Enabling Distributed Operations at the Tactical Level

AFN-OTM

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In March of 2024, 1st Infantry Division (ID) was tasked by U.S. Army Forces Command (FORSCOM) Headquarters to execute the Armored Formation Network On-The-Move (AFN-OTM) Pilot II with 1st ID (HQs and Division Artillery) and 1st Brigade Combat Team, 1st ID, at Fort Irwin, California, during the National Training Center (NTC) Rotations 25-03 and 25-04. The events that took place after this tasking culminated with the successful completion of 1st ID's Division HQs 25-03 NTC rotation utilizing the AFN-OTM kit.

Commanding General of 1st ID, Maj. Gen. Monté Rone, clearly articulated how integral the AFN-OTM equipment was to the success of the 25-03 rotation.

"AFN-OTM allowed the [Big Red One] to fight dispersed, reduced our [electromagnetic signature], and provided options to me as the commander that I previously would not have had in terms of how to echelon unit command posts, redundancy, and reduce transition time."

This equipment set, combined with the new AFN-OTM-enabled redesign of the division command post structure, has the potential to revolutionize U.S. Army Armored Formations' ability to conduct large-scale combat operations (LSCO).

AFN-OTM's cutting-edge technology possesses the ability to transform the way armored divisions operate by enabling distributed command and control (C2) at the tactical level. The successful integration of AFN-OTM during NTC Rotation 25-03 has far-reaching implications, aligning with the priorities of the chief of staff of the Army, FORSCOM's commander, and 1st ID's commanding general.

This article examines the significance of AFN-OTM in enabling distributed operations and how it supports the priorities of "continuous transformation," "readiness," and "continuous transformation to meet emerging threats."

The Program Executive Office for Command, Control, Communications & Network (PEO-C3N) equipped multiple 1st ID vehicles (mostly High Mobility Multipurpose Wheeled Vehicles and Joint Light Tactical Vehicles) with an Upper Tactical Internet (UTI) suite of transport, a baseband kit, and the Unified Voice Management System (UVMS).

Each vehicle's UTI transport suite consists of a vehicle-mounted Lower Earth Orbit (LEO) satellite communications (SATCOM) terminal, a "kick out" SATCOM terminal, a commercial cellular wireless router, two line-of-sight (LOS) radios, and a bandwidth diversity solution, which automatically selects the best path of transport.

Each vehicle's UVMS system provides the ability to call Secure voice over Internet Protocol (SvoIP) phones located in the division command and control nodes (DC2N) and Very High Frequency (VHF) over Soft Channel Access Unit (CAU), from inside the vehicles while both OTM and At-The-Quick-Halt (ATQH). 1st ID also received four Variable Height Antenna (VHA) drones. The VHA drones came in both tethered and untethered configurations and were able to extend the LOS signal path across significant distances to create a meshed network between AFN vehicles.

Each vehicle is also equipped with a bandwidth diversity solution that uses the automatic primary, alternate, contingency, and emergency (auto-PACE) functions to ensure communications are working close to 100 percent of the time. Having communication equipment with that type of resiliency is unheard of in 1st ID's current Modified Table of Organization and Equipment (MTOE) program of record for Tactical Network Transport equipment. The robust AFN-OTM UTI communications package enabled 1st ID to become the first division-level rotation to complete an entire rotation without connecting to NTC's fiber infrastructure; truly operating as a "division in the dirt."

1st ID's Lt. Col. Marreo Burch (ACoS G6), Lt. Col. Aaron Adams (ACoS G3), and Lt. Col. Duane Clark (ACoS G5) created an effective plan to utilize the AFN-OTM trucks for maximum dispersion of the division's forward command posts (CP) – namely, the Division Main and Division Tactical Command Post (TAC) - while simultaneously reducing the footprint of the Division Main during the rotation.

Four of the five Division HQ AFN-OTM trucks accompanied a M1087 "expando truck" with an eight-port switch inside, which were allocated to specific division warfighting functions (WFFs)/sections (Intel/Fires, Plans, DIV TAC) and the Mobile Command Group (MCG). The fifth AFN truck supported the Division G2's Analysis and Control Element (ACE), which had a massive bandwidth utilization requirement and was co-located with the rear CP at Marine Corps Logistics Base (Yermo Annex), California. AFN-OTM's capabilities also enabled 1st ID to become the first unit to jump their rear CP during an

NTC rotation, while maintaining situational awareness of combat operations during the movement.

