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Issue 1 – Winter 2020

> ***“ We are the only branch that impacts every mission in every element, every day. ”***

On behalf of the Royal Canadian Logistics Service and the service Home Station, the Canadian Forces Logistics Training Centre I would like to welcome you to the first edition of the newly formed logistics journal.

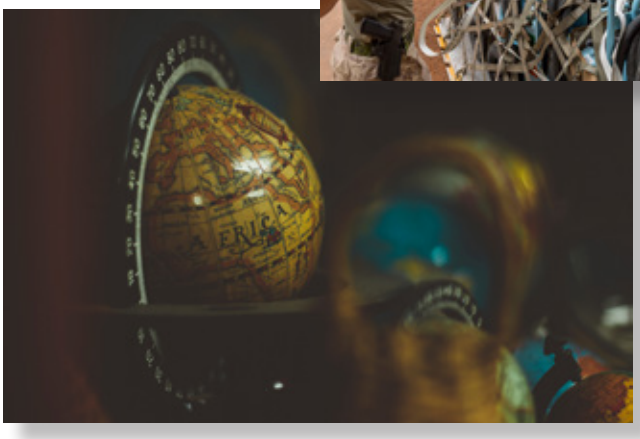
Our intent on forming a journal is to increase the professionalization of the service, share ideas, learn best practices, and disseminate lessons learned—all with the idea of improving our sustainment delivery thus creating confidence in our comrades in arms.

As logisticians, we have a pivotal role to play in warfighting and across the spectrum of operations. No mission goes out the door without some form of logistics in support. We support all missions, 24/7, all around the globe. We are the only branch that impacts every mission in every element, every day.

Battles and wars have been lost because of logistics. LTG Fredrick Franks during Desert Storm stated, “Forget logistics, you lose.” Should we, as logisticians, forgot or fail to understand and execute a wide variety of logistical skills, we will cause our military to fail. Militaries have one task—to win. Fail to win and you are dead, captured, or demoralized. This doesn’t change between various missions. No one wins without logistics. Whether this is winning against an armed foe or natural disaster, logisticians need to be flexible in mind and action. Lessons learned in this journal will help us to think critically, problem solve, lead, and take appropriate action in a flexible, adaptable manner.

We have a great edition. Our focus this issue is on Africa. Interspersed with our Africa themed articles you will find other ones on our logistics functions. We have intentionally sought and will continue to seek articles from allies, civilian industry, NGOs, and our own military. There is something for everyone from Privates to Generals. There is much to learn, so let’s get at it!

A LOOK INSIDE



FEATURE ARTICLE

CRITICAL THINKING

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INTERVIEW

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Leadership in Sustainment

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Praefectus Annonae

Definitions

1. A Leader in sustainment.
2. One who stands in front and supports.
3. An organizer of provisions.
4. A permanent, distinguished, superior, and distinct support leader.
5. ***The name of the Royal Canadian Logistics Service journal.***

During the development of this journal, members of the Canadian Forces Logistics Training Center were invited to propose names for it. Submissions included French, English, Esperanto, and Latin names. Submissions often related to memorabilia, symbolism, history, and cap badges.

These elements were taken into account with an emphasis on both sustainment and leadership. Dean of Humanities and Latin professor Dr. Hugh Elton of Trent University was consulted in order to discuss the various submissions. From this process, Praefectus Annonae was selected as the term that captures the spirit of both sustainment and leadership. We thank Dr. Elton for his expert advice and encouragement as well as all those who submitted suggestions.

Design and Layout:

MWO Roger Gonsalves
31 Service Battalion – Bellum est Cras

A U.S. Army CH-47 Chinook helicopter transports vehicles to a floating causeway on the James River as part of a sling-load operations exercise at Joint Base Langley-Eustis, Va., Feb. 15, 2017. The field training exercise involved Soldiers from the 331st Transportation Company, 11th Battalion, 7th Transportation Brigade (Expeditionary) working with land, sea and air components to prepare for real-world scenarios such as humanitarian relief or global disasters. (U.S. Air Force photo by Airman 1st Class Kaylee Dubois)

African Regional Economic Communities and Ports

- Southern African Development Community (SADC)
- Arab Maghreb Union (AMU)
- Economic Community of Central African States (ECCAS)
- Economic Community of West African States (ECOWAS)
- Intergovernmental Authority on Development (IGAD)
- Major Port (Draught Over 10 M)
- Minor Port (Draught 8–10 M)

Sustaining logistics support across the African Continent. How would you solve this problem?

Afloat Depots for the African Standby Force

by Lieutenant-Colonel Rick Thompson

Introduction

To address the need for increased stability forces, the African Union (AU) has developed the concept of an African Standby Force (ASF) to leverage the military capabilities of the regional organizations on the continent. While sustaining this combined and joint force will be key to ensuring its operational success, sustainment is not currently an AU strength. For example, the operational effectiveness of the current African Mission in Sudan (AMIS) has suffered from numerous and widely reported deficiencies in sustainment.[1] The AU aims to secure the financial assistance of outside partners for establishing a sustainment capability, and the G8 generally has been sympathetic to this initiative, because it would reduce the demand for its military forces to become involved in conflict resolution in Africa. The question is how can the combined and joint ASF be best sustained? This article proposes that a number of Afloat Depots are a better way to support the ASF than the currently planned system of regional land-based depots.

The African Standby Force

The ASF is an initiative inherited from the Organization of African Unity (OAU) to create an African capability to generate stability forces. The AU plan is to create an ASF of some five light infantry brigades by leveraging the organizational capabilities of the five main Regional Economic Communities (RECs) in the AU.[2] Generally, each region is to establish a permanent planning element, nominate an existing brigade headquarters from one of the nations as the foundation of the brigade, and then have various nations contribute the component units of the brigade according to their capacity. In effect, this structural concept is similar to the NATO notion of a 'framework nation,' in which certain countries provide the critical mass of a capability, which is then augmented by other nations. Deployment of the brigades would be accomplished through a combination of indigenous African lift and assistance provided by external partners (i.e. NATO/EU/G8). Four of the five regions have taken concrete steps to establish a capability in the near future.

The development of the ASF is not proceeding at a uniform pace, but, rather, it is progressing as the situation within each of the REC's permits. Inter – and intra-state conflicts involving the states of each region certainly will complicate any basing considera-tions. Progress in establishing the ASF brigades is most advanced in the Economic Community of Western African States (ECOWAS), where Nigeria provides the framework nation. The Intergovernmental Authority on Development (IGAD), (East Africa), has also established a capability, based upon Ethiopia being the framework nation, with Kenya playing a strong supporting role. Within the South African Development Community (SADC), less progress has been made, perhaps due to the relative stability of the region, but South Africa is clearly the framework nation. The Economic Community of Central African States (ECCAS) has established a structure for a regional headquarters, and Table of Organization and Equipment (TOE) for a 2177-person brigade, as well as an action plan for implementation.[3] Given the security situation and the relative political and military weakness of the member states, there is no obvious framework nation, and it seems reasonable to expect that anything more than token progress may be some years away. Finally, in North Africa, the Arab Maghreb Union (AMU) is the designated REC, but the AMU has been effectively moribund since shortly after its launch in 1989, and there seems to be little interest amongst the member states in reviving the organization. Thus, without significant political progress, the formation of an ASF Standby Brigade in North Africa appears to be on hold.

Notwithstanding the uneven progress on the ground, the overall concept is that each of the regional ASF brigades is expected to generate forces for five different scenarios:[4] The AU assessment is that, although resource constraints

Map by Chris Johnson

are a key factor, the further development of the ASF should concentrate upon Scenario 5.[5] The AU has adopted a phased approach to developing this capability, and expects to attain it by 2010.[6] From a sustainment perspective, the timelines for developing the force are less important than the level of ambition of the readiness goals. The 30-day response time can be considered a high-readiness posture, and readiness is expensive. To meet this timeline, the AU will need to consider how to expedite theatre activation and to ensure a timely flow of sustainment to deploying forces. It will require sustainment stocks that are well-maintained and prepared for transport, and a theatre activation capability with a response time of just a few days.

Scenario	Description	Size of force to deploy	Time needed
1	AU/Regional Military advice to a Political mission.	Staff Officers	30 days
2	AU/Regional observer mission co-deployed with UN mission	Bde HQ (-)	30 days
3	Stand alone AU/Regional observer mission	Bde HQ (-)	30 days
4	AU/Regional peacekeeping force (PKF) for Chapter VI and preventive deployment missions.	Bde task	30 days
5	AU PKF for complex multi-dimensional PK mission with low level spoilers (a feature of many current conflicts).	Bde task	30 days (military component)

The ASF concept of logistics support for this relatively ambitious military effort is not yet well developed. The notion is that forces deployed for Scenarios 1 to 3 will self-sustain for 30 days, while the brigades deploying for Scenarios 4 and 5 will have 90 days of self-sustainment. However, after 30 days of a mission, the REC will either assume responsibility for sustainment, or will reimburse the Troop Contributing Nations for doing so.[7] The premise would appear to be that nations are responsible for the first 30 days of sustainment while the succeeding 60 days (less purely national items) would be expected to be supplied largely from the regional depots.The notion of reimbursing nations rather than providing the capacity for sustainment likely would lead to a very uneven sustainment posture across the force, as not all nations possess the same capacity. Such an uneven sustainment posture could place a brake upon operational effectiveness. Another difficulty associated with this premise is that the emphasis is upon 'flowing in' the 30 days of sustainment materiel, along with the deploying forces in the initial deployment phase, thereby creating a demand for precious airlift that is likely to be in limited supply from foreign partners.

The current AU plan is to obtain external assistance to establish and stock a Central Military Logistics Depot, as well as a depot in each region.[8] No doubt, there is some notion of a maintenance capability at these depots, so that equipment and materiel held at them can be maintained in a state of readiness.The two-fold aim of such a logistics support system would be to support rapid and effective deployment, and mission sustainability.[9] For land-based depots to support rapid deployability and effective sustainment, they will need to be situated close to air and sea ports so that they can be quickly out-loaded and easily replenished. Essentially, the AU intends to negotiate the locations of the six depots with prospective host nations, and negotiate with external partners to help build, fill, and maintain them. It is somewhat likely that such a construction program of permanent infrastructure will be viewed by local politicians as a great patronage opportunity and that the resulting depots will be sub-optimal from a military efficiency point of view. The numerous Canadian and American examples of the distorting influence of 'pork-barrel politics' are not encouraging, when one considers how this process might unfold in far less transparent African polities. Moreover, the degree of political and social instability present in African nations could result in the depots being inaccessible or physically threatened. While this type of risk exists for all elements of a Standby Brigade, it is far graver with respect to sustainment stocks, because these are relatively scarce. There may be plenty of light infantry battalions but relatively little in the way of sustainment capability in the armed forces of most African nations.

G8 Support

Given that most AU member states face significant fiscal challenges that are unlikely to be resolved before 2010, external assistance for logistic support of the ASF military logistics depots is crucial. The G8 group of nations has

expressed continued support for the idea of building the capacity of the ASF.[10] The implicit idea in this partnership is that the AU will develop 'African solutions for Africa,' and the Western countries will 'write the cheques' to cover the development costs as a means of avoiding direct Western military involvement. However, there is an understandable reticence amongst donor nations to simply 'writing a blank cheque' to the AU.[11] In fact, the willingness of G8 nations to contribute financially to supporting the ASF may be less than firm if they cannot convince their publics that the funds have been well spent, and have resulted in some measurable improvements in ASF capability. Therefore, logistics support structures that can demonstrate a degree of transparency and accountability ought to be attractive to Western governments.

Geographical and Technical Context

An obvious question is whether the geographical and technical contexts of conducting operations in Africa are consistent with the Afloat Depot concept. Although 40 of the continent's 55 nations have coastlines and are accessible by sea, the transportation infrastructure in Sub-Saharan Africa is a potential limiting factor with respect to operational planning considerations for any military force.[12] The continent is under-developed in terms of transportation infrastructure, even when compared to other developing regions.[13] There are, for instance, no transcontinental road or rail structures that would facilitate force deployment and sustainment. Although southern Africa has the best-developed road and rail systems, other regions tend to have transportation infrastructure that radiates from ports to specific hinterlands, but which rarely connect.[14] Even though a limited rail network exists in East Africa, it is a different gauge than that used in the SADC.[15] This transportation infrastructure situation suggests that the movement of goods by sea around the littoral may well be more practicable than trying to move them overland.

Air transport is an obvious alternative, but the infrastructure to support it is also highly limited in most African countries. Air transport also generally has a limited capacity compared with surface movement, and it is much more expensive. For these reasons, air transport is usually considered a premium form of transportation, compared to land and sea shipments. Logisticians will normally restrict its use to moving high-priority items, while attempting to move the bulk of sustainment items by surface transport.

Seaports in Africa also face certain challenges. Like the rest of the transportation infrastructure, they suffer from under-investment and lack of modern capability.[16] The important question is whether sufficient African ports with the capacity to handle Afloat Depot vessels exist. The majority of sub-Saharan ports can accommodate vessels with a draft (the depth to which a vessel is immersed when fully loaded) of 10 metres or less. This capability generally corresponds to the draft required for first and second generation container ships, which, in turn, indicates a capacity of somewhere between 500 and 2500 containers. Furthermore, first and second generation container ships represent approximately 30 to 40 percent of the world's container vessels.[17] Consequently, there is a relatively large pool of suitable vessels available from which time-chartered Afloat Depot vessels might be sourced. Although the detailed logistical study by African operational planners has not yet been done to determine just how many containers of sustainment materiel a Light Infantry Brigade might require, a possible point of comparison resides in the 1982 deployment of the UK Task Force to recapture the Falkland Islands. That light infantry brigade task force deployed with a war maintenance reserve (30 days stocks) totalling some 9000 tonnes.[18] Although a number of differences exist between that UK Task Force and the proposed ASF brigades, including the level of intensity of combat anticipated, a simple doubling of the UK stocks (to represent 60 days) would result in a requirement of 18,000 tonnes. Another rough order of magnitude calculation, based upon the fact that a typical 20 foot shipping container (TEU) holds 17 tonnes of materiel, results in an approximate 1058 TEU requirement for an ASF Brigade's sixty days of sustainment stocks. This number of containers fits well within a typical ship size that would be appropriate to the majority of African commercial ports.


http://web.worldbank.org

The road transportation infrastructure in many parts of Africa is very limited. It also radiates from ports rather than being transcontinental in nature.

What Afloat Depots Are Not

The proposed Afloat Depots for the ASF brigades should be distinguished from pre-positioning and sea basing concepts, both of which are promoted or practised to the greatest extent by the United States. The Afloat Depot concept could assist in speeding deployment by reducing the demand on premium transport during the deployment phase. If a theatre activation package was embarked upon, it would also speed the deployment of the main force by effectively pre-positioning the materiel required, and potentially providing life support for the theatre activation troops. In these ways, it is similar to the afloat pre-positioning concept employed by the Americans. However, the American force structure calls for massive amounts of stocks, and they operate a fleet of large, deep-draught, purpose-built vessels. The Afloat Depot concept is simply not as ambitious as American afloat pre-positioning schemes.

Another key feature of the Afloat Depots is that they reduce the political and security risks associated with land-based depots, and, in that sense, they share a feature of the American sea-basing concept. However, the sea-basing concept envisions a constellation of sea-based platforms that enable the 'marriage' of troops with their pre-positioned equipment at sea. It also envisions a selective off-load capability for these platforms, to allow task tailoring of forces before they go ashore, and the ability to sustain that force without the need of establishing traditional beachheads and logistic stockpiles ashore. Finally, the sea-basing concept envisions the recovery and reconstitution of the Joint Task Force at sea.[19] The Afloat Depots, in contrast, will require a port in or adjacent to and connected to the theatre of operations. However, given the AU decision to postpone consideration of a forced entry capability until sometime in the future, sea-basing would appear to be too much solution for the AU problem.

The Large Medium-Speed Roll-On/Roll-Off (LMSR) vessels used by the United States Army Afloat Propositioning Program are too large for many African ports. They are also too much vessel for the requirement.

What They Are: The Afloat Depot Concept

The ASF could be supported by a central land-based depot and a number of Afloat Logistics Depots instead of the proposed regional land-based depots. A central, land-based depot would be the main point of stock replenishment and reconditioning for the afloat depots. The Afloat Depots would consist of chartered commercial cargo vessels suitable for operations in African ports, and would contain the supplies necessary to support a Brigade for 60 days, thus achieving the desired 90 days sufficiency after the initial 30 day period, and they could possibly embark upon a Theatre Activation Package.[20] Afloat Depots offer a number of operational advantages over land-based depots, and they may provide external partners with a transparent and accountable instrument for increasing the capacity of the ASF.

One of the key operational advantages provided by Afloat Depots is flexibility. They share one of the characteristics of naval forces, in that they have the ability to be moved to where they are needed. They can be positioned close to a crisis area unobtrusively and before deployment of the ground force is authorized. By not having the depot located on the ground in any particular country, the afloat concept also avoids the possibility that the mobilization of the force is restricted by the politics or political sensitivities of a host nation. It is precisely this type of consideration that has been a factor in the United States decision to establish its Afloat Pre-positioning forces.[21] Thus, as a crisis develops and the REC considers a possible intervention, the planning element could direct the Afloat Depot to an offshore area near the crisis zone. Then, once a decision had been made to intervene, the Afloat Depot would quickly arrive, enabling rapid deployment of the force.

Afloat Depots also enable rapid deployment by reducing the requirement for securing lift. For a land-based depot, the ASF Brigade (or mission authority) would need to negotiate a source of transport, using either integral or partner-supplied funding for charter or partner military transport assets. Following such agreement, additional time would be required to transit to the port serving the depot, to out-load the depot stocks, and to transit to the operational area. This process is likely to be measured in weeks, and although some of it could be concurrent activity, it represents considerable staff effort, and it introduces an unnecessary element of uncertainty into the operational planning process. The faster delivery of sustainment stocks means the faster achievement of sustainable combat power.[22]

A rapid build-up of combat power would also accrue from embarking a Theatre Activation Package on the Afloat Depots, which would greatly facilitate the rapid deployment of an ASF brigade. Such a package, consisting of vehicles, communications, and life support, could be in port or just offshore, waiting for the brigade advance/theatre activation party personnel to fly in and link up with it. This capability would reduce the demand for scarce and expensive airlift in the early stages of a deployment. Depending upon the type and size of vessel, it might be possible for the ship itself to provide a limited degree of life support for a small advance element through the use of modular container accommodation, either on-deck or downloaded to the pier. Alternatively, the Afloat Depot vessels could deliver the Theatre Activation Package, and then withdraw to the relative safety of the sea, in order to protect the operational stocks.

Once the stocks on the Afloat Depots had been put ashore, the vessels could be used for supplementary or alternative purposes. For instance, if the stocks became seriously depleted, the remainder could be ground-loaded, and the vessels could be used to conduct replenishment operations between the central depot and the deployed force. They could also be useful in facilitating equipment rotations of the various national contingents. Finally, in certain scenarios, they might even be employed as a limited form of intra-theatre transport under the control of the operational commander. The notion of a time charter permits all of these activities that otherwise would have to be contracted or negotiated separately.

Airlift is suitable for initial troop deployment, but an expensive way to do sustainment.

Afloat Depots offer a force protection advantage over land-based depots in an African context. Although land-based depots ostensibly can be guarded by host nation security forces, there is a reasonable likelihood that the host nation will itself be embroiled in conflict.[23] In contrast, the piracy risk to the Afloat Depots has only been assessed as significant off the Somali and Nigerian coasts.[24] There is no doubt that any depot, land-based or afloat, can be attacked by some means by a determined enemy, but the essential difference is that the Afloat Depots' mobility allows them to move out of harm's way. Even supposing that the Afloat Depots will spend a significant amount of time in the ports of member states, they could be positioned in only those states with a relatively more stable security situation. There might even be some collateral training opportunities accrued with member states as a result. In fact, the inherent mobility also means that the stocks could be positioned to support training activities in different nations, rather than being tied to one host nation. At a more mundane level, the physical security of the assets against pilferage is inherently higher for items on a ship at sea than for a land-based depot. An operational commander might wish to ground load only a portion of the operational stocks, keeping the rest nearby in the littoral. Additionally, the Afloat Depots could be provided with naval escort during portions of an operation, if warranted by a given situation.

