CTMA CONNECTOR

SUMMER 2024

NCMS Supports Battle Damage Assessment and Repair at STRATO-Tech Event

P7

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NATIONAL CENTER FOR MANUFACTURING SCIENCES

CTMA Connector

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UPCOMING EVENTS

July 2 & July 17, 2024; 10-11 AM EDT
CTMA Webinar Series: The Future of Rapid Sustainment

July 15-18, 2024
NCMS Technology Showcase: FRC-East
New Bern, NC

July 16-18, 2024
Advanced Manufacturing Workshop 2024
Bethesda, MD

July 30-August 1, 2024
NCMS Technology Showcase: Puget Sound Naval Shipyard
Bremerton, WA

November 5-7, 2024
NCMS Technology Showcase: US Naval Shipyard Repair Facility & Japan Regional Maintenance Facility
Yokosuka, Japan

December 10-13, 2024
Defense Maintenance Symposium
Salt Lake City, UT

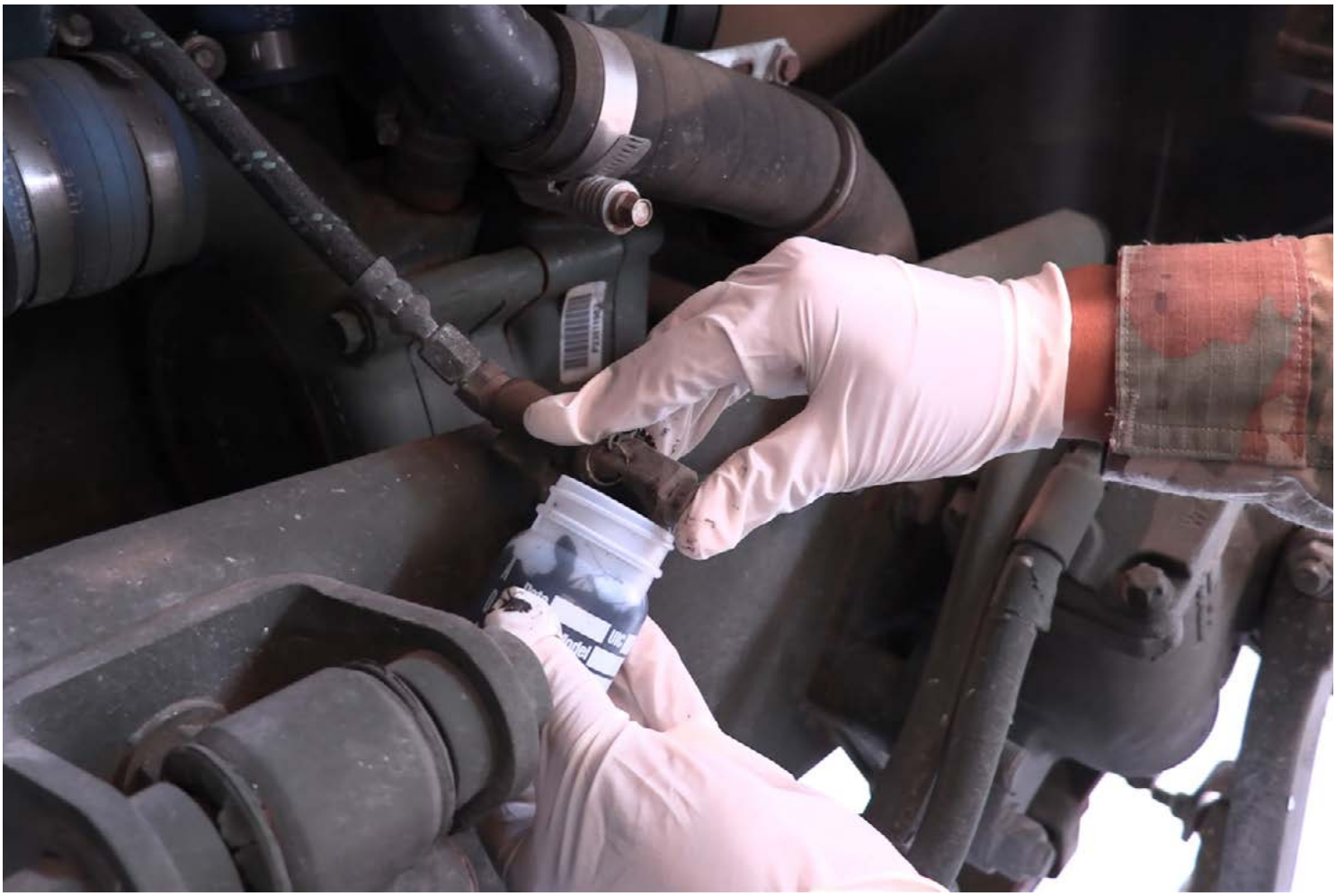
All NCMS events are subject to change. Please check the NCMS Events Page for the latest updates. Don't hesitate to email eventsupport@ncms.org with any questions.

About NCMS

The National Center for Manufacturing Sciences (NCMS) is a cross-industry technology development consortium, dedicated to improving the competitiveness and strength of the US industrial base. As a member-based organization, it leverages its network of industry, government, and academic partners to develop, demonstrate, and transition innovative technologies efficiently, with less risk and lower cost.

About CTMA

The CTMA Program offers a unique contracting vehicle for industry, academia, and the DOD sustainment community to work collaboratively. Through these efforts they promote the demonstration, evaluation, and validation of new and innovative technologies that enhance warfighter readiness at optimal value and lowest risk. This non-FAR based contracting vehicle is the only DOD-wide program focused solely on maintenance and sustainment.



A wheeled vehicle mechanic at the 39th Transportation Battalion takes an oil sample from a 915A5 Line Haul Tractor Truck at the unit's headquarters on Kleber Kaserne in Kaiserslautern, Germany. (US Army photo by Sgt. 1st Class John Freese.)

Expeditionary Fluid Assessment Capabilities Expand Across the DOD

In partnership with the Marine Corps, Air Force, and Navy, the CTMA Program has been continuously working with best-in-class industry partners to develop, test, evaluate, and implement Expeditionary Fluid Assessment Capabilities (EFAC) across the DOD to enable Condition-Based Maintenance Plus (CBM+), which is maintenance performed based on evidence of need rather than predetermined schedules.

Lubricants and hydraulic fluids must meet manufacturers' specifications to adequately perform and protect critical assets. Historically, oil and fluids were changed according to predetermined schedules, regardless of whether the asset had seen heavy use or no use at all. Studies found that up to two-thirds of this oil was still serviceable. Those unnecessary oil changes for the DOD's fleet of 420,000 ground vehicles were estimated to exceed $10M per year and waste hundreds of thousands of excess labor hours. Additionally, oil assessment had been laborious, requiring many man-hours to extract samples, send to labs, and await results. With newer EFAC tools, maintainers who are co-located with their ships, vehicles, and aircraft can easily and rapidly assess the condition of oils and other fluids in minutes, saving both maintainer time and useable fluids.

Over several years, the CTMA Program has worked with a large team of partners throughout the DOD, along with industry partners AMETEK/Spectro Scientific, Troika Solutions, and Claxton Logistics to find, develop, and evaluate a portable field-level fluid analysis capability. The team demonstrated the Spectro FieldLab 58, a battery-powered, portable fluid testing and diagnostic tool that provides maintenance personnel with real-time assessments of equipment fluid conditions. Thanks to several successful CTMA projects, the FieldLab 58 has been delivering fast results of fluid chemistry

contamination and viscosity for a range of military locations since 2018. Additionally, the FieldLab 58 has delivered x-ray fluorescence and a filter particle counter to test for residue of 16 different elements.