Each AFN-OTM truck/expando combo conducted geographically distributed operations throughout the entire rotation, mostly operating away from Division Main and Division TAC. While dispersed, each AFN-OTM truck/expando combo remained directly tied into the division's current operations on both UTI and Lower TI.

The 1st ID network operation functions allowed continued awareness of the common operating picture. Additionally, this equipment reduced the need for ancillary equipment such as static antenna masts, spools of cable, or multiple generators normally required for significant dispersion. The ability to operate multiple distributed CPs created several dilemmas for NTC's Opposing Forces (OPFOR) and presented opportunities for Maj. Gen. Monte Rone to successfully command the division from his mobile command group (MCG), while the Division TAC or Division Main simultaneously conducted multiple survivability moves throughout the rotation.

The AFN-OTM capabilities demonstrated during 1st ID's NTC rotation directly aligned with the guidance of U.S. Army senior leaders. Chief of Staff of the Army, Gen. Randy A. George, has emphasized the importance of "continuous transformation" as a top priority (George, 2023). This initiative focuses on developing a more competent, cohesive, and adaptable Army, capable of operating in a rapidly changing environment. The integration of AFN--OTM during NTC Rotation 25-03 demonstrated a significant step towards achieving this goal. By providing real-time situational awareness and enabling seamless communication between units, the AFN-OTM kit enhanced the effectiveness of C2 at the tactical level (TRADOC, 2020). This, in turn, strengthens the profession by fostering a culture of innovation, adaptability, and decentralization, allowing junior leaders to make informed decisions and take initiative (Krepinevich, 2019).

View of a tethered VHA base (front) and an untethered VHA a short distance behind it.
(Photo by Lt. Col. Marrero Burch, 1st ID)

The FORSCOM commander's priority of readiness was also directly supported by the integration of AFN-OTM (FORSCOM, 2022) during 1st ID's NTC rotation. Readiness is critical in today's operational environment, where the ability to respond quickly and effectively to emerging threats is paramount. AFN-OTM enhanced readiness by providing 1st ID's CPs, WFF and integrating cells (Joint Air-Ground Integration Cell [JAGIC], ACE, Current Operations, and Plans) the ability to operate in a distributed manner, leveraging advanced communication and networking capabilities to stay connected and informed (CBO, 2019).

The capability provided with this pilot allowed the division's chief of Operations (CHOPS) and all subordinate units to use a "Strike Net" tactics, techniques, and procedures (TTP) on a commercial collaboration service. This enabled units to respond rapidly to changing situations, making them more effective and efficient in their operations. Furthermore, the real-time situational awareness provided by AFN-OTM allowed units to anticipate and prepare for potential threats, reducing the risk of surprise and increasing overall readiness (Joint Chiefs of Staff, 2019).

Maj. Gen. Monte Rone's priority of "continuous transformation to meet emerging threats" was also closely aligned with the integration of AFN-OTM during this NTC rotation (1st Infantry Division, 2024). The division's focus on continuous transformation recognizes the rapidly evolving nature of modern warfare, where new technologies and tactics are constantly emerging. AFN-OTM was a key enabler of this transformation, providing units with the ability to adapt and innovate in response to changing circumstances encountered during NTC Rotation 25-03.

By leveraging advanced networking and communication capabilities, units can quickly integrate new technologies and capabilities, staying ahead of emerging threats and maintaining a competitive edge (Gompert, 2019).

The integration of AFN-OTM vehicles and its associated equipment during NTC Rotation 25-03 marked a significant milestone in the development of

distributed C2 capabilities at the tactical level. This new equipment set removes the limitation that organic MTOE equipment emplaced on bandwidth intensive WFF tools and Mission Command Information Systems, fully realizing their capability in training and operations. This rotation also demonstrated the potential of this technology to transform the way armored divisions operate in LSCO.

By providing real-time situational awareness with nearly 100% uptime, enabling seamless communication between units, AFN-OTM supports U.S Army senior leaders' priorities of "readiness, strengthening the profession, and continuous transformation to meet emerging threats." As the Army continues to evolve and adapt to emerging challenges, the integration of AFN-OTM will play a critical role in enabling distributed operations and maintaining a competitive edge in LSCO.

View of a tethered VHA fully deployed.
(Photo by Lt. Col. Marrero Burch, 1st ID)

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