LEMS JOURNAL
LAND EQUIPMENT MANAGEMENT SYSTEM JOURNAL
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ADDENDUM

It has come to the attention of the editorial team of the LEMS Journal that there was a harmful and inappropriate expression included in one of the articles in the last edition (Issue 8). While we strive to produce, edit and publish articles in a professional manner with Gender Based Analysis+ and inclusivity at the forefront, in this unfortunate case, full due diligence was not conducted and inappropriate language made it into the final product.

On behalf of BGen Dundon, Director General Land Equipment Program Management, we sincerely apologize for this mistake and truly regret any harm or mistrust it has caused. We will take this regrettable situation and use this as a learning moment as we must do better, now and in the future.

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LEMS JOURNAL

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FORMER RCEME OFFICER CONTINUES SERVING HER FELLOW VETS AND HER COUNTRY

Col (Ret'd) Nishika Jardine commemorates the first anniversary of her appointment as Veterans Ombud by penning an article in this issue about the services her Office provides to Wartime, CAF, and RCMP veterans – as well as those still standing on guard for their country.

Read more about the Office of the Veterans Ombud on Page 22.

Cover Photo: A Canadian soldier from India Company clears the room before entering through the window during Joint Urban Operation training with the Latvian Army National Guard 32nd Infantry Battalion in Marciena, Latvia, as part of Operation REASSURANCE eFP on March 17, 2018.

Photo credit: Cpl Jean-Roch Chabot, eFP BG Latvia Public Affairs

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LEMS JOURNAL

LAND EQUIPMENT MANAGEMENT SYSTEM JOURNAL

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LEMS Journal is an unofficial publication of the Canadian Armed Forces published by the Director General Land Equipment Program Management. The content of each article represents the views of the author or authors and does not necessarily represent official policy or opinion. The distribution of LEMS Journal is mainly done electronically. A digital version of this issue can be found at https://www.canada.ca/en/department-national-defence/corporate/organizational-structure/assistant-deputy-minister-materiel.html.

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DIRECTOR GENERAL'S COMMENTS

The next six months will bring some welcome news

By BGen Rob Dundon

At the most recent RCEME Council, the Corps staff made it very clear to us about what members of the Corps would prefer to hear. Highfaluting well wishes and cheerleading was appreciated, but most of us wanted to hear about matters that are going to impact us personally. To that end, I am going to take a different tack in this LEMS Journal introduction.

LEMS is "vital ground" to us all. It is the essence of the service we deliver primarily to the Canadian Army, but additionally to the RCN, RCAF and CANSOF. But behind the scenes is a system that feeds LEMS. It is known as the Materiel Acquisition & Support system (MA&S). It is the wellspring for the Canadian Armed Forces asset management program. The services cannot buy their own weapons systems – that responsibility falls to the Assistant Deputy Minister for Materiel. In the Materiel Group we have excellent visibility on what is programmed for acquisition and when projects are set to deliver. Here I hope to let you know what the near future will be bringing you. What follows is some of the coming goodness you can expect to see in the next six months.

A CANFORGEN is due out imminently for nursing and maternity wear. It will detail allocations and allowances to buy this much-requested clothing line.

The Special Operations Task Force Command & Control Computer Information System project will be finishing in December, having delivered architecture, innovative tools, and interoperable capabilities that are essential to Special Operations decision support.

The Urban Operations Training System project is in the process of wrapping up. It is delivering a system that simulates a range of urban terrains that might be encountered during foreign operations where soldiers are permitted a logical progression from individual to collective training. It exploits appropriate live and virtual simulation technology and is compatible with the weapons effects simulation equipment. We are just working the bugs out of the simulation fragmentation grenade, and that should be completed by January.

Deliveries of new armament loaders, fifty of them, to support the CF188 fighter aircraft for domestic and international operations will be completed to air bases across the country by February.

And finally, at FORCE testing in the near future, expect to see digital full-body scans. This will not be part of the fitness test, but rather a mechanism we are using to provide better, almost bespoke solutions for operational clothing and equipment. This is part of an initiative called the Canadian Armed Forces Anthropometrics for Soldier System Acquisition. The data will be collected and used to inform the fabrication and purchasing of new clothing and equipment. With this information, we will even be able to predict how our bodies change with age and proactively make certain that what you need is on the shelf before you ask for it.

I will endeavour to keep you apprised of our overall progress as we introduce further equipment suites and weapons systems (there will be some big announcements in the next issue, if all goes well), but until then, enjoy The Journal.

NEXT EDITION

LEMS Journal is your forum for putting forward ideas, commenting on current or past articles, and sharing related experiences. The next edition of the *LEMS Journal* will be published in the spring of 2022. If you want to be a part of the next edition, please send your articles – or your ideas for articles – to LEMSJournalSGET@Forces.gc.ca no later than **January 28, 2022**.

New camouflage enhances Canadian Armed Forces combat capabilities

By Steve Knapp

In June 2018, the Chief of the Defence Staff (CDS) directed that a new camouflage design be implemented within the Canadian Armed Forces (CAF). The aim of the project was to enhance CAF combat capabilities by modernizing the current 20-year-old Temperate Woodland (TW) and Arid Region (AR) Canadian Disruptive Pattern (CADPAT™) camouflage designs.

After years of extensive testing and evaluation – conducted by a team consisting of Director of Soldier Systems Program Management (DSSPM), Defence Research and Development Canada (DRDC), and Canadian Army members – the new standard pattern has been finalized and is known officially as the Canadian Pattern Multi-Terrain (CADPAT™(MT)).

The existing patterns are specifically designed for woodland and arid regions, with their performance decreasing the farther the soldier wearing the CADPAT moves away from these environments. The new multi-terrain pattern, on the other hand, is designed to perform well across all environments.

List Compiled

The first step toward creating CADPAT™(MT) was to assemble a list of environments and backgrounds where patterns would be tested. The team then developed criteria to determine which environments were most important to the future operating domain of the CAF. Several criteria were developed and tested.

Figure 1. California Trial: Arid / Urban Panel Test.

Initial testing and analysis led to the creation of Prototype J, based on the existing CADPAT pattern but dominated with a new brown and olive accent. The original colour, as seen in Figure 2, contained a red hue that was adjusted during the final development phase. During this stage, the team developed several other patterns and variations of Prototype J. These final patterns underwent significant technical testing in the field and the laboratory to refine, validate, and select the best design. As the technical testing progressed, a large-scale CAF user trial was initiated to gather feedback from the soldiers who would wear it in the field.

Testing began with software analysis consisting mainly of human perception models. To ensure consistency in measurement and analysis, samples were mounted onto a board next to each other (see Figure 1). The software was used to determine which designs best matched the background. User trials were then performed to help validate collected software data and to help identify other important characteristics, including which designs best break up objects and blend in seamlessly with the natural environment.

During the trials, camouflage samples were made into uniforms and displayed on mannequins (Figure 2). The use of these stand-ins allowed for a realistic approach where a helmet, shadow, or human silhouette could give away the presence of the object.

Figure 2. Left: Mannequin test in California. Right: Mannequin test in Valcartier.

Figure 3. Petawawa Trial: Soldier in Prototype J at 20 m.

Figure 4. Petawawa Trial: Soldier in Prototype J at 35 m.

Biggest Test Group

The largest user trial consisted of 438 soldiers from the 3rd Battalion of the Royal Canadian Regiment (3RCR), in Petawawa in September of 2019. They were all issued Prototype J uniforms and asked to wear them as their operational dress. The camouflage team ran groups of soldiers through section attacks and other strategic tests comparing Prototype J to CADPAT™(TW).

These tests were run day and night and were tracked with sensors from the ground and in the air. Soldiers were also sent on patrol, along a set course, searching for targets (mannequins) dressed in several different camouflage patterns. The range at which the soldier detected the target was recorded, allowing a direct comparison of the patterns, including the new variants of Prototype J.

On average, Prototype J outperformed CADPAT™(TW) across the different backgrounds. The night time performance of Prototype J was noted as exceptional. During a night time trial with night vision devices, soldiers were on patrol looking for three target soldiers wearing Prototype J in a defensive prone position. The targets were stepped on prior to being discovered. A new five-colour design showed further improved semi-arid performance over Prototype J. The five-colour variant of Prototype J was then selected and named CADPAT™(MT).

Although the development of CADPAT™(MT) focused on soldiers systems, it is likely the research and development will spread to other camouflage-specific items like individual camouflage screens, and perhaps even vehicle systems. Since Canada owns the design, emerging technologies can be integrated into the pattern as they become available.