Chartered civilian vessels, rather than naval assets, are considered preferable, because the command and control, financial, and crewing challenges of naval vessels outweigh the marginal benefits to security. Ownership and the command and control of Afloat Depots do not present a significantly greater challenge than is the case for their

land-based counterparts. In fact, since the warehousing of materiel is afloat, the small planning elements of the ASF Brigades need only direct the movement of the ship, rather than spending staff effort developing out-load plans for the land-based depots, and contracting for lift in time of crisis. Presumably, African control of the operational stocks would, from the AU perspective, be desirable. It is conceivable that the G8 would be able to assist in the crafting of, and provide financing for, time-charter contracts for vessels that would give the RECs operational control. In terms of furthering the 'African face' of the capability, it ought not to be difficult to charter African flagged vessels for the requirement, or even to require that vessels be re-flagged as part of the contract.[25]

Relative Costs

The cost of maintaining an Afloat Depot capability needs to be assessed, not only against its operational advantages, but against the cost of land-based alternatives. Time-chartered vessels offer advantages over owned vessels because they avoid the question of who owns the vessel, and they place the burdens of crewing and maintenance on the ship provider. Renewal of the asset can be accomplished with no capital construction. The limiting of the time charter to a reasonable period, say three years, would offer the AU an opportunity to adjust the capacity of the vessels as needs dictate. Although a chartered vessel does generate chartering, operations, and maintenance costs, these costs need to be compared against the capital construction, ownership issues, and the operations and maintenance (O & M) costs of land-based facilities. For instance, storage afloat for relatively long periods of time requires maintenance conditioning, particularly for vehicles, to guard against the effects of high humidity and salt. Such preservation levels are routinely maintained on US pre-positioning ships, and there is undoubtedly an associated cost involved. However, land-based depots close to the coast in littoral states would also need a similar level of conditioning or some degree of climate-controlled storage.[26] Trying to establish a precise figure for charter costs is difficult, because it varies by type of vessel, and it is highly sensitive to prevailing market conditions. However, a very preliminary and rough order of magnitude (ROM) check indicates that a vessel of the necessary size might be chartered for approximately USD 6 million to 10 million per year.[27]

To estimate the relative costs of a land-based depot, it is necessary to determine the size of the facility required. A land-based depot would likely not store everything in containers, but a ROM estimate of the space required might be based upon the 'double- stacking' of 20-foot sea containers (TEUs). A 30 percent 'broken stow' factor is assessed to allow for office space, lanes, and consolidation areas. Based upon the 1058 TEUs previously estimated as the requirement for 60 days of sustainment material, this would work out to requirement for a warehouse of some 110,000 square feet of storage space. Land-based depots are trickier to cost out because lease rates, particularly in Africa, are hard to determine, but at current Toronto prices (approximately $5.50/sq. ft.), the rough cost would be approximately USD 6 million per year.[28]

In terms of 'up-front' dollar costs, land-based depots would appear to have a modest cost advantage, when compared to the afloat alternative. Certainly, a great amount of more detailed analysis would need to be done to establish true costs, and the final amount undoubtedly would need to take into account a great many variables. However, this initial ROM estimation confirms what appears intuitively obvious; a premium is to be paid for afloat storage, versus a land-based option.[29] Nonetheless, while the AU would benefit from the greater operational flexibility afforded by Afloat Depots, the G8 countries may find the greater transparency and accountability offered by the time-charter contract and the greater security of the stores on the vessels more palatable.

Canadian Nexus

Canada will be expected to assist in the development of the ASF capability, because it is a G8 member nation. African countries will look to Canada to provide resources and/or expertise, and the other G8 nations will expect that Canada do its part in shouldering the burden. Canada could choose to offer assistance by promoting the development of the Afloat Depot concept. Although the CF has very little operational experience with Afloat Depots, it does have considerable expertise with expeditionary logistics, peace support operations, and the chartering of commercial vessels. For instance, Canada could partner with a particular ASF 'framework nation,' or REC, to assist with developing the specific logistic requirements for a particular Standby Brigade, providing expertise with respect to Theatre Activation capabilities and procedures, and assisting with the development of a contracting methodology and control mechanisms for the contracted vessels. Depending upon the level of ambition, Canada might also be able to contribute to funding the acquisition of sustainment materiel, or to the vessel charter contract.

Conclusion

There will continue to be numerous challenges to peace and security on the African continent in the coming decades. The AU desire is to develop a military intervention force that is capable of responding to these challenges, so that Africans are able to resolve African problems. The West, generally, and the G8 in particular, support such an initiative, and are willing to provide the financing and expertise to establish the enabling capabilities. Key amongst those capabilities is the sustainment of the ASF, and the Afloat Depot concept offers a practical solution to a practical problem.

A number of Afloat Depots are a better way to support the ASF than the currently planned system of land-based depots. Although they are probably more expensive to operate than land-based depots, the Afloat Depots offer a combination of operational advantages and relative transparency, accountability, and reduced risk, which ought to make them attractive to both the AU and those G8 nations providing financial assistance. For these reasons, Afloat Depots deserve further consideration in solving the AU's complicated logistics challenges with respect to supporting operations. By doing so, the AU forces will become a more credible and effective instrument for stability and peace support operations on the African continent.

Lieutenant-Colonel Thompson is the logistics/movements officer serving in the Directorate of Operational Support Specialists on the Strategic Support Staff. A graduate of Command and Staff College Course 30, he also obtained a Master of Defence Studies degree in 2003.

Notes

1. Human Rights Watch, *AMIS II-E Performance Assessment,* at <http://hrw. org/repo rts/2006/sudan0106/7.htm>.
2. African Chiefs of Defense Staff. *Policy Framework For The Establishment Of The African Standby Force And The Military Staff Committee (Part I)* (Addis Ababa: adopted by the Third Meeting of 15-16 May 2003), p. 2, at <http://www.africa-union.org/root/au/AUC/Departments/PSC/ Asf/ doc/ POLICY%20FRAMEWORK%20MAIN%20 DOCUMENT%20 (PART%20I).doc>.
3. African Union. Experts' Meeting on the Relationship between the AU and the Regional Mechanisms for Conflict Prevention, Management and Resolution. *Roadmap for the Operationalization of the African Standby Force,* (Addis Ababa, 22-32 March 2005), p. 4, at <http://www.africa-union.org/ root/ au/AUC/Departments/PSC/Asf/doc/ASF%20roadmap.doc>.
4. *Policy Framework for the Establishment of the African Standby Force and the Military Staff Committee (Part I),* pp 3-7. A sixth scenario, calling for rapid intervention to prevent genocide, was also elaborated upon, but was deemed to require a capable lead nation with standing high-readiness forces capable of opposed entry. "As a long term goal, the ASF should be capable of conducting such interventions without reliance on lead nations. This would require a standing AU multinational military HQ at above brigade level, plus the capability to assemble and deploy rapidly well prepared and capable military contingents."
5. *Ibid.,* p. 7.
6. African Union. *A Vision for the African Stand-by Force? A Draft Document for Discussion. Second Draft for Bereng Mtimkulu.* (Addis Ababa, 23 September 2005), p. 3, at <http://www.africaunion.org/root/au/ AUC/Departments/ PSC/Asf/doc/ASF%20 visionSecond%20 Draft%20Vision.doc>. Although Phase One was to have occurred by 30 June 2005, it was subsequently delayed until 2006.
7. Roadmap for the Operationalization of the African Standby Force, p. 10.
8. *Ibid.,* p. 23.
9. *Ibid.,* p. 32.
10. St. Petersburg G8 Summit Documents, "Update on Africa," at <http:// en.g8russia.ru/docs/13.html.> "We have increased our support for African efforts to build a peaceful and stable Africa, including support for setting up the African Standby Force and technical, logistical and financial assistance on policy development to strengthen the overall capacity of African organizations to deal with conflicts on the continent."
11. African Union. *Policy Framework for the Establishment of the African Standby Force and the Military Staff Committee (Part II – Annexes)* B-7. (Addis Ababa, 16 May 2003), at <http://www.africa-union.org/root/ au/AUC/Departments/ PSC/Asf/doc/POLICY%20FRAMEWORK%20 FINAL%20 ANNEXES%20(PART%20II).doc>. "While there is clear support for African goals, the international community must have confidence that support provided is used in the most effective and efficient manner."
12. University of Pennsylvania, at <http://www.africa.upenn.edu/Home_ Page/Country.html>.
13. Andrea Goldstein and Celine Kauffman; "Is More Money Enough to Fix Africa's Transport Infrastructure?" in *Policy Insights,* Number 21, (May 2006), at <www.oecd.org/dev/insights>.
    Dr. Andrew Shaw; *"The influence of changing patterns of trade and shipping in ports in Sub-Saharan Africa,"* The Development Bank of Southern Africa, 4th Intermodal Africa Conference, (Swakopmund Namibia, February 2006), at <http://tem.msomail.co.uk/assets/ AndrewShaw.pdf# search=%22African%20Port%20Data%2C%20Shaw%22>.
14. *Ibid.*
15. John Mbwana, "Transport Infrastructure in sub-Saharan Africa," in Africa Notes (November 1997), at <http://www.einaudi.cornell.edu/ africa/outreach/pdf/Transport_infrastrucuture.pdf#search=%22 Transport%20Infrastructure%20 in%20subSaharan%20 Africa%2C%20 Mbwana%22>.
16. Goldstein and Kauffman, pp. 14-18.
17. Shaw, p. 15.
18. Major General Julian Thompson; *The Lifeblood of War: Logistics, in Armed Conflict* (London: Brassey's (UK), 1991), p. 252.
19. Art Corbett, Vince Goulding, and Paul Nagy, *"Sea Basing: What's New?" in United States Naval Institute. Proceedings.* Vol. 128, Issue 11, (Annapolis, MD: November 2002), p. 34
20. African Union, *Roadmap for the Operationalization of the African Standby Force,* p. 10.
21. William G.T. Tuttle Jr., *Defense Logistics for the 21st Century* (Annapolis, MD: Naval Institute Press, 2005), pp. 92-93.
22. *Ibid.,* p. 94.
23. For instance, a September 2006 survey of Travel Advisories on the Foreign Affairs and International Trade Canada (DFAIT) website for the member states of ECOWAS revealed that seven of the 15 states suffered from some form of civil unrest.
24. International Chamber of Commerce, "Live Piracy Map," at <http:// www.icc-ccs.org/extra/display.php>.
25. PBS Frontline World, "Ruling the Lawless Sea – Hiding behind the Flag," at http://www.pbs.org/frontlineworld/stories/spain/liberia.html. Approximately a third of the world's merchant fleet flies the Liberian flag.
26. ECOWAS, for instance is examining Freetown, Sierra Leone, as a depot location.
27. Barry Rogliano-Salles, *The Containership Market in 2005,* at <http://www. informare.it/news/forum/2006/brs/container-auk.asp>.
28. Maura Webber Sadovi, *A Robust Canadian Economy Fuels Toronto's Commercial Space,* at <http://www.realestatejournal.com/columnists_ com/ blueprint/20060518-blueprint.html>. Figures converted to USD using exchange rates as of 26 September 2006.
29. Joseph E. Diana; "Improving Bare Base Agile Combat Support," in *Air Force Journal of Logistics,* Vol. 28, Issue 2, (Gunter AFS, Summer 2004), p. 16. A USAF Air Force Logistics Management Agency study into pre-positioning bare base assets reached most of the same conclusions.

Analysis: Food Tech Should Not Look At Food, But At Their Logistics To Solve Last-Mile

By Atif Rafiq

Has anyone heard about the notion that food delivery is less about food and more about logistics?

The foodtech scene is heating up as more and more players are jumping into the last mile of the food delivery. A scene that was once limited to just those cafeteria delivery boys with just a phone call away, is now filled with incumbents tapping on the complex food supply chainas they jostle for a larger slice of United Arab Emirates (UAE) food tech pie and in the process conquer the greater Gulf Cooperation Council (GCC) market.

Major Food tech players like Deliveroo, Zomato, Talabat, UberEats choose UAE as a stepping stone to test the broader market of GCC. Food delivery, in particular, choose UAE as their initial start where they set up initial operations, test the market and later expand into other countries like Saudi Arabia, Turkey, Bahrain, Oman, Egypt etc. As this space is fast becoming saturated, competition is intensifying. More recently, Careem which bought over RoundMenu, a restaurant listing platform, for an undisclosed amount to test its food delivery service, Careem Now. With RoundMenu presence in 18 cities across 9 Arab countries combined with Careem's huge network of 14 countries across Arab world, its hard to know who will come out as a winner in the last-mile in this hugely crowded market.

"Innovation is a key theme as foodtech players continue to evolve and differentiate themselves, whether be it ordering via Tweet or via a virtual assist, in some cases order with a smartwatch, a smart TV, from your car or just order with your eyes; food tech players embrace innovation to stay ahead of the curve and maintain their market-leading positions.

But the red on the foodtech bottom line is the final leg delivery on its last mile to its customer. Ask any category of foodtech player, their biggest concerns is to turn that red into black. The sliding delivery fee is not able to sustain the delivery network of drivers and to reach a critical mass, you need to increase the demand on the network and balance that with the supply of drivers.

Photo by Robert Anasch on Unsplash

I am betting my money on ride-hailing category, says Atif Rafiq, Founder of Qafila a first mile expert, who believes that food delivery has less to do with the actual food and more about logistics and supply chain ecosystem. This naturally gives an edge to 'superapp' aspirants like Uber, Careem, & Mirsool who started out as ride-hailing or errand run services but have since tapped on their logistics expertise to expand into food delivery, effectively edging out dedicated foodtech startups with only restaurant listings and delivery to offer.

As mentioned, food delivery is less about food and more about logistics, and these transportation networks own the logistics market. These incumbents save a significant amount of costs because it utilizes existing network of drivers to do pickups and delivery with logistics concepts like batch ordering for customers in the same line of journey, utilizing dead runs for the drivers to leverage any vacant cars as delivery vehicles, using their tracking information to evaluate which are closest to a given pick-up point. Given the short distances from point to point, they lower their cost by providing minimal diversion to the driver to drop off another order. Hence reducing concerns for the consumer about long delivery runs and food spoilage which are minimal.

At the end they will be able to squeeze out other players through their last-mile delivery networks, whether by more efficient management or even eating the costs of driver/ delivery subsidies — often times offset through their other business lines — to ensure market share.

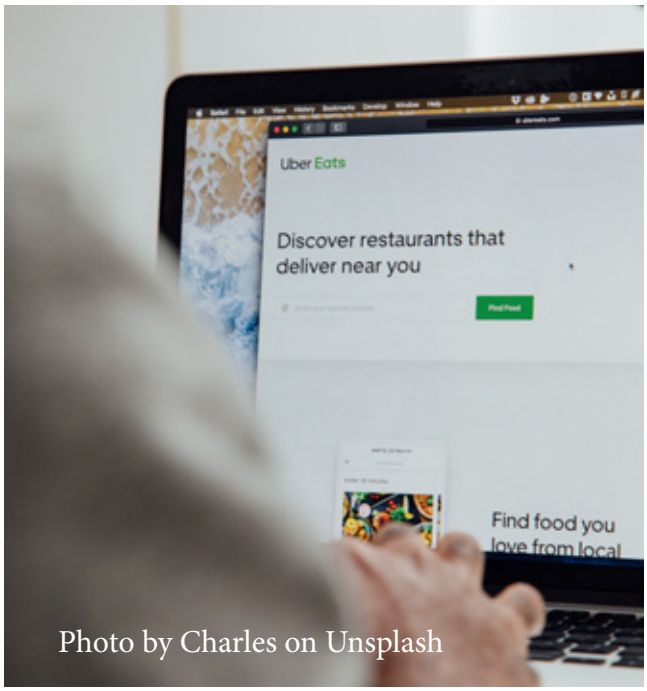

Photo by Charles on Unsplash

Marines with the Marine Corps Recruit Depot Parris Island Band conduct basic warrior training aboard the depot Jan. 16, 2019. The band conducted the training in order to refamiliarize themselves with basic military skills and to develop the leadership mindset of the unit's noncommissioned officers.

U.S. Marine Corps photo by Warrant Officer Bobby Yarbrough/Released

How The United States Marine Corps Builds Great Teams:

Beer, Bullets, and Burden

Building cohesion for the CAF logisticians

During a visit to Twentynine Palms California, a major United States Marine Corps (USMC) training base, I was once again taken back by the team cohesion and professionalism the Marines possess. I had worked with them previously and everywhere I have worked with them; it is the same – they showcase strong teams. A sense of belonging and esprit de corps have recently been on the discussion list of many senior logisticians. The question, "how can we improve in this area?" has been tabled in different forums and various suggestions have been discussed. Thinking of this question, I decided to dig a little deeper into how the Marines build cohesion in their units. Critical to this discussion was Major Alastair McMurachy, the Canadian Armoured liaison officer posted to the Marine Corps Air Ground Combat Center in Twentynine Palms.

Major McMurachy explained that to generate esprit de corps and cohesion within a unit comes down to the proper application by effective leaders of the Three B's. This is not Marine doctrine, but rather anecdotal observation that was confirmed when discussing the topic with the Marines during their logistics exercise on the installation.

The first element is **Beer**. It isn't literally "beer," but rather what occurs in NCO messes and officers' clubs. Social comradery and professional development opportunities enable the officer corps members to interact, understand personal and professional limitations, build trust, and create a network that they can leverage in a time of need both in garrison and on the battlefield. The same can be said of the senior non-commissioned members. Where comradery and social engagement was high, interactions, communication, and trust improved as the perceived rough edges of personality were ground down, allowing each member to fit within the group. This created inter-unit and intra-unit cohesion.

The second element is **Bullets**. "Bullets" certainly includes the endorphin rush of shooting on a range as a group, hearing bullets whizz above one's head while working in the butts, or letting a burst of 25mm cannon fire lay into a target. Most of us can relate that after the conclusion of a successful range day that the members of the unit or subunit are smiling and positive about their experiences, often to celebrate those who shot well while ribbing those who may not have had their best effort score. This element also ties training together. Working daily within small teams that are completely operationally focused is a tenant that is key to developing esprit de corps. Being operationally focused allows for significant value added on range days, confidence courses, unit physical fitness activities, and named exercises. By working together, and having to rely on each other generates a level of confidence and communication which is necessary for absolute trust during operational deployments. This ethos enables subordinates to have input within collective training post-mortems to identify weaknesses to improve upon, recognises informal leaders, and identifies capability gaps for strategic procurement.

The third element is **Burden**. Teams that have experienced hardship together are often much more cohesive. Veterans have an easier time speaking of unsavoury experiences with other veterans who were deployed than they do with loved ones who never experienced the same challenges. Burden must come with purpose. "Standing in the rain," explained McMurachy, "to be miserable is not the right kind of burden." There is no purpose in it, no end state, no point to identify mission success, and no intrinsic reward for being miserable. Burden can be rephrased as "Burden with Purpose" as understanding why one must stand watch in that rain will not alleviate the discomfort, but will provide an understanding, or the "why" of the effort. Succeeding (or even failing at times) as a group in a difficult circumstance creates a sense of ownership, sense of accomplishment, comradery, and trust. Training, therefore, needs to be challenging. It needs to replicate elements of a deployment. All too often we lay off a challenging training activity either because we don't want

to upset our people, receive a negative personal reputation, face the embarrassment of failing in front of our peers and subordinates, or are just plain lazy as leaders. Teams need to be challenged as a group as long as it is a challenge with a purpose. Asking: "Why are we doing this?" is key in using "Burden" as a team building tool. If there is no legitimate answer, the burden is just misery.

Many sought out the USMC for challenge and a desire to be greater than they would be by themselves. The Corps, as a team, creates a lethal machine that is greater than the sum of its individual parts. The element of "Burden" was a draw to the longest serving members I met. They wanted to be part of a select fighting force that faced challenges as a team. Part of the burden aspect is the drive to overcome extreme pressures and win against foes equally or better equipped than the Corps. In discussion with one senior Marine officer he stated, "America doesn't need a Marine Corps, but they want one." When I pushed for a reason, he stated "because we are professionals, hold high standards, and win. That is what Americans expect of us and what they want," he summarized. His later indications and those of others suggested that sharing burdens was part of the ethos and drive to survive, thrive, and win.

In discussing why the Marines joined, what motivated them, and what created cohesion, history and culture became a common theme. Marines could recite various historical moments in their Corps. Red Marine campaign signs marked each palm tree lining the main gate road. Each tree has a campaign name and date telling everyone leaving the base, everyday where the Corps has fought. History was a living piece of their culture and each Marine knew they were part of it.

Marines know what they do, why they do it, and how they do it. Not only did they know it for themselves today, but knew it for every generation of Marine before them. They had a sense of belonging which came from reviewing the history of burdensome feats placed before the Corps and which they expected to live up to and exceed. Many came from military families. One Marine was the fifth generation of his family to join the Marines. His family was a part of the history of the Corps. His identity was tied to the Corps.

U.S. Marine Corps photo by
2nd Lt. Isaac Lamberth/Released

Recruits with Echo Company, 2nd Recruit Training Battalion, complete the day movement course at Marine Corps Recruit Depot Parris Island, Feb. 6, 2019. The day movement course is part of the basic warrior training that recruits complete while at the depot. The course challenges recruits to work together as a fireteam to overcome obstacles which include walls and concertina wire.

U.S. Marine Corps photo by Warrant Officer Bobby Yarbrough/Released

There were many other observations, enough to fill a library, that demonstrated other ways that Marines create teamwork, but the aforementioned observations, with a strong emphasis on leadership seemed to come out to the forefront. My observations of the Marines, yet again, made me question how their team building could be adopted into the Royal Canadian Logistics Service. Granted, our cultures are different, but there are certainly opportunities starting in training and continuing in units.

Lieutenant Colonel Gordon Bennett is the Commandant of the Canadian Forces Logistics Training Centre. He holds a Doctorate degree in Global Business and Leadership. His present post is his third posting to the training centre.

Major Alistair McMurachy is a Lord Strathcona's House (Royal Canadian) armoured officer currently posted to Twentynine Palms. Major McMurachy has been an instrumental connection for Canadian training opportunities with the United States Marine Corps.

Biogas Potential

Courtesy of the Canadian Biogas Association

The production of Canadian biogas from all major sources – agricultural organics (excluding energy crops), landfill gas, residential and commercial source separated organics, and municipal wastewater – is equivalent to 3% of Canada's natural gas demand or 2,420 million m3 per year of renewable natural gas. This represents up to 810MW of electricity and 1.3% of Canada's electricity demand.

Biogas is a clean-tech solution that continues to offer innovation to the agricultural, municipal and waste management sectors. Biogas technologies can develop in a small footprint, and function compatibly with existing operations. Biogas offers economic and social stimulus to Canadians and plays important roles in local communities, including investment in innovation, advancement in clean technologies, engagement of youth, and job creation. The required components and services are available across Canada. Biogas production generates diverse revenue streams for farms, industries and municipalities, creates new jobs in the green economy and offers attractive investment opportunities.