On March 18, 2024, the Marine Corps announced that it is implementing FieldLab 58 EFAC capabilities, along with another unit, the MiniLab 33, across field level maintenance for land systems. This combination of EFAC capabilities now gives maintainers the ability to rapidly assess not only the condition of the oils and fluids, but to assess the condition of the land system in which they are located.

Additionally, the Air Force issued an Authority to Operate (ATO) for 180 units of the FieldLab 58 in April 2024 and will begin implementing new aircraft engine oil analysis procedures starting with the TF34 engine, which is used in a number of aircraft, including the A-10 Thunderbolt II. The new procedures will expand across all engine types by Q1 2025. NAVAIR is also assessing the FieldLab 58 in support of the Navy Oil Analysis Program.

> **"These [outcomes] are great examples of how the CTMA Program is developing and enabling implementation of advanced capabilities that are making CBM+ a reality across the DOD."**
>
> *– Debbie Lilu, NCMS*

"These are great examples of how the CTMA Program is developing and enabling implementation of advanced capabilities that are making CBM+ a reality across the DOD," said Debbie Lilu, Vice President, Maintenance and Sustainment, Business Development.

First-generation FieldLab systems focused on ground vehicles and military customers. The current version includes performance upgrades that support commercial aviation, among other industries. Designed to assist maintenance professionals who manage high-value assets, the FieldLab serves the public good by delivering CBM+ capabilities to commercial industries including automotive, trucking, marine, power generation, industrial manufacturing, metals processing, mining, oil and gas exploration, and more. Maintainers can now use the portable, lightweight device to obtain rapid oil analysis results with quality similar to oil analysis labs. ■

Sweep Up Alert: Benefits Accrue Using CTMA for FY24 Funds

Attention government partners: For DOD organizations that still have funding in their budgets, Sweep Up time has arrived! If you're looking for a way to obligate expiring funds prior to the end of FY24 to avoid losing them, the Commerical Technologies for Maintenance Activities (CTMA) Program can help. The CTMA Program enables DOD organizations to demonstrate, test, and evaluate commercial technologies prior to acquisition. It provides streamlined contracting, project management, and accounting. Consider using CTMA to obligate your expiring FY24 funds.

Attention industry and academic partners: As you meet with your US military contacts, you should know that this time of year offers added opportunities to set up new technology initiatives with DOD organizations seeking to obligate funds prior to the end of FY24.

The CTMA cooperative agreement is an easy-to-use contract vehicle that is 100% focused on improving maintenance and sustainment operations across the DOD to optimize warfighter readiness. NCMS has a twenty-six-year track record of successfully administering CTMA to complete over 800 projects focused on leveraging commercial technologies to advance military capabilities.

But don't delay: The window to obligate expiring funding through the CTMA's Cooperative Agreement will be closing soon. Funding MIPRs and paperwork for future projects must be received in-house no later than Friday, August 9, 2024, to leverage this contract vehicle for FY24 funds.

Don't let this deadline affect your critical projects. For more information about CTMA, a new free webinar series scheduled for July 2 and July 17 can provide a good overview. For more information and to register, visit: https://www.ncms.org/ctma-webinar. For additional CTMA-related questions please contact Frank Schuster at Frank.Schuster@ncms.org or call him at 734-995-3904. ■

US Army National Guard Soldiers with Company A, 4th Battalion, 118th Infantry Regiment, South Carolina National Guard conduct live-fire accuracy screening tests on M1A1 Abrams tanks at Fort Jackson in Columbia, South Carolina. (US Army National Guard photo by Sgt. Tim Andrews.)

New Fire Control System Extends Abrams Fleet's Service Life

A Commercial Technologies for Maintenance Activities (CTMA) project team consolidated separate functions of Abrams tank legacy systems into a new single line replaceable unit (LRU) for reduced size, weight, and power-cooling (SWAP-C) electronic components. The Digital Inertial Stabilization Computer (DISC) is a modernized, digital, fire control system for the M1A1 Abrams that takes up less volume, uses less electrical power, requires less cooling, is easier and less costly to maintain, and overall will extend the service life of the Abrams fleet.

The CTMA project team includes General Dynamics Mission Systems-Canada (GDMS-C) and several US Army organizations: Tank-Automotive and Armaments Command's Integrated Logistics Support Center, Program Executive Office Ground Combat Systems, and the Combat Capabilities Development Command's Armaments Center.

"The project presented a significant technical challenge because the fire control functionality was originally distributed across multiple legacy electronic units," said Mark Gojkovic, GDMS-C program manager. "We combined the functions of three primarily analog systems into a single box using a fully digital approach."

The DISC consolidates functionality of three legacy M1A1 fire control LRUs: Gun Turret Drive Electronics Unit (GTDEU), Line of Sight Electronics Unit (LOSEU), and Reprogrammable Computer Electronics Unit (RCEU). While use of the DISC is not a current Army program requirement, it addresses obsolescence issues for

Foreign Military Sales (FMS) customers with M1A1 Abrams tanks.

"Two of the three LRUs were obsolete or going obsolete in the M1A1 configuration," said Douglas Brimmer, Chief, Taiwan Management Office, PL FMS PEO GCS. "TMO and GDMS-C came up with a plan jointly to address the obsolescence which yielded one LRU and six circuit card assemblies instead of three LRUs and 26 CCAs."

> **"Development of the DISC allowed us to meet the goals of reducing space, weight, and power while increasing the overall system reliability through the reduction of the number of internal subassemblies which may fail."**
>
> *– Mark Gojkovic, GDMS-C*

In the first phase, the team developed the system requirements, performed detailed digital design, and manufactured and evaluated the initial prototypes. The second phase required two-pronged testing of the prototypes: test and qualify the new electronic unit as a stand-alone item and then test the electronics in the operational vehicle as a part of a larger system. Currently, the project is in the third phase of producing some of these units and developing depot-level test equipment to provide the Army with the ability to test them once they are fielded.

The new DISC has roughly the same space envelope as the legacy LOSEU in the M1A1, uses the existing electronics rack mounting features, and requires no modifications to the existing vehicle wire harnessing. The space previously occupied by the RCEU and GTDEU can be repurposed.

