THE CANADIAN GUNNER

1969


UBIQUE
QUO FAS ET GLORIA DUCUNT

THE CANADIAN GUNNER

Volume 5 December 1969

Captain-General
Royal Regiment of Canadian Artillery
Her Majesty The Queen

Colonel Commandant
Royal Regiment of Canadian Artillery
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THE CANADIAN GUNNER is published annually at the Canadian Forces School of Artillery, Shilo, Manitoba, financed by the Officers' Regimental Fund of the RCA Central Funds.

CONTENTS

MESSAGE FROM THE COLONEL COMMANDANT

Major General H.A. Sparling, CBE, DSO, CD

1969 has been yet another year of change in the long life of the Royal Regiment of Canadian Artillery.

In January, after serving the interests of the Royal Regiment for the past five years with a devotion which has characterized his many years in the service of the guns, General Bruce Matthews completed his tour of duty as Colonel Commandant. While saying a sincere "thank you" to him, we know we shall continue to have his full support.

February witnessed a ceremonial parade of our new 5e Regiment d'Artillerie Legère du Canada at which it received its new Colour, the 105mm L5 pack howitzer. 5 RALC exhibited the usual high standard of the Royal Regiment. The evening previous to the parade a group of retired Quebec City Gunner officers welcomed the return of the Regular artillery to the Quebec Garrison by a dinner held in the Officers' Mess of La Citadelle which for many earlier years had been the home of the Gunners of the Garrison. This latter event was typical of the close family life of Canadian Gunners.

From the reports on our Militia artillery firing practices, it is apparent that the local headquarters training of the Militia Gunner met the test of practical gunnery. Our Militia regiments and independent batteries together with those Regular Gunners who assisted in this training are to be congratulated on the standard achieved, and the continuing evidence that, as in the past, they can be counted on to fulfill their role in the defence of our country.

It would be futile to ignore the uneasiness which has been felt in recent months throughout the Royal Regiment of Canadian Artillery, both Militia and Regular, because of the anticipation of unknown reductions forecast by the fight against inflation and a new definition of defence roles. The Regular Gunners now know where they stand but the Militia artillery has yet to learn the actual impact of defence policy on them. It seems apparent, however, that the real value of the Militia Gunner as part of the "forces in being" is recognized in the stated provision that part of his training will continue to be service of the guns.

While changes such as these are always unsettling, it is well to recall that we Gunners have gone through similar experiences. A reading of Gunner history shows the selfless dedication of hosts of our predecessors in carrying on through times such as these. When the call came, they were ready.

The Gunner of today, be he Regular or Militia, is just as dedicated. The Royal Regiment of Canadian Artillery will not forget the lessons of history and will meet the demands of the future.

H.A. Sparling

MESSAGE FROM THE CHIEF OF ARTILLERY

Last summer it was my privilege to take over the appointment of Chief of Artillery from Colonel J.P. Beer whose well known devotion to the Regiment was immediately apparent from the healthy state of affairs which I inherited.

Colonel D.W. Francis, CD

Alas, this situation was destined to be short-lived; indeed it had already begun to deteriorate with the rumours of impending reductions and these rumours soon proved to be well-founded. In September the new force structure was announced, and the resulting effect on the Royal Regiment became clear. On the surface, the loss of one unit seemed not unreasonable, but in terms of manpower the Regiment suffered a loss of approximately one third of its strength. I would like to outline some of the consequences as I see them:

a. Our modest efforts to get back in the Air Defence field seem doomed to failure and there is little hope of any progress except in a small way with the All Arms Air Defence weapon. Any force required to take the field will do so without adequate protection against hostile aircraft.

b. The Locating field, with the exception of regimental survey, seems to be lost. Our highly developed skills in counter-mortar radar, sound ranging and drones will shortly disappear and we shall not soon re-acquire them. Moreover, the effectiveness of any field force will be seriously impaired by the loss of these target acquisition capabilities.

c. Our nuclear capability, coupled with our expertise in the field of missiles and large rockets will disappear. Who is to say whether we may not need them again?

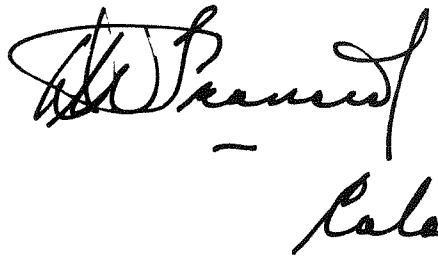
d. The Air OP, which won its spurs in war and has consistently proven its ability to support the field force, is in danger of disappearing as the air experts attempt to reorganize it into a tactical aviation unit. The effectiveness of Air OP support under such a system of command and control would be questionable unless adequate safeguards were built in.

e. The changes have resulted in an artillery structure which is out of balance with the other arms. Its ability to provide effective fire support on a sustained basis in a shooting war is highly suspect.

f. Lastly, the reduction will cause a surplus of artillery officers and men for whom useful employment must be found.

Well where does this leave us? It leaves us in a very difficult position, facing a number of seemingly insurmountable problems. One wonders whether the very existence of the Regiment is not at stake. Yet is this situation really different from countless other difficult situations which Gunners have faced before? I think not. The simple truth is that factors over which we have no control have produced a bad situation and we must do our best to work it out. The Gunner specialty of providing fire support **will** survive but the Regiment entrusted with this specialty must be a dynamic organization oriented toward the present and future needs of the forces as a whole. We, as a corps, and as individuals, must be better at our jobs than ever before. We must strive to maintain the highest standards, and we must endeavour to correct weaknesses such as those outlined above. We must learn from past campaigns but we must be constantly on our guard not to be blinded by either tradition or prejudice.

I have painted a not very attractive picture of what is taking place and how it affects our Regiment. Many fine officers and men are going to be disappointed and frustrated because career opportunities are bound to be fewer, and I can not bring myself at this time to offer words of optimism for the future. On the other hand, at the risk of pointing out the obvious, I would draw attention to two things: firstly, a public undertaking has been given that personnel will not be compulsorily released from the service for other than the normal reasons; secondly, we are a volunteer force and the choice of whether we serve or not is ultimately our own. I therefore urge each of you to assess your individual situation and make your decision as to whether some change or realignment of your personal career objectives is in order. Some will undoubtedly opt for re-retirement and others may be well-advised to seek re-mustering to other classifications or trades. To them I say sincerely that the Regiment appreciates the service they have given and wishes them the best of luck in their future endeavours. To those who remain, our course is clear, as it has always been; there is a job to be done – let's get on with it!



Colonel

THE COLONEL GEOFFREY BROOKS MEMORIAL PRIZE ESSAY COMPETITION 1970

Prizes

First	$100.00
Second	$ 50.00

Subjects

(1) *Within the past few years the method of qualifying officers for promotion has changed considerably, both in the general military sphere and in special to corps artillery subjects. Trace these changes, the reason for them and comment on their effects. Analyze the current method of officer production and qualification up to the rank of major in the artillery. Point out strengths and weaknesses, and suggest changes which would result in better qualified officers at reasonable cost.*

(2) *Changing defence roles have brought about serious degradation of artillery strength in the new forces' structure. Comment on this situation and suggest changes to the role, organization, training and equipment of the artillery which will better enable it to meet present and future needs.*

(3) *The subject of command and control of helicopters in a land force has been and still is controversial, particularly as to the level of integration of these air vehicles into land force formations and units. The Air Observation Post acts as the eyes of the artillery; as such it utilizes both artillery and flying skills. Comment on the subject generally and relate your comments specifically to Air OP giving the pros and cons of the various alternatives and your suggested solution for the organization and employment of light observation helicopters in the Air OP role.*

Eligibility Regular and Militia officers of the Royal Canadian Artillery, and Officer Cadets enrolled under the Regular Officer Training Plan, the Officer Candidate Training Plan and Reserve Officers University Training Plan, who have completed their first phase of training and who have selected the Royal Canadian Artillery as their corps.

Rules Any one of the above subjects may be chosen.

Essay entries should be between 3500 and 5000 words in length. They must be typewritten and submitted in quadruplicate.

The title and page of any published or unpublished work to which reference has been made, or from which extracts have been taken, must be quoted.

Authorship of entries must be strictly anonymous. Each competitor will adopt a motto or "nom de plume" which will be quoted at the top of the entry.

A sealed envelope will be enclosed with the entry. This envelope will contain the service number, rank, name and address of the competitor but will have the appropriate motto or "nom de plume" only, typewritten on the outside.

Entries are to be addressed to the Editor of the Canadian Gunner, CFB Shilo, Manitoba, and marked "The Colonel Geoffrey Brooks Memorial Prize Essay Competition" on the envelope. They must reach the office of the Canadian Gunner by 31 July 1970.

Judging The Head of Corps will arrange for a committee to judge the entries. The decisions of this committee will be final.

Results will be made known in the next issue of the Canadian Gunner, and the winning essay will be published in that issue.

If, in the opinion of the judges, no entry is of the required standard, prizes will not be awarded.

The Editor and Staff of the Canadian Gunner cannot be held responsible for the loss or return of any essay submitted; nor shall they incur any liability whatsoever in connection with the receipt, dealings, judging and reports of essays.

AERIAL ARTILLERY

by
*Maj F.R. McCall, CD**

Ubique means 'entrain at once for Grootdefeatfontein'!
Ubique means 'off-load your guns at midnight in the rain'!
Ubique means 'more mounted men'. Return all guns to store!
Ubique means the R.A.M.R. Infantillery Corps!
Ubique means that warnin' grunt the perished lineman knows,
When o'er is strung and sufferin' front the shrapnel sprays 'is foes.
An' as their firin' dies away the 'usky whisper runs
From lips that 'aven't drunk all day:
'The Guns! Thank Gawd, the Guns'!

– Rudyard Kipling –

"Everywhere" - the proud motto of the Gunners. The guns have always been there, the call for fire has always been answered. "Thank Gawd for the Guns," has been the cry of the infantryman over the centuries. What solace may be savoured by the artillerist, who has terminated his service to the guns and settles by his hearth with his favourite pipe, and permits his memories to drift with the smoke? Memories of the acrid stench of cordite, the ear-splitting crash of the guns, the incessant cries from the front for more fire, the quiet moments when bones and muscles ache from lifting, pushing, heaving, digging, loading and moving – always moving. The guns must always be there!

Even when the infantry gave up walking for the speed and dash of the APC, the guns were always there. We gave up our beloved horses for the greasy, snorting, mechanical tractor, and with the evolution of battlefield mobility we mounted our pieces on the ubiquitous tracked behemoth. Go where you will, the guns will be there!

Ah, the glories of the past – memories to be cherished, legends written with blood and sweat, a depth of tradition, a legacy for the Gunner of the future, a challenge to be met. The pipe grows cold and an uncomfortable thought hangs in the air with the stale smoke. What of the future – can the guns be there as always? The infantryman no longer clings to the earth like the domestic fowl, confined to his own backyard, pecking here and there. Now, he soars like the hawk able to range over vast distances and strike from the air. Will the guns be left behind? Never! The infantrymen are dashing about the battlefield in helicopters – so mount the guns in helicopters! There, the problem is solved. A fresh pipe and the return of that comfortable feeling – the guns will be there as always.

This assuaging solution may not bring such comfort to those of us who are still serving the guns. Is it possible that armed helicopters can replace conventional artillery? The idea is attractive, but the implications to be considered are manifold.

The purpose of this essay is to discuss the implications to be considered in replacing conventional artillery equipment with the employment of armed helicopters. Helicopters have been accepted as an integral part of all modern armies, and they are being employed in a large variety of tasks. Here we

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**Maj McCall is the author of the Colonel Geoffrey Brooks Memorial Prize Essay of 1969. He is the Canadian Forces Liaison Officer at Fort Bliss, Texas.*
The subject for 1969 was:

> *The evolution of artillery is a continuing process. One aspect that is attracting the attention of gunners throughout the world is the employment of armed helicopters as aerial artillery. Discuss the implications to be considered in replacing conventional artillery equipments with such delivery means.*

are interested only in the application of their use as a firing platform to replace conventional artillery. For the purpose of this discussion, conventional artillery will be considered as those guns and missiles which provide surface-to-surface fire support for the field forces.[1]

The United States has been the forerunner in helicopter development and their employment on the battlefield; therefore, any discussion on the military use of helicopters must, of necessity, be based primarily on U.S. equipment development and employment philosophy.

Before considering the implications of changing surface-to-surface fire support into air-to-surface support, let us consider the firing platforms available today and in the foreseeable future. For ease of identification, all helicopters may be considered to fall in one of the three general classifications of light, medium and heavy.