Realizing the full potential of biogas development can lead to 1,800 separate construction projects with a capital investment of $7 billion and economic spin-off of $21 billion to the Canadian economy; close to 17,000 construction jobs for a period of one year, and 2,650 on-going long term operational jobs, and; 100 new and expanded Canadian companies, including biogas system designers and developers, equipment suppliers, and laboratories.

City of Toronto Biogas

On July 20, 2018, the City of Toronto (City) announced a partnership with Enbridge Gas Distribution (EGD) to build its first renewable natural gas (RNG) facility. The facility will be located at the City's Dufferin Organics Processing Facility and utilize the biogas produced from processing Toronto's green bin organic waste. Through the partnership, EGD will install technology to clean and convert the biogas produced through anaerobic digestion into RNG and then condition and inject it into its natural gas distribution grid. Once in the grid, the RNG can be used to fuel the City's Solid Waste collection fleet, generate revenue in external markets or a combination of the two. The Dufferin Organics Processing Facility is currently undergoing an expansion to increase its organic processing capacity from 25,000 to 55,000 tonnes. The expansion and the RNG project are expected to be complete in the fall of 2019. Once up and running, it is estimated that the RNG facility will produce approximately 5.3 million cubic metres of RNG annually, enough to fuel 90% of the City's Solid Waste collection fleet.

Photo by Mariana Proença on Unsplash

"While the announcement is a significant clean energy milestone for the City, our RNG ambitions extend far beyond a single project," says Carlyle Khan, Director of Infrastructure Development and Asset Management with the City's Solid Waste Management Services Division.

The City initially began looking at RNG from a solid waste management perspective in 2015. At a time when most biogas installations in Ontario generated electricity, the City recognized they were in a unique position to generate a significant amount of RNG given their population of about 2.8 million residents and highly successful Green Bin Program. In addition, the City's early commitment to diverting organic waste from landfill via anaerobic digestion in the early 2000's, has positioned them well to be a leader in the shift to RNG production and utilization.

After evaluating their assets, including two AD-facilities capable of processing 130,000 tonnes of green bin material a year, the City looked at the feasibility of producing RNG at four sites: the Dufferin and Disco Road Organics Processing Facilities, the Keele Valley Landfill and the Green Lane Landfill. It is estimated that the four sites can produce approximately 65 million cubic metres of RNG every year, the equivalent of about 55 million litres of diesel. This represents a significant new revenue opportunity for the City and is aligned with its Transform TO Climate Action Strategy which aims to reduce greenhouse gas emissions from a 1990 baseline, by 80% by 2050.

With organics diversion occurring at a higher than expected rate, the City of Toronto is prepared for the shift to a circular economy and has found many benefits to having anaerobic digestion infrastructure in-house, including developing internal capacity and expertise, diverting materials from landfill and local economic benefits. On its plans, Kris Hornburg, Manager of Program & Strategic Initiatives for the City's Solid Waste Management Services Division says "The City of Toronto wanted to plan ahead and have a strategy in place where we know we can handle internally generated organics within the City, while doing the right thing for the environment."

When looking to reduce the Division's overall carbon footprint, the City found that the environmental benefits from using RNG as a vehicle fuel source were much better compared to the generation of electricity. Their goal is to wean the entire fleet off diesel by converting all Class 7 and 8 collection trucks to CNG/RNG in the next couple of years. The Division is also looking at converting smaller Class 5 or 6 trucks to other alternative, low-carbon fuels as these solutions mature. The City has already invested in the infrastructure with two operational CNG fill stations and another one under construction. The City currently has 90 CNG trucks on the road, which have received positive feedback from drivers, in particular due to their quieter operation.

FinTrax

Innovation Through Technology. The Administrative Burden on Flight Missions

The RCAF Flight Deck at Communitech in Kitchener-Waterloo, Ontario, is an innovation lab managed by the RCAF Aerospace Warfare Centre (RCAF AWC) that drives the RCAF innovation approach. The mandate of the Flight Deck is founded on three distinct pillars: interacting with Canadian technology companies, hosting problem-solving sessions known as "Basecamps" and engaging with the next-generation workforce. The proximity of the Flight Deck to the University of Waterloo also allows for leveraging of the brightest minds within the realm of digital-solution development by hiring co-op students on four-month rotations.

The principal aims of the Flight Deck are to drive culture change in the RCAF and foster an innovative mindset that brings about positive change from within. This is accomplished by integrating with academia, collaborating with civilian-sector corporations and businesses as well as networking with the full spectrum of ranks within chains of command to understand what issues need to be addressed at the tactical level. The aim is to stimulate and capture innovative ideas—from all ranks—that yield rapid deployment of viable solutions.

In November of 2019, a Basecamp was held that was focused on pilot retention, which has been recognized at the strategic level of command as a major issue in the RCAF today. Among the many precipitating factors uncovered by the Basecamp participants that directly contribute to the release of not only pilots but most aircrew trades was the lack of administrative support. This results in the transfer of administrative duties to crew members, who should otherwise be more focused on their primary tasks.

Considerable time and effort is required by crews to fill out the tedious claim details—all in paper formats. The lack of administrative support, compounded by the continual, incremental increase in process complexity, can also add an unreasonable amount of time to claim finalization. There is a requirement for a product to replace the paper format with a digital solution.

Enter FinTrax.

The initial proof of concept was a digital version of the trip-cost sheets. This financial tracking tool was included in the "football," which is a heavily paper-centric and cumbersome summary of all mission documentation for the aircrew, such as diplomatic documentation, hotel reservations, transportation, prior-permission-required number requests, catering arrangements, civilian-handling-company agreements and others.

The idea was to develop an application (app) to be pushed out to the existing devices (e.g., iPads), known as the electronic football that each crew carries on missions.

The proposal was accepted by the end of January 2019, and a discovery meeting was held in early February between the development team, aircrew from both 429, 437 and 436 Squadrons as well as finance clerks from 8 Wing Operations Support Squadron. By late February, the developers at the RCAF Flight Deck had ideated and prototyped the first version of the app, and the title "FinTrax" was coined. By mid-March, the app was released to the CC130J and CC177 communities in both domestic and international operations, and within a month the app was in a working format, albeit with some resolvable issues. Throughout May, considerable time was spent debugging and ensuring that all requested features functioned properly, with the expectation that this latest iteration would be ready for rerelease to the users. On June 1, the app was rolled out for 429 Squadron implementation on a month-long trial for the CC177 crews.

This means that in just five months, the RCAF AWC Innovation section, in collaboration with the RCAF Flight Deck development team, created, refined and implemented a working app that digitized a large portion of the documentation within the blue football and eliminated nearly 360 manually input data fields and scores of redundant errors, thus saving countless man-

hours as well as increasing the operational effectiveness and efficiency of aircrews and supporting units. With this kind of turnaround time for a digital solution that optimizes operations, 8 Wing Operational Support Squadron sees the potential to revamp existing dispatch software that will make its processes exponentially more efficient across the Wing writ large.

Captain Jason Fawcett
Captain Jason Fawcett is a CC177 Globemaster pilot by trade, now working as the RCAF Flight Deck Supervisor at Communitech in Kitchener-Waterloo. He is helping to spearhead RCAF innovation efforts among the third-fastest-growing innovation sector in the world. He has been posted to RAWC since early 2017 and has worked as the Air Mobility Capability Development Officer and, more recently, as the Task Coordinator for Maritime Helicopter Test and Evaluation Flight as part of 434 Operational Test and Evaluation Squadron.

****UPDATED****

This new software project is termed 'Dispatch' and replaces the archaic version previously used, which is set to be completely obsolete by the New Year. An article written specifically on Dispatch will be released soon to help explain how this new software was, again, designed, iterated and released to 8 OSS in just a few months! This is the backbone of rapid software prototyping conducted here at the Flight Deck and uses the Agile framework to remain relevant and deliver exactly what the user requires. To develop using an Agile framework involves using a process whereby developers user-empathize and rapidly prototype versions of a deliverable that is tailored precisely to what the users require. It capitalizes on frequent feedback from the users on functionality and fidelity, while the dev team rapidly integrates these improvements, with the added benefit of potentially uncovering new functionality.

Both FinTrax and Dispatch are digital solutions created from ideas stemming from the pilot retention Basecamp. Both are easy-to-manage applications (mobile and cloud based respectively) and scalable to the users at 8 OSS and 8 Wing Squadrons. These projects were designed for use at 8 Wing because that's the location of the RCAF AWC and a good starting point for the first trials of rapid software prototyping.

These apps were never intended to be designed to fulfill a need RCAF-wide. Instead, they were created to solve problems being experienced at Canada's largest air force base in Trenton, ON. This new way of doing things and presenting solutions to problems rapidly has caught the attention of leadership at all levels CAF-wide, recognizing the implied potential coast to coast. The RCAF Flight Deck is quickly proving itself and spearheading the RCAF's innovation efforts, which falls in-line with the RCAF Commander's NAVAIDs and those of the CO of the RCAF AWC. The Flight Deck works on projects that arise from a variety of sources such as Vector Checks, Innovation Tracker ideas, and results of Basecamps. Ultimately, the intent is that whatever deliverable is produced, its handed off to the owner (in this case of FinTrax - 8 OSS) who should already have in place a CONOP for its usage and integration as well as their own funding to maintain it. The RCAF Flight Deck was never intended to be the designer AND maintainer of its output. 8 OSS is in discussions to have their own team of full-stack developers to manage/maintain Dispatch and FinTrax at their own expense as the user of this software. The RCAF AWC Innovation section will continue to push the RCAF innovation agenda, in a limited capacity, and inspire our members to continually think out of the proverbial box.*

CRITICAL THINKING – THE VISIT

THE SITUATION

It's Wednesday night and Maj Green just found out that a good friend will be coming Friday night at 2000hrs and staying until Sunday at 1155hrs. Excited at this prospect, he does a quick estimate and realizes his apartment parking situation will not fit his friend's vehicle and Maj Green's truck. At present Maj Green has one parking spot for his scooter (a very narrow one) and one for his truck at his apartment. He keeps his bicycle chained to the bike rack 10km away at work next to his large parking spot where he can park both his truck and scooter. When he has his bicycle at his apartment, he can store it in a garden shed in the backyard of his apartment complex.

He decides he needs to find a solution to parking that will allow his friend to park at the apartment complex. He also wants to impress his friend by buying a box of wine from the locally famous winery "Box'o Wine Estates." The box will be 10L in volume and the estate will close at 1900hrs on Friday night.

Maj Green likes to cycle but doesn't like going further than 15km in one session as his cycling shorts chafe him. Box'O Wine Estates is 30km from his apartment and 30km from his work. The distance between his work and apartment is 10km. His bicycle is currently stored at his work. When he does cycle, because he hates paying for gas and loves the low environmental impact of cycling, he wears an 80L backpack to haul items like his uniform when he goes to work. This backpack is also used when he rides his scooter. However, he doesn't like to put more than eight litres of stuff in it when cycling because it gets bulky and hard to stand up to ride whereas he will take it full on his scooter.

As Maj Green contemplates the visit, he also realizes that he needs to wash his physical fitness (PT) clothing that has been piling up in his office for the last three weeks (about 8 litres of it). But since it will be an intensive unit PT session on Friday, he doesn't want to take it all home to wash it until after PT when he will have a full laundry load of

clothing to wash over the weekend. He needs at least one set at work until Friday at noon. Additionally, since Friday will be an intensive PT session, he does not want to cycle home that afternoon as he will be sore from the morning's PT session. He also wants to have his bicycle at work as much as possible to travel around the base as he can park close to building doors, not pay for gas, and get exercise while setting a leadership example of environmental stewardship. He will take it home as needed or for PT. He prefers cycling over hiking due to having baby skin like feet that get blisters easily. He won't have time to hike 30km to the winery or the 10km to work.

Since Maj Green hates paying for petroleum (including lubricant) products, he wants to minimize his petroleum expenses with his vehicles. His bicycle costs about $0.01/km to operate because it uses a lot of chain lubricant, his scooter $0.04/km for gas, and his truck $0.16/km for diesel fuel.

THE CHALLENGE

How can Maj Green accomplish the following tasks while minimizing his petroleum expenses, time, and efforts?

1. Ensure there is a parking spot for his friend's SUV at the apartment by the time his friend arrives,

2. Pick up a premium box of wine at Box'o Wine Estates before his friend arrives,

3. Return his dirty laundry to his apartment to wash it before Sunday night,

4. Ensure his bicycle is available at work as much as possible,

5. Maximize the time he has to visit with his friend, and

6. Return to work Monday morning without walking.

Canadian Forces Logistics Museum

And along came the Truckers…

a Story of Solidarity and Love in Wartime

In June 1944, truckers of the 5th Canadian Armoured Division "adopted" a little boy, thereby saving him from a grisly fate. Nine months later, they had to leave him with a new family in Italy. However, the bonds of love and solidarity withstood the passage of time.

In early June 1944, the 5th Canadian Armoured Division (5CAD) paused north of Frosinone. The Royal Canadian Army Service Corps (RCASC) transport companies had worked feverishly to supply the division with fuel, ammunition, food and replacement soldiers and now had a few days to rest.

One evening, one of the "truckers", Private Hagen of the 5th Armoured Divisional Troops Company, RCASC, No.17 Company, C Platoon, and his co-driver, Pte Klassen, were waiting in their 1942 Ford 60 cwt (3 ton) at a rendezvous. There they discovered an almost naked little Italian boy with a greatly distended stomach and who was in great distress. His name was "Gino" and he was five or six years old and an orphan. They could not leave him to die in the night. The truckers tucked the little Italian waif snugly in between them in their pup tent. Other members of the platoon also helped out; one made him miniature Canadian army pants and had a seamstress make him a jacket, some became his mentors and tutors. He was promoted to Corporal and became the mascot of the Company. The little boy was soon able to speak English riding around the camp, delivering messages. In February 1945, when the division was to transfer to France, he was spotted by an officer who said that Gino would not be allowed to go to France. A good home was eventually found with the Farnetti family near Ravenna.

The story has a happy end. Gino later became an engineer. Detective work led by Mariangela Rondinelli and her team discovered his history and his real family name, "Bragaglia". He was reunited with his RCASC friends who found him in 1980 and in 1990.

Photos

1. Shoulder patch of the Royal Canadian Army Service Corps, 5th Canadian Armoured Division, like Gino would have worn.

2. Second World War Canadian Army Corporal Chevrons as Gino would have worn.

3. Gino and one of his mentors, Oliver "Red" Lloyd, September-October 1944.

4. Gino with a uniform made just for him.

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All photos are courtesy of Mariangela Rondinelli, author of The Little Soldier Boy, and; Il Bambino in Divisa

1.

2.

3.

4.


Alpi
Valle Po
Milano
Venezia
Torino
Fiume Po
Genova
Bologna
Ravenna
Rimini
Pisa
Firenze
Fiume Arno
Fiume Tevere
Appennini
Ortona
Roma
Frosinone
Torrice
Campobasso
Bari
Napoli
Sardinia
Palermo
Agira
Sicilia
Catania
Pachino
Pantelleria
0
200 km
0
100 mi

Business Planning isn't that Important in the Military, or is it?

Logistics is heavily reliant on the concept of planning to have the right product and/or service at the right time. Delays because of poor planning cost lives and ground. Planning is a large portion of military life and operations, and part of military planning includes business planning.

Business planning for any type of organization isn't rocket science however it is often overlooked, poorly conducted, or forgotten entirely. For-profit organizations heavily rely on the accuracy of their business plans as this communicates to stakeholders (especially investors) the company's current and anticipated future standing. A typical business plan consists of the following key components: An executive summary, a description of the organization, the products and services offered, a market analysis, the organization's strategy and implementation, an overview of management within organization, and a financial plan including projections.

Every military unit should have a business plan, however the definition of "business planning" in the military context varies greatly between all units. Various units, individuals, and levels of command often interpret the term differently—and often very differently from civilian industry. If you ask the finance, supply, or operations officer within a unit what a business plan is, they will most likely show you an Excel spreadsheet with annex information such as how many vehicles the units require, how much L101, C127, L111 they require, or what large procurement projects are in the queue for the following year. In their world, usually this is the "business plan" or the business planning process. However, asking a commander the same question and he or she may add a mission and vision statement which should align with the next level's mission and vision statement as well (for example a L4 business plan should look similar to the L3 unit it reports to).

When business planning is done correctly within the military – completed by a team of key personnel within the unit, revisited on a consistent basis, and communicated out to the relevant stakeholders – it can be a very powerful and useful tool. Conversely, when business planning is completed poorly, it is a huge time drain on key personnel and can affect the success of the units within chains of command that rely on the unit's projections.

The unit's business plan should answer: Why does the unit exist? What is its mission and vision? What are the primary and secondary tasks the unit is required to do? What resources are available or committed from the higher up command? What are the unit's strengths and weaknesses? How much funding is required for the next year to maintain the proposed operations and training? Without an accurate business plan, the unit will not be able to communicate the shortfalls or the surpluses to its headquarters or lower level units. This is particularly important if funding changes at any point throughout the year. Additionally, a business plan also helps provide continuity when there are high staff turnovers.

It should be remembered that a business plan is not a budget or explanation why the unit will or will not complete its tasks. The budgeting aspect is important, but a good business plan should be so much more. It is a communication tool that tells the unit and its headquarters how resources will be allocated, what the priorities will be, what changes will occur if there are budget adjustments, what the main effort for the unit will be, and other useful information on daily operations.

So, is business planning important in the military? The Canadian Forces Logistics Training Centre (CFLTC) thinks so and has taken over the Business Planning course. CFLTC is revamping course content to not only educate members on how to draft a business plan, but to also highlight the significant benefits to the unit and the CAF as a whole. Interested in learning more about business planning in the CAF? Check out CFLTC's Training Schedule and take the next Business Planning course near you.

Lt. Linda Grove is presently the Resource Management Officer at the Canadian Forces Logistics Training Centre. She was an accounting consultant for a major consulting firm prior to joining the Canadian Armed Forces.

General James Mattis

Words of Wisdom

"If you haven't read hundreds of books, you are functionally illiterate, and you will be incompetent, because your personal experiences alone aren't broad enough to sustain you. Any commander who claims he is 'too busy to read' is going to fill body bags with his troops as he learns the hard way."

"In this age, I don't care how tactically or operationally brilliant you are, if you cannot create harmony — even vicious harmony — on the battlefield based on trust across service lines, across coalition and national lines, and across civilian/military lines, you need to go home, because your leadership is obsolete. We have got to have officerswho can create harmony across all those lines."

"Reading sheds light on the dark path ahead. By traveling into the past, I enhance my grasp of the present… Living in history builds your own shock absorber, because you'll learn that there are lots of old solutions to new problems. Strategy is hard, unless you're a dilettante. You must think until your head hurts."

Summary of MEPDIS Display

By The 1st Canadian Division High Readiness Depot Staff

On 18 June 2019, two members from High Readiness Detachment, 1st Canadian Division Headquarters, MCpl Legacy (2IC HRD Maint) and Cpl Raddatz (HRD EO tech) attended the familiarization on Cummins Generator and MEPDIS-R power grid demonstration at Cummins sale and service shop, located at Gloucester ON.

The MEPDIS/Cummins display was informative and although it was mainly geared towards the Cummins generator, the system was on display and showed the capabilities of the 300Kw breakout box. It is very capable and more than what is required. However, the 100Kw box appeared ideal for a DART/NEO deployment. Currently our power distribution are capable of distributing ~60 Kw max for a camp per kit, whereas the 100Kw proposed box/system is capable of handling up to 100Kw while concurrently using less power distribution boxes.

The Cummins generator system is also very advanced and has features such as auto synchronization (with other Cummins generators), auto-load sharing capabilities, and shutdown/breakdown protection which our current generators do not possess. Our current 30 Kw TQG generators are not capable of load sharing or synchronization without the use of a Power Module Unit (large bulky electrical board on the 2.5t trailer). It improves our current system by eliminating the PMU requirements, saving weight and the necessity to manually configure load sharing through the grid/camp. Another huge benefit is the capability of the Cummins to automatically turn on when another connected generator fails, resulting in the power loss not being felt. This is critical when dealing with comms systems and configurations that cannot lose power while in use. The Cummins generators are currently in use at CANSOF units and there should be available NSNs in the near future.


All people are created equal.
But only a few get to become LOGISTICIANS

The Royal Canadian Artillery Band from Edmonton AB performing Public Duties in London, UK, with the guard comprised of soldiers from all four battalions of 3 Royal Canadian Regiment. The Guard and Band performed public duties at Buckingham Palace, St. James' Palace, Windsor Castle and the Tower of London.
Photo Credit: Cpl Jay Ekin

The Royal Canadian Air Force Band from Winnipeg MB marching to St. James Palace from Buckingham Palace after mounting the New Guard, celebrating the 100th anniversary of the RCAF in London UK.
Photo Credit: Cpl Francois Charest

More Than Marching Bands:

The Professionalism of the Canadian Armed Forces Music Branch

By Captain Shawna L. Mochnacz, CFLTC Music Division

You may have heard them during a Graduation Parade or Change of Command Parade, but when it comes to the professional musicians currently serving the Canadian Armed Forces (CAF), there is more to them than meets the eye, and ear.

There are currently six Regular Force Brass and Reed (B&R) military bands within the CAF, two per environmental element, stationed in Victoria BC, Edmonton AB, Winnipeg MB, Ottawa ON, Quebec QC, and Halifax NS. The centre of training for the entire Music Branch falls under the Canadian Forces Logistics Training Centre (CFLTC) in Borden ON, and the Music Branch Advisor and his staff fall under the Directorate of History and Heritage in Ottawa ON. Each unit, with one exception, has a compliment of 34 brass and reed musicians. The Central Band in Ottawa has 39 musicians, which includes a five-piece string ensemble.