CAF members can expect to see some equipment items being issued in CADPAT™(MT) in 2022/23. Earlier this year, a Request for Proposal (RFP) was sent out to industry for a slightly improved uniform in CADPAT™(MT) for delivery commencing in 2022/23.

The efficiencies brought on by transitioning to one pattern will further benefit the Soldier Operational Clothing and Equipment Modernization (SOCEM), which will deliver modernized clothing and equipment to the CAF in the coming years.

Steve Knapp is Deputy Manager – Soldier Operational Clothing and Equipment Modernization, DGLEPM / DSSPM.

Question of the Day: Is your equipment in Cal?

By Jacques (Jack) Angel and Della Lawrence

The instruments that technicians rely on are critical to maintenance. Whether it's a torque wrench, a caliper, an oscilloscope, or multimeter, if the equipment has not been sent for calibration within the required calibration cycle, your maintenance efforts could cause more harm than good.

Approximately 35,000 calibrations of test measurement and diagnostic equipment are carried out annually to support the ongoing needs of the Royal Canadian Navy (RCN), Canadian Army (CA), and the Royal Canadian Air Force (RCAF) to sustain equipment within the materiel assurance framework. The Calibration Programme provides calibration and incidental-repair services for test measurement and diagnostic equipment (TMDE) registered in the Calibration Programme Management Solution (CPMS).

Equipment Registration

The main criteria to receive calibration services are that the instruments must be accounted for at the serial number level and registered in the CPMS application. In order to meet these criteria, each serial number is assigned with an Equipment Master Record (EMR), which is a unique serial number issued by Defence Resource Management Information System (DRMIS). Each specific EMR must be linked to a valid Plant and Storage Location (SLOC) in DRMIS so that its custody can be transferred to the calibration facility using a supply transaction called a Stock Transport Order (STO). Essentially, this allows you to track your equipment in the system. If your instrument's EMR is not linked to a valid Plant and SLOC, you will not receive calibration services.

Calibration Facilities

Calibration is now provided on a Proximity of Service (POS) concept, where the equipment is looked after by the facility that is geographically located closest to the unit where the equipment is linked.

The network of facilities is as follows:

- **DND Calibration Centres**
  - **Esquimalt** (Fleet Maintenance Facility Cape Breton): Provides support to the local Victoria area.
  - **Cold Lake** (4 Wing – 1 AMS): Provides support for the local Cold Lake area.
  - **Halifax** (Fleet Maintenance Facility Cape Scott): Provides limited support to the Halifax area.
  - **Quality Engineering Test Establishment (QETE)** Primary Standards Lab (PSL): Provides support for the above DND Calibration Centres.
- **Contractor Calibration Facilities**
  - **Dartmouth**, Nova Scotia;
  - **Ottawa**, Ontario;
  - **Mississauga**, Ontario;
  - **Edmonton**, Alberta;
  - **Calgary**, Alberta;
  - **Richmond**, BC; and
  - **Winnipeg**, Manitoba (future facility).

Calibration Services (Pylon)

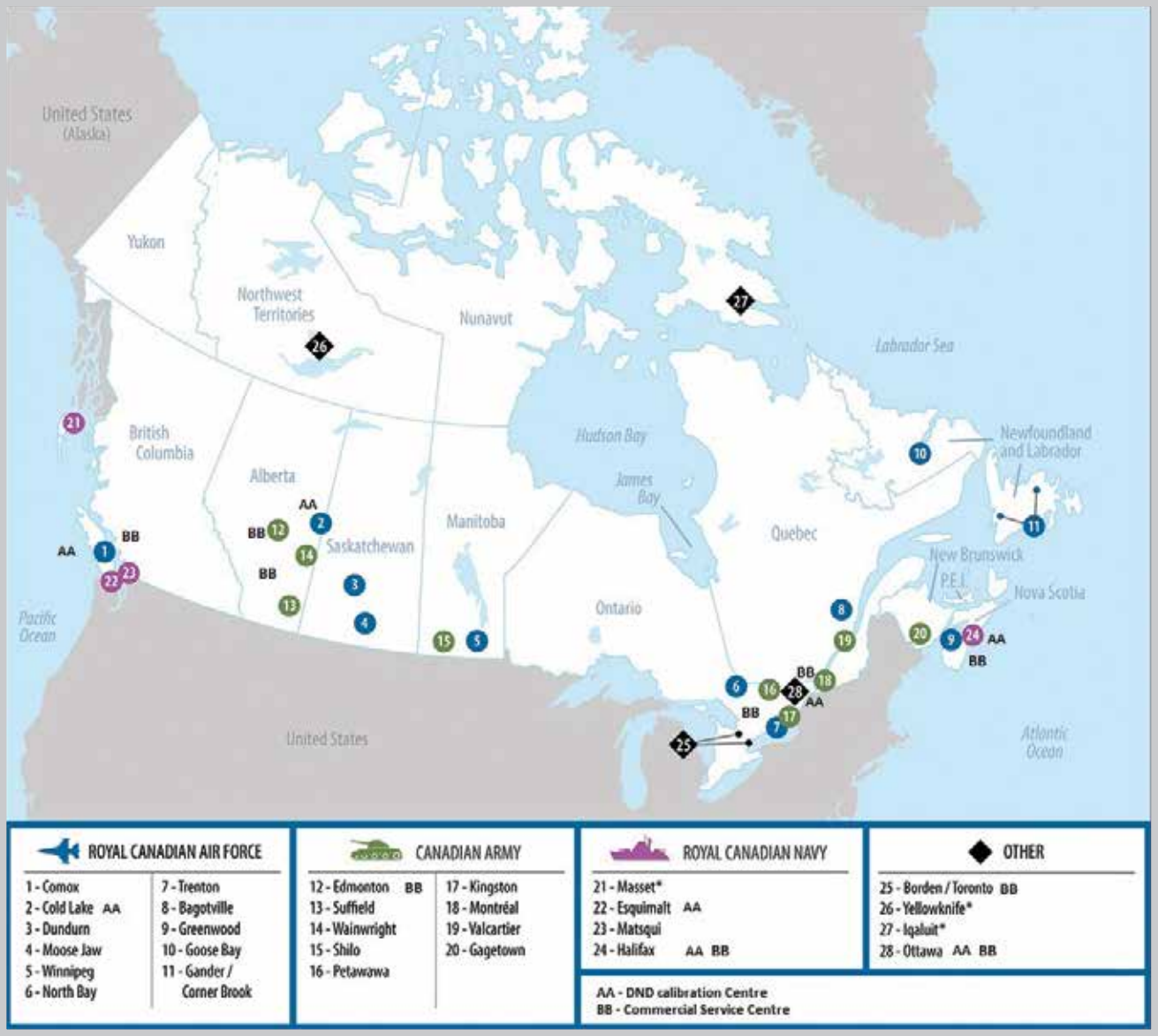
An In-Service Support (ISS) contract was awarded to Pylon Electronics Inc in 2020 for the provision of calibration services. Pylon will provide pick-up and delivery services, directly at the unit, alleviating the need to ship assets. However, Pylon can only pick up equipment that is already registered in the CPMS application and has an STO generated by the unit. It should be noted that an STO can only be generated if the equipment is linked on a valid Plant SLOC. It is therefore imperative that all Equipment Master Records (EMR) be linked.

Repairs

The new ISS contract was developed through the Sustainment Initiative and via Sustainment Business Case Analysis (SBCA) where the major criteria are:

- Performance
- Flexibility
- Value for money

During the development of the SBCA, analyses showed that a formal Repair and Overhaul (R&O) line did not provide sufficient flexibility and value for money when the equipment needed repair while being calibrated. The conclusions indicated that it would be more efficient and more cost-effective to execute the repair when the instrument was already disassembled while being calibrated. Consequently, the new ISS contract for calibration includes incidental repair (repair while being calibrated).



Conclusion

While calibration services are funded by ADM(Mat) and are not charged back to Department of National Defence (DND) organizations and Canadian Armed Forces (CAF) units, incidental repairs may require funding prior to being authorized. Units must ensure that their instruments are issued with an EMR, are registered in the Calibration Programme Management Solution (CPMS), and are properly linked to a valid Plant SLOC before receiving service.

Do you still have questions? The Calibration Programme is supported by Central Data Managers (CDMs) that can assist in determining your calibration requirements, equipment registration, and provision of calibration services. The CDMs can be reached at: +DRMIS QETE CPMS – SIGRD CETQ SGPE@ ADM(Mat) QETE@Ottawa-Hull.