The light helicopter is generally a 3 to 5 place machine, having a cruising speed from 100 to 150 knots and a limited lift capability. It is normally employed on light observation reconnaissance, medical evacuation, or liaison missions and is very lightly armed. Examples of this type helicopter are the U.S. OH-6A Cayuse, light observation helicopter which cruises at 123 knots with a range of 305 nautical miles; the CH-112 Hiller, which is a three-place machine having a payload of 900 pounds; the U.K. developed Skeeter and the U.S. Sioux, which are light helicopters used by the British Forces, and the French Alouette five-seat general purpose utility helicopter.

It is obvious that due to their size and mission none of these helicopters are designed for, nor have the capability of, delivering ordnance for general fire support. It is necessary, therefore, to examine the capabilities of the next larger class of rotary wing aircraft.

The role of the medium helicopter is more diversified than that of the light variety. Medium helicopters are employed on troop lifts of up to 30 personnel for fast deployment into forward combat zones, on medical evacuation and rescue operations, as airborne command and control centres, for light logistical airlifts, for movement and emplacement of field artillery units and, perhaps more important for this discussion, as armed gunships.

Examples of this type of helicopters are: The U.S. UH-1D Iroquois; the UDH, Huey Utility, which has been a reliable workhorse in Vietnam – comparable to the DC-3 of World War II; the CH-47A Chinook; the CH-113A Voyageur, used by the Canadian Forces; the Russian M1-4 Hound; the French SA-330, and the WG-13 armoured reconnaissance helicopter, which is under development by a collaboration of SUD and Silorsky. Dependent on their role these helicopters may be armed with light and medium machineguns, with fixed or door mounts, and automatic missile and grenade launchers.

In addition to the machines already mentioned, the U.S. has developed the AH-1G Huey Cobra gunship, which is a two-place helicopter designed especially as a weapons carrier by Textron's Bell Helicopter Company. The Huey Cobra's missions include search and target acquisition, reconnaissance by fire, multiple weapons fire support, and support of troop carrying helicopters. It has a cruising speed of 130 knots and has, as a basic armament, a 7.62mm six barrel Gatling gun. In other configurations, the aircraft can mount a TAT-102A automatic gun and a 40mm grenade launcher. Four wing racks allow installation of rocket launcher pods or fixed mini gun pods. The crew and some of the vital components are protected by armour.

Future trends in this category lean towards larger and faster air-craft having more armament such as the U.S. developed Cheyenne.

The AH-56A Cheyenne was designed as an armed helicopter whose day and night target detection and weapons capability made it potentially the most versatile and deadly aerial weapon system the Army ever developed. Operated by a pilot and co-pilot/gunner, the Cheyenne's mission was to escort troop helicopters and provide direct fire support in combat zones. Designed for quick turn-around, the AH-56A returning from a combat flight could be readied and re-armed for a new mission within ten minutes. With a top speed of more than 250 mph, the Cheyenne could fly at twice the speed of combat helicopters now in use in Vietnam.

The Cheyenne's weapons systems included a swiveling belly turret with 360° traverse, which contained a 30mm automatic gun capable of destroying lightly armoured or protected targets. The flexible nose turret held either a 40mm grenade launcher or a six barrel 7.62mm mini gun that could fire 6,000 rounds per minute. Six wing pylons, each with 2,000 pounds capacity, carried 2.75 inch rockets, or wire guided anti-tank missiles.

Ten prototypes of the Cheyenne were completed by Lockheed and presented to the Army for testing. The aircraft did not pass its military evaluation and the Department of the Army cancelled the contract with Lockheed in May 1969, on the basis

1. Artillery in Battle – Field Artillery, Volume I Command Control and Employment – CFP 306 (1), page 1-2.

that proposed adjustments would still not meet the Army's requirements. This unprecedented action has set back the development of a medium helicopter - borne weapons platform for an indeterminable length of time.

Before discussing the U.S. employment of armed helicopters in Vietnam, let us turn our attention to the heavy helicopter.

Bell UH - 1D IROQUOIS

The two prominent machines in this category are the Russian MTL, M1-10 Harke, and the U.S. CH-54A Tarhe. The Harke is flown by a crew of three and in addition to slung loads, such as a large bus or a fabricated building, it can carry up to 28 passengers in the cabin boom. The Tarhe (formerly the flying-crane) is so designed that it can carry virtually all its payload externally. The basic craft consists only of a cockpit module, high landing gear, and a long fuselage which carries the engine and rotors. Using its hoist mechanism, the Tarhe can lift a great variety of external loads weighing up to ten tons: most common are airplanes, other helicopters, and heavy vehicles. It has been equipped with special pods that have been carried to forward areas to serve as hospitals, command posts and communication centres. Tarhe can also ferry troops or bulky cargo on pallets. It has a cruising speed of 95 knots, and a range of 272 miles. It is 88.5 feet long with a gross weight of 38,000 pounds. The Sikorsky built craft was developed as an interim solution to the need for a heavy lift helicopter, which ultimately will result in a craft that can lift more than 20 tons, for short distances over ground obstacles. The CH-54A is now being used extensively in Vietnam to recover downed aircraft.

The heavy helicopter represents the upper end of the rotary-wing spectrum and, because of their great bulk and slow speed, it is unlikely that they could be utilized to any advantage as a firing platform for direct fire weapons. However, they have been used in Vietnam for lifting, moving and emplacing the First Cavalry's 155mm Howitzers. They hover with the piece one foot off the ground while the gun detachment turns the tube to the correct firing azimuth. "This modern form of artillery displacement has greatly expanded the artillery's flexibility, and extended its range."[2]

It is evident from the foregoing that the only helicopter designed primarily to provide fire support to the combat arms is the gunship. It is also evident that there are limitations on the size and quantity of weapons which it can carry and emplace. "Weapons mounted on helicopter gunships are essentially infantry weapons – machineguns, grenade launchers and rocket launchers. The helicopter has, in effect, extended the range of the infantryman's weapons and given him the capability of reaching

2. Army Digest, Jan '68, "Big Lift by Flying Crane," LTC Norman P. Jacobs, Directorate of Army Aviation, ASSFOR, page 26.

Huey COBRA Gunship

deep into enemy territory. Furthermore, the infantryman now has a highly mobile platform of fire, capable of supporting any scheme of manoeuvre."[3]

"In Vietnam the armed helicopter has become one of the Army's most versatile weapons. During the TET offensive, the armed helicopter was highly praised by all services when it was credited with being the decisive factor in stopping the enemy on the threshold of Tan Son Nhut and Bien Hoa airbases. Equally important are the many other Army Aviation missions that contribute so much to our posture in Vietnam. Aerial reconnaissance by 0-1 Bird Dogs and the new OH-6A Cayuse are extremely helpful in finding the enemy. Air cavalry units, an indispensable part of the air mobile team, fixed the enemy. Then the combined power of helicopter gunships, tactical air strikes and artillery, support the air mobile combat infantryman as he completes the destruction of enemy forces."[4]

At this point we have sufficient evidence to summarize the American philosophy on the employment of military helicopters as an additional element available to the battlefield commander for target acquisition, route reconnaissance and control, deployment of infantry on enemy positions, delivery of sustained fire power, delivery of supplies, control of the battle from the air, adjustment of artillery and air strikes, and evacuation of the wounded.

Thus far very little has been said of the implications of replacing conventional artillery with armed or artillery helicopters. It would appear that the experts, who control helicopter design and employment, have not considered the whirly-bird in this role. They favour using it as an adjunct to existing artillery to provide the infantry with quick manoeuvreable personalized fire support. Consequently, they have not developed the airborne firing platform capable of replacing conventional artillery; however, they have used it effectively to deploy artillery in order that the "flying infantry" may always have artillery fire support.

What then are the implications of replacing conventional artillery with armed helicopters? We can turn to American experience in Vietnam and examine helicopter losses in equipments and in dollars. During the year 1968, the U.S. helicopter losses in Vietnam amounted to 2,275 from enemy action and all other causes at a cost of 500 million dollars. Of these, 982 were lost due to enemy action over South Vietnam and and 10 over North Vietnam. One thousand two hundred ninety three (1,293) were lost due to accidents and other causes. As of May 1969, 1,380 had been lost due to enemy action, or over 400 in the first five months of 1969. If we were to add artillery helicopters to the battlefield inventory a proportionate number of these would be lost to accidents and other causes, as well as a certain number to enemy action. An examination of these losses in Vietnam indicates a factor which is considerably greater than the loss factor established for conventional artillery over the last 60 years of modern warfare. Consider also that the U.S. forces in Vietnam are not facing an enemy equipped with a sophisticated air defence structure. It is difficult to imagine what the losses would be if the Vietnamese were equipped with a missile system comparable to Redeye and Chaparral.

If we were to rely entirely on helicopter-borne artillery, could we provide fire support with the same degree of guarantee as we have in the past? In fact, will the guns be Ubiquitous in action or will they be scattered about the battlefield entangled in shattered avionics, or will they be muzzle-covered in hangars having their flying innards tinkered with, or will they be setting on the ground getting their bellys filled with fuel, when the cry for fire is heard from the front? Will the cry "Thank Gawd the Guns" change to "Gawd where are the guns?" Perhaps not! Again we can turn to American experience in Vietnam. "...in the first half of 1968, a combination of all U.S. ARV aviation units in Vietnam recorded almost 1.5 million flying hours, 5 million passengers lifted, 520 thousand tons of cargo hauled, nearly 20 thousand Viet Cong and North Vietnamese killed and and more than 20 thousand structures and fortifications destroyed."[5] A very impressive record, but then conventional artillery support was still present during these operations!

Another obvious implication to be considered is the effect of weather and darkness on the operation of the helicopter. Without conventional artillery will the battlefield commander have to do without fire support during the hours of darkness and during poor flying weather? This would be an unacceptable situation. An all weather day/night helicopter would take years to develop and would be almost prohibitive in cost, considering the numbers required.

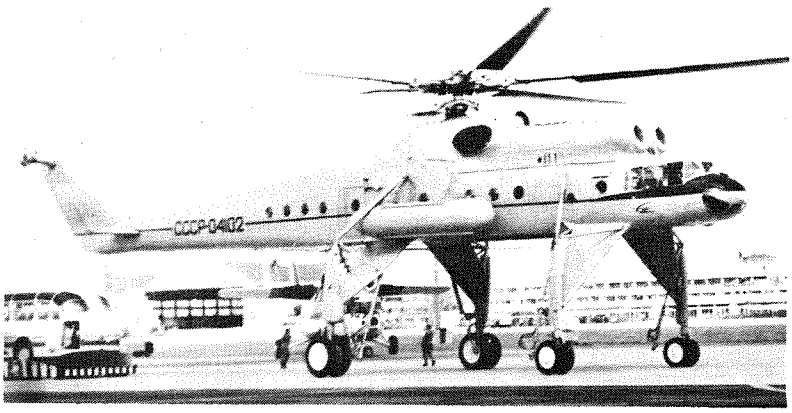
In performing its main function, conventional artillery is placed well behind the front lines so that it is out of range of the enemy's direct fire weapons, and out of his field of vision. This is necessary for protection of the weapon system from enemy infantry, armour, and counter-bombardment artillery. Because of this deployment requirement,

3. Army Digest, Feb '69, "Accent on Mobility", Joseph B. Monroe, Jr., page 10.

4. Army Green Book 1968, A Status Report on the US Army,
5. "That Extra Edge", page 105.

conventional artillery is designed to deliver its ordnance by means of indirect fire. This increases the complexity of the artillery problem in that survey, meteorological conditions, muzzle velocities, temperatures and a host of other factors must be taken into consideration before firing. Helicopter-borne artillery would greatly simplify the artillery problem by employing direct fire weapons. Although this would make the artillery less susceptible to counter-bombardment, it would require deployment nearer the front lines with the net result of increased exposure to small arms fire and air defence weapon systems.

Due to the lifting limitations of rotary wing aircraft, the ordnance delivered by the artillery helicopter would have to be smaller and lighter than that which can be delivered by conventional artillery. More machines would be required for a specific fire mission than conventional equipments, for there is a limitation to the length of time a helicopter can stay on station and a limit to the size and quantity of ammunition it can carry. In order to provide continuous fire support, helicopters leaving station to re-arm and re-fuel would have to be relieved. In addition, artillery helicopters would have to be escorted by gunships to provide protection while operating in the forward area.



Russian M1-10 HARKE

Many of the facilities provided by artillery today would have to be discontinued if conventional artillery were replaced by helicopters. For example Timed Programs, Quick Fire Plans, re-engagement of recorded targets, targets of opportunity, counter-bombardment and barrages would all become impracticable. The supported arm would have to rely on direct fire for a limited length of time. Reaction to calls for fire would depend on the location and state of readiness of the artillery helicopter at the time of the fire request, and on the type of warheads on board. The helicopter cannot be expected to carry the variety and quantity of ammunition which is found on the average gun position and, therefore, the flexibility of artillery fire would be greatly reduced.