The mission of the Music Branch is to provide musical support for the CAF, the Government of Canada, as well as provincial and local government. Additionally, each unit represents their environmental element, the CAF and Canada locally, nationally and abroad in a variety of engagements. In addition to fostering morale, esprit de corps, connecting with Canadians, and promoting Canadian aesthetics and values, the musicians take special pride in representing those who can no longer represent themselves: The Fallen. With this diverse range of mandated duties, to efficiently manage support with their limited but versatile and highly skilled personnel, the bands have adapted smaller ensembles formed from within their full concert band configuration to include, but not limited to, a marching band, a Swing-era big band, a 10-piece mess dinner band, jazz combos, Dixie band, brass and woodwind quintets, quartets, trios, duos, pop bands, rock bands, Celtic ensembles, and instrumental soloists including guitar and piano. In 2016 Pipes and Drums (P&D) musicians became a sub-occupation of the Music Branch, and those members lead the volunteer P&D bands, while B&R musicians lead the B&R volunteer bands, totalling 15 bands across the country. Additionally, there are also 53 B&R/P&D Reserve Force bands that assist in supporting the Music Branch mandate. In total, the CAF employs approximately 1200 musicians who provide musical support from units across the country.

The Naden Band of The Royal Canadian Navy from Victoria BC on the flight deck of Chilean frigate Almirante Blanco Encalada during Armada 200 EXPOVAVAL in Valparaiso, Chile. Photo Credit: Lt(N) Mélissa Kia

The Central Band from Ottawa ON performing a joint concert with the Latvian National Guard Orchestra at the Jēkabpils Cultural Centre, Jēkabpils, Latvia. Photo Credit: Jānis Lācis

The Regular Force musicians join the CAF by first winning an audition, and then proceeding with the regular recruiting process for any occupation, including Basic Training. All musicians complete all mandatory annual training required by all serving soldiers in the CAF, in addition to their musical taskings and administrative duties to run each unit. Due to the highly competitive audition process, musicians who join the Regular Force are already trained to play their instrument, with the majority of musicians holding a university degree or certificate. Many of the CAF musicians also hold a Master's degree, and a few even hold a PhD, although the recruiting requirement only stipulates a grade twelve education. For specialized military musician training, including how to march and play, how to conduct an ensemble or lead the band as a Drum Major, the musicians obtain their qualifications via Music Division at CFLTC in Borden ON.

Outside of their military duties, many of the serving musicians regularly perform with civilian ensembles, including professional orchestras, jazz ensembles, pop groups, country bands or lounge music groups, and many become staples in their local musical community. The individual strength and professional competence of each musician is critical to mission success, as they must assume various roles within their duties, frequently under demanding circumstances. Whether on the parade square in Valcartier, supporting a sunset ceremony in Ottawa, marching down the streets of Calgary in the Calgary Stampede parade, performing public concerts in Bosnia, representing Canada in a Swedish Tattoo, playing for arrival of The Queen or Heads of foreign countries, or sharing the stage with First Nations Throat Singers in The Northwest Territories, each professional CAF musician is trained as an expert in ceremonial protocols for any occasion and proudly serve everywhere they are called.

For more information about the CAF Music Branch, or for audition information, please consult the following link: https://www.canada.ca/en/services/defence/caf/showcasing/music.html

Reprinted with permission from the Military Review May-June 2017. Additional photos have been added.

New Logistics Ideas for a Complex World

Col. James Kennedy, U.S. Army, Retired
Lt. Col. Kris Hughes, U.S. Army

Wes Coleman (left), a construction manager for Fluor Corporation, reports on the progress of a new Ebola treatment unit to Maj. Gen. Gary Volesky, the commander of Joint Forces Command–United Assistance, and Sam Sells (background), the military liaison for the U.S. Agency for International Development (USAID), during Operation United Assistance 2 December 2014 in Ganta, Liberia. United Assistance is a Department of Defense operation to provide logistics, training, and engineering support to USAID-led efforts to contain the Ebola virus outbreak in Liberia.

(Photo by Sgt. 1st Class Brien Vorhees, U.S. Army)

The U.S. Army Operating Concept: Win in a Complex World describes the anticipated challenges the Army might face in the future.[1] It explains that the Army does not know the time, place, or enemy it will face, and it identifies the operational challenges the Army must anticipate to win. In order to meet those challenges, the U.S. Army's centers of excellence are busy identifying capability gaps; determining doctrine, organization, training, materiel, leadership education, personnel, facilities, and policy solutions; and updating functional concepts to evolve the current force into the Army described in *Force 2025 and Beyond.*[2] The "Air-Land Battle" or *"Full- Spectrum Operations"* experience of our senior leaders and the forward operating base and counterinsurgency experience of our midgrade leaders served us well during the Cold War and the wars in Iraq and Afghanistan.[3] However, in our unknown and unknowable future, we will need to change some of our paradigms. It is our intent to highlight five recommendations to drive discussion at the Sustainment Center of Excellence and with senior leaders that may help our sustainment force be more responsive and agile for soldiers and commanders:

1. Create a joint logistics staff officer career track,
2. Create a specific military occupational specialty (MOS) for operational contract support officers and noncommissioned officers (NCOs) in lieu of additional skill identifiers,
3. Provide an annex in a doctrine publication that includes a template statement of work that can be easily modified,
4. Create "homestead" units in which the majority of special skill logistical personnel can be retained to maintain their skill sets,
5. Provide rapid access to the Army working capital funds for Army contracting officers.

Joint Logistics Staff Officer

Joint assignments provide Army officers the opportunity to develop the skills and knowledge necessary to be successful when planning and executing joint operations. The skills and knowledge they gain include using the joint planning process, integrating Army-centric capabilities into joint operations, and gaining an understanding of the capabilities and cultures of the other services.[4] However, once their joint assignments are complete, officers that are now experienced and joint qualified return to an Army organization, creating a joint-billet vacancy that a non-joint-qualified officer must fill. While the Army will benefit from having a joint-qualified officer back in its ranks, the joint community will have to wait for a new officer to develop the required skills to be fully proficient in his or her duties. In a future where joint operations will be more prevalent, does this continual loss of experience make sense? What if instead of rotating officers in and out of joint billets, we allow a certain percentage of logistics officers to follow a joint officer career path?

By allowing a certain number of logistics officers to follow a joint career path, the joint community will retain their joint experience. Upon entering a new joint assignment, these officers will not have the same basic joint-operations knowledge gaps that non-joint-qualified officers often have

Once officers reach the rank of major, complete their key developmental assignments, and are eligible for joint assignments, they could be given the option to follow a joint career path. While these officers would still compete for branch command assignments to ensure they are competitive for promotion, all their future assignments would be joint. There are many advantages to this option. By allowing a certain number of logistics officers to follow a joint career path, the joint community will retain their joint experience. Upon entering a new joint assignment, these officers will not have the same basic joint-operations knowledge gaps that non-joint-qualified officers often have, so they will more efficiently and quickly contribute to the mission. The officers will bring new perspectives and insights from previous joint assignments, and they will also have an understanding of how the other services work and how to best integrate Army capabilities into joint operations. Gaining an understanding of service cultures is one of the most difficult perspectives for a joint officer to develop. It is impossible to teach; this understanding must come from experience, which takes time.

Another advantage of this option is the savings in both temporary duty and permanent change of station (PCS) costs. Maintaining joint-qualified officers in joint assignments means there will be a reduced requirement to send officers to the Joint Forces Staff College in Norfolk, Virginia, to attend the ten-week Joint and Combined Warfighting School. The school is necessary for an officer to receive Joint Professional Military Education Phase II certification, which is a requirement to receive the Joint Qualified Officer additional skill identifier (3L). Additionally, by having officers on a joint career path, the duration of their assignments can be extended past the traditional three years, reducing PCS costs and mission degradation caused by personnel transitions.

A major drawback to this option is the potential loss of an officer's Army-specific knowledge due to serving exclusively in joint billets, but there are a number of ways to mitigate this. Officers on a joint career track can participate in Army conferences and events, or serve in an observer coach/trainer assignment with the Mission Command Training Program in their specialty area of expertise. They can maintain their Army-specific proficiency by receiving newsletters from their functional branches or from organizations such as the Center for Army Lessons Learned. And, they can follow Army organizations such as Army Materiel Command or the U.S. Army Training and Doctrine Command on social media or on the organizations' websites.

Maintaining Army-specific knowledge is not a new challenge for Army personnel. Many officers spend time in broadening assignments where they have little contact with the Army. Foreign area officers are a good example of officers that must maintain their Army proficiency despite being stationed away from Army forces, and the Acquisition Branch has a "regreening" program to help its officers retain currency.

As previously mentioned, the Army benefits from having joint-qualified officers in its ranks, but the amount of joint-qualified officers serving in Army organizations would decrease if officers choose to follow a joint career track. Despite this reduction, the Army would still have some officers rotating between joint and Army assignments, and with more efficient communication between service staffs, the Army would not lose the benefits of having joint-qualified personnel in its ranks.

Finally, there may be some concern about a non-joint career track officer's potential to earn the rank of general officer as joint qualification is a requirement. However,

if an officer demonstrates the potential to be a general officer, he or she can still be assigned to an enterprise-level joint billet to receive joint qualification, but not remain in the joint community permanently.

Operational Contract Support Officer and Noncommissioned Officer

The first two operational contract support (OCS) principles identified in Joint Publication 4-10, *Operational Contract Support*, are, "Contracted support can be a significant force multiplier …," and "Most joint operations will include contracted support."[5] Leaders and soldiers today can attest to the tremendous benefits contracted support brings to the fight to support mission accomplishment, especially in protracted operations or in an expeditionary environment where the number of military "boots on the ground" is limited.

Contracted support can be a significant force multiplier. Most joint operations will include contracted support.

Operation United Assistance, the U.S. government response to combating the Ebola virus outbreak in West Africa in 2015, is an excellent recent example of how the U.S. Army and U.S. Africa Command quickly harnessed the capabilities of commercial companies and Logistics Civil Augmentation Program contractors to execute planning, construction, and sustainment, which played a huge role in the success of the mission. Yet, the Department of Defense inspector general's report from October 2015 clearly stated that the Army provided insufficient supervision and training to contracting officer representatives (CORs) during the mission.[6]

The Aeromedical Biological Containment System, which has been used to transport Ebola patients to the U.S. from West Africa, sits next to the Gulfstream III aircraft that carries it. (Photo Credit: Centers for Disease Control and Prevention)

Having an adequate supply of well-trained and experienced CORs is an excellent mitigation for contracting shortfalls, but with force reductions, we need to look at solutions that do not require growing the force. The current system of COR oversight is not working and needs an adjustment. To rectify this, we recommend the creation of a secondary Military Occupational Specialty (MOS) 51O, for OCS officers and NCOs, with the Sustainment Center of Excellence as the proponent.[7] This MOS is not meant to be a replacement for the 3C additional skill identifier (ASI), which is awarded to personnel who qualify to plan for contractor integration at the operational and tactical levels. Instead, this MOS could be awarded after attending a short course at Fort Lee, Virginia, or the Contracting Center of Excellence in Huntsville, Alabama, to certify the selectees in their new secondary MOS. Our rationale for an MOS instead of an ASI is that an MOS fills a primary duty, while the ASI is often considered as an additional duty.

Currently, brigade combat teams have a 3C ASI OCS planner authorized for the assistant S-4 (logistics officer). In addition to planning, this person manages OCS as an additional duty, but often without appropriate training. Adding a new member to the brigade staff—a 51O officer—to focus on OCS execution and management during an operation would reduce the workload on the OCS planner. When not deployed, these officers would continue to work in units in both the operating and generating force in their primary MOS. When needed, however, they could be tasked by the Department of the Army or pulled from other locations in the command to deploy with a unit.

The 51O officer and NCO could be placed on a unit's table of organization (TOE) or augmentation table of distribution and allowances (TDA) at the O-6 headquarters level, but not filled unless deployed, similar to the Professional Officer Filler Information System concept for medical personnel.[8] Once deployed, the primary duty description of this officer or NCO would be to oversee and manage the CORs, to teach and coach the CORs in the performance of their duties, and to perform other additional duties as assigned. A prequalification for the MOS would be that the soldier must have successfully

performed duties as a COR for a year. The benefit of the prequalification is that a unit will receive a staff officer with skills and experience in management of contractors, OCS, and CORs.

A prequalification…would be that the soldier must have successfully performed duties as a [Contracting Officer] for a year

One incentive for someone to volunteer for this second MOS might be his or her desire to build on their experience in contracting and COR management. Another incentive might be an individual's desire to contribute to the operation. Additionally, OCS is a very marketable skill after departing service, so individuals having this secondary MOS could benefit after their military service. The Army could also offer incentive pay or some other bonus to soldiers who serve in these positions. There would be no need for career progression in the MOS because it is a secondary MOS only.

The Army potentially would need to have up to one hundred personnel with this secondary MOS to meet rotational demands in high-utilization areas, or as few as twenty-five in normal contingency operations. This would not result in growth for the Army since this is a secondary MOS for TOEs and TDAs and not a primary MOS requiring a modified table of organization and equipment (a permanent) space. The position could also be filled by a civilian who is trained and experienced, depending on the mission.

The Army's automated force-structure management programs would require adjustments to ensure this MOS requirement was recognized as secondary and would not result in an increase in total strength. This automated system change would require funding, but the future cost avoidances from better management associated with the new MOS would pay back the upfront cost. Two major benefits to the Army would be increased efficiency in supervision and fewer cases of waste or abuse because better qualified leaders would be managing OCS from within the brigade staff as their primary duty.

Homestead Units

Given the planning limitation that we do not often know where or when we will be deploying, there are certain functional units that the Army may need in the opening days or weeks of an operation. We propose reassessing the idea of "homestead" units, where the majority of personnel can be retained in a unit to maintain unique skill sets. Reserve component units, in practice, already do this to a large extent, but these units take months to mobilize. One unit that might fit this concept is the 7th Transportation Brigade (Expeditionary), whose mission is to provide port, terminal, and watercraft operations, including logistics over-the-shore operations. This is the only unit of its kind in the active-duty structure. With the current concerns about enemy anti-access/area denial capabilities and the lack of advance knowledge of seaport, airport, and initial staging base locations, it makes sense to have our only expeditionary transportation Army asset as proficient, trained, and experienced as possible.

In a homestead unit, subordinate-unit captains and junior NCOs would be identified and retained as majors and senior NCOs on the brigade staff. Some might even stay in the unit as lieutenant colonels and sergeants major. Officers and NCOs could move in and out of the unit while the majority of senior leaders homestead in the unit. For example, once a captain completed company command, if he or she performed well, the brigade commander could designate the officer for return as a major after a generating force assignment for broadening and career progression.

Officers and NCOs could move in and out of the unit while the majority of senior leaders homestead in the unit.

Advantages created by homestead units include a decrease in PCS (posting) costs and the development of a core cadre with increased experience in unit-specific techniques, tactics, procedures, and operations. And, even if a new brigade commander or command sergeant major is not from the homesteading population, the **staff that supports the new leadership would be very experienced.** Another benefit for the homesteaders would be a more stabilized family environment. Spouses could get long-term work, soldiers could benefit from home ownership, and children could remain in the same schools for longer periods. Finally, to make training, support, and readiness more effective, all the homestead units could be collocated on one base.

Another benefit for the homesteaders would be a more stabilized family environment. Spouses could get long-term work, soldiers could benefit from home ownership, and children could remain in the same schools for longer periods.

A downside to homesteading would be the potential for complacency and a lack of new ideas and perspectives, conditions that are generally overcome through varied personnel assignments. However, since these types of units would be highly specialized, the only perspectives in the Army regarding their respective specializations would come from within the units themselves. This would only apply to non-brigade-combat-team active-component units.

Access to the Army Working Capital Funds

The Army Operating Concept defines "set the theater" as "actions taken to establish and maintain the conditions necessary to seize the initiative and retain freedom of action."[11] One constraint that continually slows an Army contracting officer's ability to set the theater is the lack of immediate access to funds. The Army's cumbersome financial system does not support rapid acquisition in humanitarian assistance/disaster relief or immediate contingency environments. During Operation United Assistance, Army Contracting Command personnel could not procure needed supplies and services for days after arrival because they had to wait for appropriate funding to be released to U.S. Army Africa and then allocated to them for use through the General Fund Enterprise Business System.[12] However, the Defense Logistics Agency (DLA) deployed contingency contracting personnel from their Joint Contingency Acquisition Support Office (JCASO) who were able to write contracts immediately off the plane. Why? Because DLA has a process to authorize the JCASO contracting officer access to the Defense Working Capital Fund (DWCF) for immediate needs with the intent of reimbursing the DWCF once the authorized mission funds are released. While this was the first time JCASO's expeditionary contracting officers executed using DLA's DCWF, it proved to be a great success.

Under the provisions of Title 10, the secretary of defense may establish working capital funds to finance inventories of supplies, and industrial-type activities that provide common services, such as repair, manufacturing, or remanufacturing.[13] A large portion of the Army Working Capital Fund (AWCF) is managed by activities under Army Materiel Command. However, under the current rules, the Army cannot authorize subordinate elements to allocate AWCF money for emergent activities like Operation United Assistance in the manner executed by DLA. Thus, the Army should review and amend its policy to authorize Army Materiel Command to provide a limited amount of AWCF to the appropriate Army service component command to ensure Army Contracting Command contracting officers can respond swiftly to immediate life-support and setting-the-theater requirements, especially in humanitarian and disaster response operations.

Conclusion

The recommendations mentioned above provide innovative approaches to achieving success when the Army does not know the time, place, or enemy it will be facing. By maintaining experience in our joint staff officers, enhancing our contract capability with the development of an OCS officer and NCO secondary MOS, creating efficiency by including template PWSs

Soldiers with the 331st Transportation Company connect the final section of the Trident Pier causeway 15 April 2013 in Pohang, South Korea, during the Combined Joint Logistics Over-the-Shore (CJLOTS) military exercise. CJLOTS was a ten-day training event intended to improve logistics interoperability, communication, and cooperation between the United States and South Korea. (Photo courtesy of Wikimedia Commons)

in doctrine, increasing proficiency in functional units through homesteading, and providing immediate access to funds through AWCF, the Army can more easily seize the initiative. Through the consideration of these proposed concepts, the Army can ensure it is responsive and adaptive, and ready to address the challenges of the unknowns and win in a complex world.

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Lt. Col. Kris Hughes, U.S. Army, is an instructor at the U.S. Army Command and General Staff College campus at Fort Belvoir, Virginia, where he teaches force management and sustainment. He holds a BS in secondary education from The Citadel, The Military College of South Carolina; an MS in human relations from the University of Oklahoma; and an MBA from Norwich University. He has served in command and staff positions in three separate Stryker brigade combat teams, deploying to both Afghanistan and Iraq, and most recently, he served as the director of staff for the Directorate for Logistics (J4), United States Africa Command.

Notes

1. U.S. Army Training and Doctrine Command (TRADOC) Pamphlet (TP) 525-3-1, The U.S. Army Operating Concept: Win in a Complex World, 2020-2040 (Fort Eustis, VA: TRADOC, 31 October 2014).
2. U.S. Army TRADOC, Force 2025 and Beyond: Unified Land Operations—Win in a Complex World (Fort Eustis, VA: TRADOC, October 2014).
3. U.S. Army Field Manual (FM) 100-5, Operations (Washington, DC: U.S. Government Publishing Office [GPO], 20 August 1982); FM 3-0, Operations (Washington, DC: U.S. GPO, June 2001). "AirLand Battle" and "Full-Spectrum Operations" are previous doctrinal concepts of the U.S. Army.
4. Joint Publication (JP) 5-0, Joint Operation Planning (Washington, DC: U.S. GPO, 11 August 2011), xxv.
5. JP 4-10, Operational Contract Support (Washington, DC: U.S. GPO, 16 July 2014), I-9.
6. U.S. Department of Defense Inspector General Report (DODIG) 2016-004, Army Needs to Improve Contract Oversight for the Logistics Civil Augmentation Program's Task Orders (Washington, DC: U.S. DODIG, 28 October 2015), accessed 14 March 2017, http:// www.dodig.mil/pubs/documents/DODIG-2016-004.pdf.
7. Kenneth Gambles, Ellsworth K. Johnson III, and Ethan A. Jones, "Military Proponency—Functional Area (FA) 51," Army AL&T (October-December 2009): 25–29, accessed 14 March 2017, http:// asc.army.mil/docs/pubs/alt/2009/4_OctNovDec/articles/25_Military_Proponency--Functional_Area_(FA)_51_200904.pdf. The Army currently maintains career management field (CMF) 51 in the Army Acquisition Corps. Commissioned officers in this CMF are designated as FA 51 officers, while NCOs have a specific military occupational specialty 51C—acquisition, logistics, and technology (AL&T) contracting NCO.
8. Army Regulation 601-142, Army Medical Department Professional Filler System (Washington, DC: U.S. GPO, 9 April 2007).
9. Office of the Secretary of Defense, "Contingency Acquisition Support Model (cASM)," PowerPoint presentation, accessed 15 March 2017, http://www.acq.osd.mil/dpap/pacc/cc/docs/cASM_System_Overview_7_19_12.pptx; "Contingency Acquisition Support Model (cASM)," Joint Interoperability Test Command, last modified 4 January 2016, accessed 16 March 2017, http://jitc.fhu.disa.mil/ projects/casm/.
10. Army Techniques Publication 4-41, Army Field Feeding and Class I Operations (Washington, DC: U.S. GPO, December 2015).
11. TP 525-3-1, The U.S. Army Operating Concept, 23.
12. "General Fund Enterprise Business Systems (GFEBS)," U.S. Army Acquisition Support Center website, accessed 15 March 2017, http://asc.army.mil/web/portfolio-item/ general-fund-enterprise-business-systems-gfebs/.
13. 10 U.S.C. § 2208 (2015).88

Respect in the CAF starts with you.

