



**Vancouver Artillery  
Association News**



**RUSI News**  
Vancouver

## Van Arty Association and RUSI Van Members News April 11, 2017

Newsletters normally are emailed on Monday evenings. If you don't get a newsletter on time, check the websites below to see if there is a notice about the current newsletter or to see if the current edition is posted there. If the newsletter is posted, please contact me at [bob.mugford@gmail.com](mailto:bob.mugford@gmail.com) to let me know you didn't get a copy.

**Newsletter on line.** This newsletter, and previous editions, are available on the Vancouver Artillery Association website at: [www.vancouvergunners.ca](http://www.vancouvergunners.ca) and the RUSI Vancouver website at: <http://www.rusivancouver.ca/newsletter.html> . Both groups are also on Facebook at: <https://www.facebook.com/search/top/?q=vancouver%20artillery%20association> and <https://www.facebook.com/search/top/?q=rusi%20vancouver>

**Wednesday Lunches** - We serve a great 5 course buffet meal for only \$20. Hope to see you all there. Guests are always welcome and we encourage members to bring their significant others. Dress - Jacket and tie, equivalent for Ladies

**Upcoming events – Mark your calendars** See attached posters for details.

- May 06** - BC Army Gala  
- NOABC Battle of the Atlantic Dinner
- May 13** - 15 Field Artillery Regiment Change of Command Parade

### World War 2 - 1942

*John Thompson Strategic analyst - quotes from his book "Spirit Over Steel"*

**Apr 12<sup>th</sup>:** Chinese troops move to the aid of the British as Miguangye falls to the Japanese.

**Apr 13<sup>th</sup>:** The British announce the appointment of Mountbatten as Chief of Combined Ops. In Burma, the Japanese force a British withdrawal to Magwe. The new death camp of Belzec receives its first shipment of Jews. Of the 600,000 Jews sent there during the war, two are known to have survived.

**Apr 14<sup>th</sup>:** USS Roper scores a first U-boat kill for the American Navy by sinking U85. The British start demolishing oil installations around Yenangyuang in Burma to deny them to the Japanese.

**Apr 15<sup>th</sup>:** 1<sup>st</sup> Burma Division is cut off from the rest of the British Army around Magwe.

**Apr 16<sup>th</sup>:** They have unloaded ammunition ships while bombs dropped around them, tended their fields and nets while being strafed, and endured months of constant heavy bombardment and deprivation without complaint. They sleep night after night in caves as their homes are turned into powdered rubble. Even the hard-pressed airmen, sailors and soldiers of the garrison are awed by their calm quiet courage. Today, all of Malta's stalwart citizens learn they are

collectively awarded Britain's highest award for civilian courage, the George Cross. Some 4,000 Japanese troops land on Panay in the Philippines.

**Apr 17<sup>th</sup>:** All attempts to spring the 1<sup>st</sup> Burma Division from Japanese encirclement have failed and no more attempts are to be made.

**Apr 18<sup>th</sup>:** The Japanese destroy the 55<sup>th</sup> Chinese Division on the road to Lashio – severing the Burma trail to China. Von Leeb is relieved of Command of Army Group North. The Doolittle Raid is launched as 16 Army B-25s hit various targets around Japan – with small bomb loads at an extreme range, the raid causes little material damage, but the political and strategic implications are enormous and America has struck back at Japan. The Japanese military is mortified. The bombing raid is a daring undertaking, and the best that the bomber crews can hope for is to safely bail out over Chinese territory after dropping their small ordinance loads over Japan. It is – at some levels – a propaganda stunt but it is also a severe embarrassment to the Japanese government. The raid was his idea and he led it personally: For this, James Harold Doolittle is awarded the Medal of Honor.