Jacques (Jack) Angel is CAF/DND Calibration Program Contract Manager and Della Lawrence is Senior Project Manager Calibration Program.

Schematic Analysis Refamiliarization Course **Launched To Enhance Vital Skills**

By Lt Remar San Diego

With an objective of producing competent technicians, the Training Support Centre (TSC) at Maintenance Company, Technical Services, 5th Canadian Division Support Base (5 CDSG) Gagetown has implemented a refamiliarization course on schematic analysis led by the TSC's Electronics-Optronics Technician (L) Instructor. The primary focus of this training is for technicians to enhance their knowledge of Ohm's Law, Kirchoff's Law, the use of a multimeter, and analysis of schematic diagrams.

Military Vehicle Technicians receive training on schematic analysis during their Developmental Period courses, while civilian mechanics receive theirs during their time in college or apprenticeship. During the performance of corrective maintenance on equipment, technicians are not typically required to use electronic and electrical skills. When the time comes to apply these skills after their Development Period or apprenticeship, in many cases it has been a considerable amount of time, and "skill fade" has occurred.

Skill fade is a common phenomenon where one's ability, knowledge, and technical proficiency have deteriorated over a period of time. This commonly affects many technicians when they have not received appropriate or sufficient refamiliarization training. The rapid changes in the technologies used in today's military equipment present another problem. These new technologies necessitate the requirement to read, understand and even update schematic diagrams. Schematic analysis has become an essential skill to enable quick diagnosis and repair of electrical and electronic systems.

The pilot course was initially planned to run for five training days to encompass the required course load and possible training requirements. However, the staff noticed that the students were able to grasp the knowledge quickly and thus they required only three-and-a-half days of training and discussions on schematic analysis and test equipment use.

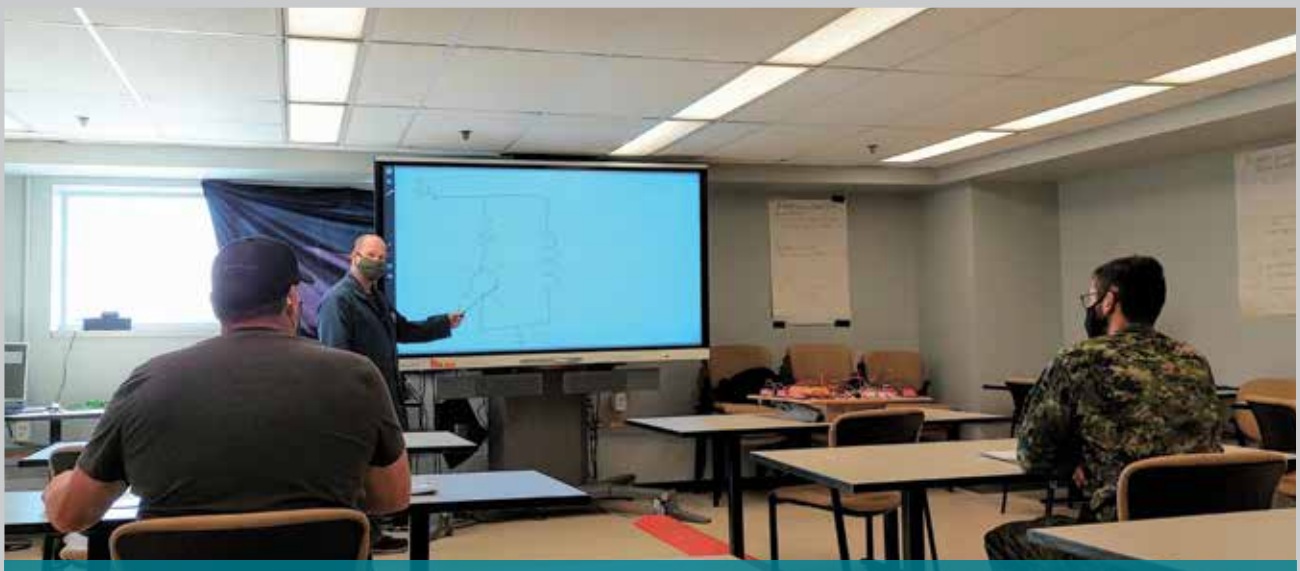


Figure 1. Schematic to Wiring Diagram: David Bamber, GLVHE10 of 5 CDSG Tech Svcs Maint Coy (left), Jeffrey Leger, GT03, 5CDSG Tech Svcs Maint Coy (centre), and Cpl Ian MacAdam, Veh Tech, 5CDSG Tech Svcs Maint Coy (right).

Figure 2. Learning the capabilities of the Fluke 88V: Jeffrey Leger, GT03, 5CDSG Tech Svcs Maint Coy (left), Cpl Ian MacAdam, Veh Tech, 5CDSG Tech Svcs Maint Coy (centre), and David Bamber, GLVHE10 of 5 CDSG Tech Svcs Maint Coy (right).

During the first day, a review was conducted on the basics of electricity – including discussions on Ohm's Law and Kirchoff's Law. On the second day, students revisited the use of multimeters and the many functions available on most of these devices, specifically the Fluke 88V Automotive Meter.

The second day also focused on reading schematic diagrams and then redrawing them into wiring diagrams. On the last day, the students were shown the schematics of several in-service armoured vehicles, finding the practical application of their skills and theory involved in analyzing schematics particularly useful and engaging.

Based on the success of this pilot course, additional serials with expanded course curricula will be offered. RCEME TSC Gagetown intends to host refamiliarization courses across a broad spectrum of subjects in support of institutional and operational requirements to reduce the potential of skill fade in all trades.

The opportunities for technical "professional development" are infinite and the TSC is an appropriate place to provide this refresher-type training. Currently, the TSC is considering offering training in electrical diagrams analysis designed specifically for Weapons Technician Land and other subjects for all RCEME technicians, both military and civilian.

These capabilities may even advance to provide "Equipment Culture" training to other non-RCEME trades. Consequently, this initiative will reduce maintenance repair times and therefore equipment VOR.

Lt Remar San Diego is located at the OIC Training Support Centre, Maintenance Company, Technical Services, 5th Canadian Division Support Group.

Equipment Display Activity: DGLEPM Orientation Day takes a new direction

By Lt Sarabjit Multani

The Director General Land Equipment Program Management (DGLEPM) works with other government departments to define an equipment solution based on the requirements of the Canadian Army (CA), manage the implementation into service, procure spare parts and other system upgrades throughout its lifecycle, and support the CA with engineering advice and services if required.

To perform those tasks, people within DGLEPM require experience, education, training, and orientation. Each year new members – both military and civilian – who join the DGLEPM team need a proper welcome to facilitate their transition into the division and orient themselves within their new work environment. To do that, the 11 DGLEPM directorates with distinct areas of responsibilities would conduct several power point briefings, called DGLEPM Orientation. This year, however, DGLEPM replaced its annual orientation with a static display of equipment activity held on a day in late September at Ottawa's Land Engineering Support Centre (LESC) Uplands.

The intent of this new way of doing things was to promote the positive motivation and the personnel commitment of members by introducing key LEPM activities and providing a contact opportunity with various LEPM equipment. It was also an excellent way for each directorate to get out and be seen and share their work among members of DGLEPM, especially after more than a year of working in remote conditions due to the COVID-19 pandemic.

There were nine stations at the event hosted by members of the various directorates. The gathering took place under a controlled environment in order to ensure that measures put in place to deal with the pandemic were adhered to at all times. The attendees were divided into groups and teams with a maximum of 20 personnel per unit. The total audience was estimated to be about 200 personnel including Canadian Armed Forces (CAF) members and civilian public servants employed under DGLEPM. There were also about 60 volunteers on hand, including administrative personnel, the event offices of primary interest (OPIs), speakers for directorates at their stations and so on.

The day started with some pre-screening administration, followed by the gathering of the audience in front of the first station that was operated by Director Land Equipment Program Staff (DLEPS) and hosted by Maj Messaoud Nabhani, who, as the Division OPI for this event, was responsible for setting up and managing the display activity.

After welcoming the audience and passing on some administrative points, Maj Nabhani turned the proceedings over to Director General Land Equipment Program Management, BGen Robert Dundon. Subsequently, BGen Dundon, Chief of Staff DGLEPM Colonel Bryan Davidson, and the Divisional Sergeant-Major, Chief Warrant Officer Daniel Racette, welcomed the attendees and thanked the volunteers and the directorates for their participation before giving the green light to commence the event.