"Experience in Vietnam has shown that when a U.S. infantry unit suffers heavy casualties during a major contact frequently this mistake has been committed: call for artillery fire was delayed while an attempt was made to get support from the Air Force or gunships, or artillery was placed in a "check fire" status in order to allow Air Force support or gunships to come in.

When an infantry unit is pinned down and suffering casulaties – whether from automatic weapons, small arms, or mortars – artillery fire delivered without let-up on the enemy is properly called "neutralization fire." The enemy is forced to take cover and our infantrymen are able to disengage, regroup, flank his position or take other effective action.

Intermittent air or gunship support, no matter how devastating, allows the enemy to observe the aircraft and to resume firing at our troops during the periods when our aircraft suspend their attack. If both air and artillery are available, proper co-ordination – preferably from a command and control helicopter – usually will allow fire from both to be delivered simultaneously.

Naturally, we are assuming that U.S. infantry companies will at no time operate beyond range of friendly artillery. This practice has been adopted in Vietnam. This is not to say, though, that at times Air Force bombs or gunship support may not be the preferred method of attack, even when artillery also is available. For example: (1) Against a hard target, like a bunker, bombs delivered by the Air Force may be best for knocking out the enemy position. (2) In relatively open terrain, when the enemy is trying to break contact by attempting to evade in small groups, gunships can more effectively hunt down these small groups than can any other weapon system.

However, an inexperienced infantry company commander, faced with a situation where his men are being killed, is apt to go through a mental checklist:

call for artillery, call for air, call for gunships, call for "spooky" (the term now being used for "Magic Dragon", the C-47 plane armed with gatling guns). When all arrive overhead, he may find they are mutually exclusive, or that's what he may be told initially.

The forward air controller may say, "cut off the artillery and air will do the job." The gunship flight leader may say substantially the same. The artillery forward observer may say, "I'll have to 'check fire' the artillery because the gunships are all over the air space and I'm afraid I'll shoot one down."[6]

This leads us to another implication – control and use of friendly air space. Consider the addition of artillery helicopters and escorts to the forward area air space. This block of atmosphere is already impregnated with projectiles, SSMs, SAMs, ASMs, rockets, logictic and combat helicopters, fixed wing liaison and combat support aircraft, reconnaissance vehicles – ranging from drones through rotary wing and fixed wing aircraft and a future family of surveillance devices such as periscopters, kites and balloons. What priority could be given to artillery aircraft in this environment? Guaranteed fire is already in some jeopardy due to the unpredictability of present air space users. It will not be unusual for a timed program to be stopped because a senior battlefield commander's command helicopter is operating in the same air space required by the guns, or infantry combat reserves are crossing through the artillery trajectory, or medical evacuation from the local battle zone is taking place. All air space users will undoubtedly be controlled through a central automatic data processing system in future operations, which would include artillery helicopters. This would have a direct impact on DS artillery, particularly where "On Call" or opportunity targets are concerned. Evidence indicates there will be more chance of getting fire support on opportunity targets or receiving neutralizing fire on an "On Call" basis from conventional artillery then from airborne artillery.

It is possible to dip into the well of implications and discuss the resulting inferences until the question of helicopter artillery versus conventional artillery is drowned in a flood of verbalism. There are many more implications than those already discussed, such as the effects of the extremities of weather on helicopters versus the effects on guns or the cost in manpower to support each type of equipment and the comparison of flexibility available to the battlefield commander through the use of the armed helicopter and the relative dollar costs of helicopters and guns. The introduction of pertinent Principle of War may serve as a catalyst to bring this discussion to fruition and as a fence to corral the stray factors not yet considered.

The armed helicopter may certainly be described as an "Offensive Action" weapon as it literally serves no other purpose. However, as artillery is generally considered to be a supporting arm in all phases of battle, the artillery helicopter would also assume a supporting role. "Offensive Action" may consist of a prolonged set piece battle, such as the battle for Monte Casino in the Italian campaign, or an advance of many miles such as the advance from Pusan to Seoul in the Korean war. Or it may take the form of short skirmishes, having limited objectives, or it may consist only of active patrolling during the hours of darkness, as was the case during the latter stages of the Korean conflict. The question to be considered here is whether or not the artillery helicopter can provide the fire support required in all phases of battle. Will "Offensive Action" be curtailed or delayed while helicopters reload or refuel, or will "Offensive Action" be halted through the lack of adequate flying conditions, or more important, will "Offensive Action" be limited in scope due to the inherent characteristics of the artillery helicopter? This would indicate a requirement for a new set of tactics based on helicopter fire support.

By airlift, that's how – giant skycrane lifts a 155mm howitzer to a new position.

6. Army, June 1968, "Artillery Fire or Gunship Support", page 82.

Conventional artillery has always played a major role in providing "Security" for vulnerable areas. Guns have always been available for DF tasks with immediate response to a DF (SOS). This function cannot be provided by artillery helicopters. Without conventional artillery the supported arm would have to fend off the enemy with their organic weapons until the helicopter could get airborne. This would jeopardize the "Morale" of the front line soldier. The cry "Gawd where are the guns" might well be heard throughout the battlefield.

"The elements of surprise are secrecy, concealment, deception, originality, audacity and rapidity."[7] These six terms adequately describe the principle of "Surprise" – three of which may be ascribed to the armed helicopter, while the other three directly oppose it. The attainment of secrecy, concealment and deception is improbable through the use of the artillery helicopter; while originality, audacity and rapidity may easily be accomplished. Conventional artillery often achieves surprise by delivering a large volume of fire without alerting the enemy with prior ranging or by ranging a "Witness Point" and shifting the "Fire for Effect" onto the target without warning, or by engaging a previously registered target. The helicopter, on the other hand, gives warning of its presence before it gets in range and leaves no doubt in the mind of the enemy when its mission has been completed.

"Concentration of Force" can be more readily accomplished by the helicopter than by conventional artillery. Fire power can be very quickly concentrated and disbursed to match the flow of action on the battlefield. This provides the battle commander with a magnitude of "Flexibility" never before enjoyed. However, the law of diminishing returns must take its toll for the commander will experience a constraint in the types of fire power which can be provided. His flexibility of choice will be reduced as the helicopter cannot carry the range of calibres and warheads that are available through the use of conventional artillery.

7. Introduction to the Study of Military History for Canadian Students – Stacey, page 148.

8. Introduction to the Study of Military History for Canadian Students – Stacey, page 149.

The final principle, which may be considered as applicable to this discussion, is "Economy of Effort." "Economy of effort implies a balancé of employment of forces, and a judicious expenditure of all resources with the object of achieving an effective concentration at the decisive time and place."[8] When one considers the relative cost of producing and operating a helicopter as compared to a gun, and the number of helicopters required to produce the same sustained fire on a 24-hour a day basis, and the same life expectancy of a single gun, it is difficult to justify the helicopter as a "judicious expenditure of all resources".

Although a discussion of implications does not require the need for a conclusion, but merely the possible drawing of an inference, I feel justified in coming to a conclusion in this instance.

I feel there is a definite requirement for the armed helicopter on the modern battlefield to reinforce conventional artillery, particularly during mobile operations. But in view of the implications which have been considered it is absolutely impracticable for armed helicopters to replace conventional artillery.

BIBLIOGRAPHY

Army, June 1968 – Association of the U.S. Army
Army Digest, January 1968, Vol 23, No. 1, The official magazine of The Department of the Army.
Army Digest, February 1969, Vol 24, No 2.
Army Green Book, 1968, November 1968 – A Status Report on the U.S. Army – Association of the U.S. Army.
Army Research and Development, February 1969, Vol 10, No. 2 – Monthly magazine of The Office of the Chief of Research and Development, Headquarters, Department of the Army.
Artillery in Battle, Field Artillery, Vol 4, Duties Within the Regiment.
January through May 1969 – Directorate of Flying Training (RAF), Ministry of Defence.
Les Materiels Modernes, De L'Armées De Terre.
Military History – Directorate of Military Training, Army Headquarters Queens Printer, Ottawa, 1955.
Terre Air Mer, Bimensuel Des Forces Armées, 10 February 1969.

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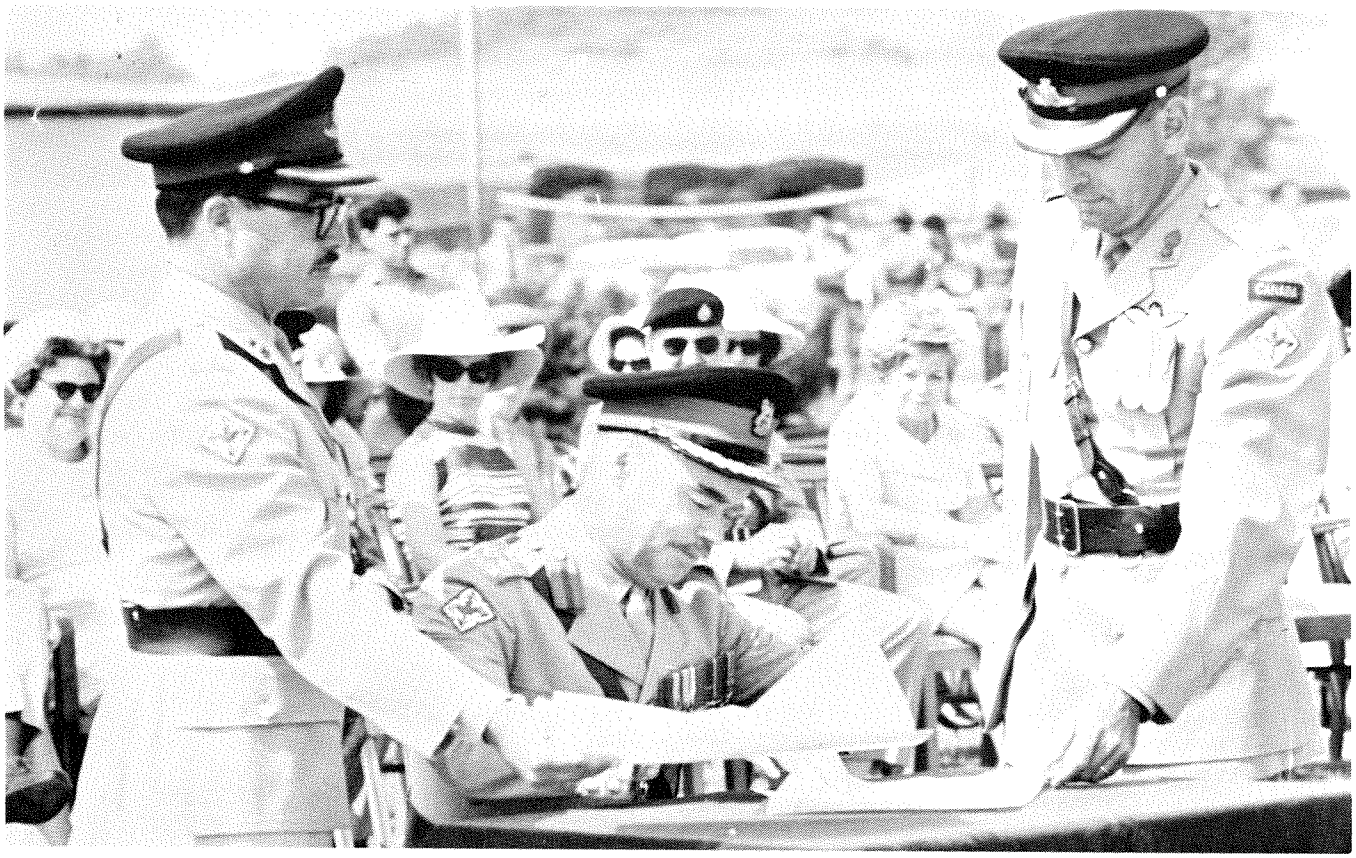
1 RCHA



Change of Command

LCol M.D. Calnan, CD officially assumed command of 1 RCHA on 1 August 1969 from LCol D.R. Baker, CD who was appointed Commandant CFSA. Above LCol Calnan and LCol Baker witness as BGen J.C. Gardner, Commander 4 CMBG signs the handover documents.

Competitions

During practice camp in April, the direct fire competition was held on the ranges at Munster. Sgt D. Chiasson, 26C, was declared winner after achieving nine hits in ten rounds. Sgt Chiasson's detachment was the first to receive the 25 pounder rammer presented by 5 Field Regiment RA. The Commanding Officer, also presented the Golden Horse Pennant to 26C to be flown for one year.

