues. AMPV was designed on a significantly upgraded chassis of a Bradley Fighting Vehicle (BFV), which provides a level of mechanical commonality to vehicles already existing in the formation. Perhaps most exciting is the development of efficient and reliable hybrid diesel-electric engines to power future

vehicles. OMFV is being designed with a requirement that under most tactical-use cases, it would need to be refueled no more than once per day.

Further, OMFV will be able to operate on silent watch and to move for short distances in a silent mode. Increasingly, hybrid engines are viewed as the means to achieve these increased reliability and reduced logistics demands. This will not only significantly decrease the logistical tail needed to support the ABCT but will greatly add to the agility and adaptability OMFV will bring to the armored division.

## AMPV

“Tough beats fancy,” BG Norman said. “And AMPV is not fancy. It is simply a tough vehicle that is going to bring a level of reliability and durability that our modern formations demand.”

AMPV will replace the aging M113 family of vehicles, which first entered active service in 1959. The Army is forecast to eventually purchase more

than 2,800 AMPVs. AMPV will be delivered in five variants: general purpose, mortar carrier, medical evacuation, medical treatment and mission-command vehicles. AMPV will fulfill the Army’s strategy requirements of protection, mobility, reliability and interoperability.

Perhaps the most significant attribute that AMPV brings to the fight is its ability to keep pace with the Abrams and Bradley, allowing the formation to maneuver more quickly and operate in a more dispersed manner.

## OMFV

To defeat our adversaries on the modern battlefield, the Army of 2030 requires new, advanced combat platforms that are not merely updates of vehicles designed in the 1970s. While OMFV will replace the BFV in the ABCT, the OMFV is not merely an updated Bradley. Rather, OMFV will be a transformational infantry fighting vehicle, incorporating new technologies



Figure 1. The AMPV has undergone extensive testing at all three of U.S. Army Yuma Proving Ground’s natural environment test centers: Yuma Test Center outside Yuma, AZ; Cold Regions Test Center at Fort Greely, AK; and most recently at Tropic Regions Test Center in the jungle of Panama. (U.S. Army photo)



**Figure 2. A multi-month evaluation at U.S. Army Cold Regions Test Center helped ensure the Army's latest armored personnel carrier works even in the world's coldest environments. The AMPV boasts the same powertrain and suspension system as the BFV and M109A7 self-propelled howitzer, which eases maintenance and logistics challenges for all three vehicles in the field. (U.S. Army photo by Sebastian Saarloos)**

and all the Army has learned about mechanized-infantry effectiveness since the Bradley was first fielded in 1981.

Put simply, the OMFV will be more lethal and more survivable, and will feature capabilities that were barely imagined during the Cold War-era design of its predecessor.

The OMFV development process recently concluded a digital design phase in which five companies created virtual prototypes of what the Army's next infantry fighting vehicle might look like. A competition in which up to three companies will be selected to create actual prototypes is now underway, with industry partners to be selected in April 2023. To meet silent-watch and fuel-performance requirements in the digital prototype phase, all five of the Army's industry partners proposed the use of a hybrid-electric engine, and some proposed using composite rubber tracks rather than traditional steel track.

While it remains to be seen if a hybrid-electric engine or new track systems will remain in the final proposal, these are just two examples of the way emerging technologies could transform how mechanized infantry contributes to combined-arms operations.

OMFV will integrate APS from the beginning of development. These APS

capabilities, coupled with improvements in passive armor, will allow OMFV to better protect against a range of incoming projectiles. Advancements in network data links will facilitate the sharing of targeting information with unit commanders, allowing better, faster decisions to be made assigning the best shooter to the right target. GCIA allows the Army to cost effectively update or exchange APS and other capabilities as technologies improve and threat capabilities evolve.

## NGMBT

While work continues on upgrades to the Abrams tank, Army senior leaders challenged the Army and industry to explore the potential capabilities and technologies for a possible future NGMBT. Research on NGMBT characteristics of need is in the early stages, focused on the observations from recent conflicts abroad and strategic guidance from Army senior leaders, as well as experiments and touchpoints with Soldiers and units from the operating force.