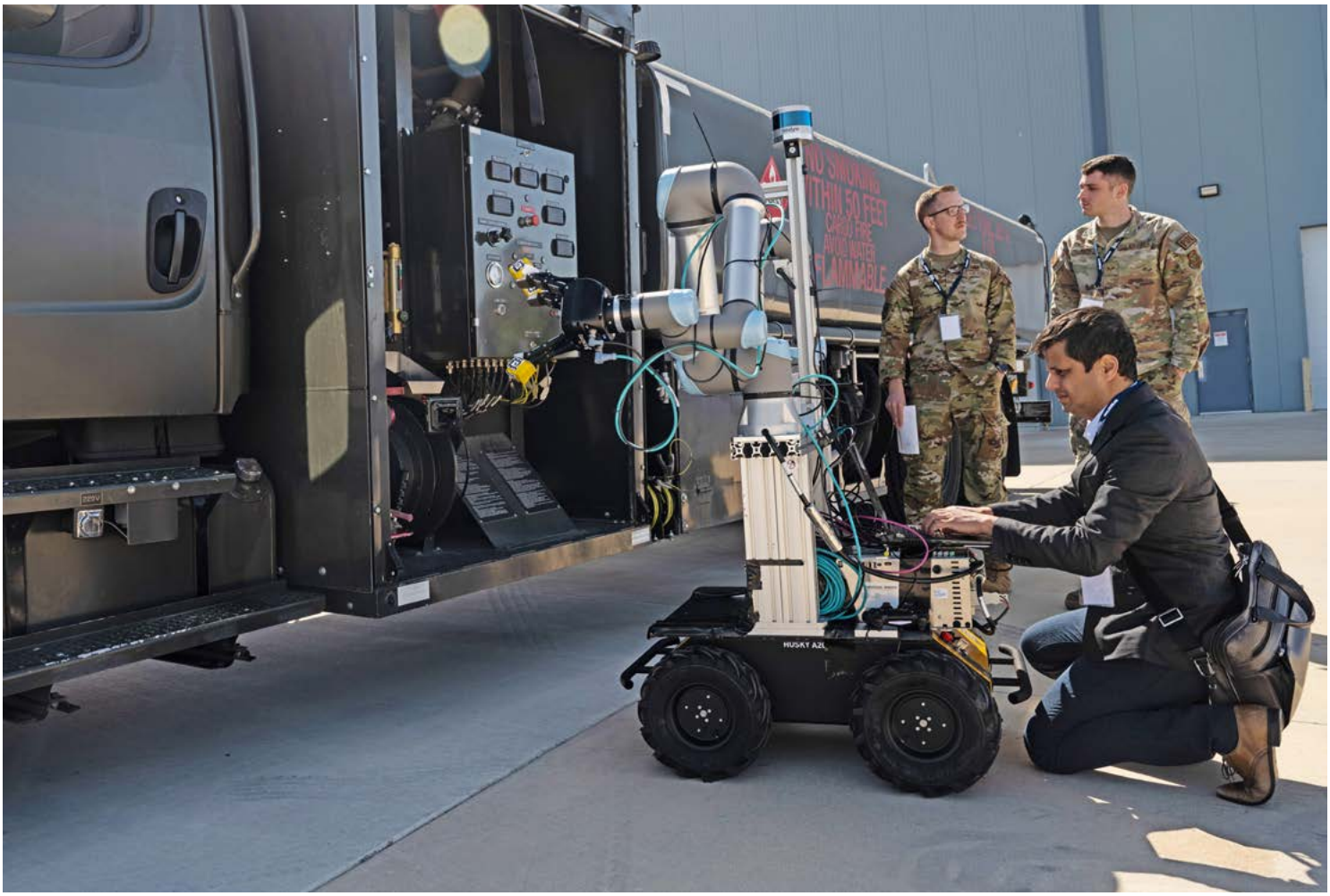
The DISC is compatible with all M1A1 variants, including newer variants with the Commander's Independent Thermal Viewer (CITV). Powered from the existing turret circuit breakers, the DISC executes the currently fielded M1A1 ballistics software. The DISC interfaces with the vehicle's Embedded Diagnostics system and can be easily retrofitted in the field. Most importantly, the DISC resolves all standing obsolescence issues for a minimum of ten years. While the three legacy LRUs were supplied by three different manufacturers and contained 26 subassemblies, the new DISC is supplied by one manufacturer and contains only six subassemblies.

"Development of the DISC allowed us to meet the goals of reducing space, weight, and power while increasing the overall system reliability through the reduction of the overall number of internal subassemblies which may fail," said Gojkovic.

"We are comfortable putting this into the legacy M1A1," said Brimmer. "Looking across multiple FMS Abrams fleets, this particular LRU has the potential to extend the life of over 1,500 legacy Abrams tanks."

The project, scheduled to wrap up in May 2025, will serve the public good by demonstrating a method of developing obsolescence-resistant LRUs through consolidation of functions to reduce the system's SWaP-C and logistics burden while increasing reliability. This methodology can be leveraged by adjacent public sectors and industries that require ruggedized, long lifecycle, safety critical equipment such as mining, forestry, aircraft manufacturing, and medical equipment.

"The design methodology and development approach applied to the design of certain elements of this new electronics box are broadly applicable to other use cases where electronic equipment is expected to operate in harsh and environmentally demanding environments," said Gojkovic. ■



Shashwat Srivastav, CEO of industry participant AIVOT Robotics, updates the software for his company's robot to work on a fuel truck during STRATO-Tech, a hands-on workshop held in Wichita, KS, to help the US Air Force develop new sustainment practices for the KC-135 Stratotanker. STRATO-Tech is an initiative under the Sustainment Technologies, Research and Automation for Transformative Operations Testbed (STRATO-T) that studies, develops, and tests innovations to improve the efficiency and cost-effectiveness of the KC-135. (US Air Force photo by Staff Sgt. Tryphena Mayhugh.)

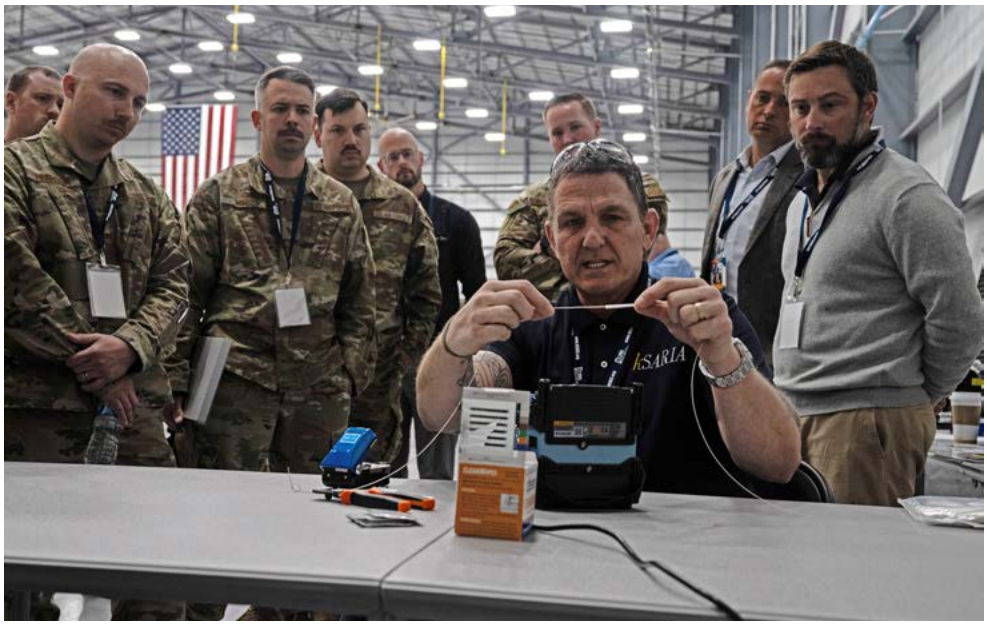
NCMS Supports USAF Battle Damage Assessment and Repair at First-Ever STRATO-Tech Event

To support the global reach of the US Air Force (USAF), a new hands-on workshop brought together USAF sustainment experts with 19 best-in-class industry partners to perform rapid battle damage assessment, repairs, and expeditionary maintenance on the KC-135 aircraft. Held from April 22 to 25, the NCMS event, STRATO-Tech, was the first workshop to spring from a collaborative KC-135 Stratotanker innovation testbed—Sustainment Technologies, Research and Automation for Transformative Operations Testbed (STRATO-T)—a partnership formed by the National Center for Manufacturing Sciences (NCMS), the US Transportation Command (USTRANSCOM), Air Mobility Command (AMC), the KC-135 Program Office, and the National Institute for Aviation Research (NIAR).

"NCMS was honored to support the Air Force by identifying solution providers that have the potential to significantly improve the sustainment posture of the KC-135 and other aviation assets across the USAF," said Lisa Strama, NCMS President and CEO. "NCMS prioritizes on-site sustainment technology demonstrations to help ensure that our warfighters and their equipment are at peak readiness levels."

The STRATO-Tech event was held at NIAR in a beautiful, newly refurbished aircraft hangar adjacent to McConnell Air Force Base, where the non-flying KC-135 was transferred in July 2023. The KC-135 is a key asset for the Air Force, having been utilized since the late 1950s to support aircraft refueling.