In the 1969 Silver Gun Competition, a combined 1 RCHA and 1 SSM Battery team placed first in both Basketball and Tug of War, and third in Small Bore.

Winner of the Number Ones Direct Shooting Competition Sergeant D. Chaisson receives target information from Lieutenant-Colonel D.R. Baker. "The Judge", Major N.M. Pettis, awaits the beginning of the shoot.

Visitors

The regiment hosted a number of well known visitors this year. Among these were LGen W.A.B. Anderson, OBE, CD who visited in December 1968 and returned in July 1969 as part of his tour to say goodbye to field units. In June the Master Gunner of Saint James Park, General Sir Robert Mansergh, GCB, KBE, MC visited the regiment. Later, in August LCol M.L.A. Chabot, CD visited. LCol Chabot commanded 1 RCHA from August 1962 to July 1965.

Lieutenant-General W.A.B. Anderson pauses briefly at the gun position to say goodbye and add a few words of encouragement during his last official visit to 1 RCHA.

EXERCISE "MARSHMALLOW"

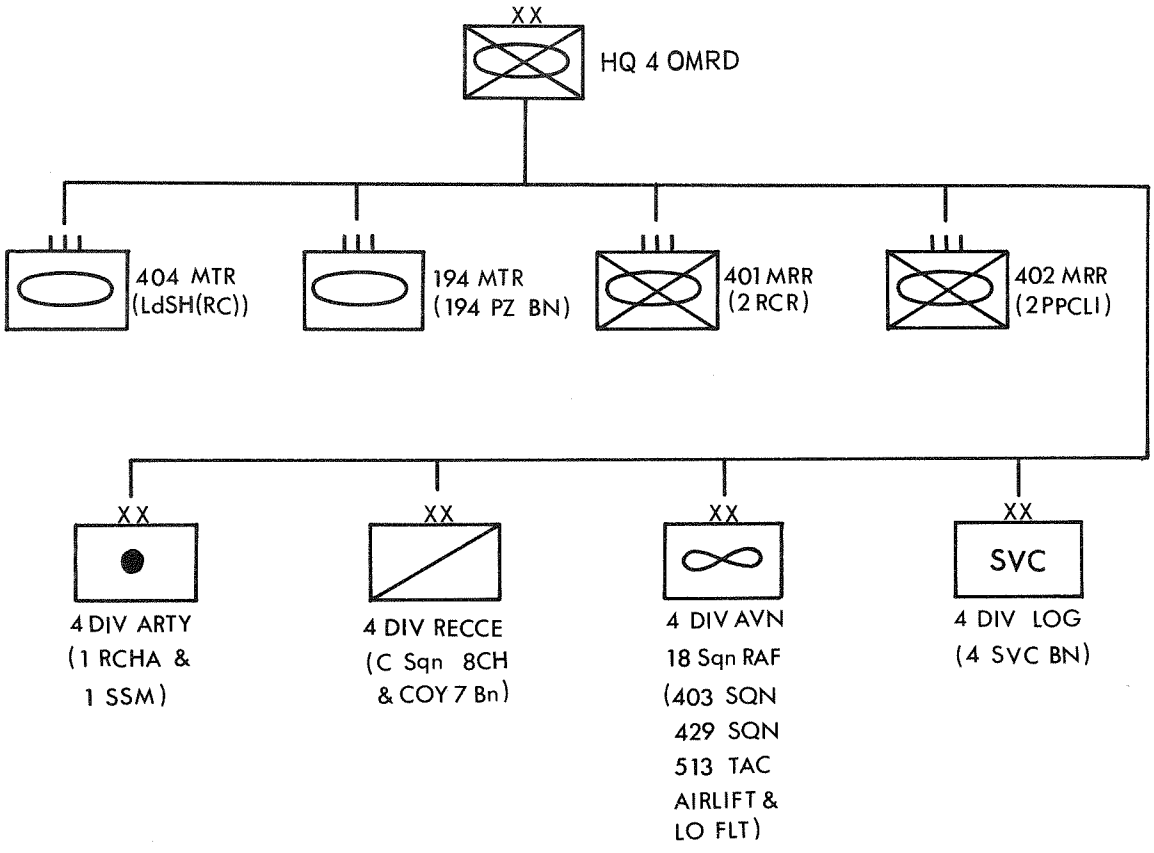
by

*Capt R.B. May**

The early evening of 15 October 1969, 1900 hrs Zulu to be precise, saw the Canadian brigade in Europe pitted against their 1 (British) Corps comrades for probably the last time. The exercise, on the familiar terrain between Osnabruck and Hildesheim and named for some obscure reason, Exercise *"Marshmallow"*, ended 18 years of formation exercises with the British Corps. Next summer, 4 CMBG will come under operational command of CENTAG. Nautrally, the brigade's current operational commitment will be met until the move south, but this was its swansong.

Last year, a brief description was given of Exercise *"Keystone"*, the fall formation exercise in which the brigade as part of 1 (Br) Corps once more withstood the onslaught of the Redland hordes. As usual, we provided him with a bloody nose just prior to the cease fire. In past years the enemy has shown remarkable ability to rise again for subsequent command post and formation exercises. This fall was no exception. He rose once more, but in the slightly faded form of an Orangelander.

The exercise was designed to practise the covering force in its roles of keeping in contact with the enemy, reporting his advance and imposing some delay. A second brief phase of the exercise practised this force in a flank protection role (this 24 hour phase is not referred to further in this article). A bolstered 4 CMBG was tasked as the enemy – 4 Orangeland Motor Rifle Division (4 OMRD). The additions included 194 Panzer Battalion; Recce Company 7 Battalion (also German); 15 Para Battalion (T & AVR); six Wessex helicopters and two C130s from England; two CC115 Buffalos of 429 Squadron and four CUH-1H Hueys of 403 Squadron in Canada. As most Canadian brigade headquarters are accused, usually justifiably, of being the size of at least a divisional headquarters, we appeared prepared for our task. Briefly, the organization of 4 OMRD was as follows:



Organization – 4 Orangeland Motor Rifle Division.

* *Capt May is a member of 1 RCHA, which took part in the exercise.*

Thus, every organization thought and planned one level higher. The organization of the divisional artillery is shown below. For those readers unfamiliar with the term "Notional", it is a quaint English word used to baffle recently arrived Canadians and indicates "hypothetical units". Our artillery ORBAT conformed to that integral or normally allotted to an Orangeland first echelon division.

The following army and front artillery had been notionally allotted to 4 OMRD:

a. two SCUD bns;

b. one How bn (152mm);

c. one Gun bn (130mm);

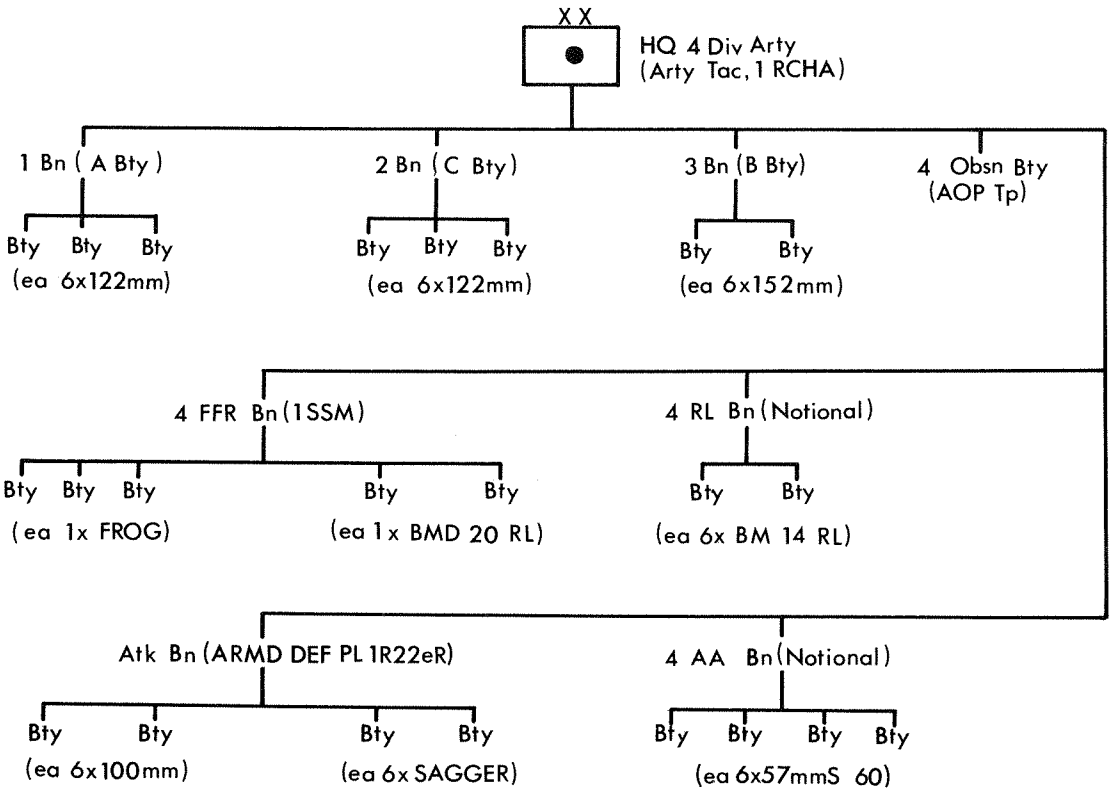
d. one Atk bn (100mm);

e. two ATGM bns (SAGGER); and

f. one SAM bn (SA-2 GUIDELINES).

As can be readily seen, Gen M.D. Calnanofski had considerable artillery resources to command. As the sketch map indicates, the divisional frontage was 70-80 kms (45-50 miles) at the commencement of the exercise. The dispersion and tactics planned necessitated the placing of a considerable weight of the conventional artillery under command of the three first echelon regiments. Thus, the battery commanders found themselves with a mix of real and notional batterys and battalions at their disposal.

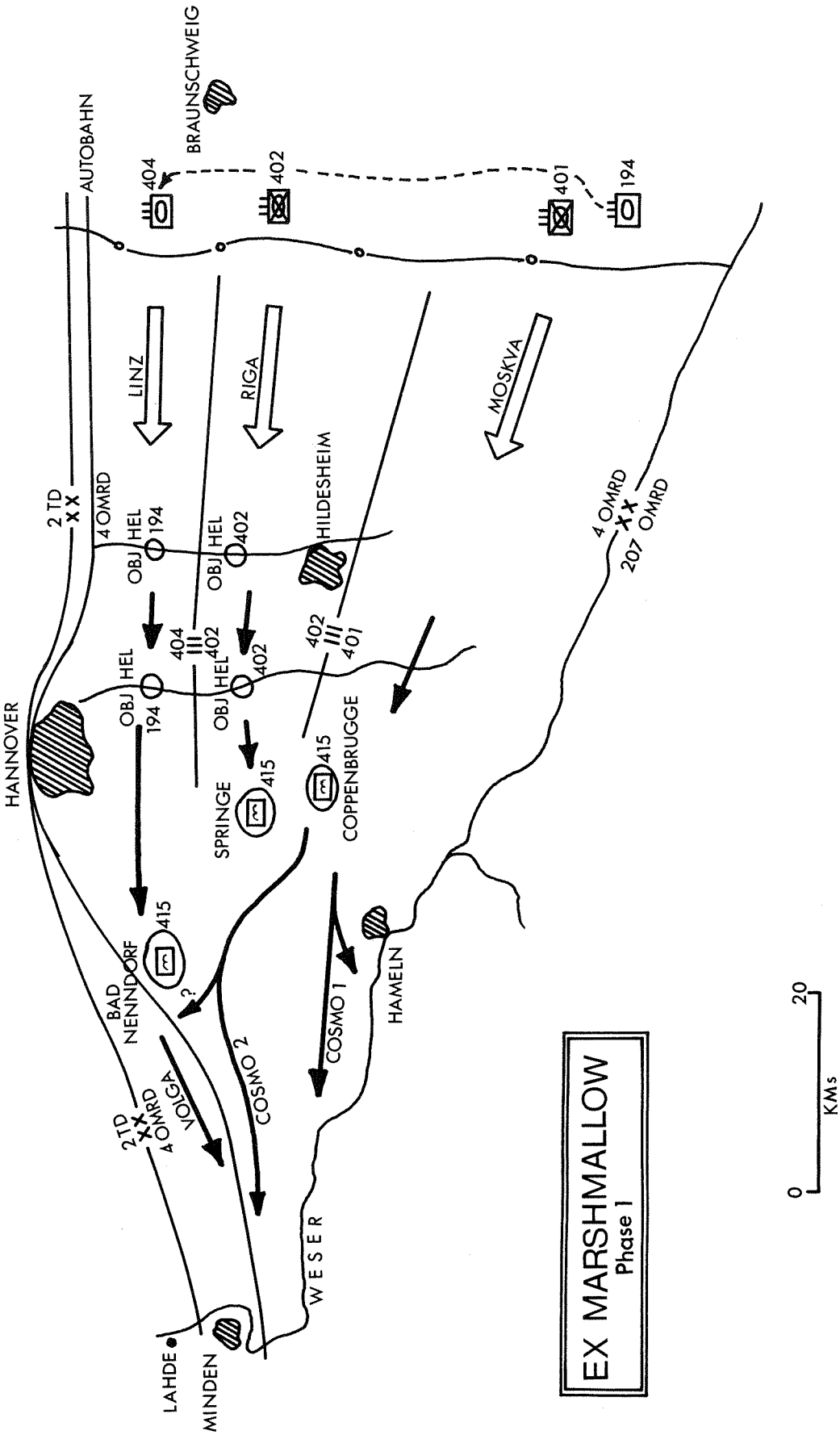
Briefly, the divisional mission and concept of operations was to dominate the east bank of the River Weser between Lahde and Hameln by H+48 hrs. The advance was to be on a broad front beginning at last light 15 October with 4 Div Recce Company leading. The three regiments of the first echelon were to link up with 415 Para Battalion on the primary objective line of Bad Nenndorf, Springe and Coppenbrugge not later than 1600 Zulu hrs 16 October. On the seizure of this line, the advance was to continue as