Each visitor group was assigned a starting station and a volunteer to help them navigate through the other eight stations. Here is a brief description of the directorates and the equipment/technology displayed in their stations:

DAEME – Director Ammunition and Explosive Management and Engineering directorate manages the life cycle of current ammunition and explosives and brings new ammo into service. Their station in this event displayed various ammo dummies used in the CAF such as the TOW 2B (Tube-launched, optically tracked, Wire-guided), 105mm APFSDS-T (Armor piercing Fin stabilized discarding sabot-tracer) and HE (High Explosive) rounds, grenades, small arms ammunition and such (Figure 1).

DSSPM – Director Soldier Systems Program Management directorate is responsible for the maintenance of the in-service soldier systems and the delivery of new initiatives to reflect the challenges faced by soldiers, sailors, and aviators. Their station had about 40 items ranging from old and new combat dress to night vision goggles to the different weapon systems used by soldiers.

QETE – Quality Engineering Test Establishment provides the CAF with the technical expertise required to support engineering decisions throughout all phases of material acquisition and support. Instead of equipment, QETE offered a well-structured presentation demonstrating some current challenges and providing general information about their projects.

DLCSPM – Director Land Command Systems Program Management supplies the CAF and deployed task force commanders with Joint C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) program management. Their station had a LAV-6 with their newly developed Tactical Battle Management System (TBMS) called TOPAZ – an interactive software expected to be shipped to various CAF fleets in 2022/23. The aim is to help in the battle effort by providing the vehicle crew with a much greater situational awareness as well as improved communication and coordination in order to greatly shorten such things as mapping time of the battle space. An additional display featured deployable geospatial support systems that assist headquarters in providing the bigger picture of the war and aiding commanders in following battles on a screen.

DSVPM – Director Support Vehicles Program Management directorate aids the CAF by procuring, supporting, maintaining, and disposing of wheeled support vehicles and related equipment. In this event, they displayed three variants of the relatively new Medium Support Vehicle Systems – Standard Military Pattern (MSVS-SMP) and their three alternatives – Cargo, Crane, and Gun Tractor. They also informed the audience of their replacement project that includes the acquisition of these MSVS-SMP trucks

Figure 1.

to replace the older Medium Logistics Vehicle Wheeled (MLVW), pointing out some advantages of the new fleet including modularity and functionality.

DAVPM – Director Armored Vehicles Program Management directorate provides soldiers with well-supported Wheeled Armoured Vehicle systems through professionally managed programs. Their stations featured a Tactical Armored Patrol Vehicle (TAPV) and a Light Armored Vehicle (Lav 6.0). Their presentations included informing the audience about some of the upgrades in the TAPV – such as an improved Remote Controlled Weapon System (RCWS) and integration of weapon effect simulation (WES) system. They also pointed out that the LAV 6.0 fleet owned by the CAF includes 651 vehicles in six different configurations.

NRC – National Research Council, although not part of the DGLEPM umbrella, volunteered to take part in this display event to enlighten the audience on some of the work they do and their relationship and collaboration with DGLEPM. They conduct military-specific research and advanced science. The audience learned of NRC's Canada-wide Industrial Research Assistance Program seeking out small or medium-sized Canadian organizations with great scientific ideas but without the funding to pursue them.

DCSEM – Director Combat Support Equipment Management directorate is responsible for the management, procurement, modification, and disposal of support equipment for soldiers – including deployable camps, virtual training systems, Chemical Biological Radiological and Nuclear (CBRN) Defence, their capabilities in countering explosive threat and so on. This undertaking represented the largest station at the event. On display was a deployed tire shop used for heavy duty in the field and a deployable kitchen comprised of four cooks capable of feeding as many as 250 soldiers at a time. Also on hand was an Explosive Ordnance Disposal (EOD) robot (Figure 2) weighing 800+ pounds (360+ kilograms) consisting of five different cameras, a laser range finder and a control station used against Improvised Explosive Devices (IEDs). To add to the counter-IED capability, the group also displayed some EOD equipment used in situations where the EOD robot would not succeed. In a special collaboration with the Canadian Special Operation Forces (CANSOFCOM), the staff displayed a Commercial Pattern

Figure 2.

Armored Vehicle (CPAV) that was essentially a Toyota runner used for missions where the Special Operations Force (SOF) needs to keep a low profile. It is equipped with heavy armour, anti-mine protection, and a larger sun roof to enhance its combat capability.

DASPM – Director Armament Sustainment Program Management is the directorate responsible for the management of the life cycle of equipment for which it has been assigned technical authority, such as tanks and some armaments and Tracked Light Armored Vehicles (TLAV). The station featured three variants of TLAVs – Ambulance, Maintenance and Engineering platforms (shown left to right in Figure 3). The audience learned about major fleet modifications, especially those undertaken during the Afghanistan campaign. Modifications such as bar protection to defend against rocket-propelled grenade (RPG) threats, cooling vests, and ballistic blankets were all made in response to the risks faced by troops in Afghanistan.

As a first experience, this activity was a success and comments from attendees were all extremely positive. Members indicated that this event provided them with a better understanding of the equipment fleets that the Division procures and supports, and it also allowed them an opportunity to meet other members of the DGLEPM team.

It is interesting to note that the event was beneficial for all visitors and not only for new members. One attendee mentioned: "I've been working on this equipment (CBRN crane) for two years and I had never seen a real one before today!" After being confined for about two years and having canceled the majority of RCEME activities, the members of the Corps enjoyed getting together, discussing their equipment, and promoting the spirit of the Corps.

Lt Multani is the Assistant RCEME Staff Officer in DLEPS 3, DGLEPM.

Figure 3.

The RCEME in action on **Operation REASSURANCE 21-02**

By Capt Marc-Antoine Levesque and MWO Sébastien Guillemette

In June of this year, a group of RCEME technicians from over nine Regular and Reserve Force units were deployed as part of Operation (Op) REASSURANCE Roto 21-02 in Latvia. This gathering of technicians representing the four different RCEME trades undertook a large-scale collective challenge with unfailing motivation. Therefore this mission, sponsored by the North Atlantic Treaty Organization (NATO), became a unique integration opportunity that would enable Canada to validate its interoperability with nine other nations.

Demonstration of the Spanish Buffalo's towing capabilities on a Canadian vehicle supervised by Sgt D.R. Martin, V-Tech, 5 Svc Bn and Sgt O.L. Fréchette, V-TECH, Svc Bn.
Photo: Sgt A. Cortes-Pinilla, Imaging Tech, Spanish Contingent.

With no second-line support on site, the maintenance platoon (Maint Pl) deployed on Op REASSURANCE was responsible for responding to all first- and second-line repair mandates. From a towing perspective, with our main Armoured Heavy Support Vehicle System (AHSVS) wrecker, AHSVS Flat Deck Recovery System (FDRS), and Bison Mobile Recovery Vehicle (MRV) platforms, a major capacity deficiency for the main battle tanks was identified very quickly upon our arrival in theatre.

That deficiency had to be covered by the other nations. We thus decided to set up a towing academy to enable us to validate the interoperability of the platforms from the various organizations of the enhanced Forward Presence Battle Group.

The first of two days was devoted to theoretical presentations about the equipment parts supported by each nation. This was one of the first contacts between the technicians from different nations, which enabled them to learn more about the abilities of our allies. During this meeting, each contingent presented the fleet they were expected to support and briefly introduced their organization and support concept from a maintenance perspective. A common aspect of all the organizations was the remarkable effort made to communicate in a second – and, for some – in a third and even a fourth language.

On the second day of the towing academy, everyone went to the training areas. The contingents brought equipment specific to their organization: the Spaniards with their Buffalo and Leopardo; the Italians with their Dardo and Ariete; and the Polish with their WZT-3 and PT-91, to name a few. The Slovaks were also present with their large self-propelled artillery equipment Zuzana.

Each nation was able to enjoy a few hours in the morning to speak and interact with the crews from different platforms. The technicians were also able to conduct an off-road test as passengers in the various vehicles, which noticeably pleased the members of the other nations, judging from their smile when they returned. Then, a good portion of the day was devoted to validating the towing matrix used

Group photo taken at the end of the 2021 Towing Academy. Photo: Avr D. Levasseur, Photo Tech, CFB Borden Imagery.

on Op REASSURANCE. The technicians were able to practise simulating recoveries using the various platforms to ensure the interoperability of the different contingents in a multinational context. The day ended with a photo of the participants and platforms that were involved in the towing academy.