No one would shoot a fellow
productive member of their unit.

So, why would anyone cause a psychological
blue-on-blue with their mouths or behaviour?
That's what happens when we fail to respect others
and build our unit into a cohesive fighting team.

No one ever won a war by
killing their own team members.

Commandant
Canadian Forces Logistics Training Centre

Operation HONOUR

Traffic technicians unpack and sort through supplies delivered by a CC-130 Hercules aircraft in support of Operation PRESENCE - Mali to Camp Castor in Gao, Mali on July 25, 2018.

Photo: MCpl Jennifer Kusche, Canadian Forces Combat Camera

LAST MILE LOGISTICS:
EMPOWERING THE DISTRIBUTION LINK

CARLA HARDING, BGen

The Dwight D. Eisenhower School for National Security and Resource Strategy National Defense University Fort McNair, Washington, D.C. 20319-5062

Africa is a complicated continent. History has carved it into have and have-not countries, the differentiating factor being access to abundant natural resources and the distribution system in place to get these resources to market. The net result has been abject poverty for the majority and excess riches for the few.

To a large degree, this social inequality has been the result of the lack of infrastructure to enable widespread economic growth. Moreover, it has left swaths of Africa unreachable for both economic development and humanitarian assistance. The lack of focused microeconomic development of last mile logistics, specifically distribution networks, in developing countries is preventing both effective economic growth and sustainable development programs. This paper will focus on Uganda and Sierra Leone, as representative countries, to highlight that this issue is not unique to any one part of Africa, but rather is applicable to any developing country.

An effective distribution system built into local supply chains will have a dual purpose of globalizing local markets and providing a viable supply chain backbone for security operations. This analysis will encompass an understanding of what last mile logistics means in Africa and the constraints inherent in the development of distribution systems. It will then focus on what this could mean to distribution strategies to enhance globalization and security operations.

Last Mile Logistics

'Last mile logistics' as an axiom is relatively new, due in part with the advent of the e-commerce boom that has occurred in the last decade. However, the actual activity of last-mile logistics has occurred in various forms for hundreds of years. In today's global economy of multi-modal logistics, the last mile is the lexicon given to the final mode of transport that can reach the customer in the most remote region. The complexity of the last mile correlates to the available transportation infrastructure, the security situation, and the resources necessary to reach the final destination. To highlight these complexities two representative countries will be used in this study: Uganda and Sierra Leone. It is important to understand that this comparative is not to suggest that one or the other is disadvantaged by their geography, but rather to demonstrate the range of challenges that are presented when discussing last mile logistics.

In order to frame the challenges facing Uganda and Sierra Leone, it is important to understand the overarching issues. First and foremost, the most crucial aspect of last-mile logistics is a viable transportation infrastructure. In Africa, "the roads, highways, railways, airports and seaports owe their existence to the colonial era. Colonial authorities believed firmly that transportation and economic development were positively linked."[1] Ambe Njoh, an American professor in urban planning, has done extensive research on the link between the availability of transportation infrastructure and economic development. In addition to reinforcing the paucity of research done on this topic, he notes "the studies focusing on Africa are consensual in suggesting that the transportation-infrastructure of any country or region has an effect on its development profile."[2]

Logistically, Africa is a very challenging environment in which to work. While significant investment into transportation development has occurred, it is not

particularly well developed. Moreover, it was unsustainable or maintainable due to civil wars and a lack of education. To this effect, it is necessary to approach any assessment of Africa with an open and innovative mindset.

Land Locked Country – Uganda

Uganda is a land-locked country, bordered by Kenya, Tanzania, Rwanda, Democratic Republic of the Congo and South Sudan and shares Lake Victoria with Kenya and Tanzania. Additionally, "unreliable power, high energy costs, inadequate transportation infrastructure, and corruption inhibit economic development and investor confidence."[3] Regional instability has directly affected the degree of investment in the country. The majority of transportation infrastructure in Uganda dates back to the British colonial era and very little has been updated; it is considered archaic and well below Western standards.

The second facet of last mile logistics is security. Uganda has the misfortune of being in the middle of a number of conflicts just outside its borders; while the nature of the conflicts pose a low risk to spillover into Uganda, humanitarian crises and refugees will exacerbate the economic issues facing this already poor country.

Outside of the major urban centres, the instability is less about the government and the politics of the rich, but rather ethnic clashes and terrorist groups. For instance, while the Lord's Resistance Army was a major issue prior to 2012, major operations by African Union and US forces has pushed the group into the Congo. It is estimated that only 200 combatants remain in the group. However, with the discovery of oil, there is concern that this may be an impetus for the group to return.[4] Al-Shabab, a Somalia-based Islamist terrorist group, has also had incursions across the Ugandan border. While the last major event was July 11, 2012, where they killed 76 people in Kampala, Uganda continues to issue warnings of terrorist attacks within Uganda.[5]

While transportation infrastructure and stability are important for economic growth, resources are necessary to get to this 'last-mile'. The United Nations (UN) and known global logistics organizations provide a good indicator of available resources. In Uganda, the UN does not have their own germane logistics entity in country. An extrapolation suggests that the UN is using third-party logistics (3PL) for their activity. DHL is the most common global 3PL company in Africa; in Uganda itself, they have locations throughout the country, many of which are located in beauty salons, pharmacies, and malls. In comparison, FedEx and UPS only have offices in Entebbe and Kampala.[6] However, UPS has a strategic partnership with Daks, a local company that has an "extensive country-wide network of agents, largest fleet of bikes, vans and trucks has seen us enjoy more than 45% market share of domestic courier and transportation business in Uganda."[7] This company has the ability, on a localized scale, to reach deep into Uganda.

When considering the availability of transportation infrastructure, the security situation and the resources available to execute last-mile logistics, Uganda is not only complex, it is also in need of a better developed distribution network to enhance economic development and provide a framework for security operations. Entebbe and Kampala both have sufficient infrastructure to enable global distribution, but the focus needs to be on building the infrastructure out to the rural areas and solidifying the desire to develop and maintain the capacity.

The Loadmaster directs logistical staff from the United Nations Mission in South Sudan (UNMISS) with unloading a CC-130J Hercules at the UN base in Juba, South Sudan, 21 August 2019.

Photo: MCpl Jordan Lobb, Canadian Forces Combat Camera

Blue Water Access – Sierra Leone

By contrast, Sierra Leone is a vibrant West Africa country on the Atlantic Ocean. While the country was devastated by a civil war in the 1990s, there has been significant investment since then by both the United Nations and the

United Kingdom to re-establish stability. This influence lasted to 2014, when the UN Peacebuilding office closed and the government assumed the office's responsibilities.

Fifteen years of UN and UK missions have resulted in a mix of modern and British colonial-era transportation infrastructure. According to the World Bank, "most of the public infrastructure was either damaged or allowed to dilapidate during the years of civil war … today, the roads network is in dire need of rehabilitation and new investments, particularly in rural areas."[8]

Today, with the closure of the UN Peacebuilding office, "the fate of the economy depends upon the maintenance of domestic peace and the continued receipt of substantial aid from abroad, which is essential to offset the severe trade imbalance and supplement government revenues."[9]

A CH-147F Chinook helicopter delivers material to a United Nations convoy near Gao during Operation PRESENCE-Mali on August 31, 2019.

Photo: Cpl Lessard Task Force-Mali

The internal threat to Sierra Leone from rebels or terrorist is actually quite low. A strong peacekeeping presence for several years reduced the rebel networks to insignificance. While Sierra Leone remains at a medium risk to civil unrest and political action, there is no indication of significant rebel or terrorist activity that could cause instability affecting distribution networks.[10]

The third facet of last-mile logistics, the resources, shares some similarities to those of Uganda. The lack of internal distribution capabilities and two decades of conflict have isolated the resources to the major centres. Unlike Uganda where they piggybacked onto other businesses, DHL only has major offices in the three major cities – Freetown, Bo and Kenema. FexEx does not operate in Sierra Leone and UPS only operates a major office in Freetown. One of the greatest challenges in Sierra Leone is the lack of basic infrastructure; this is reinforced by the World Bank study that discovered that "only 21 percent of the population lives within two kilometers of an all-season road."[11] However, there is an emerging trend of the multinational companies investing in roads as means of accessing natural resources and exporting them to a global market.[12]

Sierra Leone has significant potential for last-mile logistics development. While the Ebola crisis stunted investment progress, the stable security situation, underdeveloped transportation network and abundant natural resources makes Sierra Leone prime for logistical economic development projects.

Microeconomic Constraints

Last mile logistics issues are not created equally, particularly when considering the numerous challenges that face the different nations in Africa. This section will highlight economic constraints as they relate to geography, industry regulation, and corruption.

Geography

Geography can make a difference to the economic viability of a country. While geography is not the deciding factor, it has a significant role in economic development. Paul Collier notes, "if you are landlocked with poor transport links to the coast that are beyond your control, it is very difficult to be integrated into global markets for a product that requires lots of transport."[13]

Uganda

Uganda is rich in natural resources, but its biggest challenge is the physical distribution of these resources. "Uganda has substantial natural resources, including fertile soils, regular rainfall, small deposits of copper, gold, and other minerals, and recently discovered oil."[14] While the mining and oil industries exist, they are not the predominant economic sector. As of 2015, the vast majority of the population, 80%, works in the Agriculture sector.[15] The major exports for Uganda are coffee, cotton, tea, sugar and tobacco.[16] With the discovery of the fourth-largest oil reserves in Sub-Sahara Africa, oil can become a major economic driver when it comes on line.[17]

Uganda's top five trading partners are Kenya, DRC, Sudan, Rwanda and South Sudan.[18] The distribution of exports to these countries remains a major challenge due to the lack of a robust transportation infrastructure, which is one of the reasons that Agriculture has remained the prominent economic sector due to its relative ease of transport. The country does have a large number of waterways, but none of them have any long navigable routes.[19] While there are three ports on Lake Victoria, they are used for ferry service only; however, as of 2013, environmental studies have begun to develop ports and freight vessels to improve trade between the adjacent countries.[20] The distribution plan for oil is via the Uganda-Kenya Crude Oil Pipeline (UKCOP), which is scheduled to be on line in 2017.[21] While new development projects are underway, the fact remains that the economic growth of Uganda is tied to their road network.

Uganda's economic growth is also dependent on the stability and the politics of their neighbouring countries. Uganda exports more to South Sudan than the total of its remaining export partners.[22] Another aspect is Kenya; Uganda is dependent on Kenya for blue water access and as such, it has no choice but to be subservient to their national politics. This was highlighted during the discussion on the UKCOP routing. While Uganda wanted it to go direct to Nairobi due to insecurity in northern Kenya, "the Kenyan government favoured a different route for its potential to open up the underdeveloped Turkana region, where Tullow Oil has discovered vast quantities of oil and its linkage to the Lamu Port South Sudan Transport (Lapsset) Corridor."[23] One nation cannot expect to succeed without its neighbours being part of the solution.

Sierra Leone

Sierra Leone is "endowed with a wealth of natural resources including minerals, such as diamonds, bauxite and rutile—forests, fresh water, fertile lands, a natural harbour, and potential off-shore oil reserves."[24] However, despite this geographic advantage, they have not enjoyed the benefits of such bountiful resources.

Sierra Leone's limited transportation infrastructure is centered on the major cities – Freetown, Bo and Kenema. Its main trading partners are Belgium, Germany, UK and the US, which account for 85% of all exports and highlights the importance of the port infrastructure within the country. For other infrastructure, Sierra Leone's major challenge since the end of the civil war is its aid-dependent budget versus economic development revenues. While they have initiatives such as the Road Fund, which is a fund designed for new investment and rehabilitation, they do not have the income base to support taxation or fiscal policy as a means to resolve their infrastructure dilemma.[25]

Unlike Uganda, the security situation of Sierra Leone's neighbouring countries has very little impact on the economic development of the country. Interestingly, the Ebola outbreak had a much greater impact, igniting global fears of a pandemic. The greatest challenge for the country is investor confidence that another outbreak will not occur.

Central Government Direction

A centralized government is crucial for international relations; other countries and large organizations, such as the EU or the UN, will insist on dealing with the entities of a legitimate government to ensure both representation of a country's interest and the long-term sustainability of any engagement. A centralized government needs to have the ability to have bilateral or multilateral discussions on key issues such as transportation networks to facilitate national goals; an example of this is the Northern Corridor Transit and Transport Coordination Authority (NCTTCA), which is focusing on the joint development of a railway with DRC.[26]

Another positive facet of centralized government is that it enables the development of a coherent plan that will look at the needs of the country as a whole, versus a collation of disparate entities. Strategies for transportation connectivity cannot be effected with decentralized governance.

Corruption

Corruption is rampant in Africa. However, in 2014, Rahim Quazi did a case study on corruption as it pertained to Foreign Direct Investment, and found that corruption is a cultural aspect of Africa and is perceived to be a 'helping hand'.[27] While corruption is a way of life in Africa and affects all manners of government and business, it is necessary to understand what corruption means in Africa and how it impacts the economy.

From a psychosocial perspective, corruption falls into two types of norms – descriptive and injunctive. Descriptive norms are those that describe how people behave in a given situation versus injunctive norm, which is behaviour that the average person will know is inappropriate and unethical.[28] Here, corruption falls into two categories – greed and necessity. Foreign involvement is usually profit driven and involves considerable wealth and power to

those who corroborate to allow access. The other side of this is petty corruption, which predominantly results from economic necessity in the lower economic class.[29] From a 'norm' perspective, this means that greed would be an injunctive norm and petty corruption would be a descriptive norm.

The economic and political situation across the developing countries of Africa further complicates this situation. Transparency International noted "anti-corruption experts attributed the problem in Uganda mainly to inadequate political will to fight corruption coupled with low salaries for civil servants."[30] The abject poverty levels in Africa means that corruption has become the norm as a means of survival in both the government and private sector, which increases the frequency of these actions and perpetuates the behaviour as normal.[31]

The Dilemma of Corruption

In consideration of corruption as a microeconomic constraint, there are positive and negative aspects to corruption. Research suggests that not only is corruption a way of life in Africa, it is also the means by which business is done. This is not to suggest that corruption is rampant through all aspects of economic development, however, one cannot be so naïve as to not think that it is must be considered as part of any economic development plan.

Developing countries struggle to stimulate their economy, which will then enable the growth and independence necessary to assert their sovereignty without the albatross of foreign aid. Foreign Direct Investment (FDI) is one of the most effective ways to stimulate growth, due to the aggregate benefits that result from investment. In order to attract FDI, a company must have the desired resources, stable security, and a system of governance in place that will enable profitability for this investment.

The other side of this dilemma is the social cost of corruption. For those developing countries that have established effective governance, they are then faced with the challenge of eradicating corruption and legitimizing their authority. The real cost of corruption is that "it stops or slows down the process of development and progress in society. It increases the cost of production, depresses investment and blocks the growth, the public confidence on its national institution tumbles down leaving a negative impact on entrepreneur."[32]

Corruption is the greatest constraint to all levels of economic growth in developing countries. In Africa, it has been perpetuated as a norm throughout the entire society, the rich becoming greedier and the poor just seeking survival.

Distribution Strategies

Distribution strategies are as varied as the products available; each commodity requires its own tweaking in order to ensure that the distribution matches the needs of the customer to the market itself. In Africa, this is further complicated by the unique constraints of last mile logistics and the challenges for development. However, it can be done. C.K. Prahald points to two examples of distribution to reinforce his theory that distribution can be done in many forms – Project Shakti in India and Avon ladies in Brazil, both empower local women to do the distribution as they move from village to village. While these are very nascent distribution systems that entail moving small items on bicycles, their distribution power comes from the pure number of women.[33]

Hub and Spoke

Hub and spoke operations is a term given to a central distribution hub that then distributes its products to the end user or to another hub for further distribution. The location of the hub is based on a number of factors such as its customer base, the business climate costs, and availability of transportation infrastructure.[34]

Large corporations from Europe are putting major hub and spoke operations in place. In 2015, the Journal of Commerce wrote an article on DHL's expansion into sub-Sahara Africa noting that they have built a massive warehouse in Johannesburg to position themselves for further expansion into East Africa in anticipation of a 91% growth of trade with China.[35] Hub and spoke systems such as this are currently in place and are the means by which products like Coca-Cola are delivered to the most remote region. There are also smaller hub and spoke operations already in place, such as Living Goods in Uganda. They have over 100 distribution points, so that their health care agents are no further than 5 miles from their nearest distribution centers. These distribution centers hold two months inventory and hire motorcycle riders to distribute the materials to the agents to ensure that the health care workers do not waste valuable clinic time picking up their products.[36]

In Sierra Leone the major cities of Freetown, Bo and Kenema are located throughout the country, which supports hub and spoke operations. The road network between these cities are relatively new, courtesy of UN and NGO funding post civil war. In Freetown, a number of freight forwarding agencies, such as EHS Logistics and Mediterranean Handling Services, offers door-to-door services, to Bo and Kenema. For anything outside these cities, they use local trucks and barges to move cargo through the country. Additionally, larger multinational companies, such as mining companies, are building their own distribution networks, including roads, to assure business continuity from source to customer.[37]

Piggyback Distribution

The concept of piggyback logistics has always existed in one form or another and has a wide application of uses, such as hitchhiking or maximizing partial loads. It is a popular distribution method as people who are moving throughout the country can also be moving goods in any space they have available.

Piggyback distribution is used extensively in Africa. In a recent study on the distribution of Coca-Cola, it was noted that "trucks are the primary means of national distribution, with wholesalers often using bicycles at the local level."[38] Entrepreneurs are seeking new ideas that "create value propositions that bundle service and product delivery."[39] In 2011, SABMiller approached Coco-Cola about putting AidPods in their shipments. AidPods is an innovative design that packages medicine in small pods designed to fit between the bottles in Coca-Cola crates.[40] They noted that there is "great need for process and business model innovation that can enable wide-scale distribution."[41]

In both Uganda and Sierra Leone, the decentralization of governance has resulted in local initiatives to get the final product to market. The lack of a national transportation infrastructure has forced the local population to do what they can do to earn a living. With a poor transportation network that is susceptible to failure during rainy season and corruption rampant throughout both countries, the logical conclusion is that any economic development is through the effort of the individual with little national support. It is reasonable to extrapolate that piggyback logistics is the predominant way that goods are being distributed throughout the country. The downside of piggyback logistics is scale; the distribution is not focused on the good, but rather on 'hitching a ride'.

Large scale distribution systems are crucial to economic growth.[42] Globalization and the demands for the unique goods of Africa have initiated growth beyond their own domestic needs. However, these goods need to get to these markets in order to realize true economic potential.

Conclusion

The challenges facing development in Africa are vast, mainly because in a globalized environment, the interdependency between nations drives economic viability. The interconnectivity that holds it all together is reliable and secure transportation infrastructure. This is the cornerstone of economic development and without it, coherent development cannot occur.

Last-mile logistics is crucial for economic growth, both getting the product to the end customer within Africa and getting goods to a global market. While there are a number of excellent development programs in place in the different countries, their focus has been on the projects themselves and not the distribution networks. In Sierra Leone and Uganda, the common thread between them was the lack of transportation infrastructure upon which to build a sustainable distribution network. These countries are representative of other developing countries in Africa. Investment in transportation resources is crucial to assist in the distribution of goods. In some cases, FDI will be the answer to this solution, but the investment environment needs to be attractive to the large companies who can truly globalize a nation.

A viable Ministry of Transport and a low level of corruption creates an appealing climate for investors. The absence of major hub and spoke operations in a number of countries is an opportunity for many of these investors. Entry-level operations can occur through piggyback logistics until there is a greater understanding of the regional distribution constraints, but they cannot sustain large scale trade activity. Companies such as DHL and UPS in Uganda and Sierra Leone are using sub-contractors for last-mile logistics until they can confirm their optimum business model.

The challenges of providing humanitarian aid are now apparent. In these developing countries, the reason that aid often goes undelivered is that there simply is no legitimate distribution system in place that can deliver the aid to the end customer. For a high price, greedy and corrupt individuals and organizations can facilitate this delivery, which is counter to the social contract of many aid agencies.

One significant solution is that foreign aid target the development of a Ministry of Transportation who can not only provide the cohesive oversight necessary for a national transportation network, but is capable of coordinating the connectivity with other nations. However, in order to recognize the cultural nuance of decentralizations, these plans must be decentralized for execution.
Infrastructure investment needs to be implemented in a manner that generates GDP growth. Moreover, there needs to be an acceptance of corruption, but efforts need to be made to ensure that it errs on the side of the common good, not lining the pockets of the greedy few. Last mile logistics based on the factors presented in this paper will provide an ability for economic growth, humanitarian aid flows, and infrastructure development which will improve African nations and their citizen's standard of living.