"The first-ever STRATO-Tech event provided a unique opportunity for industry partners to demonstrate capabilities for rapidly assessing battle damage, repairing aircraft skin and structural damage, troubleshooting and repairing electrical wiring and fiber optic cable, removing coatings and surface preparation, and making parts needed for repairs on-site," said Greg Kilchenstein, NCMS Chief Technologist.



Richard Timberlake, the west coast training manager for industry participant kSARIA, demonstrates repairing fiber optic cables using his company's technology during STRATO-Tech. (US Air Force photo by Staff Sgt. Tryphena Mayhugh.)

At STRATO-Tech, industry technology solution providers demonstrated these capabilities in collaboration with USAF Aircraft Battle Damage Repair (ABDR) subject matter experts (SMEs) and crew chiefs. The team performed two aircraft quick-turn scenarios aimed at speeding up the process by which the KC-135 can be landed at a remote airfield, refueled with as little equipment as possible, and put back in the air.

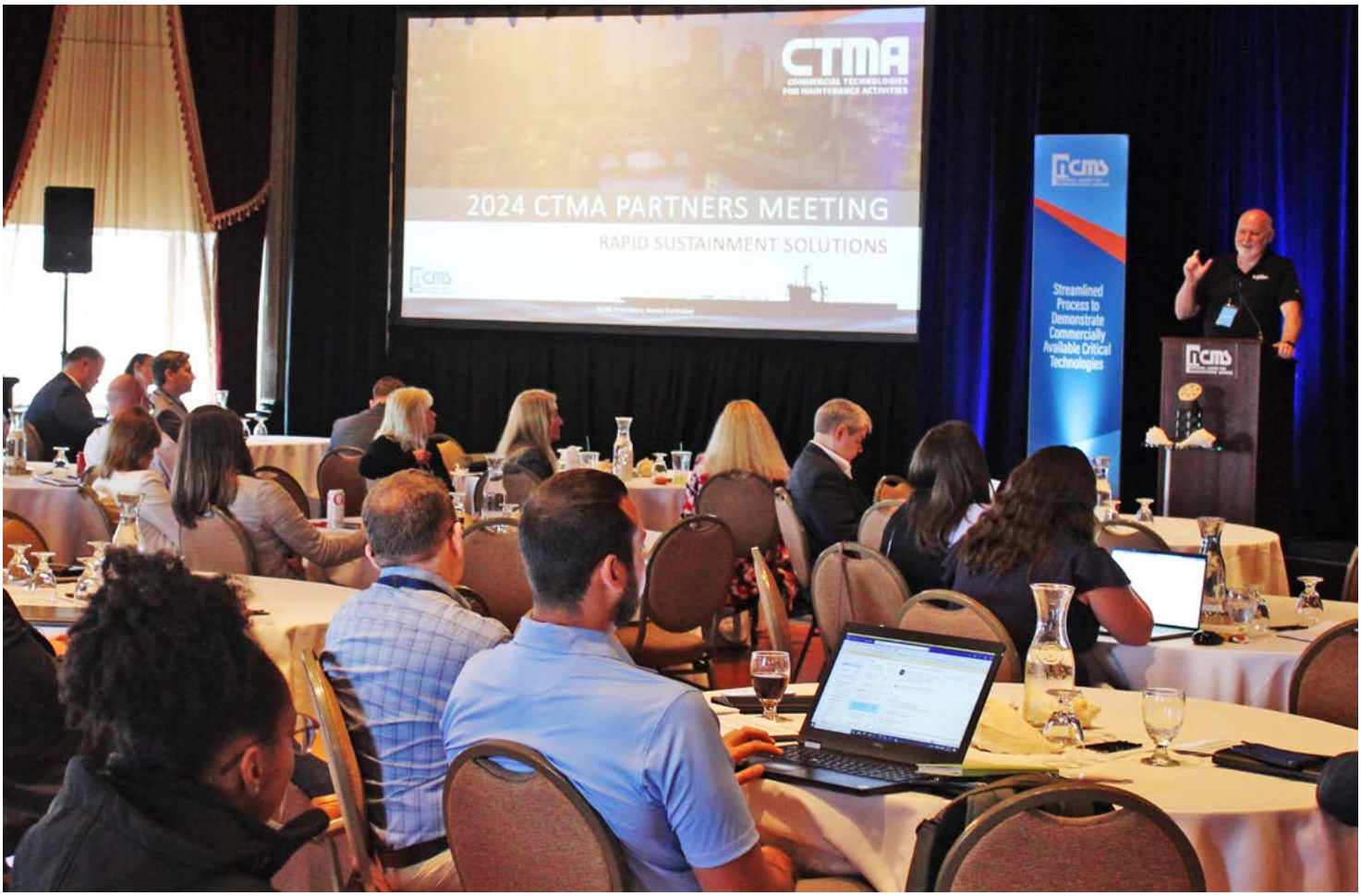
The team also performed 13 aircraft battle damage and repair scenarios, using cutting-edge capabilities to rapidly and accurately assess battle damage to skins, structures, wiring, electronics, pressure vessels, fiber optics, fuel tanks, communications, and avionics. A key focus was on quickly performing repairs to aircraft in remote locations and in denied communications environments. The team also focused on demonstrating capabilities that reduced ground support equipment (GSE) and on manufacturing metal parts at point of need in remote locations.

The industry participants found great value in the hands-on structure of the event.

"Thanks to STRATO-Tech, Fairmount Technologies (FT) was able to meet and learn from ABDR units about how they do temporary on-site repairs on damaged aircraft, by cutting out damaged parts, choosing a correct size extrusion stock, then snipping and folding it into the curve required to serve as a replacement," said Jordan Peter, General Manager, Fairmount Technologies. "This is highly skilled, time-consuming work under difficult operating conditions. Understanding this process pushed us to prove our future concept of developing our XtruJog (XJ) joggling machine into a part folding machine. With slight modifications, we successfully produced curved extrusions by creating a series of joggles in them. ABDR then took us to the KC-135 to show us parts, likely formable by XJ, that they need to form for repairing a damaged landing gear area they are fixing. We discussed development of a portable version of XJ that can fold parts to contours required to fix aircraft on-the-fly. ABDR units will be visiting our facility to discuss next steps in working together and to review our other CNC machines: XtruForm for forming, and XtruMach for milling extrusions. We are excited by these successful outcomes and how they supported the mission of STRATO-Tech to demonstrate and adapt novel sustainment capabilities to scenarios in real time."

Moving forward, NCMS is focused on continuing to support the USTRANSCOM/Air Mobility Command community through additional immersive, demonstration-based events on the STRATO-T.

"NCMS is working to collate and organize the feedback provided into a cohesive report that will assist the USAF ABDR community in prioritizing investment and integration of these novel capabilities needed to ensure the readiness of tanker aircraft in remote locations during contested operations," said Debbie Lilu, NCMS Vice President of Maintenace and Sustainment, and Business Development. "We are also in discussions with the ABDR community on developing further CTMA demonstrations on a number of the capabilities exhibited during STRATO-Tech." ■



CTMA Technology Competition finalist Mark Smithers, CTO and Co-founder of Boston Engineering, delivers a presentation about his company's entry, "Family of Sustainment Assisting Robotics (FOSAR)," during the 2024 CTMA Partners Meeting in Providence, RI. This technology was later named the Overall Award winner for the competition, for which it has earned $100,00 in CTMA project support funding. (Photo by Tricia Billiau, NCMS.)