## **'Third Arm' May Lessen Soldier's Burden, Increase Lethality**

Sean Kimmons March 24, 2017



*The Army Research Laboratory is developing a "third arm" passive mechanical appendage that could lessen Soldier burden and increase lethality. Weighing less than 4 pounds, the device attaches to a Soldier's protective vest and holds their weapon, putting less weight on their arms and freeing up their hands to do other tasks.*

*(Photo Credit: Courtesy photo)*

HUNTSVILLE, Ala. (Army News Service) -- Future ground troops may one day have a "third arm" device attached to their protective vests that will hold their

weapon, lessening the weight on their arms and freeing up their hands for other tasks. Weighing less than 4 pounds, the body-worn weapon mount is currently undergoing testing at the Army Research Laboratory, where researchers hope the lightweight device will ensure Soldiers pack a more powerful punch in combat. "We're looking at a new way for the Soldier to interface with the weapon," said Zac Wingard, a mechanical engineer for the lab's Weapons and Materials Research Directorate. "It is not a product; it is simply a way to study how far we can push the ballistic performance of future weapons without increasing Soldier burden."

Today, some Soldiers are weighed down by combat loads that exceed 110 pounds. Those heavy loads, he said, may worsen as high energy weapons, which could be larger with heavier ammunition, are developed for future warfare. "You wind up pushing that Soldier's combat

load up beyond 120 pounds and they're already overburdened," he said last week at the Association of the United States Army's Global Force Symposium. "We [now] have Soldiers in their late teens and early 20s and they're getting broken sometimes in training before they see a day in combat." The goal of the third arm device is to redirect all of a weapon's weight to the body, making it easier for the Soldier to carry a more lethal firearm. "With this configuration right now, we can go up to 20 pounds and take all of that weight off of the arms," said Dan Baechle, also a mechanical engineer. The passive mechanical appendage, which is made out of carbon fiber composite, can be used in the prone position and on both sides of the body. To test the device, researchers are conducting a pilot with a few Soldiers using an M4 carbine on a firing range at Aberdeen Proving Ground in Maryland. As part of the pilot, Baechle said, the Soldiers wear electromyography sensors on their arms and upper body to measure muscle activity to determine if there's a change in fatigue when shooting with the device.

Researchers also score the Soldiers' shots to see if there's an improvement in marksmanship. "The research and development we're focused on now is refining this device," Baechle said, adding that they're also working on it with the lab's Human Research and Engineering Directorate. Further research will look at answering questions by the Soldiers, such as if the device will get in the way if they wear a medical kit on the side or a magazine pouch in the front. "Those are all future use issues that we're going to address in future iterations," he said. While the M4 is the only weapon currently being tested with the device, Baechle said, they plan to investigate other types of weapons with different calibers, like an M249 squad automatic weapon or M240B machine gun. "Imagine shoulder-firing either of these without the weight on your arms, and without all the recoil going into your shoulder," he said. The third arm could also allow Soldiers to use future weapons with more recoil. "We could potentially look at very high recoil systems that aren't going to beat up on the Soldier like they normally would," he said.

Researchers also plan to examine the device's potential applications for various fighting techniques, like shoot-on-the-move, close-quarters combat, or even shooting around corners with augmented reality displays, he said. Other possible applications for the device include helping a Soldier keep his weapon close by as he cuts through a barrier with a power saw during a breaching operation. A Soldier might also use it to carry a shield as he leads other Soldiers in clearing a room. Before any field testing takes place, Baechle said, they hope to "ruggedize" the device to ensure it can withstand rigorous activity, such as having a Soldier fall to the ground with it. "Right now, we're just doing proof of concept, so we're not diving into the dirt with our only prototype," he said. "But that's something we would want to make sure we can do, because Soldiers will be doing that."

## **Boeing Positions Poseidon as Aurora Replacement**

*Skies Magazine* Chris Thatcher 14 March, 2017

Like the CP-140, which is based on the Lockheed Martin P-3 Orion airframe, the P-8 was purpose-built for anti-submarine warfare (ASW) but carries a sensor suite and other capabilities to perform anti-surface and ISR (intelligence, surveillance, reconnaissance) operations or serve