Army and Front artillery organization allotted to 4 OMRD

Note –

1. Armd Def Pl was under comd Div Arty.
2. Each Artillery Battalion has a mortar platoon under command in keeping with the integrated indirect fire support procedures followed in 4 CMBG.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quickly as possible supported by the second echelon. The rate of advance was to be at least 60 kms per day and 100 kms where possible. Open flanks were to be disregarded – speed was the over-riding factor. Chemical weapons were to be used from the outset. Four heliborne company groups were given important crossing sites to seize over the Zweigkanal and River Liene. These and the three airborne assaults on the defiles at the primary objectives were to go in just before H Hour.

Before the advance, a plan of border incursions at 13 selected spots over the DML was carried out. These platoon size patrol incursions were to test the enemy defences and determine their strengths and probable reaction. During the incursion phase, 194 MTR (German Leopard tanks) succeeded in allowing the enemy to identify them in the extreme south. The next night, after the advance began, they were switched to the northern axis as a second echelon regiment. This well executed deceptive move was most successful.

A detailed fire plan was co-ordinated to cover the incursion tasks as well as the initial advance. Included were a number of chemical strikes on the airborne and heliborne DZs fired by the FROGs, SCUDs and BMD 20s thirty minutes prior to the landings. The majority of these were very successful. In one instance, all the crossing sites for the rearward move of Blueland were eliminated but one. This restricted his withdrawal considerably. Nuclear strikes were not employed during the exercise.

The plan was followed to the letter. The pre H Hour chemical strikes followed shortly by the airborne and heliborne landings were well executed and extremely successful. One of the latter objectives had to be delayed because of a reduction in available helicopters. The covering forces were surprised in many of the objective areas even though several of the crossing sites and defiles were fairly obvious choices. The subsequent advance moved swiftly with the battle groups easily bypassing the defenders thinly deployed in their path.

Regrettably, the advance moved so well that a temporary cease fire was ordered by Corps HQ on the pretense that 4 OMRD was far ahead of its flanking formations and thus our flanks were dangerously exposed. We were required to fall back approximately 15-20 kms just as the three gaps were about to be taken. These were seized several hours later on the recommencement of the exercise and Phase 1 was halted prior to the reaching of the River Weser.

M109s of 1 RCHA deployed along a treeline during Exercise "Marshmallow".

In defence of Blueland's failure to check Orangeland's advance, several factors must be borne in mind. The attacker always has the advantage in manoeuvres where live rounds are conspicuous by their absence. Also, the covering force was tasked with the defence of the three gaps and others, as well as the garrisoning of the many crossing sites over the two water obstacles. This was obviously a responsibility that would normally be given to other formations in depth.

What did the exercise provide for 4 CMBG other than an offensive role for a change from a more defensive one? To realistically play the part of Orangeland, all units had to study the threat, equipments, organizations and tactics to a degree never before contemplated. 1 RCHA conducted a series of lectures and briefings on the characteristics, employment and tactics of the Orangeland artillery for two months prior to the exercise. Some of these were practised on Exercise *"Tomahawk"*, a 4 CMBG controlled exercise conducted in lieu of the usual Soltau concentration. By a cursory examination of the Orangeland threat and their considerably forces, one can and usually does become easily awed. But they also have problem areas and limitations. As discovered during the advance, there are several key logistical problems, in particular that of petrol, when a distance in excess of 150 miles is covered. Their artillery has not the flexibility provided by our procedures and communications and is thus incapable of centralizing fire support of flanking units and formations. Certainly the Orangeland practice of retaining towed conventional equipment and prime movers is

open to question. The protection and cross-country capabilities provided by most self-propelled equipments would appear to be basic requirements for their artillery, especially with the employment of some of these in approach marches and assaults. 4 CMBG vehicles travelled a total of 750,000 miles in about eight days and this in itself is quite an accomplishment for a mechanized formation. The regiment averaged over 400 miles on its M109s, yet at the end of the exercise, 23 guns were still operational.

There is no doubt 1 RCHA once more acquitted itself extremely well in Exercise *"Marshmallow"*. The unit is anxiously looking forward to its move south and any re-organization that may transpire prior to next summer. The 1970 training calendar has changed little from those of previous years just the odd amendment such as insert "Grafenwoehr", delete "Hohne and Munster".

"Carlsberg, Cap Off, Charge Thunderflash"

"BEER CAN" GUN MAKES GOOD

by
*Capt J.A. Poh**

During the past year while the Radar Section in 1 RCHA was being formed and trained, a requirement existed for a training aid which could be used to hurl a projectile in the air, make a noise, and be employable on other than regular firing ranges. The target simulator in the radar was only good for training the radar detachment. The firing ranges were too far away and too crowded to be used frequently. This limited the training of the complete section since the listening posts required a source of sound, the radars required a projectile, and the command post required data from the LPs which agreed with the data produced from the radars observing a projectile. A good substitute was found ..... the "Bear Can" gun.

For those who have not yet met this formidable weapon, the gun consists of a metal pipe some three feet in length and sealed at one end. The diameter of the pipe is slightly larger than that of a beer can. A beer can partially filled with dirt is used as a projectile. A thunderflash or artillery simulator serves as the propellant, thus giving a variable charge. To fire the weapon, it is emplaced in a near vertical position. The propelling charge is ignited and dropped into the tube. This is followed immediately by a projectile, and when the charge explodes, the projectile is hurled into the air. An excellent radar target is presented due to the "flip-flop" ballistics of a beer can. Maximum range achieved is approximately 4-500 metres thus making this weapon suitable for small areas. This limited range also makes the task of recovering the spent projectiles easy.

Such unorthodox use of pyrotechnics requires stringent safety precautions. The detachment must be rehearsed in their duties, the same as any gun detachment. When using artillery simulators, it is deemed mandatory to sandbag the tube up to the muzzle due to the high chamber pressures. Results have shown that the "gun" does have potential as a training aid, particularly in small sized areas, and that it serves as an intermediary between the target simulator and regular mortar firings.

* *Capt Poh is the BAIO, 1 RCHA.*

REGIMENTAL SURVEY

by
*Capt J.A. Poh**

Introduction

The organization and employment of a Regimental Survey Section in the close support, self-propelled regiment has not kept pace with changes in tactical concepts or with the introduction of new equipment.

During World War II, a regiment usually deployed in a small area generally the size of a grid square. The Survey Section at that time was a ten man party equipped with directors, steel tapes and range finders or stadia rods. Regimental grid could normally be provided within two hours. Over the years, the deployment area for a regiment has increased until today it is not unusual to find up to 6-8000 metres separating batteries. The battlefield has become more fluid. Deployments are quick and often a battery may move several times in a 24 hour period. This greatly increases the survey problem. To cope with this increased problem the present survey section is composed of 15 all ranks. It is equipped with such additional equipments as tellurometers, theodolites, radios and the gyro orientors. The survey section has more flexibility and the ability to carry accurate survey over much longer distances. There has not, however, been any change to the basic organization of a section or in the survey principles and procedures used within a regiment.

The recent introduction of the gyro orientor at battery level and above affords an opportunity to take a fresh look at the regimental survey problem and the employment of surveyors within a regiment.

Regimental Survey

The object of artillery survey is to place as many fire units as possible on a common grid by providing them with sympathetic orientation and fixation. Ideally, this data should be as accurate to map data as possible. The present tolerances allowed between fire units are three mils for orientation and 25 metres for fixation.

The gyro orientor which is now issued to each gun battery will give orientation accurate to one mil in approximately ten minutes of time. Thus, each battery can now provide its own orientation within the required limits but the problem of determining sufficiently accurate fixation still remains. Just how accurate does this fixation have to be in a close support regiment.

The maps found in Northwest Europe are excellent. With these maps, and using a modified map spot, firm map detail or resection, fixation accurate to 50 metres is possible. The AN/MPQ 501 Counter Mortar Radar, of which there are two in the self propelled regiment, can provide fixation to an accuracy of 30-50 metres in a very short time. Another method of determining fixation is to use the navaid found in each battery recce party as it is accurate to within one percent of the distance travelled.

Using any of these methods, it is possible to give fixation accurate within 50 metres in a very short period of time. This accuracy, is sufficient for a regiment whose role is neutralization particularly when one considers the zone of the M109 and the lethal area of the projectile of this weapon.

The Survey Section

The survey section is presently composed of an officer and driver/communicator, a WO and two surveyors in the computing centre, and five observing pairs. Although they are equipped with the latest in survey equipment, their training and organization is not aimed at regimental survey. Survey courses teach such procedures as triangulation and traversing which are time consuming to employ since they require extensive recce and field work. The section organization is designed to employ these methods but they are more suitable for divisional or corps level rather than regimental level. Time is the enemy of the regimental surveyor. The processes which he uses must be quick, simple and accurate enough to meet the required tolerances. His training and organization must be attuned to this aim.

Proposed Organizations

If it is accepted that the present methods of doing regimental survey are too slow and that the present equipment found within the section will provide the accuracies required, the next obvious thing to examine is the organization of the Survey Section. There still is, and will be for some time, a need for surveyors within a regiment. Whether

* *Capt Poh is BAIO/LOC Tp Comd 1 RCHA.*

these surveyors should remain in RHQ or become a part of each gun battery is worth considering. Two methods of employing surveyors are to have a survey pair as a part of each battery recce party or else to reorganize the present section into two sub-sections of two observing pairs each. The former is presently being used in the British Army. The latter method, however, appears to have more merit.

Pair per Battery

The advantages of this system are:

a. there is a survey element as an integral part of the recce party; and

b. there is a considerable saving in the manpower and equipment required.

The disadvantages of this system are:

a. misemployment of highly skilled personnel;

b. lack of common training standards within the unit as a whole;

c. inability to concentrate survey effort for difficult tasks; and

d. difficulty in making use of tellurometers, if required.

Two Sub-sections

The advantages of this system are:

a. it allows flexibility since sub-sections can be despatched or concentrated as the need arises;

b. the command/control element can form an additional observing pair if required;

c. best use is made of skills and equipment;

d. a better training standard can be maintained;

e. sub-sections can keep up with forward batteries as they move; and

f. there is a saving in manpower and equipment over the present organization.

This is the recommended method. It is more suitable for mobile operations when more than one route is used. The organization of this section should be:

Command and Control

WO - Surveyor
Cpl/Pte - Surveyor
Cpl/Pte - Communicator/Driver

Two radios for regimental and section nets plus one set of observing stores (less gyro orientor)

"A" Sub-section (Pairs)	"B" Sub-section (Pairs)
Sgt - Surveyor	Sgt - Surveyor
Cpl/Pte - Surveyor	Cpl/Pte - Surveyor
Cpl/Pte - Surveyor	Cpl/Pte - Surveyor
Cpl/Pte - Surveyor	Cpl/Pte - Surveyor

Each pair would have a ¾ ton vehicle, as would the command/control element. Each pair would also have a radio. Sub-sections would be equipped with one gyro orientor, one theodolite and two tellurometers. In addition, normal taping stores would be carried by each pair. This method is being tried in 1 RCHA to determine if it is better than the present organization and to determine if there are any disadvantages which are not now apparent.