2024 CTMA Partners Meeting Unites Top Industry, Academia, and Government M&S Leaders

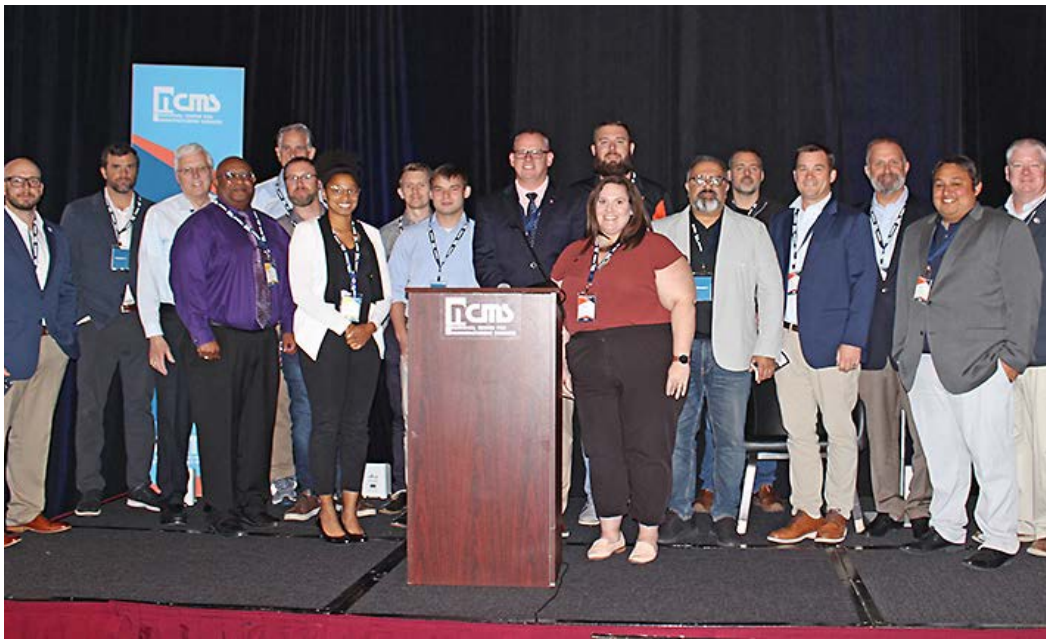
Over one hundred leaders from government, industry, and academia gathered for the 2024 CTMA Partners Meeting, held this year in Providence, RI, from May 7 to 9. Focused on bringing rapid sustainment solutions to the warfighter, the Partners Meeting provided a forum of engaging speakers, informative panels, emerging technologies, and an innovation workshop that developed on-the-fly solutions to maintenance and sustainment needs.

This year's Partners Meeting kicked off with a highly anticipated hands-on session, back for the second year in a row: the Rapid Innovation Workshop, a technology development and integration exercise. Each participant chose one of four scenarios: aircraft battle damage and repair, local parts manufacturing, advanced decision support using data streams, or predictive maintenance for electrical components. The teams had 45 minutes to develop a solution for their chosen scenario and prepare a short presentation. After viewing each presentation, participants were asked to vote on the best idea for a solution, other than their own team's. Congratulations to the winning group: a team of 23 repesenting 19 different industry organizations that presented a solution for Scenario 1: Expeditionary Aircraft Battle Damage Assessment and Repair. NCMS has awarded $25,000 to this team to develop a proposal for a CTMA collaboration based on their solution.

On the second day, Col. Howard Marotto, a Reserve Marine Colonel and Additive Manufacturing Business Director for EWI, delivered a compelling address, "The Future Fight." Col. Marotto touched on the limiting factors our military currently faces, such as the logistics of fighting across the Pacific, and access to fuel and ammunition. He spoke about the risk of the DOD losing ground in our war efforts due to the lack of agility in the innovation

space and with emerging technologies. When speaking on the opportunity to address this problem, Col. Marotto referenced the Marine Corps' NEXLOG project, an initiative that accelerated the Marine Corps' adoption of emerging technologies into logistics capabilities. Among his takeaways: "The fight begins and ends on the Hill… with a capital H. We need leaders in both industry and government whose primary desire is to protect their country and make key decisions that are what's best for their nation."

Multiple panel presentations took place throughout the three days, including a discussion on Organic Industrial Base (OIB) modernization with participants from the Army, Air Force, and Marine Corps. Later, attendees were able to witness an engaging panel on cold spray applications that included representatives from Solvus Global, Powders on Demand, VRC Metal Systems, and the Office of the Deputy Assistant Secretary of Defense for Materiel Readiness (ODASD-MR). Attendees learned about the technology, the need for implementation, and some of the hurdles that are being faced along the way.



Members of the winning group for the Rapid Innovation Workshop gather after the close of this hands-on contest held during the 2024 CTMA Partners Meeting in Providence, RI. The team of 23, which repesented 19 different industry organizations, developed and presented a solution for a battle damage assessment and repair scenario. NCMS has awarded $25,000 to this team to develop a proposal for a CTMA collaboration based on their solution. (Photo by Tricia Billiau, NCMS.)

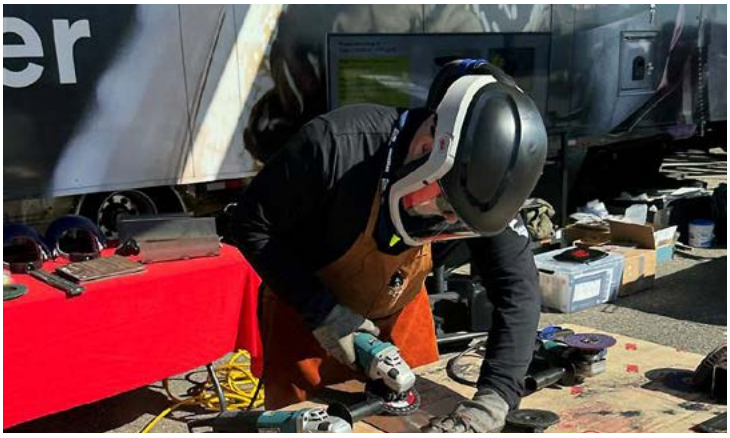
In addition to the panels, the Partners Meeting featured two evening receptions to facilitate networking and feature tabletop demonstrations by 20 industry innovators. Exhibitors demonstrated how their technology can provide solutions for DOD sustainment challenges. Exhibitors included Ametek Spectro Scientific, Andromeda Systems Incorporated, BlastOne International, Boston Engineering, Brighton Science, Cumulus Digital Systems, DIT-MCO, Edlore Inc., Element 119 LLC, GVS-RPB, Industrial Coating Services, Laser Photonics, Naval Systems Incorporated (NSI), One Network Enterprises, Siemens Government Technologies, Skydio, Solvus Global, ToughGuard SPC, LLC, Universal Synaptics, and ZOLLER Inc.

Presentations were given by the three finalists of the 2024 CTMA Technology Competition, after which the judges selected the Overall Award winner and attendees voted on the People's Choice Award winner. Congratulations to Boston Engineering, which earned the Overall Award for "Family of Sustainment Assisting Robotics (FOSAR)." The FOSAR program will provide digitally enabled robotic platforms, enabled by a common user-interface, that will be distributed throughout the DOD and will improve fabrication, safety, and sustainment. The US Air Force won the People's Choice Award for their "Surface Cleanliness Analyzer." This innovative technology can greatly improve the efficiency of paint, coatings, adhesives, and sealants. For more information about the competition, including a booklet featuring all 100 entrants, see https://www.ncms.org/ctma-competition/.