as a C3 (command, control and communications) node anywhere in the world. While RCAF commander LGen Mike Hood has publicly stated a desire to see that maritime and overland capability on a Canadian-built platform, such as a Bombardier C Series, Boeing believes the strength of its production line and supply chain, commonality with the US Navy (USN), and a long-term growth plan with allies such as the UK and Australia, will make the P-8 an attractive fit. “[Though] we feel the P-8 is the right aircraft for those countries [currently] flying the P-3, we will look to meet Canada’s needs as we get to know their requirements going forward,” said Matt Carreon, global sales and marketing lead for the P-8 program, at a recent media briefing. To support the USN’s maritime mission requirements, the P-8 incorporates an integrated sensor suite that includes a multi-node radar, an electro-optic infrared camera, and electronic signal detection sensors to find, identify, locate, and track surface targets. For sub-surface targets, the suite includes an integrated acoustic sonobuoy launch and monitoring system.

Situational awareness, target and threat data is managed, shared and displayed on a robust digital communications suite that integrates SATCOM and line-of-sight radios, Inmarsat phone and a common data link. And, in addition to 128 sonobuoys, the weapon suite features four AGM-84 Harpoon missiles and five torpedoes, as well as extensive countermeasures. “The P-8 has really evolved into a multi-mission aircraft,” said Carreon, a former US Navy tactical coordinator on the EP-3 and P-3 aircraft. He added that an open architecture mission system and reserve power and cooling capacity were designed to accept future requirements or upgrades. The UK, Australia and the USN, for example, have requested search and rescue capability. “The open architecture allows you to incorporate new and evolving technologies into the mission system to meet changing and evolving threats.” The Poseidon is based on Boeing’s venerable 737-800 fuselage, with the longer wings of the Dash 900. Like the next generation variant, it features two 27,300-pounds thrust CFM56-7BE engines and claims a max takeoff gross weight of 198,200 pounds, and a combat radius of 1,200 nautical miles with four hours on station, with a full payload of over 22,000 pounds. “No other aircraft can meet that combat radius for anti-submarine warfare,” said Carreon. “The P-8 is designed to be the most advanced ASW maritime mission aircraft in the world.”

With a commercial fleet of 737-800s that includes 4,000 aircraft in operation and 7,000 of the next-generation variant on order, Boeing is counting on fleet commonality to reduce production, maintenance and training costs for customers. “We were able to save over \$2.1 billion in efficiencies [for the USN],” Carreon said, adding that the unit fly-away cost has decreased by 30 per cent since production began, “and we continue to refine that process.” It is still early days for the Poseidon, which achieved initial operating capability in 2013, but the order book is starting to grow. Boeing is on contract for 80 aircraft to the USN, 50 of which have been delivered, but the service has indicated a requirement for 117. In addition, Australia requested eight, four of which have been approved and funded—the first was delivered in November; India signed a contract for eight in 2009 and added four more in July 2016; the UK confirmed plans for nine at last year’s Farnborough Air Show; and the US State Department in December cleared the sale of five to Norway. Whether the Poseidon is a cost-effective option for Canada

remains to be seen, but it is being positioned to fulfil Canada's multi-mission maritime and overland role

## **US Army Test Fires 3D Printed Grenade, Grenade Launcher**

*Written by US Army 17 March 2017*



Researchers at the US Army Armament Research, Development and Engineering Centre (ARDEC) have successfully fired the first grenade created with a 3D printer from a grenade launcher that was produced the same way. This demonstration shows that additive manufacturing (commonly known as 3-D printing) has a potential future in weapon prototype development, which could allow engineers to provide munitions to Soldiers more quickly, the US Army said earlier this month. The printed grenade launcher, named RAMBO (Rapid Additively Manufactured Ballistics

Ordnance), was the culmination of six months of collaborative effort by the US Army Research, Development and Engineering Command (RDECOM), the US Army Manufacturing Technology (ManTech) Program and America Makes, the national accelerator for additive manufacturing and 3-D printing.