Conclusion

The organization and employment of the regimental surveyor must keep in tune with the equipment, and tactics in use. The tolerances required depends upon the role and equipment of the regiment. How these tolerances are met is dependent upon the quality of maps, time available and other resources available such as radars and navaids. The surveyors must be organized to make maximum use of all of these points. The organization and procedures recommended above best meet present regimental survey requirements.

INTEGRATED FIRE SUPPORT

by
*Capt D.B. Bianco**

Those who have been employed as a FOO with an infantry combat team during an all arms exercise may recall a haggard, perhaps frustrated infantry sergeant packing a portable radio on his back, a roll of maps under one arm, a bed roll on the verge of slipping from the other and all 12 pockets of his combat uniform bulging. This NCO may even have approached you to solicit a ride in your spacious new APC. The expression of rejection you detected on his weather beaten face has likely resulted from having been tersely told there wasn't any room for him in the combat team commander's vehicle. No doubt you quickly surmised that the unwanted sergeant was the Mortar Fire Controller (MFC) and conceivably during your moment of commiseration, you silently questioned the effectiveness of this lone NCO at providing mortar fire support in an operation lasting longer than 24 hours.

This query, in conjunction with the effectiveness of all fire support resources within the battle group is of acute interest, particularly to battery commanders who are responsible to the battle group commanders for the most profitable use of all indirect fire resources available to the battle groups. In 1967 the battery commanders of 1 RCHA began to define the problem areas allied with the production of indirect fire support and to seek possible solutions to increase its total effectiveness within the battle group.

THE PROBLEM

Indirect Fire Resources

At that time the infantry mortar platoon organization consisted of eight mortars grouped into four sections each with an MFC. Also there was an M577 command post, an M548 ammo carrier and a ¼ ton recce vehicle. The limitations to this organization were:

a. the MFC was only one man, without means of transportation and with only a manpack radio for communications;

b. the MFC had no relief therefore he couldn't function as an OP for a continuous period; and

c. because of the limited range of the 81mm mortar, its limited effectiveness against hard targets, and ammunition resupply, only profitable targets could be engaged.

The M109 battery could normally provide two OP parties, each with their own transportation, sufficient communications for a variety of tasks or situations, and each capable of operating on a round-the-clock basis. One limitation was the inability of the direct support battery to provide more than two OP parties without seriously interfering with the production and checking of firing data at the gun end. The battle group requires a minimum of four OP parties on a continuous basis.

Control

It is a well accepted principle that the fire of artillery and mortars should be closely coordinated. Under the old organization this was an ideal not easily accomplished. An MFC could fire only his own section directly. To obtain guns he was compelled by lack of communications to go through as many as four nets, one of these being the busy combat group command net.

The mortar platoon commander was located near battle group HQ with his command post. He was not in direct contact with his MFCs making it almost impossible for him to control the rate or allot the weight of fire of the platoon to the most important areas. The MFCs conversly were out of touch with what was happening outside their immediate areas and therefore could not react to the overall situation. The obvious solution of putting MFC, base plate and command post on the same net was ruled out due to the short range of the MFC's man packed radios.

Movement

Since the normal practice of grouping mortars had been to place one or two sections under command or in support of various combat teams, movement of the mortars was ordered by the MFC. The mortar deployment was therefore dispersed with no guarantee that fire could be massed at critical points. Utilizing this system it was possible that all mortars could be moving at the same time and little consideration was given to coordinating with artillery movement to ensure that some fire support was always available.

The Solution

These problems were attacked by 1 RCHA and 2 PPCLI in Germany beginning late 1967. A new system was devised, and with adjustments,

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* *Capt Bianco is presently serving in 1 RCHA.*

was tried out on Exercise *"Keystone"* in October 1968. In early 1969 the system was formally implemented in 4 CMBG. The policy and training necessary to achieve integrated indirect fire support were outlined as follows:

a. ABCA fire order procedures were to be used in 4 CMBG;

b. 1 RCHA was to conduct an MFC course for mortar platoon commanders, 2ICs, and the sergeant and corporal for the newly established MFC parties;

c. a map exercise for all combat team commanders would be held as a refresher on fire planning procedures;

d. 1 RCHA was to conduct mortar-artillery live fire training for MFCs, mortar platoons, combat team commanders and FOOs in July 1969;

e. 1 RCHA and 2 PPCLI were to develop standard operating procedures for MFCs and Integrated Indirect Fire Support; and

f. infantry battalions were to reorganize their mortar platoons as shown in Diagram 1. Diagram 2 shows the communications for the reorganized mortar platoon.

It should be noted that the MFC party now consists of a sergeant MFC, a senior corporal A/MFC and a corporal/private as communicator/driver.

THE INTEGRATED INDIRECT FIRE SUPPORT SYSTEM

Organization

The main effect of the reorganization was to establish two mortar groups each with an MFC party, mounted in an M113 together with two A sets and a B set. The MFC is now capable of maintaining a set on the mortar net and a set on the combat team net. The B set is for dismounted operations or use on section fire control net if the need arises. It has however since become evident that an additional B set is essential for communications with the combat team during dismounted operations. The direct support battery organization remains normal.

Each battle group now forms a fire control centre (FCC) from mortar platoon HQ which coordinates all indirect fire support – artillery, mortars, air support and nuclear. It is the direct support battery commander's task to organize and operate the FCC on a continuous basis.

An OP party may be either an artillery OP party or an MFC party; therefore, four OP parties are available from the resources of the direct support

NEW MORTAR PLATOON ORGANIZATION

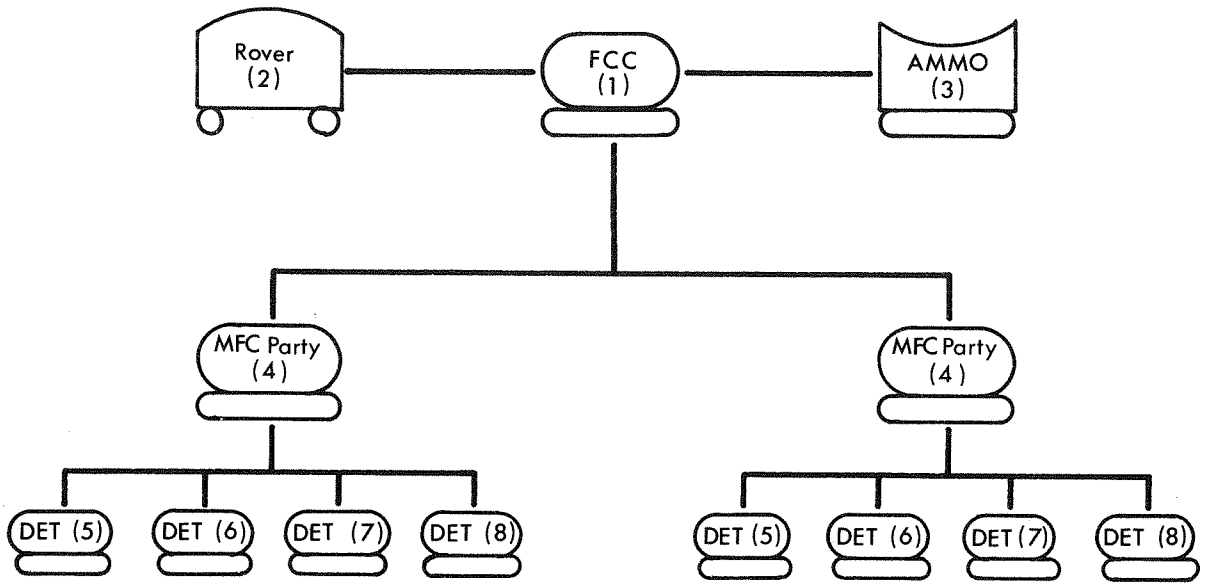


Diagram 1

NEW MORTAR PLATOON COMMUNICATIONS DIAGRAM

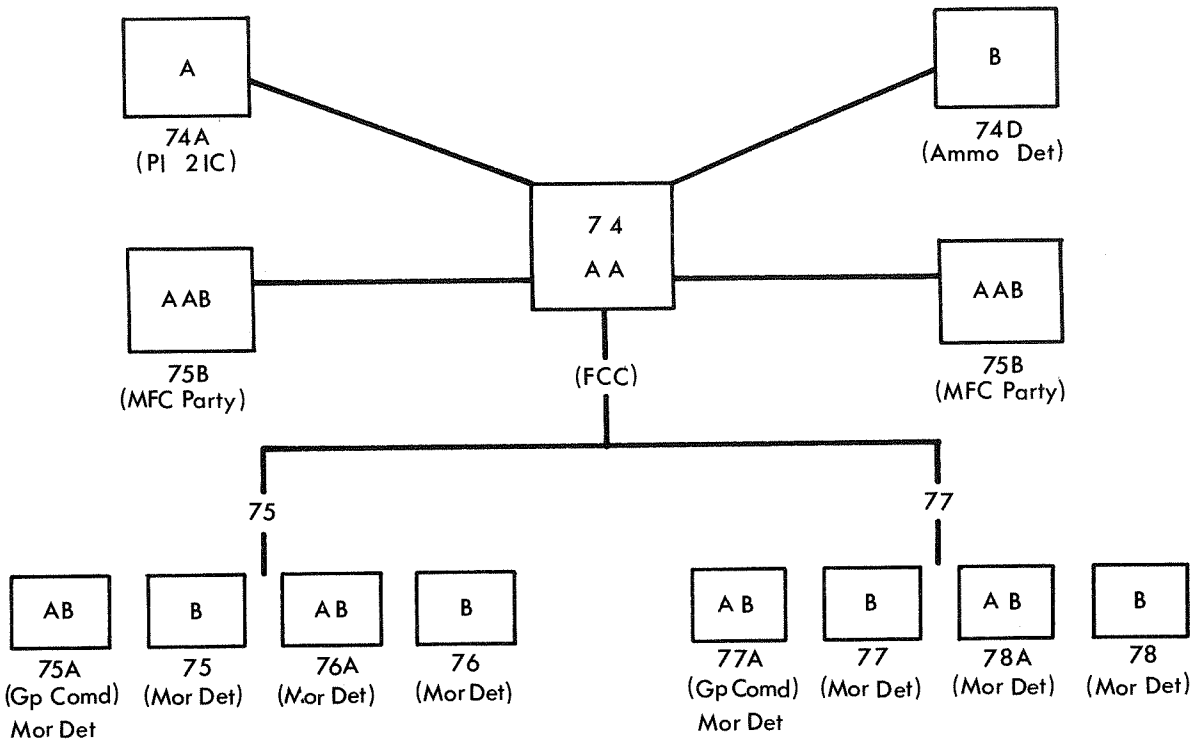


Diagram 2

battery and mortar platoon. These arty OP and MFC parties are theoretically interchangeable. In practice, however, the artillery OP has greater endurance due to more manpower and is capable of more complex fire planning.

Communications

The mortar platoon operates only one net. If sections must be placed under command of combat teams, the detached sections operate a section fire control net and maintain a rear link on the mortar net.

The battle group FCC normally operates the following nets:

a. mortar net;

b. battle group command net;

c. DS battery net (provided by BC); and

d. artillery regimental net (provided by BC).

In practice these communication arrangements allow the artillery OP to go directly to the mortar net and vice versa. The MFC can go to the battery net by use of the FCC link. The main problem was in the conversion techniques and procedures. MFCs had to be taught observation of fire, voice procedure, artillery fire orders and fire planning. MFCs were still using the old Canadian methods. Canadian mortar manuals were outdated, weak on tactical application of mortar fire, MFC training, fire control and fire planning. As a result MFCs trained under that system were slow reacting to fall of shot, had little knowledge of how to acquire and successfully engage targets and had almost no knowledge of fire planning. A two week course conducted by 1 RCHA proved that these problems were not difficult to overcome. The MFCs were eager to accept the new doctrine and the fresh challenge.

The system was tested at a joint mortar and artillery live firing practice during July 1969. The exercise conclusively proved that the improved procedures were sound. The following important advantages were demonstrated:

a. fire can be quickly concentrated consistent with priorities;

b. effective fire is produced more quickly using fewer nets;

c. the correct weapon can be used for a specific target situation and each combat team has access to guns or mortars while dealing with only one man – an MFC or artillery OP;

d. fire planning is simplified and a control on expenditure of ammunition can be maintained; and

e. fire orders are taken off the battle group command net.

The aggregate effect of this hard work was to substantially increase the total effectiveness of all indirect fire support within 4 CMBG. The new system was practised by all battle groups on 4 CMBG formation Exercise *"Tomahawk"*. At the conclusion of this exercise one combat team commander was noted to have said "I have never been so aware of fire support as I was on this exercise".