Sponsors for this year's Partners Meeting included Boston Engineering, Laser Photonics, Solvus Global, and Naval Systems Incorporated (NSI). NCMS and the CTMA Program are expected to facilitate several more events this year including Technology Showcases taking place at Marine Depot Maintenance Command in Albany, GA; Fleet Readiness Center East in New Bern, NC; and Puget Sound Naval Shipyard in Bremerton, WA. To view a complete list of upcoming events, see https://www.ncms.org/events/.

For more information and details about the Partners Meeting, see https://www.ncms.org/ctma-partners-meeting/. ■

Shipbuilder Welcomes NCMS Technology Showcase



An exhibitor demonstrates repair capabilities to attendees at the Acceleration Summit: Technology Showcase co-hosted by Newport News Shipbuilding and NCMS at the NNS Athletic Center in Newport News, VA. (Photo by Tricia Billiau, NCMS.)

A recent partnership with HII—the largest shipbuilder in America—enabled NCMS to accelerate capabilities that can support the construction, maintenance, and best practices available to US Naval shipbuilding. Working in collaboration with Newport News Shipbuilding (NNS), a division of HII, NCMS co-hosted an Acceleration Summit: Technology Showcase March 20-22 at the NNS Athletic Center in Newport News, Virginia.

"This successful event brought together a wide range of world-class industry participants with capabilities including advanced/additive manufacturing, predictive maintenance, coatings and corrosion prevention, respiratory protection, enhanced inspection, reliability improvement for hardware, and visualization," said NCMS President and CEO Lisa Strama.

The Acceleration Summit at NNS gave 18 industry participants the ability to offer solutions to known sustainment complications, as well as help solve future problems. Participants also gained a rare opportunity to network with government decision-makers.

"I have attended many NCMS events, but the event at Newport News was the best yet," said Mark Smithers, CTO and Co-founder of Boston Engineering. "I couldn't believe how many government decision-makers made themselves available to meet with us."

NNS is the largest industrial employer in Virginia—employing more than 25,000 people—and is the nation's sole designer, builder, and refueler of nuclear-powered aircraft carriers and one of only two shipyards capable of designing and building nuclear-powered submarines.

To learn more about this event and the industry partners who exhibited their capabilities, please visit the exhibitor directory: https://www.ncms.org/wp-content/uploads/2024_Tech-Showcase_Acceleration-Summit_240311_PRINT.pdf ■

NCMS Hosts Industry Day During the AMC Modernization Symposium

An NCMS collaboration with US Army Materiel Command (AMC) advanced knowledge sharing and best practices for implementing emerging technologies into the AMC Organic Industrial Base (OIB). This collaboration—an Industry Day during the AMC Modernization Symposium—took place April 2-4 at Redstone Arsenal in Huntsville, AL. The fourth annual symposium provided a rare opportunity for industry partners to showcase capabilities that serve Army maintenance needs.

The symposium supported the Army's ongoing Organic Industrial Base Modernization Implementation Plan, which is modernizing facilities, processes, and the workforce to bring the OIB into the 21st century. The Army's industrial base is comprised of 23 depots, arsenals, and ammunition plants that provide critical materiel and sustainment support to warfighters across the joint force.

Attendees included Army decision-makers along with maintenance and sustainment subject matter experts from multiple Army depots, giving industry exhibitors an opportunity to demonstrate how their products and services support the Army's modernization plan.

"The NCMS Industry Day during the AMC Modernization Symposium was great for our company, and we were able to connect with several government and industry partners," said Randall Johnson of Industrial Coating Services, Inc. "Because we attended this event, we were invited to visit several Army depots. We were also invited by a DOD contractor to meet with their group to integrate our services into some of their contracts. Overall, attending the NCMS Industry Day was a great success for us."

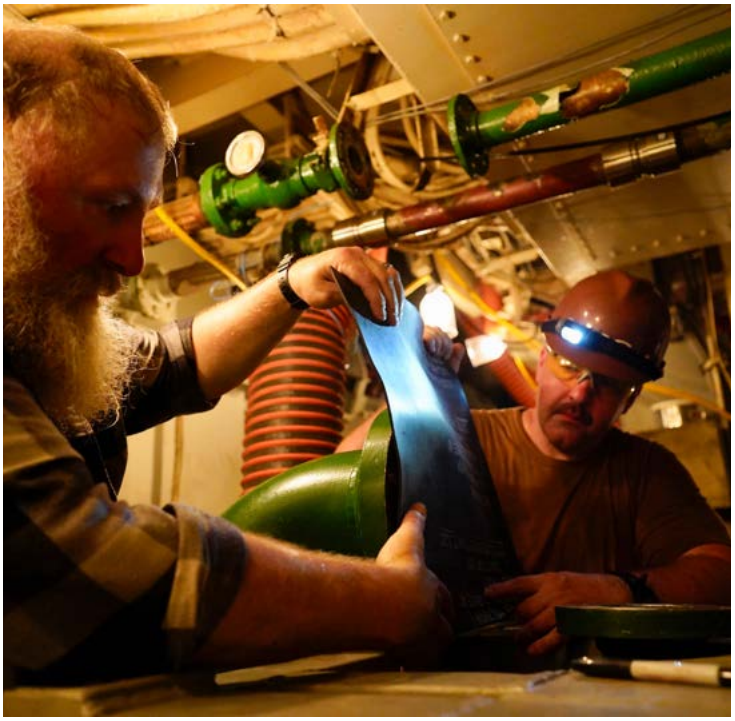
To learn more about the 25 industry partners who exhibited their capabilities at the event, please visit the exhibitor directory: https://www.ncms.org/wp-content/uploads/2024_Tech_Showcase_AMC_240319.pdf. ■

REPTX 2024 Salvage Exercise

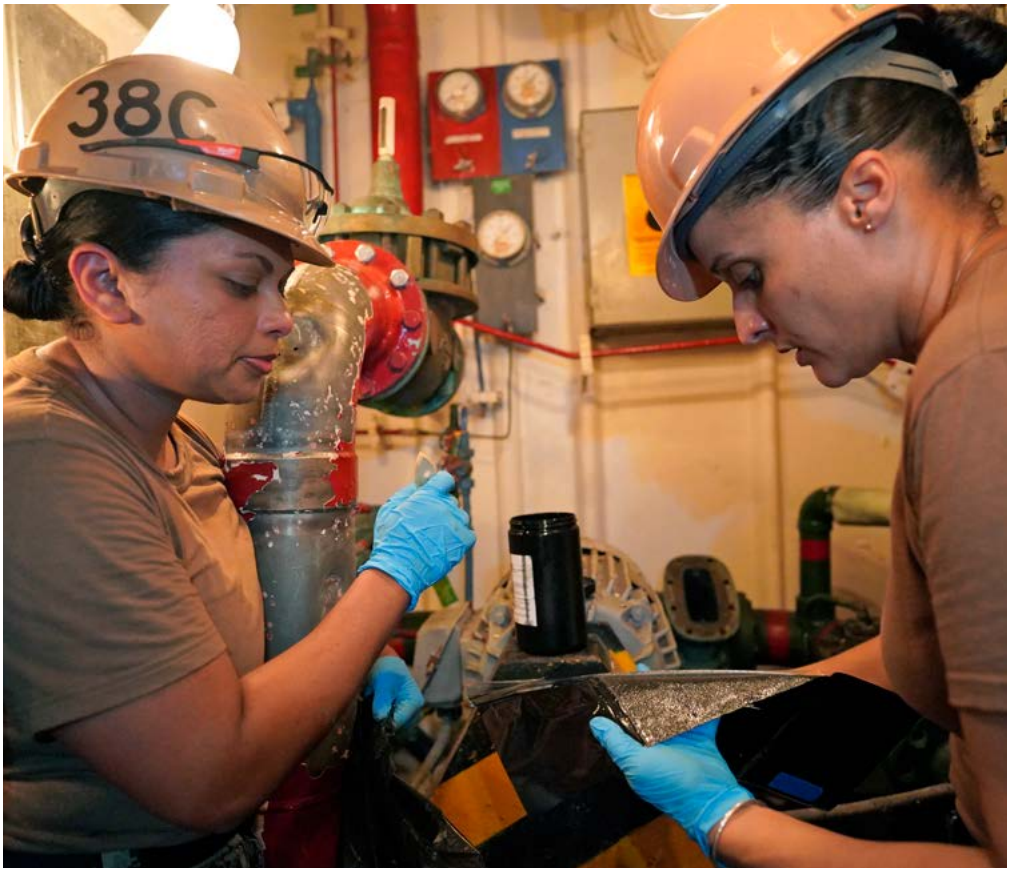
The most recent Repair Technology Engagement Exercise (REPTX), co-sponsored by NCMS, NAVSEA 05T1, and Pearl Harbor Naval Shipyard (PHNSY), took place on and near the base May 20-31, 2024. Approximately 250 industry partners, Sailors, and observers came together to test out innovative solutions for expeditionary repair work.