ENDNOTES

1. Ambe J. Njoh, "The Development Theory of Transportation Infrastructure Examined in the Context of Central and West Africa," *Review Of Black Political Economy* 36, no. 3/4 (December 2009), 229, accessed February 25, 2016, http://eds.a.ebscohost.com.nduezproxy.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=7&sid=da52a279-fd93-4ea0-a4c9-a8f61a5635ec%40sessionmgr4001&hid=4211.
2. Ibid, 3.
3. CIA Factbook, "Uganda," accessed February 25, 2016, https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html
4. Global Security, "Lord's Resistance Army," accessed February 25, 2016, http://www.globalsecurity.org/military/world/para/lra.htm
5. Reuters, "Uganda warns of possible Al-Shabab attack", the Star, 24 September 2015, accessed February 25, 2016, http://www.the-star.co.ke/news/2015/09/24/uganda-warns-of-possible-al-shabaab-attack_c1211641.
6. FedEx, "FedEx Uganda – Office Locations," accessed February 16, 2016, http://www.fedex.com/locate/index.html?locale=en_UG.
7. Daks Courier, "Transport and Logistics," accessed February 26, 2016, http://www.dakscouriers.com/about_us.html
8. Nataliya Pushak and Vivien Foster, "Sierra Leone's Infrastructure: A Continental Perspective," (The International Bank for Reconstruction and Development/The World Bank: 2010), 8, accessed February 25, 2016, http://infrastructureafrica.org/system/files/Sierra%20Leone%20ctry%20rpt%20Web.pdf.
9. Country Watch, "Sierra Leone," accessed February 26, 2016, http://www.countrywatch.com.nduezproxy.idm.oclc.org/Intelligence/CWTopic?Type=text&CountryID=153&Topic=INFIC
10. Aon, "2015 Terrorism & Political Violence Risk Map – A guide," accessed February 25, 2016, http://www.aon.com/terrorismmap/2015-guide-terrorism-political-violence-risk-map.pdf.
11. Nataliya Pushak and Vivien Foster, 25.
12. Nataliya Pushak and Vivien Foster, 3.
13. Collier, 57.
14. Country Watch, "Uganda," accessed February 26, 2016, http://www.countrywatch.com.nduezproxy.idm.oclc.org/Intelligence/CWTopic?Type=text&CountryID=178&Topic=INFIC
15. Ibid.
16. Food and Agriculture Office of the United Nations, "Yearbook: Uganda – Exports," accessed February 26, 2013, http://faostat.fao.org/desktopdefault.aspx?pageid=342&lang=en&country=226.
17. CIA Factbook, "Uganda," accessed February 25, 2016, https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html
18. The Observatory of Economic Complexity, "What does Uganda Export 2013?" accessed February 26, 2016, http://atlas.media.mit.edu/en/profile/country/uga/
19. Ibid.
20. European Commission International Cooperation and Development, "Lake Victoria Regional Development," accessed February 26, 2016, https://ec.europa.eu/europeaid/lake-victoria-regional-transport_en
21. Christabel Ligami, "Kenya, Uganda to strike deal on oil pipeline," *East Africa News* (25 August 2015), accessed on February 26, 2016, http://www.theeastafrican.co.ke/news/Kenya--Uganda-strike-deal-on-oil-route-to-export-market-/-/2558/2833884/-/eshg11/-/index.html
22. International Alert, "Trading with Neighbours: Understanding Uganda-South Sudan Business Community Relations," October 2014, accessed February 26, 2016, http://international-alert.org/sites/default/files/Uganda_UgandaSouthSudanTradeRelations_EN_2014.pdf
23. Christabel Ligami.
24. Nataliya Pushak and Vivien Foster, 6.
25. Nataliya Pushak and Vivien Foster, 24.
26. Northern Corridor Transit and Transport Authority, "Background," accessed February 27, 2016, http://www.ttcanc.org/page.php?id=11.
27. Rahim M. Quazi, "Effects of Corruption and Regulatory Environment on Foreign Direct Investment: A Case Study of Africa," *Global Journal of Business Research* 8, no. 4 (2014), 51, accessed December 13, 2015, http://search.proquest.com.nduezproxy.idm.oclc.org/docview/1561477396?accountid=12686.
28. Nils C. Köbis, Jan-Willem van Prooijen, Francesca Righetti, and Paul A. M. Van Lange, "Who Doesn't? - The Impact of Descriptive Norms on Corruption," *Plos* ONE 10, no. 6 (June 2015), 2, accessed February 29, 2016, http://eds.a.ebscohost.com.nduezproxy.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=3&sid=0763c272-8716-480d-a913-57e486db8bbd%40sessionmgr4004&hid=4202.
29. Alfred Wong, 79.
30. Transparency International, "Corruption by Country," accessed February 25, 2015, https://www.transparency.org/country/#UGA.
31. Nils C. Köbis, 8.
32. Umbreen Javaid and Saadat Faruq, "Corruption Pervades Poverty: In Perspective of Developing Countries," *South Asian Studies* 30, no. 1 (January 2015), 166, accessed February 26, 2016, http://eds.b.ebscohost.com.nduezproxy.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=1&sid=cf54b85d-a67e-498a-a91f-bd328705ca8e%40sessionmgr102&hid=112.
33. "Enhancing Lives through Project Shakti", *Hindustan Unilever Inc.* accessed December 13, 2015, https://www.hul.co.in/sustainable-living/case-studies/enhancing-livelihoods-through-project-shakti.html.
34. F. Robert Jacobs, Richard B. Chase, Nicholas J. Aquiland, *Operations and Supply Management,* 12th edition (McGraw-Hill Irwin: New York, 2009), 386-388.
35. Global Logistics Focus 2015, "DHL Pours Investment Into Africa," *Journal Of Commerce,* 15307557, 59A, (2015) accessed December 13, 2015, http://tv3wq6ms5q.search.serialssolutions.com.nduezproxy.idm.oclc.org/?sid=Refworks&charset=utf-8&__char_set=utf8&genre=article&title=Journal of Commerce (15307557)&date=2015&pages=59A-59A&atitle=DHL Pours Investment Into Africa&spage=59A&.
36. Living Good Uganda, "The Living Good System," last updated 2015, accessed December 13, 2015, https://livinggoods.org/what-we-do/the-living-goods-system/.
37. Sierra Rutile Ltd, "Existing Operations," updated 2015, accessed February 28, 2016, http://www.sierra-rutile.com/existing-operations.aspx.
38. Prashant Yadav, Orla Stapleton, & Luk Van Wassenhove, "Learning from Coca-Cola," *Stanford Social Innovation Review,* (Winter 2013), 54.
39. Yadav, 53.
40. Jim Butschli, "Medicine kit pack rides Coca-Cola crates to save lives in Zambia," *Healthcare Packaging,* May 27, 2013, accessed December 2, 2015, http://www.healthcarepackaging.com/trends-and-issues/distribution/medicine-kit-pack-rides-coca-cola-crates-save-lives-zambia.
41. Yadav, 55.
42. US Commercial Growth, "Doing Business in Uganda: 2014 Country Commercial Guide for U.S. Companies," accessed February 28, 2016, http://photos.state.gov/libraries/adana/766947/public/doing-business-uganda2014.pdf

Prior Learning Assessments

Recognizing Your Qualifications Obtained Outside the Norm

The Canadian Forces Logistics Training Centre (CFLTC), situated in Borden, Ontario offers training for 10 trades. Courses range from basic trades training for Privates to advanced logistics training for Majors.

Logistics training can be obtained through a variety of methods. The most common method is through courses taken at The Canadian Forces Logistics Training Centre (CFLTC). However, the Canadian Armed Forces recognizes there are other ways in which members obtain qualifications.

Standards Division at CFLTC has been recognizing various sources of qualifications or partial qualifications for years. However, not all logisticians know about the prior learning assessment or PLAR process that applies to training taken at other venues outside CFLTC. Recognizing qualifications earned outside CFLTC saves training time, money, resources, and time away from the unit.

A PLAR can be submitted for qualifications issued by other militaries; work experience; trade school qualifications; civilian industry qualifications; provincial driver's licensing; NATO courses; and prior Canadian military courses.

A few examples of PLARs include, but are not limited to the following:

1. Material Support Equipment Operator driving and civilian licensing qualifications,
2. Transferring reserve training to regular force training,
3. Chef qualifications for cooks,
4. Prior military courses for re-enrolees,
5. Experience garnered from prior or current civilian employment,
6. Allied and NATO military courses.

PLARs can be submitted by reserve force members of any class or contract type, primary reserve list members, regular force members, prospective transferees from other militaries, and recruiting centres on behalf of perspective members.

CFLTC receives a significant number of PLARs annually. Preparation is key in order to assist members with a quicker response. If a member is considering submitting a PLAR or the chain of command is recommending a member receive a PLAR, the following documents will be needed:

1. A completed PLAR checklist for the requested course(s). A blank checklist can be obtained from the CFLTC Standards Division PLAR coordinator (Catherine Maurice) directly by email to a member or through the member's chain of command,
2. The member's Military Personnel Record Resume (MPRR) or allied equivalent (if available),
3. Supporting documentation which can include:

a. A description (word document) explaining how the member meets the required overall standard. This is often a supporting letter signed by the member's Commanding Officer when chains of command are engaged in the process. If chains of command are not engaged, then a simple letter from the member will suffice,
b. Copies of course reports,
c. Certificates of training completion,
d. Allied supporting documentation,
e. Personnel evaluations, but only if relevant and which detail the work completed relating to the PLAR request,
f. Post-secondary transcripts of course completion,
g. Provincial qualifications (e.g., copy of driving qualifications, Red Seal certificate, journeyman trade qualification, etc.),
h. Proof of trade school, technical institute, union, employment, or post-secondary course completion.

PLARs that are not granted often lack adequate substantiation or are a fishing attempt by the member or chain of command who have provided excessive, non-targeted documentation. Most denied PLARs have little explanation given on the checklist and provide only a military resumé.

Another common example includes members who submit a stack of paperwork for every course they have ever taken, a checklist with little or no details, and a request to grant them anything for which they may qualify. PLAR requests should always be targeted on to a specific course or qualification. Fishing attempts will be rejected as they demonstrate the applicant does not understand the course material being taught.

Often, members submit documents such as high school transcripts. High school transcripts never have sufficient strength to grant a qualification as courses taught at CFLTC are at the college/technical institute level or higher.

Letters of recommendation are often received without accompanying documentation. These letters frequently come from Commanding or other officers who are unfamiliar with logistics training. Unfortunately, many of these chains of command are unaware of the required standard and qualification granting process for logistics personnel. A letter of recommendation alone will not be sufficient to grant a qualification, but it can be used to support the request. Other supporting documentation is required.

The highest degree of success comes from targeted, relevant, and substantiated supporting documentation.

PLARs do not require to be submitted though the chain of command. Although it is recommended a supervisor be informed of the request, a member may contact the PLAR coordinator directly. Supervisors and chains of command can contact the PLAR coordinator to submit PLARs or request assistance or advice on behalf of their members. Recruiting offices are encouraged to contact the PLAR coordinator directly to facilitate re-enrolled and allied military transfer applications.

New for Material Support Equipment Operators

CFLTC will be processing PLARs for MSE Ops based on the following parameters:

1. If a member has a provincial driver's license with qualifications on it, 404 equivalents will be most often given,
2. If a member has trade qualifications from a provincially run program (e.g., forklift operations at a technical college), they will be granted 404 equivalencies,
3. If a member has qualifications from a private college, trade association, union, training company, or prior employment, they can request PLAR approval and will be required to do a driving test.

Under all of these conditions, should the Standards Division staff feel the candidate has not met the CAF standard, a driving test can be administered. Likewise, if a driver is applying for a qualification that requires the skill of manual shifting and has only done automatic, a shortened training module will be given before the full PLAR is granted.

The intent of these changes is to accelerate new entrants into the trade, reduce training time, maximize qualifications, and conserve resources.

How to Submit a PLAR

Following the ensuing steps will help ensure a PLAR is submitted and the results returned without significant delay:

1. The requestor emails or phones the CFLTC PLAR coordinator. A plus account has been set up which the CFLTC PLAR coordinator accesses. A request for the checklist for one or more courses is submitted through this DWAN account (+CFLTC PLAR Coord@CFLTC-CILFC@Borden).
2. The member, chain of command, or recruiting office will fill in the checklist, which includes a place for substantiation. The requestor collects supporting documentation for the course or courses they wish to be granted,
3. The documents are scanned and emailed to the PLAR coordinator at CFLTC and carbon copied to the Military Personnel Generation Training Group PLAR coordinator at DWAN account (+CFSTG PLAR Occupations@CFSTG Stds@Borden). The CFLTC PLAR coordinator then forwards them

on to the appropriate standards personnel within CFLTC,
4. If the standards personnel require clarification, they may contact the applicant directly,
5. The request will be assessed against the current course offerings and standard of training,
6. If the applicant is successful, they will be notified and the qualification entered into their Military Personnel Record Resume. If the applicant is not successful, they will be notified. In some cases, a partial or provisional qualification may be issued pending further action by the member as outlined in the response from the Standards Division.

Criteria to Receive a Qualification

Qualifications are granted based on the current standard and requirements of existing courses. A member who has returned to the military after a prolonged absence may find that the standard or course material has changed and may not be granted a qualification based on older courses.

Did you know…

New members arriving with prior qualifications from civilian industry often come with significant experience. The PLAR process enables these members to be employed in units faster than through the normal training process.

To aid with reducing training time and redundant training, various trades will be modularizing their training plans at CFLTC. Candidates missing certain qualifications but having others will be able to do only those modules that they are missing rather than a full training program. This will free up more seats for untrained candidates, reduce training waiting times, and reduce the cost of accommodations and feeding for new members.

Additionally, the following criteria/questions will be used by the standards personnel in assessing the request:

1. Has the applicant fulfilled at least 70% of the course material? Most applicants will be well above this figure. The cut off of 70% is the pass rate for most CFLTC courses, with a few exceptions involving health, safety, and finance,
2. Is there anything the member is missing that would be detrimental to health and safety?
3. Is there a leadership component missing that is required?
4. Is there a legal requirement or general order/ CANFORGEN to conduct the current training?
5. Are there legal changes that are required in the course for which the member must be made current?
6. Is there anything that the member is missing that could cause financial embarrassment to the Crown or trade, demonstrate financial incompetence, or increase risk to the Crown that involves financial errors or loss? This question typically relates to finance, clerical, and contracting courses,
7. Has there been any significant change in technology or equipment that would affect the applicant's ability to competently function?
8. Is the request for a high skill fade qualification? The prime example of this criteria is for members who have had a prolonged absence from the military and who have not been working in a related trade in the civilian or reserve environment. Ammunition technicians are a prime example.

Pending the results of the above criteria, members will be granted the qualification, denied the qualification, asked to provide additional or clarifying substantiation, or be granted a provisional qualification pending supplementary training. An example of supplementary training often occurs with officer training when a member has completed a reserve two-week course, has experience, but is lacking one or two performance objectives for a regular force course.

In cases such as these, the members or their chains of command will be contacted to make arrangements to conduct on-the-job training to fulfil those requirements before a full qualification is granted. Other examples of how to fulfil the necessary requirements may include: A road test to be administered by a qualified driver instructor or completion of a performance check, exam, or assignment under the supervision of the member's chain of command or CFLTC Standards Division staff.

Conclusion

A prior learning assessment is an excellent tool to help personnel obtain qualifications. It saves significant resources, time, and funding while avoiding duplication of effort. The key to a successful PLAR is effort and preparation put in to requesting the qualification. A targeted, well supported PLAR has the highest degree of probability for approval. Should individuals for chains of command have further questions, they are invited to contact the CFLTC PLAR coordinator at: +CFLTC PLAR Coord@CFLTC-CILFC@Borden.

Photo by Matthew T Rader on Unsplash

Roman Military Logistics in the Sixth Century AD

By Hugh Elton

Although the western part of the Roman Empire had collapsed in the late fifth century AD, the eastern part (often referred to as the Byzantine Empire), continued to exist for another millennium. During the sixth century, the Roman Empire continued to defend its borders and to engage in large scale offensive operations. Two early sixth-century operations are briefly discussed here, the campaigns under Anastasius (491-518) against the Sasanid Persians in Mesopotamia in 502-506 and the campaign in north Africa under Justinian (527-565) in 533. The primary sources for these operations are often very detailed, so that we have a good understanding of how armies on campaign were supplied.

Anastasius' Persian War (502-506)

Following a long period of peace between the Romans and Sasanians in the fifth century, in 502 the Sasanid Persian king Kavadh I (488– 531) attacked the Roman Empire. He launched his army from the Persian highlands through the Armenian mountains, capturing Theodosiopolis (modern Erzurum) in August. He then marched south to besiege Amida (modern Diyarbakır) in early October. After a four month siege the city fell in January 503, but while Kavadh was occupied here, local Roman forces recaptured Theodosiopolis late in 502.

In the spring of 503, a large Roman army was sent to Mesopotamia. This combined the eastern field army under the command of Areobindus with the central army from Constantinople (modern Istanbul) commanded by Patricius and by the emperor Anastasius' nephew, Hypatius. The sixth-century chronicler known as pseudo-Joshua the Stylite suggests this was a force of 52,000 men. As was typical Roman practice at this period, a civilian official, the praetorian prefect Apion, was appointed to manage the supplies of this large army.

"Since the bakers could not make enough bread, he gave orders for wheat to be supplied to all the households in Edessa and for them to make the military biscuit (bucellatum) at their own expense. On the first occasion, the Edessenes produced 630,000 modii." (ca. 4,200 metric tons) (Chronicle of Pseudo-Joshua the Stylite 54).

A later historian Procopius described the way in which this bucellatum was prepared:

"The bread which soldiers ought to eat in camp must be baked twice in the oven, and be cooked so carefully as to last for a very long time and not spoil in a short time; bread cooked in this way necessarily weighs less and for this reason, when such bread is distributed, the soldiers generally received as their portion one fourth more than the usual weight." (Procopius, Wars 3.13.15).

With this large and well-supplied army, Patricius and Hypatius besieged Amida. However, the Persians were also well-prepared. An account of the Roman capture of the Persian fortress of Petra in the Caucasus in 551 suggests what would have happened at Amida. When the Romans captured Petra, they found:

"a vast quantity of grain and of cured meat as well as all other provisions which were indeed sufficient to keep all the besieged adequately supplied for five years. But the Persians had not, as it happened, stored wine there other than sour wine, but they had brought in an ample supply of beans." (Procopius, Wars 8.12.18–19)

While the siege of Amida was taking place, Areobindus campaigned in Mesopotamia. However, with the army being commanded by three equally ranked generals it was hard to set priorities. Thus in 504, a new overall commander was sent out from Constantinople, the magister officiorum Celer. Patricius again besieged Amida which finally surrendered in early 505, while Areobindus and Celer conducted. raids into Persarmenia and Mesopotamia. In 506 the Romans and Persians negotiated a seven-year peace on the borders that had been in place in 502.

Justinian's African War (533)

Justinian's decision to invade north Africa in 533, lost to Roman control when it was conquered by the Vandals a century earlier, was not taken lightly. It involved launching an amphibious expedition from the capital at Constantinople to the Roman province of Africa (modern Tunisia). In Italy, an alliance with the Ostrogothic queen Amalasuntha allowed the use of Syracuse in Sicily as a staging post. Before the final decision was made, we hear of discussion in the consistory (the imperial advisory council) where the eastern praetorian prefect John the Cappadocian argued fiercely against the plan to invade Africa.

Once the decision had been made, the general Belisarius led an army of 16,000 men to Africa. This force was carried in 500 transports (some of which transported horses), escorted by 92 warships. When the expedition arrived in southern Greece, Procopius reports that in an attempt to save money, John had baked the bucellatum only once.

"And when it seemed to be cooked in some fashion or other, he threw it into bags, put it on the ships, and sent it off. And when the fleet arrived at Methone, the loaves disintegrated and returned again to flour, not wholesome flour, however, but rotten and becoming mouldy and already giving out a sort of oppressive odour. … And the soldiers, feeding upon this in the summer time in a place where the climate is very hot, became sick, and not less than five hundred of them died." (Procopius, Wars 3.13.17-20)

Procopius was hostile to John, so this account may be somewhat exaggerated. Once Belisarius landed in Africa, he defeated the Vandals in a small battle at Ad Decimum, occupied the Vandal capital of Carthage, and then won a decisive victory at Tricamarum. With the collapse of the Vandal kingdom, Africa was again Roman controlled.

Conclusions

Both of these campaigns show typical characteristics of the Late Roman army. The state was able to organise large numbers of men, animals, and supplies for military purposes. This allowed armies to campaign a long way from their permanent bases, and to undertake amphibious operations and sieges lasting for months.

Dr. Hugh Elton graduated from Oxford with a Doctor or Philosophy specializing in late Roman political and military history. He has taught courses on the Trojan War, ancient warfare, Greek, and Latin. From 2001 through 2006, he served as Director of the British Institute at Ankara. He has been a professor since 1993 with his latest position being held at Trent University.

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The Application of Drones to Logistics

Photo: Courtesy of Google.

There is a significant disparity between the quality of life in the developed and developing worlds. Our access to premier services and state-of-the-art technology leaves little to be imagined living on the cutting edge of history. In other parts of the world, life is difficult, rugged and logistically complex. Basic infrastructure, such as roads, are poorly built, or traverse difficult terrain, making it challenging to deliver even basic amenities and supplies.

This disparity has created an opportunity for the private sector to solve traditionally government/ social problems (such as infrastructure) with the latest technological advances. An example of this was the wide implementation of cell phone services in developing countries (jumping over the installation of affixed telecommunications cable, due to its cost). Similarly, we are seeing this with the application of drones to the delivery of life-saving medical supplies, such as blood and plasma. These in-demand and highly perishable items can be packed into a drone within an urban centre and flown to rural areas within a matter of hours, with no concern over the quality of the terrain, changing the landscape in which we approach classic problems.

A specific case study that demonstrates this success is that of Zipline, based out of California. In 2017, under the auspices of the World Economic Forum, this company started a delivery program in Rwanda that delivered medical supplies, medicine and blood to remote and rural areas under a government partnership. This program has since been expanded and is now operational in half of Africa.

As we watch this, and other initiatives develop, we see that this could also be applied to military operations when it comes to just-in-time deliveries that are time sensitive and highly important. We continue to learn from companies such as Amazon and Zipline how important innovation is, especially when it comes to meeting demand. To benefit from these applications, we need to instill foresight into our daily routine and be aware of these types of initiatives to better serve our logistics community to create a more agile force.