OVERHEARD

The scene:	*A hastily dug, camouflaged and soggy OP somewhere in Germany. The OP is surrounded by a CRA, BMRA, CO, BC and an IG and is within earshot of the remainder of the regimental OPs.*
OP Officer to sig:	*"Four guns adjust fire."*
OP Sig in handset:	*"Four guns adjust fire over."*
GPO Sig reading back:	*"Four guns adjust fire – only three available over."*
OP Officer muttering to himself:	*"I guess three will do."*
OP Sig in handset:	*"Three will do over."*
GPO Sig reading back:	*"Three will do out."*

HEAVY MACHINE GUNS IN THE AIR DEFENCE ROLE

by

*Capt L.C. Adkins**

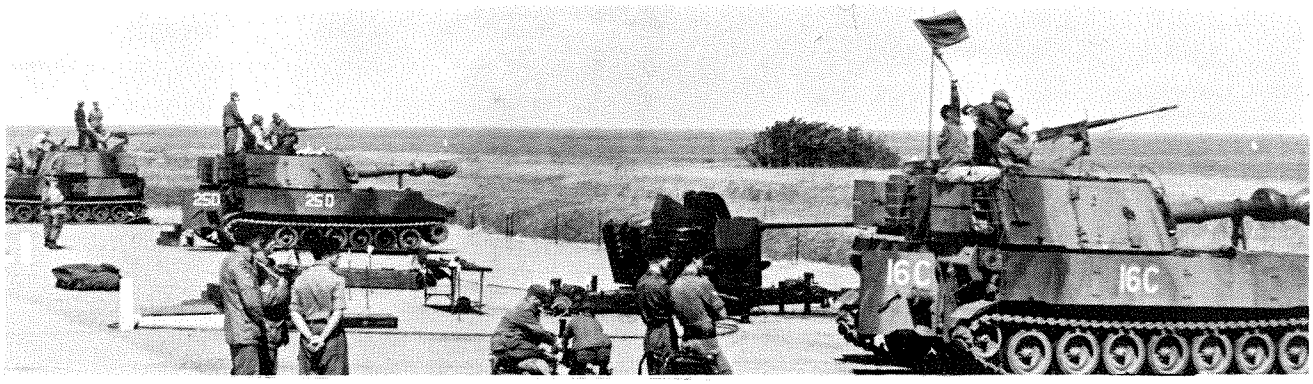
"All stations this is zero. Shooting run, shooting run. Out!" This staccato message crackling in headsets along the Todendorf range warns gunners that a simulated aircraft attack is imminent. The tow plane swoops low over the position. The target sleeve is spotted. Safety officers order "Safe to shoot". Eighteen guns from 7.62mm LMGs to 40mm Bofors bark and stutter angrily skyward; the fluorescent cloth target falls into the Baltic... "dead". This action took place at Todendorf Germany this summer when selected members of 1 RCHA were hosted by 34 Light Air Defence (LAD) Regiment to practise firing the .50 calibre heavy machine gun (HMG) in an air defence role.

Todendorf is a permanent anti-aircraft practice range near Kiel on the Baltic Sea. The firing point is a straight, level area approximately 300 metres long containing 18 hubbed platforms. Guns are stationed directly over the hubs and issued safe arcs which correspond to numbers painted on a fence in front. World War II Sea Fury aircraft, civilian owned and operated, tow the 15 inch by 12 foot cloth target sleeve at a distance which varies from 800 to 2,000 metres. Pilots are ordered to approach straight or vary the angle slightly in order to present the small end of the target and make it difficult to see and hit.

The range is controlled by a Chief Safety Officer who observes the height, direction, and speed of the target. When he is satisfied with the target position he orders "Shooting run". On the order "Shooting run" a Safety Officer on each gun acknowledges and permits the gunner to load. When the tow aircraft is directly overhead Safety Officers order "Safe to shoot". During a run the Safety Officer ensures that the gun does not traverse beyond the safe arc or elevate greater than 70 degrees. If either occurs, he orders "Stop". The gun is unloaded immediately to lessen the chance of a "cook-off".

Training was conducted in two phases. First, one officer and ten NCOs from 1 RCHA invaded the "bird gunner's aerie" for a three day air defence instructors seminar with 34 LAD Regiment, Dortmund, then, three M109s with AA HMG mounts were shipped by rail to Todendorf. The training cadre of one officer and ten NCOs conducted seventy members through a week of live firing with each man averaging 420 rounds in eight shooting runs. Three M109s, five HMGs, 20 barrels and 30,000 rounds proved adequate to train these gunners during the week long exercise. For this practice, the standard belts consisting of one tracer to four armoured piercing rounds was modified in the ratio of one to three.

Lessons learned were basically individual discoveries of how to track and effectively engage airmobile targets travelling between 240 and 270 knots. Most men opened fire at a range of 1600 metres and stopped firing at 75 metres. Most hits were scored in the 400 to 250 metre bracket. One very important principle observed when the 7.62mm LMG, .50 calibre HMG, and 40mm Bofors fired simultaneously at the same target was that the slower the cyclic rate of the weapon, the higher the ratio of tracer to armoured piercing required. When using a slow firing weapon against a fast target, many unseen rounds were wasted. Two of the M109s had been fitted with an experimental AA sight on loan from the Lord Strathcona's Horse (Royal Canadians). Unfortunately the sight was of little value in the Air Defence role.



M109s of 1 RCHA bracket a 40mm Bofor on the Todendorf anti-aircraft practice range.

Capt Adkins is a troop officer in 1 RCHA.

ARTILLERY SUPPORT ON D DAY

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RECOLLECTIONS OF 6 JUNE 1944

by
*LCol R.H. Webb, DSO, CD**

Although the manoeuvres of a quarter century have dimmed my memories of that momentous day, a few scenes and expressions still stand out loud and clear. As CO 12th Field Regiment RCA, I had the good fortune to accompany HQ 7 Infantry Brigade across the English Channel from Southampton to Courseulles-sur-Mer. Accordingly, I was an eye witness to only some of the actions mentioned in the following paragraphs; however, I was familiar with the remainder through having participated in the planning phase, and having read both the official and regimental histories.

As I recall, "D Day" really began with the arrival of nautical twilight – that ephermeral moment when, according to our naval friends and experts, the rising sun reaches a point twelve degrees below the horizon. That definition always foxed the army planners! Anyway, the moment was important because it marked the commencement of daylight at sea. Ships began to be silhouetted against the horizon, and we knew that approximately an hour and a half remained before the first assault troops would jump onto the shores of France. Everyone wondered what sort of welcome awaited us in that period, for the invasion could no longer be considered a secret. RAF Bomber Command had started its terrific attack on the enemy's main defences shortly before midnight and shortly afterwards, American and British Airborne Divisions landed in the fields behind some of the beaches. Now, six hours later, as the first glimmer of day appeared in the eastern sky, the 3rd Canadian Division was still about seven miles from shore and all seemed well, with the exception of the many who suffered seasickness.

As the twilight brightened, ships could be seen on all sides – ships of many sizes and shapes each deploying towards their assigned position for the final approach to the beaches. The beaches too could be discerned to the south as a long thin dark line separating the overcast sky from the surface of the grey sea. Further to our left and right were similar armadas carrying British and American forces towards their particular beaches. Swarms of small assault craft, recently launched from their "mother" ships, were now moving steadily forward. In front of them were the LCTs which carried the "DD" tanks, AVREs and other armoured vehicles specially designed to lead the way ashore through the forest of booby-trapped obstacles planted between high and low tide marks. There were ships with Divisional HQ, the three Brigade HQs, beach groups, reserve units and all the other elements essential to a successful landing on this first day of the invasion at Normandy. Not to be overlooked was the galaxy of ships which would play a part in the immense fire plan soon to be opened.

The overall fire plan had been prepared with two main objects in mind – first, to knock out any fixed defences which could bring fire on the invasion area, and, second, to saturate the vicinity

The beaches at Normandy.

* *LCol Webb who commanded the 12 Fd Regt RCA on D Day is now retired and living at White Rock, B.C.*

of each landing beach during the final approach. The first part had been allotted to the heavy bombers of the RAF and the USAAF, while battleships, cruisers, destroyers and other members of the naval arsenal would take on any points left in action after the bombing ceased. The second was to be performed by the field artillery from floating platforms (LCTs), by rocket ships (LCTRs), "DD" tanks, and by a multitude of fighter and fighter-bomber aircraft. The heavy bombers were to bomb from just before twilight and the remainder of the fire plan would begin approximately between 0700 hrs and 0715 hrs and continue until H Hour when the leading infantry should be crossing the beaches. I use the word approximately because variable factors such as tide, current and depth of water necessitated a different H Hour for each beach, thus the timing of the individual fire plans for each beach, of course, was related to its particular H Hour.

The artillery portion of the fire plan for the two assaulting brigades of 3rd Canadian Division was to be carried out by the 12th and 13th Field Regiments supporting 7 Brigade and by the 14th and 19th Field Regiments supporting 8 Brigade. For this unusual task, each regiment had been equipped with 105mm "Priests", 150 rounds of HE and Smoke per gun and six LCTs – one for each troop. The gunnery involved was quite simple. Approach bearings, aiming points in the target areas, speed and rate of change in elevation during the final approach had all been pre-determined during the planning sessions at Cowes. The Navy would supply line and opening elevation. The angle of sight, of course, would be zero. Thus the Gunners had little to do except prepare the ammunition, load, level, fire, lower elevation and keep repeating the sequence for thirty minutes and 150 rounds. Although the planners had appreciated that the targets would be visible to the LCTs, as a check against gross error, they decided that each regiment must have an observer stationed in a motor launch well in the forefront of the armada. It was this observer's task to observe ranging rounds or salvoes and order corrections to ensure the subsequent gunfire came down in the target area. This would be no mean feat since the fighter aircraft were due to start their program fifteen minutes before the artillery, and the Navy would be concurrently bombarding other targets in the vicinity. Nevertheless, it was considered the observer should be able to keep the artillery shells falling on land which would be preferable to having them wasted in the sea.

After the field guns and aircraft stopped firing, five minutes would remain before the infantry touched down. In that interval the rocket ships would let go their awesome firepower, the destroyers would continue to engage targets of opportunity on the flanks and the "DD" tanks, which then should be emerging from deep water, were to open fire with their weapons. Thus, it was calculated that the infantry would receive continuous supporting fire right up to the moment they came under protection of the sand dunes and buildings located just above high water.

The "PRIEST"

Despite adverse weather and some enemy opposition the fire plan and subsequent landings took place pretty well as expected. At 0630 hrs the twenty four LCTs began deploying into line-abreast formations for the final approach, and at approximately 0715 hrs the artillery program commenced. After a few ranging corrections the observers reported the

concentrations as being on target and before long the guns were again silent. The noise level in the LCTs during the firing must have been extremely high but I do not recall being informed of any damaged ear drums. A reason for this might have been that everyone wore ear plugs. At H minus 5 the program ended. The troops were in good position to see the final assault as the LCTs were only 3000 yards from shore; however, there was much to do as the craft swung around and headed out to sea to await landing instructions from the beachmasters.

In spite of the fire plan, not all the defences had been knocked out or neutralized. There were severe casualties among the infantry and among our observation parties. In addition, the narrow exits from 7 Brigade's beaches were effectively blocked when one or more of our armoured vehicles blew up on enemy mines. When it was learned that the exit wouldn't be clear for several hours, arrangements were made with the beachmaster to call in the LCTs carrying 12th Field Regiment. Accordingly, its twenty four "Priests" were in action by 0845 hrs at the water's edge, and a few minutes later, they were firing on their first target inside France. The opening range was 1400 yards! By mid-afternoon the exits had been cleared and the 12th and 13th Regiments were able to proceed to their pre-selected gun areas around Banville.

It had been a long and exciting day, and the Gunners of 12th, 13th, 14th and 19th Field Regiments had certainly learned the meaning of "UBIQUE".

1 RCHA GUARD OF HONOUR

1969 marks the twenty-fifth anniversary of the liberation of Belgium from German occupation during World War II. To represent Canada at the ceremonies in Antwerp and Adegam, Belgium on 6 and 7 September, 1969, 1 RCHA was tasked to supply a 35-man Guard of Honour and a five-man flag party to escort the Canadian Flag and the Canadian Forces Ensign. The Canadian troops arrived at Caserne Hulsmans, Antwerp on 5 September 1969 and soon learned that they enjoy a very high standard of living in their own garrison. The shortcoming in accommodation at Antwerp was partially compensated for by the enthusiastic co-operation and assistance given the Canadian group by the 6eme de Ligne Batallion.