Every component in the M203A1 grenade launcher, except springs and fasteners, was produced using additive manufacturing (AM) techniques and processes. The barrel and receiver were fabricated in aluminium using a direct metal laser sintering (DMLS) process. This process uses high-powered precision lasers to heat particles of powder below their melting point, essentially welding the fine metal powder layer by layer until a finished object is formed. Other components, like the trigger and firing pin, were printed in 4340 alloy steel, which matches the material of the traditional production parts. The purpose of this project was to demonstrate the utility of AM for the design and production of armament systems. A 40mm grenade launcher (M203A1) and munitions (M781) were selected as candidate systems. To be able to additively manufacture a one-off working testable prototype of something as complex as an armament system would radically accelerate the speed and efficiency with which modifications and fixes are delivered to the warfighter, the US Army said. Researchers would be able to manufacture multiple variations of a design during a single printing build in a matter of hours or days instead of waiting months for a prototype. Depending on a part's complexity, there can be numerous steps involved before it is ready for use. For instance, in the case of RAMBO, the printed aluminium receiver and barrel required some machining and tumbling. After printing, the components were cut from the build plate, and then support material was removed from the receiver.



The barrel was printed vertically with the rifling. After it was removed from the build plate, two tangs were broken off and the barrel was tumbled in an abrasive rock bath to polish the surface. The receiver required more post-process machining to meet the tighter dimensional requirements. Once post-processing was complete, the barrel and receiver underwent Type III hard-coat anodizing, a coating process that's also used for conventionally manufactured components of the M203A1. Anodizing creates an extremely hard, abrasion-resistant outer layer on the exposed surface of the aluminium. The barrel and receiver took about 70 hours to print and required around five hours of post-process machining. The cost for powdered metals varies but is in the realm of \$100 a pound. This may sound like a lot of time and expensive material costs, but given that the machine prints unmanned and there is no scrap material, the time and cost savings that can be gained through AM are staggering. The tooling and set-up needed to make such intricate parts through conventional methods would take months and tens of thousands of dollars, and would require a machinist who has the esoteric machining expertise to manufacture things like the rifling on the barrel.

Beyond AM fabrication of the weapon system, ManTech also requested that a munition be printed. Two RDECOM research and development centres, the US Army Edgewood Chemical and Biological Centre (ECBC) and the US Army Research Laboratory (ARL), participated in this phase of the project to demonstrate RDECOM's cross-organizational capabilities and teaming. An integrated product team selected the M781 40 mm training round because it is simple and does not involve any energetics—explosives, propellants and pyrotechnics are still awaiting approval for use in 3D printing. The M781 consists of four main parts: the windshield, the projectile body, the cartridge case and a .38-caliber cartridge case. The windshield and cartridge case are traditionally made by injection molding glass-filled nylon. ARL and ECBC used selective laser sintering and other AM processes to print glass-filled nylon cartridge cases and windshields for the rounds. The .38-caliber cartridge case was the only component of the M781 that was not printed. The .38-caliber cartridge case was purchased and pressed into the additively manufactured cartridge case.

Research and development is underway at ARDEC to print energetics and propellants. In current production, the M781 projectile body is made of zinc. Zinc is used because it's easy to mass-produce through die-casting, it's a dense material and it's relatively soft. The hardness of the projectile body is critical, because the rifling of the barrel has to cut into the softer obturating ring of the projectile body. The rifling imparts spin on the round as it travels down the barrel, which improves the round's aerodynamic stability and accuracy once it exits the barrel. Currently, 3D printing of zinc is not feasible within the Army. Part of the beauty of AM is that changes can be made quickly and there is no need for retooling. ARDEC researchers used modeling and simulation throughout the project to verify whether the printed materials would have sufficient structural integrity to function properly. Live-fire testing was used to further validate the designs and fabrication. The printed grenade launcher and printed training rounds were live-fire tested for the first time on Oct 12, 2016, at the Armament Technology Facility at Picatinny Arsenal, New Jersey. Testing included live firing at indoor

ranges and outdoor test facilities. The system was remotely fired for safety reasons, and the tests were filmed on high-speed video. The testing included 15 test shots with no signs of degradation. All the printed rounds were successfully fired, and the printed launcher performed as expected. There was no wear from the barrel, all the systems held together and the rounds met muzzle velocities within 5 percent of a production M781 fired from a production-grade grenade launcher. The variation in velocities were a result of the cartridge case cracking, and the issue was quickly rectified with a slight design change and additional 3-D printing. This demonstrates a major advantage using AM, since the design was modified and quickly fabricated without the need for new tooling and manufacturing modifications that conventional production would require. More in-depth analysis of material properties and certification is underway. The RAMBO system and associated components and rounds are undergoing further testing to evaluate reliability, survivability, failure rates and mechanisms.