Once the integration was complete, it was then time to make way for real manoeuvres in Latvia's training areas. During these training events, Canada, identified as a framework nation for this operation, provided multinational command. Therefore, Maint Pl had several elements from the Allied Nations attached to it in order to support all Brigade Group (BG) contingents. Maint Pl was responsible for coordinating the towing requests for all elements. In some circumstances, interoperability was pushed even further. For example, under Canadian control, the decision to send a Spanish vehicle to tow an Italian vehicle could be made.

Towing of the Italian 3x ARIETE using the Spanish Buffalo and Canadian MRT BISON ordered by MCpl O.J.J.G. St-Onge, V-Tech, 2 R22eR led by Cpl J.J.A. Leclerc Laurin, V-Tech, 12th CAR.
Photo: Sgt G. Landreville, V-Tech, 2 R22eR.

In summary, Op REASSURANCE is a unique opportunity to work closely with a number of NATO nations toward a common goal. Many friendships were formed, and an understanding of multinational capabilities continues to grow over time. The cooperation and cohesiveness that distinguishes RCEME members in Canada are central to our operations abroad. We are all very proud to have the opportunity to represent our Corps internationally, and we look forward to continuing this positive momentum of collaboration until the end of our operational mandate.

Captain M.A. Levesque and MWO Sébastien Guillemette are currently deployed to Latvia as the Maint O and ETQMS respectively as part of Op REASSURANCE.

Coordination meeting with some technicians from the other nine nations led by Captain M.A. Levesque, RCEME, 5 Svc Bn.
Photo: Sgt G. Landreville, V-Tech, 2 R22eR.

The Application of **3D Printing Techniques** in Rapid Prototyping and On-Demand Manufacturing

By Lt Andrew Pan, Capt Aaron Judah, Maj Jason Doucet, Maj John Im, and LCol Kenneth Perry

The application of 3D printing has significantly grown in science and engineering through past decades. 3D printing – also referred to as Additive Manufacturing (AM) – is one of the most revolutionary and effective techniques in developing new equipment, creating functional components, and adapting to specific operations.

The success of 3D printing resides in the freedom to create any geometrical form with the advantage of cost effectiveness, quality, immediate manufacturing, and accuracy. Despite efforts devoted to 3D printing techniques in mechanical, civil, and aerospace engineering, there are limited applications and impacts of 3D printing in relation to the Canadian Army (CA) in terms of providing on-demand manufacturing and capability for late-stage modification.

This article presents practical aspects of 3D printing in the rapid prototyping and manufacturing of the breakaway and dissolvable structures. The progress and issues with 3D printer settings such as temperature, speed, and materials selection – as well as CAD-integrated design – are addressed. The challenges of 3D printing, in terms of both material properties and structural responses, are also discussed.

Overview

The 3D printing process is a promising technology in science and engineering. It provides more freedom than any other manufacturing techniques, allowing users to implement rapid, flexible, and delocalized production. 3D printing is termed as additive manufacturing (AM) since objects are fabricated with sequential layers deposited using print head, nozzle, or other printing processes. The technology works by adding layer upon layer of material to build up a complete object.

Compared to traditional manufacturing techniques, the practice of 3D printing has the advantage of reducing prototyping time and cost and provides easy modification of objects. Additionally, the 3D printing process itself is quite fast, eliminating the need to create a mold and the necessity of waiting for the injection molding process. The 3D printing process achieves these goals by material deposition, joined or solidified under computer control in order to create a three-dimensional object.

The development of 3D printing technologies has occurred over the past few decades. One of the most important aspects of AM equipment and materials was invented by Scott Crump in 1988 and commercialized by his company Stratasys, which marketed the first fused deposition modelling machine in 1992. With 3D printing technologies maturing gradually, there are a number of AM categories, including Stereolithography (SLA), Digital Light Processing (DLP), Fused Deposition Modelling (FDM), Selective Laser Sintering (SLS), Selective Laser Melting (SLM), and Electronic Beam Melting (EBM).

The main differences between these processes are the way layers are deposited to create the parts and materials used. Among them, the most affordable and cost-effective 3D printers are FDM. In the FDM process, the thermoplastic is forced into the nozzle where it is melted and deposited in prescribed layers on the plate. The platform is successively raised in the z-direction to complete the object.

In the current scenario, more and more 3D printing has been used in manufacturing, industry, and engineering – which in turn facilitates AM in becoming a successful technology. The AM technique creates rapid prototyping that accelerates product development. Thus, more and more users can access the world of 3D printing. Given the tremendous advances in 3D printing, it is anticipated that this technology will revolutionize the way we design. By applying the AM technology, 3D printing is capable of meeting the most stringent demands in terms of time, cost, and precision in the creation of desired modelling parts and components, particularly in military engineering services.

Within the defence sector, AM has revolutionary potential. It provides versatile tools for the precise manufacturing of various devices – expanding the capabilities of equipment and adapting them to new operational requirements. Supplementing the existing supply system with AM technology could result in a paradigm shift in the sustainment system for Canadian Armed Forces (CAF) supplying parts on demand, free-form manufacturing, and customization

in conjunction with a reliable stock of materiel. AM has been included in CAF "Future Security Environment 2013-2040", enabling the CA to better align the country's defence policy as outlined in the document Strong, Secure, Engaged: "Canada's military must be agile, flexible and responsive in meeting the challenges and capturing the opportunities of our rapidly evolving world."

Although the potential of AM could improve materiel availability and the reduction of reach-back requirements, there are limited applications and impacts of 3D printing in relation to the CA in remote areas of operations (AOR) on immediate demand of manufacturing, and capability for late-stage modification.

In consideration of these facts, a project was initiated to study 3D printing techniques in rapid prototyping and manufacturing for supporting breakaway and dissolvable structures. Our study highlights the procedure and approach of AM in breakaway and dissolvable structures, including:

- Designing 3D objects in computer-aided design software AutoCAD
- Exporting a model to 3D shape file
- Importing file to slicer software to generate layer file
- Generating system-specific applications and creating components to fit the equipment

The 3D techniques we used have important implications – including allowing military engineering users to design and optimize the practice of 3D printing – which is inexpensive – creating spare parts and rapid prototyping and producing specific items with minimum waste. Our case studies may help improve the application of AM in military field engineering in terms of the application of 3D printing technology in small arms sustainment.

Material and Methods

A commercially available FDM, Ultimaker 5S Pro Bundle 3D printing system (Figure 1), was used in the study. The system consists of an active bed levelling that corrects bed height and two sets of build plate to enable the system to print both inclined surface and high dust areas. The system features the Ultimaker Cura v4.7 programming software that enables a high degree of design freedom and provides a high level of operational security. It can also function as the control for the material layer thickness, infill density, infill structure, and print speed and so on. The unique integrated material station within Ultimaker 5S Pro Bundle enables humidity control and has an active EPA filter that removes up to 99 percent of particles.

Figure 1. Typical Ultimaker 5S Pro Bundle 3D printing system.

Two types of material were selected for the study – polylactic acid (PLA) and polyvinyl alcohol (PVA). PLA is the main printing material due to its high degree of stability, processability, and high stiffness along with its lower cost. PVA is used to create water-soluble support structures to achieve complex geometries characterized by high tensile strength, flexibility, and adhesive properties.

The printing procedures were adjusted based on material properties and behaviour. A preliminary test was conducted for optimal build temperature, speed, and the infill pattern for each material. The build temperature was based on the manufacturer's suggestion as shown in Table 1. The temperature was raised in 5°C increments until the optimal level was reached. The print speed was adjusted by the material and layers. The selection of the initial layer, exterior layer, and final layer of each material type is based on best practices.

We used a gunstock in the context of a weapons part as a module in our project. Traditional gunstocks have a permanently shaped buttstock that is fixed in length and cannot be tailored to the anatomical variation between different users. Modern gunsmithing techniques can produce gunstocks with adjustable positions, which can be achieved by using 3D printing techniques in rapid prototyping and on-demand manufacturing.

