QLLEX25 Next Generation Deployable [Resilient Installation/Rapid Insertion] water Purification and treatment System (DRIPS) Demonstration SITREP; Clint Smith, PhD, CNRP, REP

JUNE 3-10, 2025, QLLEX-25 FT BRAGG, North Carolina

At the invitation of the 354th QM GP COL Heather Roelker, 953rd Theater Petroleum Center (TPC)-3rd Expeditionary Sustainment Command (ESC) COL Jason Nowak and LTC Jamie Pittman, Drs. Smith, Mesheske, Tirmizi, Anderson, and Ms. Diaz attended the 2025 Quartermaster Liquid Logistics Exercise (QLLEX 25), at Mott Lake, FT Bragg, NC. QLLEX25 is linked to CSTX 25 and Mojave Falcon 25. The Next Generation (NG) DRIPS and smaller DRIPS were requested for demonstration into the exercise with the Army Reserve 316th QM BN lead by LTC Tina Minoski and 810th 92 Whiskey water production Company.

This opportunity represents an engagement to introduce an in-house Engineer Research and Development Center (ERDC) built Next Generation Deployable [Resilient Installation/Rapid Insertion] water Purification and treatment System (DRIPS) as an emerging brackish to freshwater production and treatment system with newly added reverse osmosis (RO), augmented dual microfiltration, and 240V power with pig tail/whip to a 5kW generator. The team incorporated direct Soldier feedback from QLLEX 24 held at FT Barfoot, VA, increasing the size of the system and for improved operability.

The DRIPS emergent technology seeks ERDC and Army operational water portfolio for Installation energy and water plan/emergency response/preparation support, Defense Support to Civil Authorities (DSCA), and early entry and rapid insertion support to Army water operations at phased integration. The team is coordinating with the ERDC Operational Water Portfolio lead by Dr. Martin Page and lead Technical Director Mr. Jim Allen, Sustainment-CDID, DEVCOM GVSC, Product Manager Petroleum And Water Systems (PdM PAWS), and PEO CS&CSS for further integration. The Operational Water Logistics for sustainment (OWLS) team of ERDC-Geospatial Research Laboratory (GRL) engaged with our partners throughout the planning for the design phases, exercise planning, and exercise through the ERDC Flex4 NG DRIPS Demonstration project and CRADA with industry partner WaterStep based out of Louisville, KY. The 75th Innovation Command provided support from three Soldiers, CAPT Travis Tetzloff, MAJ (SF) Hunter White (AAG DET 5 OIC), and MAJ Ryan West (AAG DET 5). Dr. Smith and team briefed the distinguished visitors on 9 June, including QLLEX25 leadership: 377th Theater Sustainment Command “Sustainer 6” MG Justin Swanson; Deputy Commanding General BG Rachel Humphrey; Chief of Staff COL Tina Kirkpatrick.

The DRIPS 1.0 and 2.0 (Next Generation) systems were deployed from the ERDC laboratory in Ft. Belvoir VA to Mott Lake, Fort Bragg, NC for testing and demonstration during QLLEX25. The DRIPS 1.0 and 2.0 systems were able to pull “dirty water” from Mott Lake and fill the white water bladders (pictured above) with filtered, potable water. The water was tested by the Preventive Medicine Command, passing Coliform and E. coli biological tests. The testing showed 0 CFU found and no bacteria. These testing results were particularly significant because a rainstorm the day prior washed extra biological material on the shoreline into the lake, which spikes bacteria levels.

The 75th USARIC Soldiers contributed to the deployment of the DRIPS systems and overall success of the QLLEX exercise in multiple ways. Their support was invaluable to success of the exercise and much appreciated.

In summary, the "So What", if successful and adopted by the Army or Army Reserves, the DRIPS system will be more reliable, deployable, and easier to use than legacy water purification systems. The Reverse Osmosis Water Purification Unit (ROWPU) was initially fielded in 1983, and the Tactical Water Purification System (TWPS) was fielded in the late 1990's. Both systems are no longer in production, making replacement parts difficult to obtain, dramatically reducing water production readiness. These systems are also very large and heavy. The ROWPU is typically towed by a HEMTT-LHS, and the TWPS is towed by an FMTV; the DRIPS System could be configured to be towed by a Polaris MRZR or civilian crossover SUV. The ROWPU and TWPS are typically assigned to US Army Sustainment and Support units; approximately 30% of these units are active duty (Composition 1) and 70% of these units are USAR (Composition 3). The Army National Guard also uses the ROWPU and TWPS for civilian support and disaster relief. The DRIPS would be an added value at phased entry to support early entry support and engagements. The DRIPS system supports USAR's LOEs "Adapt, Transform and Modernize" and "Mobilize and Deploy". For strategic guidance the DRIPS has Alignment with LOE #3 – "Innovate Through Persistent Experimentation".

The DRIPS supports SECDEF's initial message to the force for "Fielding Emerging Technologies", "Reviving Our Defense Industrial Base", "Defend Our Homeland On The Ground", and "Stand By Our Allies".

Photos: Dr. Clint Smith delivers a capability brief to DVs.

ERDC Research and Engineer Team, DV's, and MAJ White with DRIPS 2.0 System in US Army Trailer and Reverse Osmosis Unit (blue box).

The DRIPS 2.0 System with reverse osmosis unit (blue box) in an Army trailer. The DRIPS 1.0 system is shown beside the trailer on the ground. The DRIPS 1.0 system can fit through a standard doorway.

DRIPS 2.0 System established at Mott Lake, Fort Bragg, NC. Pictured is an Army Generator powering the DRIPS 2.0 System, both in Army trailers. The white bladders are filled with potable water from the DRIPS system.

DRIPS 3.0 system CONOP Visual input from 75th Innovation Command: Ensuring it can be towed by the Army's Polaris MRZR, installation placement, or any small civilian automobile (natural disaster relief, DSCA, emergency preparation/prepositioning).