## **Vancouver Artillery Association Yearbook Updates**

Check out the latest website updates!

Follow the war diary entries of 100 years ago on our What's New page -

<http://www.vancouvergunners.ca/whats-new>

Nominal Roll Update - General Sir Charles Loewen, a former member of 68 Battery,

<http://www.vancouvergunners.ca/whats-new/nominal-roll-update2581645>

Another former member, WO Ben Van Slyke. <http://www.vancouvergunners.ca/2017.html>

I'm still looking for more stories and pictures! Contact Leon Jensen at [LeonJ1@hotmail.com](mailto:LeonJ1@hotmail.com)

*The Vancouver Artillery Association has been selected as a recipient of a \$75,000.00 grant from the British Columbia | Canada 150: Celebrating B.C. Communities and Their Contributions to Canada fund. See attached Release.*

## **Who Is It**

**Last Week:** This picture was taken at Albert Head in the early 1950s and the gun is a 40mm



Bofors of the 65<sup>th</sup> Light Anti-Aircraft Regiment (the Irish Fusiliers), RCA, which they were from 1946 to 1958, when they reverted to Infantry. They are probably the only RCA unit to wear the caubeen and emerald hackle. The Irish paraded in the Horseshow Building (Stanley Park Armoury) until it burnt down after a St Patrick's Day party in 1960. From there they moved to Shaughnessy Armoury until placed on the Supplementary Order of

Battle in 1964. Officially, they are now part of the BCR. Note the Correctional Sight Mk V (Stiffkey Stick) which enables the gunners to properly 'lead' target aircraft.

**This Week:** This week's quiz, at first glance, appears to be of a non-military nature. However, we can assure you that it does fit within our usual khaki remit (which is sometimes navy or air force blue). As one can see, this is an urban scene, but, judging from the steam shovel just visible by the house on the right, of a vintage well before most of us were even in short pants (save for the editor, who is ageless).



In actual fact, this location is one that is familiar to many who manage to get to the bottom of the newsletter and actually read this quiz (and, I thank all three of you). So, to keep it simple, we'd like to know if you know where this is. We'd also like to know what is going to happen once the steam shovel fires up. Finally, we'd like you to name someone involved in all of this (two names spring to mind, one far out-ranking the other). If you care to guess, send such musings to the editor, [bob.mugford@outlook.com](mailto:bob.mugford@outlook.com), or to the author, John Redmond ([johnd.redmond@telus.net](mailto:johnd.redmond@telus.net)). Keep on digging!

### **From the 'Punitary'**

What is the problem with Apple's new building? They are having trouble installing windows.

### **Murphy's Other Laws**

If anything can't go wrong, it will anyway.

### **Quotable Quotes**

The only sure weapon against bad ideas is better ideas. *Alfred Whitney Griswold*



## Vancouver Artillery Association Release

The Vancouver Artillery Association is pleased to announce that it has been selected as a recipient of a \$75,000.00 grant from the *British Columbia | Canada 150: Celebrating B.C. Communities and Their Contributions to Canada fund*. This funding is intended for the advancement of the Yorke Island Conservancy, a Second World War coastal artillery site off Sayward, British Columbia that was manned by members of the 15th (Vancouver) Coast Brigade, RCA.

The project under this funding will deliver heritage conservation planning, interpretation and rehabilitation for Yorke Island Conservancy. The scope of work includes implementation of heritage conservation measures, encompassing emergency stabilization and improved public access and public safety. The work at Yorke Island is purposefully designed to demonstrate a working model for the collaborative management of heritage assets and cultural landscapes managed by BC Parks throughout the province.