We studied the stock structural support – to which the barrel, action, and firing mechanism are attached – and then developed two working prototypes: standard fixed stock and adjustable for the C6 General Purpose Machine Gun

Table 1. Temperature Setup for PLA and PVA

Material	Print temperature range T_p (°C)	Print temperature T (°C)	Bed temperature T_b (°C)	Shrinkage/ warping potential
PLA	190 – 220	210	20 – 60	Minimal
PVA	200 – 225	200	60	Significant

(C6 GPMG) – using AutoCAD software as shown in Figure 2. The design of the standard stock is based on the current model. It features attachment locations for both front and back plates for which mechanisms are attached and allows the C6 GPMG to be assembled in the same way as the conventional wood stock as shown in Figure 2a. The design of the adjustable stock is based on the internal components of the current system. The adjustable stock consists of three components: the front attachment, the rear attachment, and the lever, as shown in Figure 2b. The stock receiver in the adjustable stock has three adjustment slots, allowing for three positions to better accommodate different shooting stances. The designed systems are fully compatible with the current system and allow the current C6 GPMG to be retrofitted with the adjustable butt stock with ease.

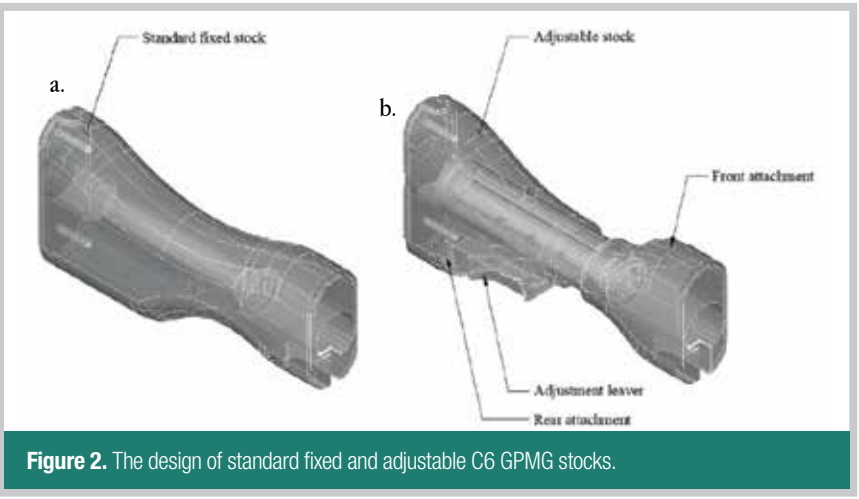


Figure 2. The design of standard fixed and adjustable C6 GPMG stocks.

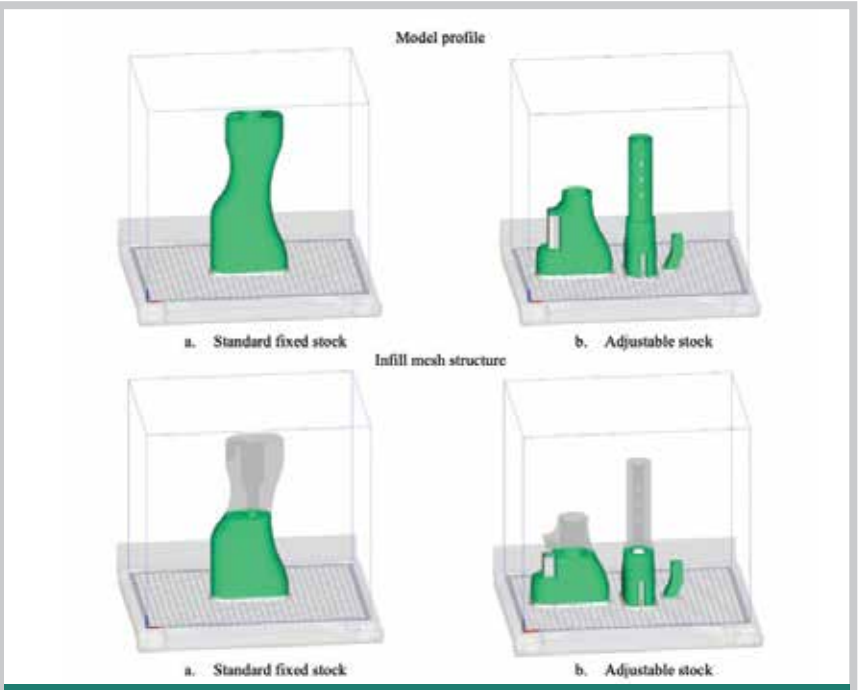


Figure 3. The design model of standard fixed and adjustable.

Figure 3 illustrates the designed models that were printed with brim adhesion and support structure. Brim adhesion is an assembly that is used at the first layer and is printed around the object to increase model adhesion to the build plate. The support structure is used to support overhang and other structures. The completed design model from AutoCAD is converted into computer numerical control (CNC) for printing. The CNC controls movement of the nozzle along x and y axes and the movement of the print plate.

Results and Discussion

The stocks fabricated by the 3D printer are presented in Figure 4. As expected, both standard stock (Figure 4a) and adjustable stock (Figure 4b) created by the 3D printer are compatible with the C6 GPMG, which allows the internal component to be integrated in the system. Our proposed technique is to be able to readily produce a standard stock as a replacement and an adjustable stock for improvement. The experimental results confirmed that the printed stocks, both standard and adjustable, can accommodate the hydraulic buffer assembly, butt screw, and buffer catcher, allowing the designed stocks to maintain weapon functionality equal to the originally designed stock but with more versatility.

In developing the experimental protocols, a series of experiments was conducted to examine the material properties of the PLA and PVA. Preliminary results indicate that the PLA filament was easy to work with in terms of low work temperature and rapid prototyping, but it was not water or chemical dissolvable. By comparison, the PVA requires a more complex parameter and longer time with lower print speed (45mm/s). The most important characteristic for the PVA, however, is the property of water

dissolvability. Along with the rationale for the conditions selected, we conducted a breakaway support structure with PLA material and a dissolvable support structure using PVA material for the subsequent experiments.

Figures 5 and 6 illustrate the typical difference between a breakaway support structure involving PLA and a dissolvable support structure with PVA. The PLA breakaway support structure uses the same filament as the main object. The support forms intermediate columns to support bridging and overhang. The drawback for using breakaway supports is that they are attached to the building materials, and we had to cut the connection when the model was completed. By contrast, the PVA dissolvable support structure uses a separate material. PVA is used in a 3D printer extruder to form a platform that supports the object as in Figure 6. Once printing is done, all the components are immersed in water and the PVA support structure material dissolves, leaving the rest of the insoluble print behind as shown in Figure 6.

The differences between the PLA breakaway structure and the PVA dissolvable structure are also reflected in the finished component as shown in Figure 7. The breakaway support system only forms contact at limited points as shown in Figure 7a.

By contrast, the soluble component encompasses the whole cavity as shown in Figure 7b, restricting thermal expansion resulting in more uniform cooling, less layer delineation, and higher accuracy. The difference is particularly evident in the post-processing of breakaway support and soluble structures. The support structures are also shown to affect the degree of precision in the finished model, which is more evident in the cavities. The dissolvable structure support has continuous contact

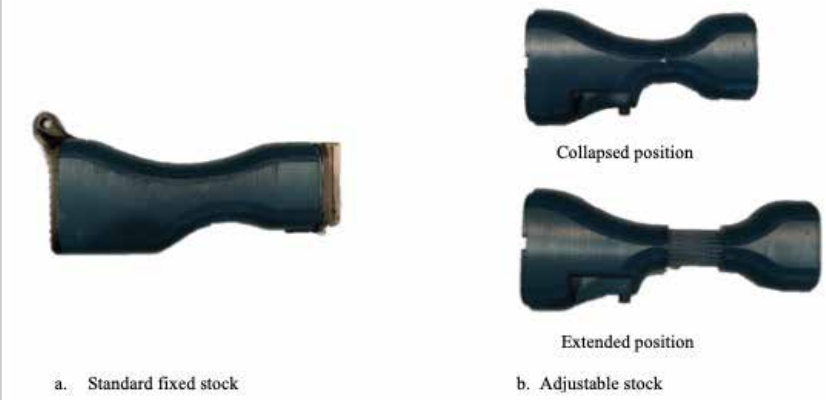


Figure 4. Stock components fabricated by 3D printer.

Figure 5. Breakaway Support Structure by PLA.

Figure 6. Dissolvable support structure by PVA.

Figure 7. Effect of breakaway structure by PLA and dissolvable structure by PVA.

with the main component – whereas the breakaway support has limited contact with the main component.