Source: PTI, Indianweb2 (Technology, Web and Start-ups). Telangana Govt, Apollo Hospitals to Use Drones to Deliver Blood, Medical Products. 2017.

Zipline: An Urgent Medical Delivery Tool in Africa

Photo: Open Source Photography
Workers prepare a Zipline drone for a delivery by installing the wings and battery pack.

Zipline is a US technology startup that has been delivering medicines and blood products by drone since 2016. As of February 2019, Zipline has delivered over 4000 units of blood and countless medications. It has a capability to process 500 orders per day. Zipline drones are able to operate in a variety of conditions that would normally be very slow for ground vehicles. The average delivery time is 30 minutes with some deliveries being made in as little as six minutes. The drone is launched from a simple, electric powered, rail catapult; flies a pre-set course with holding patterns if needed; and then drops its payload by parachute as per the app or operator specifications. No landing is needed for the drop or even the return. When the unit automatically returns (or has an override activated by the pilot), it is caught by a tail hook that snags the drone on a wire strung between catch poles. The drone flights are monitored by air traffic control along with regular manned aircraft in the area. Zipline has been funded by key Silicon Valley venture capitalists. Zipline has been instrumental in lifesaving medical care by reducing delivery times from many hours to minutes.

Zipline: The Specs

Max Speed: 135km/hr
Max Range: 160km
Max Payload: 2kg
Net Weight: 20kg
Units of Blood Delivered: 4000
Average Delivery Time: 30 minutes

Photo: Open Source Photography
A Zipline drone prepares to engage its small tail hook onto catch line and swing nose down to make a “landing”.

Top 3 Trends Facing the F&B Cold Chain Industry

By Atif Rafiq

In recent years, the food industry has faced a number of exciting and dramatic changes to its supply chain, fueled mostly by shifting consumer demands. Consumers are increasingly focused on the food retailer's transparency which includes foods that generally require temperature controlled storage through the supply chain.

From the deployment of automation and robotics in warehouses to new innovative ways to manage energy, ideas that were once confined to brainstorming sessions and office whiteboards are now getting the significant investment they need to be deployed in the supply chain.

So what innovations and trends are poised to have the greatest impact on our industry in the next three to five years

- Digital twin – Data becomes insight
- The Amazon effect
- E-commerce drive change

Foodtech landscape				
Software only (Order only platform model	Software + logistics (integrated delivery model)	Ride hailing & Cross-industry integrator	Vertically integrated	Prepared groceries or meal kits
Examples include: Round menu, google reviews	Examples includes: Deliveroo, talabat, swiggy, Zomato, Carriage	Examples includes: Uber Eats, Careem Now, Fetchr, Mirsool	Examples includes: Ritebite, Kcal extra	Exemples includes: Hellochef.me
These companies offer consumers a network of online food ordering sites with restaurants partners, the restaurants handles the delivery	These companies focus on both, optimizing the food ordering platform as well as delivering restaurant meals to the end-consumer	The ride hailing platforms have moved into the food delivery space by providing software and logistics	These companies offer consumer fresh cooked food and delivery service under one umbrella. They design menus and cook the food in-house	Grocery delivery or meal kits offer weekly subscription models, which deliver fresh ingredients in specific proportions along with the printed recipe card

Digital Twin – Where Data becomes insight

Cold chain is already greatly benefiting from the power of data analytics, artificial intelligence and deep learning, which can quickly and accurately collect data from multiple sources and then convert that information into actionable knowledge. Further utilizing application from the IOT revolution, one can get a complete view of operations and the extended logistics chain, enabling more precise control over the environment.

For example, if your whole supply chain has a digital twin, we can ensure and maintain a level of temperature control and efficiency that is unmatched in the industry – the incumbent can analyze shipment conditions during transportation of perishable and other commodities that are sensitive to temperature, humidity and other environmental conditions. While oceans voyages are fairly stable when reefer containers are used, the other "legs"of the journey – or what happens from the farm to the vessels, and once the commodity is off-loaded from the vessel to the importer's warehouse or even the distributor – are the most vulnerable.

Photo by Christian Wiediger on Unsplash

Amazon effect

The market continues to demand faster velocity, better service and greater efficiency. Leading supply chain providers must deploy systems that can provide clients with product visibility and control in near real time.
A chain is only as strong as its weakest link, as the saying goes, is especially appropriate in the supply chain industry. We must keep precise delivery windows with our ocean carrier, freight forwarder, trucking partners, both inbound and outbound, and ensure we leave a customer's product in the same condition we received it.

Old freight forwarders who have not evolved and still prefer doing things the old way will have to step aside and let themselves be disrupted by new players who understand the technology that brings speed and visibility to help develop SLA windows and the ability to serve customers faster and better.

Ecommerce revolutions drive innovation upstream
Regional players like Carrefour, Spinneys and Union Co-operative have hopped on the e-commerce bandwagon with Souq Supermarket and some have established their own delivery channels esp in the grocery store and convenience store category. This trend signals a change in consumer preference which has created a ripple effect in the retail supply chain.

For third party logistic providers, many are experiencing delivery requirements within hours instead of days or weeks. This had led to a rise in retail standards around velocity and on-time movement of goods particularly in perishables where time is of the essence. Third party logistic providers are also adapting their service offering whether its repacking larger cartons into smaller packages, offering promotional labeling etc.
As for warehouse and fulfillment design – Proliferation in food and beverage for fresh food, gluten-free and farm-to-table preferences cascade into warehouse operations. As the number of SKU's increase, it affects the profile of orders and increases the number of lines. Greater precision is required in how the capacity inside the warehouse is used to manage an expanding product line.

Those fulfillment issues need to translate into new requirements for technology in terms of visibility and traceability to handle the complexities.

MSE OPs from 31 Svc Bn practice new techniques while withdrawing under contact during a convoy operation exercise.

Photo by MWO Roger Gonsalves, 31 Svc Bn

ARMY TRANSPORT IN THE CANADIAN ARMED FORCES:

MOBILE SUPPORT EQUIPMENT OPERATORS

FROM HORSE AND WAGON TO DRONES

By MWO G.J. Boucher

In ancient times, mankind tended to be found gathered together in relatively small numbers of family groups or small tribal communities. As civilization progressed, these small villages became larger settlements, towns, and cities throughout the course of history. Populations became denser, the requirement of the inhabitants for larger tracks of land to provide their basics needs and the desire for trade increased, and therefore the need for means of transportation over long distances became more pronounced. Throughout history, a need for armies and defensive forces has been constant, and as civilizations grew, the need increased, and the requirements of the armies changed.

The only way for any armed force, militia, or army, to be successful is through sustainment, and a major factor contributing to the success of any sustainment operation (during peace time or at war) is transport.

Transport today is by far no means close to the transport of yesteryear. The use of animals (e.g., horses, oxen, and mules) in armies gave way to the external combustion engine (steam) then the internal combustion engine (the type used in most automobiles today) which in turn opened the door to the many types of vehicles being used in the Canadian Armed Forces (CAF) currently.

Today, the transportation methods that the CAF utilizes come in many different forms. This includes ships, planes, helicopters, and vehicles both wheeled and tracked. The Army, although supported by the Navy and Air Force, has its very own trade dedicated to movement of supplies and people: Mobile Support Equipment Operators (MSE Op). A diverse group of individuals able to operate many vehicle platforms in support of garrison, field, domestic operations, and overseas deployments.

The lineage of the Trade is unique as it has a history prior to confederation :

Royal Waggoners 1794-1795;
Royal Waggon Corps 1799-1802;
Royal Waggon Train 1802-1833;
Land Transport Corps 1855-1856; and
Military Train; 1856-1869.

Between 1794 and 1869, regardless of the name of the unit, the requirement for a dedicated and reliable military transportation organisation became evident. As shown during the Napoleonic and Crimean War, battles were lost due to the insufficient transport to move supplies to the front.

Based on these lessons learned, between 1869 and 1881, the Army Service Corps was formed. It was a small detachment of the 1st Army Service Corps (British troops) with the main body of Canadians (militia and boatmen) aiding in the supply and transport support of the Red River expedition of 1870. The main means of transport at this time were horses, large canoes, and flat-bottomed boats.

It is notable to add that Major-General Garnet Wolseley, who led the expeditionary force, was so impressed by the skill and efficiency of the Canadians transporting his force through the difficult series of rapids and portages to the Red River Settlement, that he later asked the Canadian government for 300 Canadian “boatman” to go to the Sudan to transport his army up the Nile River. Prime Minister John A. MacDonald refused to give official assistance. However, he did allow the British to recruit directly from Canada .

While Commissariat and Transport Corps was formed between 1881 and 1888, Canada was forced to fall back on the old standby of hiring civilian contractors (this time Hudson's Bay Company) to provide transportation services for its Militia. Recognizing a need, the 2nd Army Service Corps was formed in 1888. This corps provided the foundation for the formation of the Canadian Army Service Corps (1901-1919) and Royal Canadian Army Service Corps (1919-1968).

Throughout World War I, armies took the steps needed to advance their own capabilities, both at home and on the battlefield. Despite automobile development being in its early stages, horses were still a vital part of the war. Both riding and cart horses were in high demand, and faced a draft not unlike soldiers did. Many a horse that was fit and capable was recruited into service, and trained for different jobs. They were a form of transportation as they hauled artillery pieces and supplies, and preformed other tasks as required. An estimated eight million horses died during World War I, with another two million injured but cleared for duty.

"Transport today is by far no means close to the transport of yesteryear."

World War I marked the end of the cavalry charge at the beginning of the war. The impracticality of trench warfare did not allow for a charge, nor did the machine gun fire. This did not see the end of the usefulness of horses and mules as transportation, however. Automobiles were still new enough that they were unreliable and would break down, partially due to inexperience in maintenance. However, the planners saw the opportunity for growth and development, and throughout the war, and after, technological advances in transportation became a priority.

During the interwar years of 1919 to 1938, mobile support functions fell under the direction of the Aeronautical Engineering personnel. The Royal Canadian Air Force (RCAF) established in 1924 at "Station Camp Borden"; was comprised of officers and Airmen of which 11 were described as Motor Transport Drivers. RCAF Transport equipment consisted of smaller staff cars, various truck platforms, tractors, ambulances, fire vehicles, mobile cranes, and marine craft.

Throughout the 1920's and 1930s the Canadian governments kept military spending to a minimum. Many people believed that the First World War had been the "War to end all Wars". Canada reduced its military forces to fewer than 5,000 full time members. During the economic catastrophe brought by the Great Depression of the 1930s, Canadians worried more about their jobs and families than the state of the armed forces. This meant money for defence was virtually non-existent. Modernization of our forces was impossible at this time; however, advancements in transportation were quickly becoming apparent.

Transition from horse transport to motor transport was ongoing after WWI, the last parade of horse transport was held in 1936. In May 1938, the Royal Canadian Army Service Corps (RCASC) Training Centre was opened at Camp Borden; but, in the summer of 1939, the RCASC had a strength of only 4,000.

A year-by-year account that covers the major events that marked Canada's involvement in the Second World War and Korea cannot be explained briefly. Canada played a strong role in defeating the Axis powers. The roles of the many RCASC units played on the battlefield of Europe, Africa and in the Pacific from 1939-1945 and later during the Korean War from 1950 to1953 bare testimonies to the many advancements of the technological improvements in transportation, whether it was to infrastructure and roads or the development of more sophisticated vehicle platforms designed to haul heavier loads, bulk oil and gas, or mass transportation of personnel.

A time of rapid change came to Canada with the unification of the Canadian Forces in 1968. Just prior to this, the Canadian Forces School of Administration and Logistics (CFSAL) was inaugurated 01 September 1967. Transportation Company at the school was developed to provide trades training to the MSE Operators. Later the name changed to Canadian Forces Logistic Training Centre, and apart from the name change, the role remained the same – to deliver relevant and effective trained personnel to the Canadian Armed Forces.

The ever-evolving CAF commitment to the country and world stage has shaped the way the military provides sustainment, specifically with regards to transportation. The largest example in history was the horse and wagon evolving into an engine operated means of sustainment. These basic utilitarian vehicles got bigger, faster, and more capable of doing a wide variety of work.

The advancement of technology was evident. The CAF went from the Standard Military Pattern (SMP) Medium Logistic Vehicle Wheeled (MLVW), the work horse of the 80s to early 90s to the Heavy Logistic Vehicle Wheeled (HLVW) which gave way to the Super Heavy Logistic Vehicle Wheeled (SHLVW), or better known as the 16 Ton Pallet Loading System (PLS) - a platform (at that time) specifically operated by MSE Operators. Self-loading (the sea container and/or pallet could be loaded on to the truck without the aid of a heavy forklift), able to move 20' palletized loads or 20' sea containers weighing up to 16 Tons, enabled the delivery of bigger loads using fewer operators.

The CAF vehicles with container handling capability have been around since the early 90s. The vehicle proved itself during the Somalia deployment where four PLS Vehicles with accompanying PLS trailers were deployed to theatre. From all reports, this proved to be quite successful. This support was used extensively in the former Yugoslavia between 1996 and 2003 and later in the early years of Afghanistan.

Since the early years of the PLS, the vehicle has gone through many changes and variants. In the 2008 the Armoured Heavy Vehicle Support System (AHVS) was rolled out for exclusive use in Afghanistan. A heavily armoured vehicle with state-of-the-art computerized functions used in sustainment was the envy of many countries in theatre. Its heavy payload capability and armour protection afforded the operator excellent protection from the many threats. Many variants were made to include general cargo, pallet/sea container lift, tractor trailer, and recovery options. The CAF saw the need for this type of vehicle for use in Canada and slowly started rolling out the SMP MSVS. A smaller version of the AHSVS, but a very dependable vehicle platform able to replace the aging HLVW fleet and continually support the CAF for years to come.

Transportation and logistics have traditionally been defined by trucks and infrastructure, but over the past several years' technology has begun to change that. The use of computers has come to the forefront, GPS has advanced, and electronic vehicle logs are making their way into practice. The CAF has started to research Telematics – a GPS tracking device to analyse driving behaviour and fuel consumption for each vehicle. It has been installed on a trial basis on commercial pattern vehicles employed in Halifax and Esquimalt. This new technology could be transferable to the SMP fleet, with the potential to improve transport operations by tracking vehicle locations, improving vehicle utilization, automatically tracking drivers' hours, tracking vehicle maintenance needs, and generating alerts if the engine generates a trouble code. All these applications could help avoid breakdowns and extend the life of the vehicle.

As we look to the future of transport within the CAF, we must not tunnel vision ourselves with basic wheeled vehicles. Recently, a large well know logistics company made headlines when it announced it planned to use unmanned flying drones to deliver products to customers. Can a practical use be developed for the CAF? Less than ninety years ago, the horse was still heavily used in the Army. In years to come, will there be autonomous vehicles driving throughout Canada on our bases and deployments? Time will tell. History has proven to be productive and positive with regards to technological advancement. Things that seemed futuristic twenty-five years ago are common place now. We are living in an incredible time where the only constant is change, and the rate of change is by far increasing! Let's look to this bright future as we continue to provide transportation services that are Second to None!

NOTES

1. Royal Army Service Corps & Royal of Transportation Association http://www.rascrctassociation.co.uk/. Last accessed 7 October 2019
2. Chronology, First Imperial request for Canadian Troops – The Loyal Edmonton Regiment Military Museum. Last accessed 7 October 2019
3. WarMuseum.ca - A Chronology of Canadian Military History - 1919-1939. Last accessed 7 October 2019

TRADESPERSON

PROFESSIONAL

WARRIOR

I'M A LOGISTICIAN!

UN Flight 51

The destruction of UN Flight 51, which took place on August 9, 1974, represents the worst one-day loss for the Canadian Armed Forces since the Korean War. Five of those who were lost were acting in a logistics capacity. It was also the worst day for the Logisticians since the Second World War.

CAF members had been participating in the second United Nations Emergency Force (UNEF II) since its inception in October 1973 to keep the peace between Egyptian and Israeli forces. Shortly thereafter, in May 1974, the United Nations Security Council passed Resolution 350 to create the United Nations Disengagement Force (UNDOF) to monitor the disengagement agreement between Syrian and Israeli forces in the Golan Heights.

UN Flight 51 was Buffalo 461's last flight designation, for a routine scheduled supply trip from Ismailia, Egypt to Damascus, Syria. (Photo from Canadian Warplane Heritage Museum)

Part of Canada's UN contribution to UNEF II was an Air Transport Unit (116 ATU) stationed in Camp Shams near Cairo in August 1974. The ATU served both UNEF II and UNDOF. At the time, there were three unarmed Royal Canadian Air Force DHC-5 Buffalos providing logistics air support for UNEF II, and UNDOF six days a week. They flew from Ismailia near Cairo to Beirut and from Beirut to Damascus.

On Friday, August 9, 1974, UN Flight 51 was on its last routine supply flight for the week, travelling from Cairo to Damascus via Beirut. On board and acting in a logistics capacity were the pilot, Capt George Gary Foster; the First Officer, Capt Keith Mirau; the navigator, Capt Robert Wicks; the Flight Engineer, MCpl Ronald Spencer; and the Load Master, Cpl Bruce Stringer. Four other CAF passengers were on board as well.

Just prior to crossing into Syria, First Officer Capt. Mirau changed to Damascus Air Traffic Control Centre to communicate the routine flight information. He received the latest weather from Damascus and at 12:51 read back to them, "Roger we are cleared to Damascus VOR to maintain 8000 cross Mike Echo Zulu at 10,000 or above." As the aircraft approached the village of Diemas in Syria, a Syrian SAM site on a Syrian air base fired a SA-2 missile at the transport plane. UN Flight 51 began to trail smoke and lose altitude. 60 to 90 seconds later two SA-6 missiles hit the plane. All nine Canadians aboard were killed.

Whether the shooting was accidental or intentional remained unanswered by the Canadian Board of Enquiry that was held following the tragedy. Was it Syrian nervousness linked to the recent incursion over Syrian airspace by an Israeli fighter jet, a Syrian message to the UN to hold the Israelis in check or the lack of communication between the UN representative in Damascus and his Syrian counter-part? Regardless of the reasons for the loss of UN Flight 51, it was the highest one-day loss of Canadian Logisticians since the Second Word War and a sad milestone in the history of the Logistics Branch. To mark the day and to honour all Canadian military and police who have served the UN, August 9th is now Peacekeepers' Day in Canada.

What did we learn?

Select Lessons from Op Presence in Africa for Logisticians

This section will briefly outline a select number of lessons learned from recent operations in Africa. Although there are many more, the idea is to use this section as a learning platform. These lessons are drawn from the CJOC lessons learned databases as general observations. Dozens of other lessons learned were captured and can be reviewed on the Defense Wide Area Network.

Lesson 1 – Dangerous goods movement across West Africa requires 14 days for host nation advisory. Although fewer days may be required for other nations, mounting leading up to the deployment needs at least 14 days.

Lesson 2 – Monetary transactions in Africa required smaller denomination notes. Large bills issued by European financial institutions were too large for standing cash advance use. Most locally procured items in Africa required small bill cash payments.

Left Photo:
Gao, Mali. August 14, 2018 –
A CH-146 Griffon helicopter takes off from Camp Castor in Gao, Mali during Operation PRESENCE.
(Photo: Corporal Ken Beliwicz)

Right Photo:
Gao, Mali. August 14, 2018 –
A CH-147F Chinook helicopter takes off from Camp Castor in Gao, Mali during Operation PRESENCE.
(Photo: Corporal Ken Beliwicz)

Lesson 3 – IT work stations and connectivity were underestimated. The number of work stations for an austere location needs to be compared against the requirements for connectivity during a rehearsal and tied to a joint planning session. Additionally, exercising connectivity from remote locations should form part of exercise rehearsals in Canada, especially when considering a joint operation.

Lesson 4 – Increased training between the Task Force Headquarters, the Aviation Battalion, and the National Support element is required to improve communication and coordination. This includes tabletop exercises on medical evacuation, mass casualty scenarios, and airmobile operations. Increased scenario play in training will help cement coordination between these elements that do not have a history of training together except for this operation.

The Operational Support Hub in Dakar: An enabling operational capability in Africa

By Lieutenant-Colonel Anik Lefebvre
Commanding Officer, Operational Support Hub in Dakar
1 January to 27 April 2019

The Operational Support Hub (OSH) in Dakar was established in June 2018 with a primary mandate to provide operational support to Operation PRESENCE. Strategically positioned, the mission support team not only had access to the facilities of the Léopold Sédar Senghor (LSS) military airport but also had some access to port facilities and Blaise Diagne International Airport. Although the level of poverty is high in the country, Senegal is the second largest economy in West Africa, and Dakar has shown economic growth over the past five years. The location chosen for establishing the OSH, with the resources available, was conducive to supporting the mission in Mali.

The Tactical Air Detachment (TAD), co-located with the OSH team, provided airlift between Senegal and Mali. This grouping was the perfect combination to ensure that Operation PRESENCE received effective operational support. Frequent weekly CC-130 flights between Dakar and Mali, as well as regular monthly strategic flights from Canada to Senegal, ensured that Task Force Mali was resupplied. With a well-established support capability in Senegal, other Canadian missions based in the region were also able to take advantage of the support provided by the OSH and TAD. Operation NABERIUS in Niger, as well as elements of the Royal Canadian Navy and other operational tasks, benefited from the capabilities provided by the OSH and TAD. The team was even able to help support Operation SOPRANO in South Sudan, even though that Canadian mission is located in East Africa.