Titled REPTX 2024 Salvage Exercise (Salv-Ex), the hands-on exercise was held aboard the decommissioned amphibious assault ship USS Tarawa (LHA-1), docked in Pearl Harbor. During the two-week event, participants collaborated on a variety of scenarios to evaluate simulated battle damage, and personnel developed repair solutions using emerging technologies to accelerate repairs and shorten repair timelines. The use of public-private partnership between the Navy and industry highlighted technologies, equipment, and products ready to transition into ship maintenance.

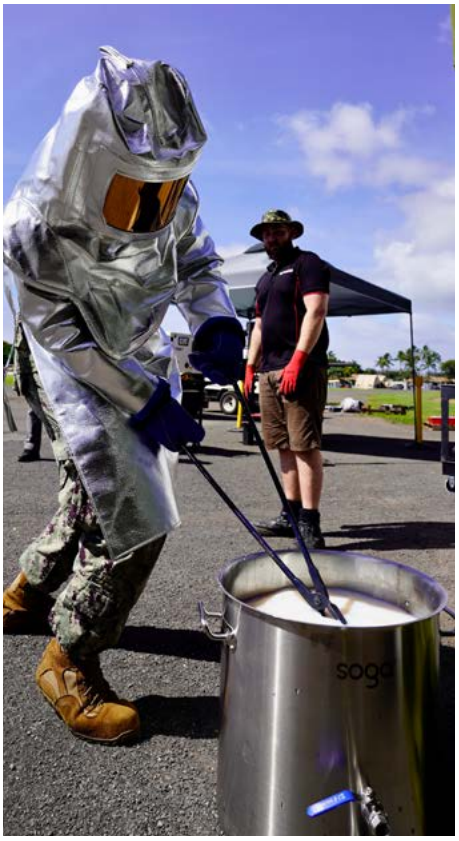
The photos displayed here offer a glimpse of the action. Check the next issue of the *CTMA Connector* for more comprehensive coverage of this unique event.



A staff repair technician (left) and a Sailor (right) work on making a rubber gasket aboard the USS Tarawa, a decommissioned ship, during the REPTX Salv-Ex event in May at PHNSY. (US Navy photo by Claudia LaMantia.)

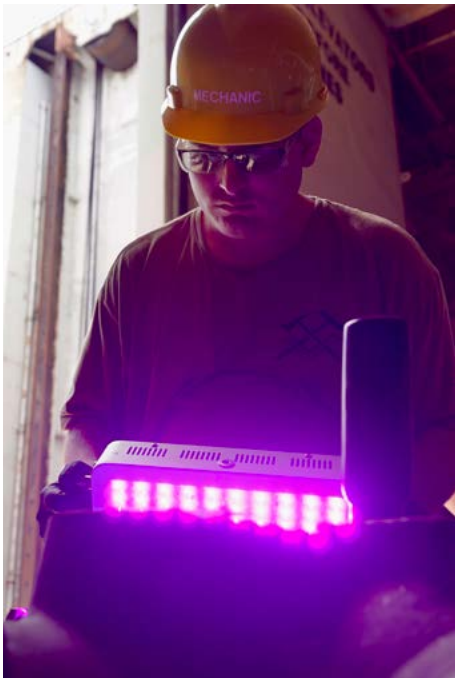


Two Sailors prepare to repair a damaged pipe aboard the decommissioned amphibious assault ship USS Tarawa at PHNSY during the REPTX Salv-Ex event, held May 20-31, 2024. (US Navy photo by Claudia LaMantia.)

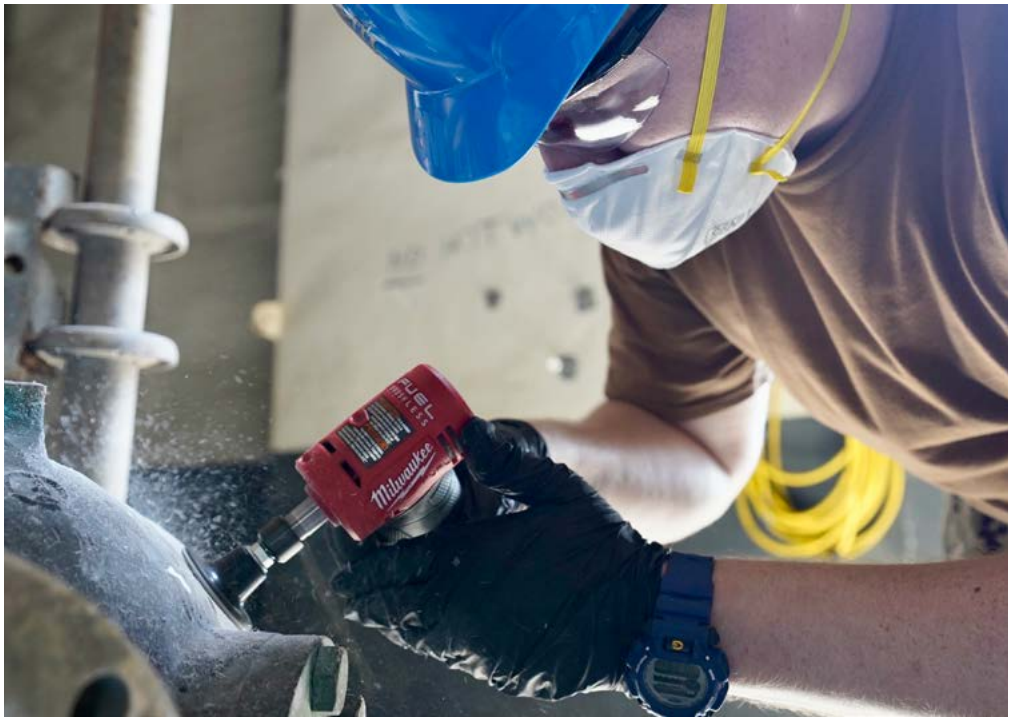


A Naval Postgraduate School student quenches a cold spray part to repair a cooler head near PHNSY during the REPTX Salv-Ex event in May. (US Navy photo by Claudia LaMantia.)