Conclusion

This article presents the results of an experimental investigation on 3D printing techniques in rapid prototyping and on-demand manufacturing. Based on the experiments and obtained results, the following conclusions can be drawn:

- 3D printing – or AM – is unique to conventional manufacturing processes in terms of the mechanical and physical properties of the material selection. Designing the 3D printing process and recognizing the differences in material properties are key – and identify critical-to-quality features.
- Breakaway support is the original support design. However, for the smoothest surface finish we recommend PVA. Also, breakaway material in the print for structure support needs to be removed. Therefore, users do not have complete design freedom.
- It should be noted that all tests were completed for specific materials of PLA and PVA and specific 3D printing products. However, the approach can be applied to other models with a variety of 3D printing materials such as acrylonitrile butadiene styrene (ABS), polyethylene terephthalate (PETG), nylon, and thermoplastic Polyurethane (TPU) as well as other components. Any materials selected for 3D printing must be well-suited to the application in order to achieve the design goals.

Readers interested in the reference material for this article can contact Lt Pan at: andrew.pan@forces.gc.ca

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SUPPORT TO OPS

General Dynamics Land Systems – Canada Contributes to the Excellence of RCEME Vehicle Technicians

By Cpl David Boily

This pilot project came about at the Royal Canadian Electrical and Mechanical Engineers School (RCEMES) at Canadian Forces Base (CFB) Borden in early 2020. This familiarization training on the Light Armoured Vehicle 6.0 (LAV 6.0) was developed by General Dynamics Land System – Canada (GDLS-C) at the request of the RCEME Corps.

A few highly qualified civilian technicians from GDLS-C gathered to set up a two-week course covering all the mechanical systems on this vehicle. Why does such training appear this way? The reason is simple: over the past few years, the Canadian fleet of Light Armoured Vehicles 3.0 (LAV 3.0) have been upgraded to adapt to the new realities in the field, whether in practice, domestic operations or in the operational theatre.

Significant improvements have been made to this vehicle, involving multiple components including the hull, drive train, suspension, and auxiliary systems, among many others. The purpose of this training is to provide additional

knowledge to vehicle technicians who are already qualified but have not necessarily had the opportunity to work on this type of vehicle.

The LAV 6.0 was introduced into the fleet of the 5th Canadian Mechanized Brigade Group (5 CMBG) a few years ago, covering several variants of the infantry section carrier (ISC) and the command post. In addition, the armoured combat support vehicle (ACSV) project currently under development will enable the modernization of the aging second-generation LAV (Bison/Coyote) fleet as well as the ACSVs. This replacement project will provide a common platform among combat vehicles and tactical support vehicles, significantly reducing the number of spare parts and tooling. Nevertheless, the primary advantages of having common platforms are the expertise and knowledge that technicians will be able to develop, thus greatly increasing the operational readiness of the fleet.

This two-week training is divided into two major parts. The course begins with a few days of theory, focused mainly on acquiring knowledge about the LAV 6.0. Since the training is given to qualified military and civilian technicians, it isn't a general mechanics course. Most participants are already familiar with basic mechanics and have a number of years of experience on armoured military vehicles and wheeled support vehicles. This opportunity creates a lot of knowledge exchange between participants and instructors.

The training focuses on systems that are specific to the LAV 6.0. GDLS-C instructors review all the systems and ensure that they are clearly understood by the participants. As some common mechanical issues are already known by the maintenance organizations and GDLS-C instructors, due to the vehicle already being used by units, students can expect to receive clear answers to their questions. In addition, information books as well as all the electrical, pneumatic, and hydraulic diagrams are provided to candidates, who will be able to take advantage of them in their respective units. These few days of theoretical learning are a good introduction to the second part of the course, where hands-on skills are tested.

A Light Armoured Vehicle (LAV) 6.0 drives out from its hide during Exercise MAPLE RESOLVE at 3rd Canadian Division Support Base Garrison Wainwright, Alberta on May 6, 2021.

Photo: Sailor First Class Camden Scott, Directorate of Army Public Affairs

Once in the workshop, the second part of the program, the participants are divided into sub-groups and alternate between the various work stations. When the course was developed, GDLS-C focused on improving certain basic practices since these could result in potential mechanical problems. Also, the use of all the computer software required for diagnosis is taught and put into practice. During these exercises, real problems are introduced on the vehicles, and candidates apply the concepts taught in order to diagnose and repair the failures.

This machine has many electronic components. Therefore, proper supervised training by a team of specialists like this one is needed in order to keep this fleet operational and the technical expertise up to date. The LAV 6.0 familiarization training is fulfilling and will continue to be used in the very near future.

With the ACSV becoming the next vehicle technician support tool, the training provided by GDLS-C is a smart investment. For units that already have combat variants, certified technicians will be back in platoons – and maintenance troops will be better equipped and more qualified than ever!

Cpl David Boily is a vehicle technician with 5 SVC Bn/Maint Coy.

Materiel Group expertise supports **Mobile Respiratory Care Unit** procurement

Article courtesy of Adm (MAT) Communications Team

In the early days of COVID-19, the Government of Canada identified the need for a self-contained Mobile Respiratory Care Unit (MRCU) that could be quickly deployed anywhere in the country to answer any pandemic-related health emergency. Public Services and Procurement Canada (PSPC) was tasked with this project and they in turn looked to the Materiel Group for our technical and project management expertise.

SNC-Lavalin – Intensive Care Unit – Ward View.

The task was daunting – up to 10 fully mobile, self-sufficient 100-bed MRCUs to provide emergency care for people with acute respiratory disease and distress. The unit had to include an 80-bed in-patient ward and a 20-bed Intensive Care Unit (ICU) and had to be quickly transported and set up with a minimum of engineering expertise, anywhere and in any season. It also had to be stocked with the necessary medical equipment and 10 days of consumable medical supplies. In the case of a remote deployment, there might also be a requirement for accommodations, food, and support for medical personnel.

Stéphane Siegrist, Trish Cullen and André Picard from Director General Land Equipment Program Management (DGLEPM) put together a small team designed to be "efficient and agile" – three engineers and three Purchasing and Supply (PG) individuals.

On the engineering side, two project managers, Luc Doré preceded by Andrew Plater, and Oswald Peters (also from DGLEPM) liaised with both contractors. The procurement team was led by Nadine Khaddaj from DGMEPM, and included two procurement advisors, Carolyn Marcichiw from Director General Procurement Services (DG Proc Svcs) and Ryan Billingham from DGMEPM. They were soon joined by Tim Blanchard from Director Land Command Systems Program Management (DLCSPM) as the Program Coordination Officer. The Department of National Defence (DND) was engaged on the project at the end of March. The contracts were awarded on April 9. Yes, you read that correctly – we were in contract within 10 days.

Both contracts, valued at $150-million each, were awarded at the same time to two different contractors. The team managed to write the Request for Proposals, complete the bidders' conference, conduct the bid evaluation, and put two contracts in place within that short time frame.

André Picard in Director Combat Support Equipment Management (DCSEM), the overall program manager, recalls some of the challenges: "We had to navigate the project within a diverse group of government organizations – PSPC, Public Health, DND and our contactors – with only some basic guidance. Because the project actually resided with PSPC, we found ourselves in a different role, providing engineering and technical expertise for that government department. We also provided oversight and monitoring – making sure everything fell in line according to the contract."

Weatherhaven – Intensive Care Unit.

In the early stages of the program the team relied heavily on the expertise provided by the Canadian Armed Forces (CAF) medical team. Col Peter Clifford and LCol Sean Meredith, both with CF Health Services, shared their extensive knowledge and experience with the MRCU team, and contributed a great deal to the technical requirements of the contract.

"The RFP went out on April 6 and we were able to receive the RFP, complete bid evaluations, and draft the contract between April 6 and 9 when the contracts were awarded," recalls Nadine Khaddaj, "so that was a busy week for us. We didn't sleep much in those three days."

While PSPC was the lead on the RFPs the procurement team provided input, review, advice, and guidance – and also assisted with the statements of work (SOWs), task authorizations, and support for progress payments. None of this could have been achieved without seamless teamwork and dedication from every department.

In the end, two suppliers were chosen: Weatherhaven Global Resources Ltd. of Coquitlam, BC and SNC-Lavalin Group Inc., based in Montreal. Weatherhaven has received PSPC approval to build the first two MRCUs. These were further deployed in the Toronto area (Sunnybrook Health Sciences Centre and Hamilton hospital) from May to September 2021 with a contingent of military members consisting of critical care nurses, multi-purpose medical assistance teams and command and support personnel.

The Weatherhaven MRCU is based on the HQSS Headquarters Shelter System and was purchased by the Government of Canada for use by the CAF in 2017.