The OSH team, which has just over 30 members not including the TAD, nevertheless had extremely limited support capabilities––capabilities that included transportation, military personnel administration, finance, contract management, maintenance, movement control, ammunition, communications, supply, health services, postal services, military police and force protection. With very little redundancy or depth within each of the capabilities, it was necessary for all members to participate

in the collective effort to achieve the desired effects. At one point or another, everyone was called upon to take part in transportation tasks, physical security activities and site maintenance. When operational requirements somehow exceed available capabilities, we have to be flexible, prioritize tasks and ensure that team members understand the value of their contribution to the mission. That is the responsibility of leaders in the field who must keep members motivated and ensure that they understand how critical their role is to the success of the mission.

In order to be ready to support the mission, leaders had to not only try to put together the core support capabilities required, but they also had to make the necessary preparations prior to deployment. Preparatory training, including an understanding of the operational context in which the team would be called upon to operate, as well as essential equipment requirements, were all important factors to consider before the team left. As a result, we had to educate ourselves through briefings and do some personal research in order to fully understand the tasks we were going to be called upon to perform as well as be familiar with the mission commander's expectations and the operational environment. We also had to understand the cultural context, the authorities on the ground, including other Canadian stakeholders, and the relationships between them. Those factors all had to be considered in pre-deployment preparations. Thus, aspects such as the language used, particularly for establishing and managing contracts and interactions with the Senegalese airport authorities, were critical points that had to be assessed in composing the team to be deployed. It was also necessary to know the status of agreements with the host nation, the parties present and their role. For example, for an extended period of time, the memorandum of understanding and technical agreement between the Canadian and Senegalese authorities was not formalized. There were only agreements in principle. Those were not insurmountable issues, but they sometimes made it difficult to access certain services or resources. Establishing communication with the Canadian Defence attaché was definitely necessary in order to fully understand the situation. In addition, we needed to understand how the host nation operated, bearing in mind that we were guests on its territory. By showing respect for the policies and rules of the host nation and being courteous to the Senegalese forces, we maintained a healthy relationship that enabled the OSH to carry out its tasks. By following the directives of the Senegalese authorities, communicating frequently with Senegalese forces based at LSS and demonstrating a high degree of professionalism, the Canadians enjoyed exceptional cooperation from the Senegalese authorities. Among other things, access to key facilities and freedom of movement at LSS directly contributed to the quality of operational support provided. Collaboration with the other nations present also played a key role in operational support. For example, the French Armed Forces based in Dakar served as great enablers in OSH support operations. The relationship that was maintained with the French military on the ground contributed to situational awareness and provided access to some of the resources required for Canadian support operations.

Knowing how to get the most out of the team members is crucial, especially when the team is fairly small. That is best accomplished by bringing team members together prior to deployment to get to know them and, most importantly, by ensuring that leaders have the opportunity to communicate work expectations and critical information about the mission. By getting to know the members in advance, leaders can discover additional capabilities within the team that can contribute to the success of the OSH. For example, when instructions were exchanged between departing and arriving staff at the OSH, we found that there were four projects to improve air operation conditions at LSS. Those included performing planned repairs to the airport perimeter, acquiring bird control devices, clearing brush around the runway and redoing the airport runway lines. Although the OSH team did not have the technical expertise to develop the statement of requirements for each of those projects, some members had the agility and, more importantly, the willingness to establish the necessary contracts to carry out them out. Thus, we were able to put in place the conditions to close Task Force Mali and establish a permanent OSH in Senegal.

The experience of leading the OSH mandated to provide operational support to Operation PRESENCE from January to April 2019 was an unforgettable experience. It was very rewarding, both personally and professionally, to have this adventure with a team made up of members from across Canada and forge relationships with both the Senegalese and Canadian authorities in Dakar, the Senegalese people and our allies.

Africa, Ebola, and Cold Supply Chain Logistics

This case is based on Operation SIRONA, Canada's deployment to Sierra Leone to support the Ebola crisis. The names, some of the details, and positions have been modified for the ease of case instruction. The purpose of this case is the enable critical thinking and understanding of unique logistics problems.

Background

The first outbreak of Ebola occurred in 1976 in Zaire. It was largely contained in spite of killing over 300 people with 88% effectiveness, so the world paid little attention to the isolated outbreak. Over the next three decades the disease seemed to remain relatively isolated in Africa and did not garner much media attention.

However, by 2013 the world began to take notice. In 2013 Ebola began taking the lives of thousands of people in Sierra Leone and the surrounding countries. The spread of the disease caused fear of outbreaks in other parts of the region and concern around the globe with the movement of potential carriers in and out of the affected countries. As elementary caregivers responded to family members, friends, neighbours, and patients, their contact with the body fluids of infected people only increased the risk of transmission and death. Western governments advised avoiding travel to the affected nations and several westerners that traveled or who had been living in the region became infected.

The World Health Organization (WHO) reported that the number of cases doubled every 20-30 days.[1] This rapid increase added additional concerns to those seeking to contain the epidemic. Authors for *The Lancet,* a world-renowned medical journal, suggested that mortality from the virus ranged from 55-100%, but could be reduced to 10% with high level intensive care. Intensive care was significantly different and expensive compared to traditional healers who were often the first point of contact for medical care.[2] Some of the evidence supporting extensive intensive care was based on Americans surviving an infection. However, in order to react quickly, the establishment of intensive care facilities to curb the rapid growth of the epidemic would not be tenable for a variety of reasons.

Other factors also surrounded the outbreak. The economies of West Africa suffered as trade slowed. Terrorist organizations claimed the disease was a western conspiracy while the western media questioned whether terrorist groups could use Ebola as a terror weapon both in Africa and abroad.

The Vaccine

As the crisis rapidly grew, governments around the world, aid groups, the UN, and others began questioning what could be done. Largely unheard of and unseen was Canada's research into Ebola. Canada's National Microbiology Laboratory in Winnipeg had been studying the disease since 1999 and, by 2005, had developed a vaccine that appeared to be highly effective and ready for human trials.[3] The federal government patented the vaccine and produced 800 vials for a future response team need, if that were to ever arise. The government did not pursue commercial development or human trials itself. Rather, it opted to sign over a licence with Iowa's NewLink in 2010. By early 2014, NewLink and Merck began to work together to complete the human trials and produce the vaccine.[4]

The vaccine did provide logistical problems, however. It was required to be kept at -800C until shortly before being administered. This meant that transporting it from the production facility to the airport, flying the vaccine around the world, and then storing it at the end destination required a cold supply chain that could be monitored, consistent, and multimodal. It also required personnel that understood the importance of cold supply chain measures.

The Canadian Federal Government Considers a Response

The government's initial response was to provide funding through the WHO and other means to support the effort to stem the tide of Ebola and aid patients already infected with the disease. Various other courses of action were considered by the various federal government strategic decision makers. One option suggested was to deploy Canadian medical professionals, including military personnel, to the region to assist with UK and WHO efforts in triaging and treating patients. It is at this stage that the case dialogue begins.

The Military Approach and Dialogue

"I'd like to welcome everyone to today's teleconference to discuss the option of deploying Canadian soldiers to an Ebola affected part of Africa. We received a staff check on it from the Strategic Joint Staff this morning." The voice of the CJOC J3 trailed off. The Canadian Joint Operations Command (CJOC) was the designated organization tasked with the employment of Canadian Armed Forces personnel abroad, less Defence Attachés, overseas posted personnel, and advanced training list personnel.

Members dialed in to the teleconference or siting in the CJOC conference room include the Joint Health Services Operations J4, Joint Health Services Operations J3, CJOC J4, CJOC J4 Movements, Commanding Officer 1 Canadian Field Hospital, and various other staff officers. "From a Health Service perspective, we can deploy. But… the Surgeon General has specifically stated that CAF personnel will not deploy without having health security measures in place. I know she has spoken with Strategic Joint Staff and they support this limitation," stated the Health Services J3.

"OK, so what does that mean?" questioned the CJOC J3. "What it means is that we must have the ability to deploy with the proper protective suits, gloves, masks, filtering equipment, and so forth. We pretty much have all the gear, but there is one more thing the Surgeon General has requested…the Canadian produced vaccine," replied the Health Services J3.

"I heard Canada has one, so, what's the big deal? We drop it in a box or cooler or something and fly it over, right? I heard there was enough stock from a federal government lab to provide for several hundred soldiers so I don't think stock is an issue," suggested the CJOC J3.

"Supply isn't the problem," replied the Health Services J4. "The problem is shipping it. The vaccine isn't like a regular medical shipment. It has to be kept at -800C until just before administering it to the members. We also won't be able to give it to all the members before deploying and we may need some for the UK and WHO members that will be working with us. That means that it has to be shipped to the affected area and maintained at that really cold temperature until ready for use. The lab is in

Winnipeg and we will need to ship it to Sierra Leone or wherever we get assigned, vaccinate those that need it, and have extra ready for emergency situations or delayed arrivals. This also means that when it gets to Africa, it has to be ground transported at -800C and kept at that temperature throughout. Now, we do have monitoring devices to alert us if there is a temperature disruption throughout the cold supply chain, but the shipping container is a problem," continued the Health Services J4.

"So why don't we just stuff it into some liquid nitrogen or something," asked a CJOC J3 staffer.

"It's not that simple. Liquid nitrogen is -1980C and we're not doing cryogenics here. Dry ice is -780C. Isopropyl alcohol freezes at -890C. So, in a way we could use something like that if we can get the temperature right. Normally sensitive items like vaccines are transported in special medical containers that control the temperature very closely. We don't have any units in the CAF that go to -800C. I'm not even sure we've ever had to transport a medical item at such a low temperature. There are commercial versions available that plug into planes, but they are expensive, hard to find, and the airforce doesn't have any tested so are reluctant to 'just plug a cooler' into a plane without first testing it for air worthiness and cabin pressure loss scenarios. We spoke to 1 CAD about this problem earlier this morning and I seemed to get push back on just buying a container and plugging it into their planes. Furthermore, the coolers have to plug into a plane, a ground vehicle like a Toyota 4 Runner or Hilux, and an office space with the right voltages throughout. The voltage in Sierra Leone is 230V while here in North America it is 110V," replied the Health Services J4.

"Sounds like a log thing alright," noted the CJOC J3 as the CJOC J4 quickly sat upright in his seat. Turning to the J4, he continued, "J4, we need your staff to work with the Health Services staff to figure out how we are going to get an Ebola vaccine at -800C to Sierra Leone or some other part of Africa without disrupting the cold supply chain. Tee up with the airforce or anyone else you need to get this done."
"I'm on it," came the reply.

Questions

As a logistics officer, how would you approach this problem and what possible solutions could you develop to satisfy the needs identified? What would you recommend to Commander CJOC?

What Happened

The lack of airworthiness testing and time for procurement of coolers that could maintain a temperature of -800C proved to be two significant challenges. In the end, the CAF contracted out the deployment of the vaccine to a specialist carrier that had the correct coolers. The contract included pickup from the Winnipeg laboratory through until delivery to the CAF clinic in Sierra Leone where the vaccine was the kept onsite in the contractors' coolers.

By May 2018, no country had officially approved the use of the vaccine as it was still under human trialing. However, over 4000 doses had already been supplied to locals in Kinshasa with highly positive results and very few negative effects. Reports indicated that members of families that were vaccinated were not affected by subsequent outbreaks in spite of non-vaccinated members of those same families dying.

Dr. Gordon Bennett is the Commandant of the Canadian Forces Logistics Training Centre. He has been previously published in the North American Case Journal, Canadian Military Journal, and the popular media.

Photo Credits: Combat Camera

NOTES:

1. WHO. (2014). Ebola in West Africa: heading for catastrophe? Retrieved from https://www.who.int/csr/disease/ebola/ebola-6-months/west-africa/en/
2. Timothy JWS, Hall Y, Akoi-Boré J, et al. (2019). Early transmission and case fatality of Ebola virus at the index site of the 2013–16 west African Ebola outbreak: a cross-sectional seroprevalence survey. Lancet Infect Dis 2019; published online Feb 21. http://dx.doi.org/10.1016/S1473-3099(18)30791-6. Retrieved from https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(18)30791-6/fulltext
3. Crowe, K. (2018). How the new Ebola vaccine was made in Canada https://www.cbc.ca/news/health/second-opinion-ebola-vaccine-1.4672807
4. Ibid.

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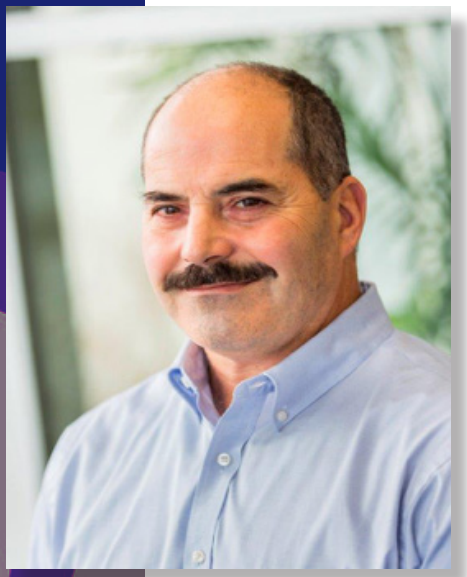
Canadian Biogas Association
CELEBRATING 10 YEARS

INTERVIEW with MARK GUADAGNINI



Rear Admiral Guadagnini graduated with distinction from the U.S. Naval Academy in 1980, earning a Bachelor of Science in Economics.

Operationally, he served as a division officer in VA-65, on the staff of Carrier Air Wing 8 as head landing signal officer and strike operations officer, as head of the safety and maintenance departments in VA-65, and as operations officer for Carrier Strike Group 8. He commanded Strike Fighter Attack Squadron 15 and Carrier Air Wing 17. During these operational tours he operated from the decks of 12 different aircraft carriers, participating in combat Operations Desert Storm, Provide Comfort, Deliberate Force, Southern Watch, Enduring Freedom, and Iraqi Freedom.

Shore duty assignments included three years as a test pilot and instructor at the Naval Test Pilot School, a Legislative Fellowship in the United States Senate, and as an aide and flag lieutenant in the Bureau of Naval Personnel and on the U.S. Pacific Fleet staff in Hawaii. Guadagnini also worked as a liaison between the Office of the Secretary of Defense and the U.S. Congress, and served in the Navy Personnel Command as the division director for Aviation Officer Distribution.

As a flag officer, he commanded Carrier Strike Group NINE, served as the chief of Naval Air Training; head of Human Resources for the Naval Aviation Enterprise; Deputy Commander for Fleet Management at U.S. Fleet Forces Command; and served as the director, Maritime Headquarters at U.S. Fleet Forces Command. He has over 4,700 hours of flight time in 52 different aircraft, and flew 95 combat missions.

Mark Guadagnini retired from active duty in October 2013, and went to work at Shell as Vice President for Arctic Maritime and Logistics. In July 2016, he assumed the duties as General Manager for the Shell Technology Center Houston. After an international assignment in Nigeria, he was appointed as Vice President of Health, Safety, Security, Environment and Social Performance for Shell Real Estate and Global Functions in December 2018.

You started your career as a carrier pilot with the USN and later became Shell's Vice President for Arctic Maritime and Logistics after retirement. Can you tell us how you made that transition as it appears as though the two career fields are very different?

All military operators, from trigger pullers to maintainers to logisticians, are taught from the outset of their military careers to work together and solve problems. During my career as a pilot, I worked with great teammates to solve thorny problems, but what I found as a logistics executive is that the process of solving supply chain problems is the same, and uses the same skillsets, that we learned for problem solving in the military…merely the problems were different ones to solve.

Operating in the Arctic is always a challenge for any industry but it is a place in which the military is expected to operate. Can you tell us a bit about the challenges Shell has faced in the Arctic and how it overcame them?

In my last job in the military, the logistics organization for half of the U.S. Navy worked for me. Those great people taught me the key things I needed to know – the most important of which was: the last tactical mile is the hardest one to move people, equipment, or supplies. That was especially true in the Arctic, where the weather, infrastructure (actually lack thereof), public opinion were all hostile. The biggest thing we learned was to use local people, with their incredible knowledge of the Arctic, to help solve logistical problems…they and their ancestors have been master logisticians in the Arctic for thousands of years!

What we learned is the rule of three in the Arctic: it is going to cost you 3 times as much, and take 3 times longer, to do something in the Arctic as it would below 50 degrees latitude.

You are presently the Vice President of Health, Safety, Security, Environment and Social Performance at Shell International. What does "social performance" mean and why is it valuable?

In Shell, we believe in respect for people and in being good neighbors wherever we operate. Social performance defines those things we do: communications, community liaison, charity work, infrastructure improvement, job and educational opportunities; to make sure our actions match our words.

Shell has been executing a number of sustainable, environmental footprint reduction projects such as its LEED certified buildings. From a logistics standpoint, what are some of the projects Shell is working on that could be applied to other industries such as the military?

One of the key things we are doing in both demolition and construction projects is figuring out how to be "circular". That means actively recycling materials from the demolition of buildings and plants; actively searching for ways to use recycled materials in construction of new buildings and plants. This can be applied anywhere we do business. Another example: in some countries our shredded paper documents are being recycled and used in the manufacture of toilet paper.

You had a distinguished military career with deployments around the world. What would you say were some of the key success factors that contributed to effective sustainment in supporting foreign locations? Alternatively, what were the challenges your units faced when sustainment was not well done?

As an operator, I learned that your supply chain must: a) be pre-planned, b) have branches and sequels built in, c) be robust, and d) be made an integral part of battle plans. When that worked, military operations were superb. One key failure of supply: on one deployment, the aircraft carrier was down to a 2-day supply of toilet paper, with no resupply scheduled for five days. The entire operation would have come to a screeching, and miserable, halt due to what we might think of as a relatively minor consumable.

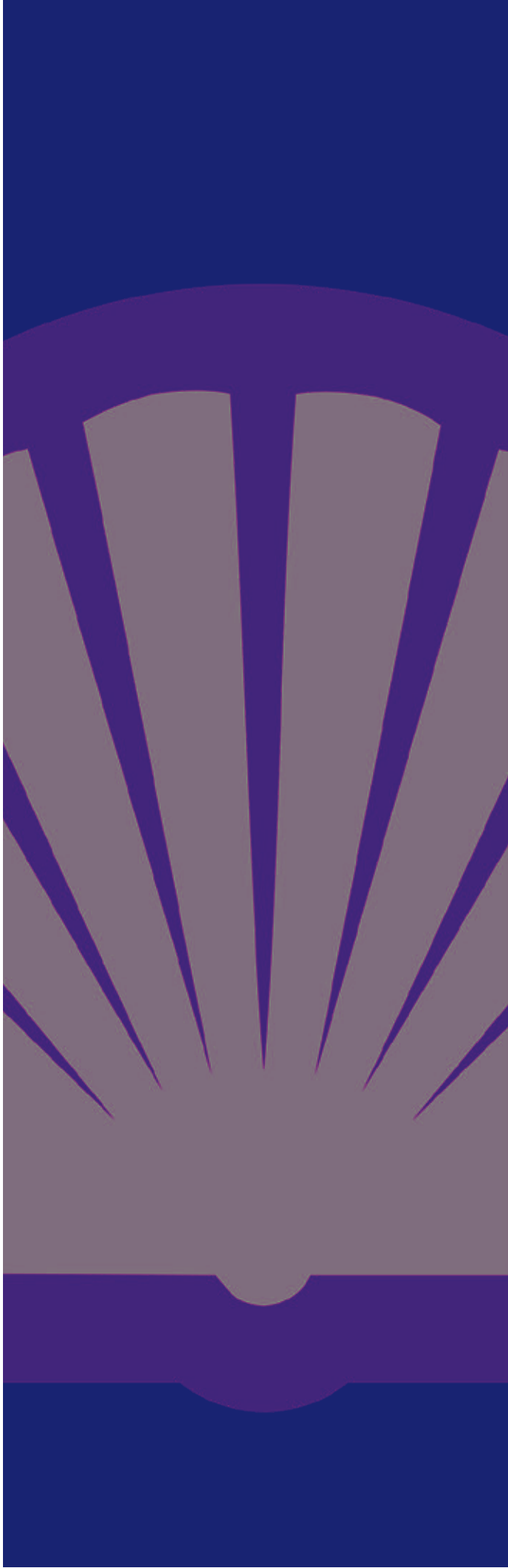
INTERVIEW with MARK GUADAGNINI (Con't)

During your military career you served in the Navy Personnel Command. When a military looks at strategic human resources, what should it focus on?

People are the most important part of any military. The focus should be on recruiting the right people, training them in the culture and traditions of the military, training them to do their jobs. Then the role of any Personnel Command, or Human Resources organization is twofold: 1) put the right people in the right parts of the organization, 2) try to make sure that the people progress as far in their careers as their talent and hard work will take them. Simply put: Take care of the People and Take care of the Team.

Based on your experience in both the military and civilian industry, what can organizations do to encourage its personnel to learn the lessons of the past and prevent repeating the same mistakes in the future?

First, an organization, and all the people in it, have to possess the humility to admit that they don't know everything and constantly need to learn more. Second, an organization has to invest the time to learn from excellence (those things that went well), from incidents (those things that didn't go well), and from outside (other militaries and businesses). Third, the database that contains all the information has to be easily accessible, easy to search, and easy to input lessons learned.



Is your unit doing something interesting?

Do you have expertise in a certain area?

Is there a recent book that you recommend to others?

Did you just return from a mission and have lessons to share with the logistics community and our allies?

Do you have useful practices from industry or our allies we should adopt?

If so, we are accepting submissions with the following guidelines:

1. Ten pages or less
2. English or French
3. Pictures welcome with notations
4. Sources must be referenced as end notes, if using references

Email your submissions to the Cmdt of CFLTC at
Gordon.Bennett4@forces.gc.ca

We welcome submissions from any rank, any trade, and any element.