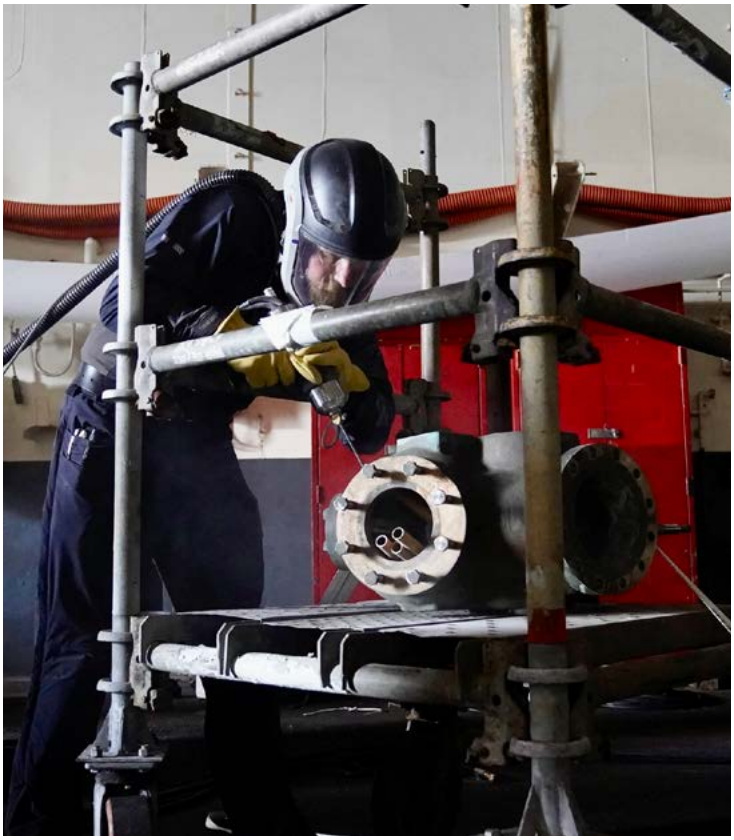
Targets Expeditionary Repairs



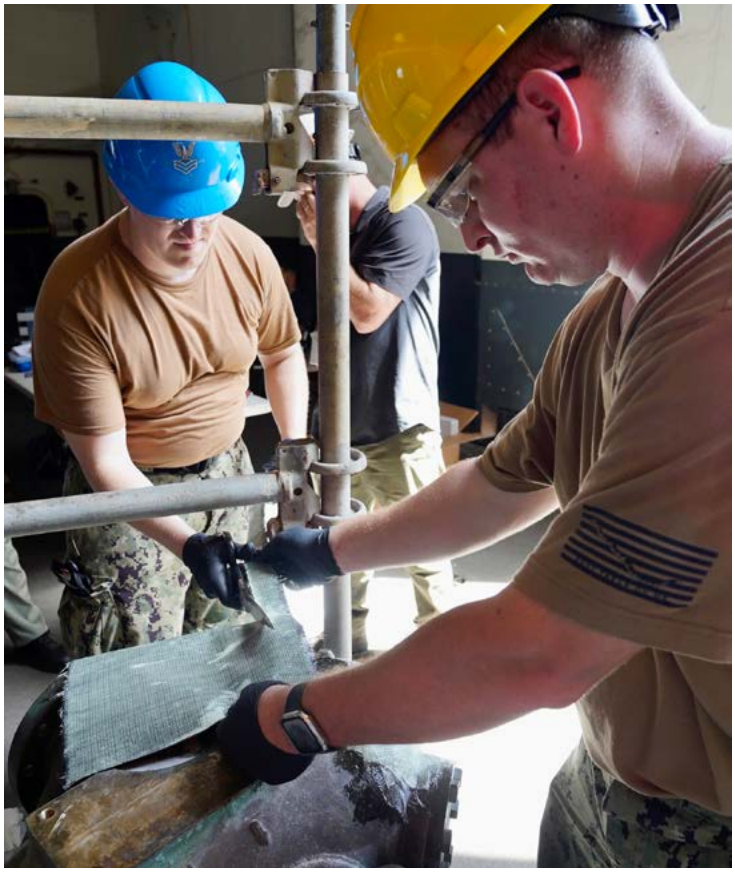
A Sailor uses UV light to solidify a sun resolution patch aboard the USS Tarawa during the REPTX Salv-Ex event in May at PHNSY. (US Navy photo by Claudia LaMantia.)



A Sailor sands off after epoxy repair on damaged equipment aboard the decommissioned amphibious assault ship USS Tarawa during the REPTX Salv-Ex event in May at PHNSY. (US Navy photo by Claudia LaMantia.)



A contractor with industry participant Titomic demonstrates how to use plasma cold spray to fill in a crack on a damaged piece of equipment aboard the USS Tarawa during the REPTX Salv-Ex event in May at PHNSY. (US Navy photo by Claudia LaMantia.)



Two Sailors repair a pipe using Sunrex UV strips aboard the decommissioned amphibious assault ship USS Tarawa during the REPTX Salv-Ex event in May at PHNSY. (US Navy photo by Claudia LaMantia.)

Altair

Altair is a global computational intelligence company that provides software and cloud solutions in simulation, high-performance computing (HPC), data analytics, and AI. Altair software helps companies using digital twins, intelligent models, and the convergence of simulation, HPC, and AI to predict and optimize system outcomes. Altair's simulation-driven design method—from generative design through to production—has transformed the product development lifecycle for major automotive, aerospace, medical equipment, electronics, semiconductor, and heavy equipment manufacturers by reducing time-to-market and driving organizational innovation.

Altair's comprehensive set of technologies can serve the DOD by designing and optimizing efficient, innovative, and sustainable products and processes. Altair HyperWorks is a design and simulation platform that utilizes physics simulation and concept design across multiple disciplines. The platform encompasses structures, motion, fluids, thermal, electromagnetics, electronics, controls, and embedded systems, with AI embedded throughout to improve productivity and augment user expertise.

Altair HPCWorks is a cloud and HPC platform that harnesses high-performance computing to maximize the efficient utilization of complex compute resources and streamline the workflow and workload management of compute-intensive tasks for applications including AI, modeling and simulation, and visualization.

For full profile, see: https://www.ncms.org/news/altair-member-spotlight/.

Edlore

Edlore enables digital asset management and maintenance operations across the DOD and various industries, enhancing the way organizations visualize and interact with their equipment in real-time. Specializing in advanced AI/ML and 3D technologies, Edlore's solutions extend from interactive digital manuals to integrations with wearable devices, streamlining operations and improving efficiency.

At the core of the company's offerings is Edlore Basic, a turnkey software solution that enables organizations to access device manuals comprehensively and scan any equipment for detailed information seamlessly. This platform not only facilitates improved work order and asset management but also provides real-time tablet access to view devices, manage media in a robust library, and access device safety guides easily.

Edlore Asset Explorer is designed specifically for asset-intensive industries. It empowers quality and inspection teams by providing powerful 3D device manuals that allow users to scan devices for information, create work orders, and explore equipment details for more effective operational management.

For full profile, see: https://www.ncms.org/news/edlore-member-spotlight/.

Virginia Digital Maritime Center

The Virginia Digital Maritime Center (VDMC) leverages expertise from Old Dominion University, industry, and state and federal agencies to advance the maritime workforce and drive economic growth in Hampton Roads, Virginia. Utilizing applied research and cutting-edge technologies, VDMC mitigates workforce and supply chain gaps across the defense industrial base (DIB), with a focus on Naval shipbuilding, repair, and modernization.

VDMC's focus on multi-modal learning engineering, digital analysis, and technology insertion supports the DOD mission through the development of AI-enabled and extended reality-enhanced training systems, integration of advanced manufacturing into shipbuilding and repair supply chains, and increased awareness of and opportunities for entry-level marine skilled trades training.

Through collaborative partnerships with the DOD, academia, and the DIB, VDMC delivers optimized training systems that collect, organize, curate, and share content with the right learner at the right time. VDMC's training systems are designed to transition legacy programs to modern developmental frameworks, implementing AI and machine learning.

For full profile, see: https://www.ncms.org/news/virginia-digital-maritime-center-member-spotlight/. ■