The tent-based shelter systems have a flexible configuration that can be used for everything from headquarters or command posts to accommodations and medical facilities.

"This is such a great example of successful co-operation between departments," says Nadine. "What we accomplished in such a short timeframe was something that nobody from either team had ever experienced in their careers before."

Weatherhaven – Sunnybrook System.

Former member of the RCEME Corps seeks fairness for all **who stand on guard for their country**

By Col (Ret'd) Nishika Jardine, Veterans Ombud

After having served 37 years in the Canadian Armed Forces (CAF) and the Corps of RCEME – and learning to enjoy the freedom of being retired – being appointed the new Veterans Ombudsman, or Ombud, on Remembrance Day 2020 was an amazing moment for me. Since then, it's been an incredible learning curve!

Before this, and perhaps like many of you, I had no idea that there was an Ombud for Veterans. Nor did I really understand what an "ombudsman" is or does. Basically, the primary role of an ombud is to provide a place for people to go when they feel they have been treated unfairly. And so, when a Veteran – Wartime, CAF, or Royal Canadian Mounted Police (RCMP) – or family member is having difficulty with accessing benefits and services from Veterans Affairs Canada (VAC), that person can contact the Office of the Veterans Ombud for assistance.

We operate independently of VAC, and we do our work in an impartial manner. What this means is that we do not take sides. When a Veteran or family member comes to us with a complaint against VAC, with the complainant's permission we access his or her VAC file in order to take a fresh and impartial look at the case, and we do this through what we call the Fairness Triangle (or lens).

Essentially, we look to see whether the Veteran was treated fairly, that the case was fairly processed, and that the outcome was fair. Where we find otherwise, we work directly with VAC to advocate for fairness on behalf of the Veteran. Sometimes a Veteran just needs more information in order to submit a claim to VAC, or may actually need a referral elsewhere. Members of our front line staff are also able to help in these ways.

A second part of the Ombud mandate is to investigate barriers or gaps in the way that VAC administers or delivers benefits and services to Veterans and their families. When we find unfairness here, we can publicly make recommendations for change directly to the Minister of Veterans Affairs.

During FY 2020-2021, our office received more than 1300 requests for assistance:

- 1200 were complaints
- Of those, we investigated 600 (the remainder were either referred to VAC or were outside our jurisdiction)
- During the course of those investigations, we found close to 350 complaints with some element of unfairness, and we then advocated for a fair resolution

Since my appointment, we have published two major systemic investigation reports.

Mental Health Treatment Benefits for Family Members, in their Own Right, for Conditions Related to Military Service

This investigation examined the impact of VAC policies on mental health treatment for Veterans' family members and found that they were only eligible for funded treatment if it was part of the Veteran's treatment. We found this to be unfair, and made this main recommendation to the Minister of Veterans Affairs:

> Considering the unique impact of military service on the mental health and well-being of both Veterans and their family members as a result of frequent postings, long and multiple absences, and the inherent risk of military service resulting in illness, injury or death, the Government ensure that family members, including former spouses, survivors and dependent children, have access to federal Government funded mental health treatment in their own right when the mental health illness is related to conditions of military service experienced by the family member, independent of the Veteran's treatment plan and regardless of whether the Veteran is engaging in treatment.

Peer Support for Veterans who have experienced Military Sexual Trauma

We received complaints from serving members and Veterans about being referred away from the main peer support programs provided by CAF/VAC after disclosing their experience of military sexual trauma and launched an investigation. We found that the peer support provided by VAC is an important source of assistance for many Veterans living with psychological difficulties connected to their service, and equitable access to comparable peer support should be available to all Veterans – regardless of the cause of their service-connected psychological difficulties. To address the gap, we made the following main recommendation to the Minister of Veterans Affairs:

> Provide a funded peer support program that meets the needs of Veterans who have experienced Military Sexual Trauma.

Later this fall, we will publish the Veterans Ombud Report Card, which lists all of the recommendations made by the Ombud Office since its inception in 2007, together with our evaluation of the implementation progress made by VAC. In essence, the report card serves to hold government to account for making changes to improve equitable access for Veterans, serving members, and their families to VAC benefits and services for which they are eligible.

Of note, the Veterans Ombud reports to Parliament through the tabling of our annual report by the Minister of Veterans Affairs, and we have been working to have the report ready for submission upon the resumption of Parliament.

Additionally, before the end of the year we expect to publish a Women Veterans Literature Review as well as our investigative report on the Additional Monthly Amount. (The Additional Monthly Amount is a non-taxable monthly payment to members and Veterans who had received a Disability Award between April 1, 2006 and March 31, 2019 and who would have received a higher amount under the new Pain and Suffering Compensation benefit that was put in place as of April 1, 2019).

Going forward, we have set the following three strategic priorities:

- Building Trust: We strive to provide excellent service to all Veterans and their families.
- Veteran / Family Health and Well-being: We recommend changes to the benefits and services provided by VAC to improve the health and well-being of Veterans and their families.
- Fair and Timely Access to VAC Benefits and Services: We identify unfairness, inefficiency, and excessive complexity in how VAC administers its programs and services.

Over the past year, I've met with a number of Veterans, advocates, and stakeholder groups, and I look forward to continuing that dialogue. For me, personally, I have come to understand much better what it means to be a Veteran. In my view, once you have worn the CAF uniform, you never really return to being a "civilian" when you are released. Instead, we join the ranks of "those who have served our nation"– we are Veterans. I feel immensely privileged to have been afforded this opportunity to continue to be of service. The Veterans Ombud exists to be of assistance to individual Veterans and also to our broader Veteran community.

In summary:

- If you are dealing with Veterans Affairs Canada, you have the right to be treated with respect, dignity, fairness, and courtesy.
- The Veterans Bill of Rights sets out your right to fair treatment by VAC.
- If you feel that any of your rights have not been upheld or a decision is unfair, you have the right to make a complaint to the Veterans Ombud.
- The Veterans Ombud operates independently of VAC and we are impartial.

- We don't take sides. We will listen to you.
- We will review your file with you and communicate with you in clear language so you can understand your options.
- We will evaluate how you were treated, how the process was followed and whether the outcome is fair.
- If we find that there is something unfair in your case, we will advocate for fairness on your behalf.

CONTACT

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For more information, please see our newsletter, *Focused on Fairness*, and follow us on Facebook, Twitter or Instagram.

Help when help is needed...

An important message Veterans Ombud Nishika Jardine would like to emphasize to Canadian Armed Forces members who are still serving is that her office can be of assistance prior to release. Here are two examples of assistance rendered:

Sergeant Vehicle Technician releasing in one month:

- Complex medical release after 26 years of Regular Force service
- Assigned a VAC Case Manager
- Issue:
  - The VAC Case Manager was not returning the sergeant's calls
  - There was no news on the status of his disability claim, his VAC rehab program application, or the Income Replacement Benefit (IRB)
  - The sergeant was distressed about his future income and plans, and was very concerned he would fall through the cracks

How our Office helped:

- We contacted VAC – the Case Manager was on unexpected extended sick leave, and the sergeant's file had not been reassigned. A new Case Manager was appointed and committed to contacting the sergeant within one week
- We reviewed his VAC file and found:
  - His disability claim (Pain and Suffering Compensation) was in the queue and a decision was not expected before release due to backlog
  - His rehabilitation application was fine, and the Case Manager would develop the plan with the sergeant
  - His IRB will be approved, and he will receive the VAC top-up beyond Service Income Security Insurance Plan Long-Term Disability (SISIP LTD) to 90 percent of pre-release income

Outcome:

- Sergeant Smith was reassured that while his disability claim would not be decided before his release date, his rehab plan and IRB would be in place once his release was complete

Corporal Weapons Tech releasing from Regular Force in six weeks:

- 18 years combined Regular Force and Primary Reserve service
- Issue:
  - She applied for the Education and Training Benefit (ETB) and was only approved for partial benefit ($40K)
  - She was expecting to start an MBA program immediately after her release, and was counting on the full $80K benefit to which she believed she was entitled
  - If she had to wait for the review process, which is a minimum of 12 weeks, she would miss the start of her program

How our Office helped:

- We reviewed her VAC file and her qualifying time calculation sheet
- We discovered her maternity leave was miscalculated and some Primary Reserve time was missed. After recalculation, she met the qualifying time for the full $80K benefit
- We asked VAC to reassess her case as a priority, and the education plan and the full benefit were approved prior to the corporal's release

Outcome:

- Corporal Chen was released as scheduled, and commenced her MBA as planned