This effort is also leveraging lessons-learned from the development of OMFV and of another platform, mobile protected firepower, which is slated for delivery to infantry BCTs starting in 2025. These lessons are informing the NGMBT experimentation and analysis.

While the requirements for an NGMBT are early in the development phase, several characteristics rise in importance. NGMBT must reduce the overall weight of the vehicle. A lighter vehicle creates operational and strategic advantages for the Army and the Joint force.

NGMBT will also:

- Provide improved survivability and force protection;
- Allow increased mobility and improved transportability compared to the Abrams;
- Increase lethality through next-generation fire control and improved accuracy;
- Reduce logistical impact to the ABCT and increase operational range and endurance; and
- Provide growth margins for future capabilities.

## Conclusion

As each platform is delivered, it is important to note that the Army is taking a holistic approach to transforming our units. Integral to the development of new armored vehicles is a focus on how sustainment looks in the future. As the Army moves toward more hybrid-electric vehicles, batteries grow in importance and development of these capabilities continue alongside the development of the vehicles themselves.

Lighter vehicles increase operational mobility over varying road networks and bridges. Vehicles designed to be more climate-resistant can operate in the extreme temperatures – hot or cold – in which they may be required to perform. Across all fronts, advancements are being made.

The work to transform the capabilities of the Army's ABCTs continues as a team effort. NGCV CFT will focus on experimentation and requirements development to deliver Soldiers and leaders combat vehicles that can see more and sense farther than our adversaries; maintain low signatures and footprints while remaining highly lethal; allow our forces to converge at the time and place of our choosing to present our adversaries multiple dilemmas; and achieve new levels of protection, reliability and connectivity.

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## ACRONYM QUICK-SCAN

**ABCT** – armored brigade combat team  
**AMPV** – Armored Multi-Purpose Vehicle  
**APS** – active protection system  
**BFV** – Bradley Fighting Vehicle  
**GCIA** – G(round Combat Systems) Common Infrastructure Architecture  
**MOSA** – Modular Open-System Architecture

**NGCV CFT** – Next-Generation Combat Vehicles Cross-Functional Team  
**NGMBT** – Next-Generation Main Battle Tank  
**OMFV** – Optionally Manned Fighting Vehicle

## Honoring our Armor and Cavalry Medal of Honor Heroes

Derived from Center of Military History information provided at <https://history.army.mil/html/moh/civwaral.html>. Listed alphabetically. Note: Asterisk in the citation indicates the award was given posthumously.

**PARKS, HENRY JEREMIAH PVT**  
 Unit: Company A, 9th New York Cavalry. Place and date of action: Cedar Creek, VA, Oct. 19, 1864. Entered service: Orangeville, NY. Born: Feb. 24, 1848, Orangeville, NY. Date of issue: Oct. 26, 1864. Citation: While alone and in advance of his unit and attempting to cut off the retreat of a supply wagon, he fought and sent to flight a Confederate color bearer. After capturing the color bearer and leaving him in the rear, he returned to the front and captured three more wagons and drivers.

**PAYNE, IRVIN C. CPL**  
 Unit: Company M, 2nd New York Cavalry. Place and date of action: Sailors Creek, VA, April 6, 1865. Born: Wayne County, PA. Date of issue: May 3, 1865. Citation: Capture of Virginia commonwealth colors.

**PEIRSOL, JAMES K. SGT**  
 Unit: Company F, 13th Ohio Cavalry. Place and date of action: Paines Crossroads, VA, April 5, 1865. Born: Beaver County, PA. Date of issue: May 3, 1865. Citation: Capture of flag.

**PINN, ROBERT 1SG**  
 Unit: Company I, 5th U.S. Colored Troops. Place and date of action: Chapins Farm, VA, Sept. 29, 1864. Entered service: Massillon, OH. Born: March 1, 1843, Stark County, OH. Date of issue: April 6, 1865. Citation: Took command of his company after all the officers had been killed or wounded and gallantly led it in battle.