The project has two primary deliverables: first, the implementation of urgently required conservation and interpretation at Yorke Island; and the second, the development of a BC Parks Heritage Legacy Handbook, that can be used at provincial and national level to guide best practices in the management of heritage assets in parks.

*“This project is an important milestone in the preservation of Yorke Island for future generations. The 15th (Vancouver) Coast Brigade RCA was our regiment’s contribution to the Second World War. The defence of Vancouver from a hostile enemy was due to the diligence of the soldiers stationed at the forts at Yorke Island, Stanley Park and Point Grey. Many of those soldiers went on to serve in the Italian and European theatres after the threat to Vancouver diminished. Many did not return.”* – Lieutenant Colonel Brent Purcell, Commanding Officer, 15th Field Artillery Regiment RCA

*“The 15th Field Artillery Regimental Society is honoured to be a part of the process of not only supporting the Regiment as it connects with its history and with the communities that it served in; but also working with BC Parks in the development of a Heritage Legacy Handbook for use throughout the province of British Columbia. A true legacy!”* – Al DeGenova, Honorary Lieutenant Colonel, 15th Field Artillery Regiment RCA

The Vancouver Artillery Association is looking forward to working with BC Parks, BC Heritage Branch and other local community groups in moving the project forward. Updates will be provided as the project develops over the upcoming year. Additional background information can be obtained by viewing our website at [www.vancouvergunners.ca](http://www.vancouvergunners.ca) or contacting the Vancouver Artillery Association President, Leon Jensen at [leonjl@hotmail.com](mailto:leonjl@hotmail.com).

Would you like to be part of the team? Additional donations to the Yorke Island Fund can be made through our website at <http://www.vancouvergunners.ca/quartermaster-stores.html>.

# Battle of the Atlantic Dinner



The Naval Officers' Association of British Columbia  
Founded 1919

*The President and Directors of  
The Naval Officers' Association of  
British Columbia*

*request the pleasure of your company and guest(s)  
at dinner.*

*We shall commemorate the 72nd anniversary of*

***The Battle of the Atlantic***

*on*

*Saturday, May 6<sup>th</sup> 2017*

*1830 for 1930*

***HMCS DISCOVERY***

*Commodore Jeffery Zwick, OMM, CD*

*Commander Canadian Fleet Pacific*

*Guest of Honour*

*The Honourable Judith Guichon, OBC  
Lieutenant Governor of British Columbia*

*Cost: \$85.00 per person  
Mess Dress or Black Tie  
(Ladies Equivalent)  
Miniatures*

*RSVP before Tuesday, April 25<sup>th</sup> 2017*

*by using the attached reservation form.*

*We're Going...*

**Are YOU?**



**VIMY**  
1917 - 2017

**Event:** The 2017 British Columbia Army Gala  
**Date:** Saturday, May 6th, 2017  
**Location:** The Seaforth Highlanders of Canada Armoury  
**Dress:** Mess Kit or Black Tie, Evening Gown  
**Tickets:** Website/Facebook details here

For more information, go to the Gala website: -  
<http://bcarmygala.ca/#about-marquee>





The Commanding Officer  
and  
all ranks of

The 15<sup>th</sup> Field Artillery Regiment,  
The Royal Regiment of Canadian Artillery

request the pleasure of your company at the

Change of Command ceremony

between

Lieutenant-Colonel Brent Purcell, CD  
and  
Lieutenant-Colonel Pierre Lajoie, CD

To be held on  
13 May 2017, at 13:00 hours  
At

Gun #1 Museum of Anthropology UBC 4<sup>th</sup> Avenue, Vancouver BC.

Guests are asked to be seated by 12:30 hours

(In the event of inclement weather, the parade will be held at Bessborough Armoury,  
2025 West 11<sup>th</sup> Avenue, Vancouver, B.C .V6J 2C7).

Reception to follow in the 15<sup>th</sup> Fd Regt, RCA Officers' Mess  
in Bessborough Armoury.

Dress:  
CF Mbrs- DEU No.1A (Medals)  
Civilian- Business attire

RSVP  
Richard.Jones6@forces.gc.ca