Next day, the guard joined British, French and Belgian forces in a massive parade in the old part of Antwerp. The ceremony included an inspection by representatives of the three Belgian Chiefs of Staff, a review by the Belgian Minister of National Defence and a parade of mounted and dismounted troops through the old city. During this parade, the Guard of Honour found itself marching over rough cobblestones to a band it could not hear. Despite this the guard, one of the most colourfully dressed contingents on parade, was well received as evidenced by the cheers and shouts of "Bravo Canada" from the spectators.

On the afternoon of 7 September 1969 the guard joined the Canadian Armed Forces Band from Ottawa at the farming village of Adegam. Adegam is situated about 20 kilometers east of Brugge. It is significant to Canadians because the only Canadian military cemetery in Belgium is located on the outskirts of the village. Canadian forces liberated that part of Belgium in the fall of 1944. Every year a strictly Canadian ceremony takes place there. After marching to the village church the guard saluted the dignitaries as they arrived. These included the representative of the King of Belgium, the Canadian Secretary of State and the Belgian Military District Commander.

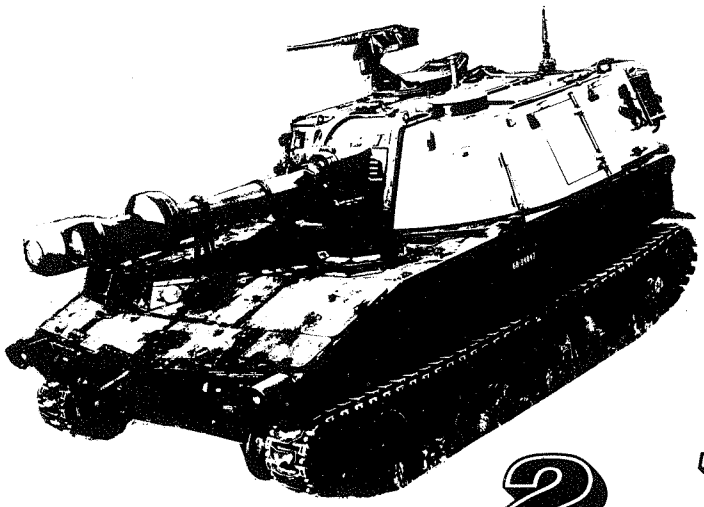
During the church service the band and guard moved to the Canadian military cemetery where more than 800 fallen Canadian servicemen lay buried. There the approach to the Cross of Sacrifice was lined by a detachment of Belgian naval ratings and the Canadian Guard of Honour. Canadian sentries were mounted on the base of the Cross of Sacrifice. The Canadian Armed Forces Band and the Belgian Naval Band formed up behind and on either side of the Cross of Sacrifice. Between the bands stood the Canadian flag party. Approximately one hundred school children stood by to lay a small bouquet of flowers each, around the base of the monument.

The ceremony was long but very sincere and emotionally moving. It was conducted in Flemish, French and English. The Canadian Guard of Honour fired volleys after the Last Post and a Canadian Armed Forces aircraft dropped 20,000 poppies over the graves as the last notes of O' Canada concluded the service. The sincerity evident in the Burgomeister's praise of the Canadian

troops that liberated the area made us all proud to be Canadian servicemen. The Secretary of State for Canada spoke on behalf of the Canadian government.

That evening a concert was given by the Canadian Armed Forces Band in front of the village church. The population of the entire village appeared to be in attendance. Illuminated by spot lamps, a very large Canadian flag flew from the top of the church steeple. Below on the cobblestone street, several hundred villagers watched and listened intently. Before them was a Canadian band in dress uniform and the Conductor, acting as announcer, spoke to the people in their own language, Flemish. Following the playing of the Belgian and Canadian national anthems at the end of the concert many of the people returned home with tears in their eyes. Such a scene in an obscure little Belgian farm village helps to explain the meaning of Canadian citizenship.

The 1 RCHA Guard of Honour, commanded by Capt D. Elrick presents arms to Canada's Secretary of State, the Right Honourable George Pelletier in Adegam, Belgium in September 1969. The guard represented 4 CMBG at celebrations marking the 25th anniversary of the liberation of Belgium.



2 RCHA

At present, the Second Regiment, Royal Canadian Horse Artillery is a two battery mechanized regiment equipped with the M109 self-propelled 155mm howitzer. A part of the 3rd Combat Group at CFB Gagetown, New Brunswick, the regiment has had two distinct and separate roles this last year; first, to support 3 Combat Group as an Artillery Regiment, and second, to supply personnel to augment and reinforce 1 RCHA in North West Europe.

To reinforce 1 RCHA, the regiment loses a constant stream of personnel who, when properly trained, proceed overseas. Manpower is thus one of 2 RCHA's primary problems. In this last year the regiment has trained and posted some 240 soldiers to North West Europe.

With this manpower situation ever present the regiment still effectively carried out its duties in 3 Combat Group performing such varied tasks as conducting a spring practice camp, acting as stand-by force for aid to the civil power, providing support for the FMC reserve concentration, providing a vital part of the Staff College firepower demonstration, supporting two Combat Team Commanders courses for six weeks and providing fly-over personnel for 4 CMBG.

2 RCHA missed out on some of the more glamorous roles such as the Ace Mobile Force or Cyprus peacekeeping. To the chagrin of some, the regiment's commitments kept it permanently occupied in CFB Gagetown. Thus, although the farthest the regiment ever got from the base was some thirty miles deep into the CFB Gagetown ranges, it has had a very busy and exacting year.

New Commanding Officer

To start off the new year 1969 the regiment received a new Commanding Officer, LCol J.A. Cotter, CD. He succeeded LCol J.G. Henderson, the Commanding Officer of the regiment since 1967.

For LCol Cotter it was a homecoming to the regiment in which he served initially as a subaltern in North West Europe and Winnipeg, and later as Battery Commander of "D" Battery, again in North West Europe. Prior to becoming CO of 2 RCHA, LCol Cotter was SO 2 Arty at Headquarters, Mobile Command.

The change of command ceremony on 21 January 1969 was reviewed by another ex-CO of 2 RCHA, BGen J.L. Drewry, Commander 3 Combat Group and CFB Gagetown. In a simple afternoon ceremony held inside the 2 RCHA drill hall to avoid the below-zero weather, LCol Henderson bade farewell to his regiment and LCol Cotter assumed command. The official signing over took place shortly afterwards at the 2 RCHA Officers' Mess. With a new commanding officer and a new year ahead of it the regiment settled down for a busy time.

Training

The period January to May 1969 was the one time of the year when 2 RCHA had the chance to work and train unhindered at its primary task, that of artillery support. With new officers and men working together for the first time the batteries concentrated on troop training, battery deployment and firing exercises, with the aim of being ready to participate

Lieutenant-Colonel J.G. Henderson relinquishes command of 2 RCHA to Lieutenant-Colonel J.A. Cotter as Brigadier-General J.L. Drewry, Commander 3 Combat Group and CFB Gagetown looks on.

in the regimental practice camp from 28 April to 13 May.

This was the one time of year when the regiment could work together for a relatively long period of time. For the younger inexperienced officers it was their first chance to prove to themselves, and to others, that they not only had a sound grasp of the technical side of gunnery but they could also provide effective leadership for their men for a sustained period in the field. For the new gunners it was their first opportunity to perform as an integral part of an M109 detachment or a command post or OP crew. For the older and more experienced officers and NCOs the practice camp was a chance to actually do the job that they are trained to do.

The first week consisted of battery training during which each battery went through the "bread and butter" drills of artillery – recce, local defence, fire and movement and fire planning. Additional zeal was added to the training by the fact that each battery was in effect practising for the Roberts Trophy Competition, an annual competition at the end of which the Roberts Trophy is presented to the battery that best performs in all the phases of gunnery. This year the contest was a 24 hour exercise during which a staff from RHQ assessed each battery on a points system. In a close and spirited contest "D" Battery emerged as the winner.

After a brief recovery period, the last five days of practice camp were taken up with the CO's Exercise *"Narrow Pass"*. This exercise was the chance to put together collective training experience and perform as a regiment. The highlight of Exercise *"Narrow Pass"* was the development of Battery Commanders' fireplans using the complete resources of 2 RCHA, an ad hoc 105mm battery, the mortar

platoons of the 1st and 2nd battalions of the Black Watch (Royal Highland Regiment) of Canada and the close support aircraft of 408 Squadron. The shooting of the last two days made it quite evident that the regiment had gained a vast amount of benefit from working together in the field.

The regiment returned to the base feeling somewhat nostalgic over the fact that the team which had just begun to produce so efficiently was soon to break up as postings to Europe and elsewhere would scatter the troops to the four winds. Nevertheless, the regiment learned much of itself and its capabilities and each individual was a much better soldier than when he had entered the field only 16 days before.

Armed Forces Day Demonstration

2 RCHA was tasked with providing a display troop to participate in the FMC Demonstration held at CFB Petawawa, on 14 June 1969 in conjunction with Armed Forces Day celebrations. D Troop of E Battery formed the nucleus of the force and on arrival in Petawawa on 22 May 1969 the troop was attached to M Battery of 4 RCHA until the return trip to CFB Gagetown in June.

D Troop participated in two ways. First, an M109, and M548 cargo carrier, plus radar and meteorological technicians took part in a large static display of FMC equipment. Second, D Troop provided a four gun fire unit in support of a mechanized attack illustrating the firepower and flexibility provided by FMC weapons and equipments.

In this, a large and most impressive demonstration drawing upon much of the resources of Mobile Command air and land elements, the gunners of 2 RCHA were not to be overlooked. The M109, plus the other tracked vehicles and hardware display by 2 RCHA were a focal point of interest, and the firing of our M109s left a resounding imprint on the Mattawa Plain.

Exercise EARLY HARVEST

In October 1969, over 200 faculty and students from the Canadian Forces Staff College (CFSC) Toronto, and the Canadian Land Forces Command and Staff College (CLFCSC) Kingston, along with numerous other invited guests visited CFB Gagetown to witness Exercise *"Early Harvest"*. The exercise was a four day series of demonstrations to illustrate to the Staff College Officers the equipment and firepower available from the resources of a mechanized combat group and to show these resources when effectively coordinated. All units of 3 Combat Group were involved in the presentation of both static and mobile demonstrations.

The two highlights of the exercise were a night illumination demonstration which, pointed out the illumination resources available within a combat group and the effectiveness of artillery, armour and infantry weapons in using this illumination; and a daylight firepower demonstration which ended with the movement and shock effect of a fully mechanized combat team in the attack.

2 RCHA played a vital role in Exercise *"Early Harvest"*. The regiment supported both the night and day demonstrations, firing 150 rounds of HE, WP and CVT in approximately 15 minutes during the daylight demonstration. In addition to providing this fire support, the regiment was tasked to illustrate the deployment techniques of an M109 battery.

With the Staff Colleges students observing, D Battery demonstrated the quick deployment of an eight gun M109 battery. To provide a contrast, C Troop of E Battery performed a deliberate troop deployment in slow motion, narrated step by step to indicate to the students in detail the operation of an artillery troop going into action. D Troop had been deployed prior to this demonstration and expertly camouflaged to illustrate how a position such as C Troop had occupied could be developed into a defensive position in less than 24 hours.

After a five day stay, the Staff College students returned to their studies in Kingston and Toronto, much more familiar with the Canadian land forces' mechanized capabilities. The regiment then turned its attention to the Combat Team Commanders course which arrived the same day the Staff Colleges departed.

An E Bty M109 during winter training

The Combat Team Commanders Course

Twice during 1969 the regiment was called upon to give support to the Combat Team Commanders course from the Combat Arms School. In May, and again in October the first and second courses respectively came to CFB Gagetown for three weeks of intensive training to complete the eight-week program.

For both courses, 3 Combat Group fielded a battle group consisting of an infantry battalion (1 RHC), and armoured squadron from the RCD, an artillery battery (D Bty, 2 RCHA), a troop of engineers from 2 Fd Sqn and elements of 3 Sigs Sqn. The battle group was broken down into three combat teams for the students to command against a live "enemy" provided by 2 RCHA and 1 RHC.

D Battery provided three FOO/FAC parties, one for each combat team. These parties gained valuable experience in mechanized operation through working with a complete combat team on the ground. D Battery also provided a battery command post to simulate the guns responding to the calls for fire from the FOOs. Fire simulation teams together with the Engineers provided a degree of realism seldom seen in peacetime. This entire effort was backed up by an echelon of 35 men who supported the exercise.

Sports

Despite a busy year of training commitments, and the constant loss of personnel through postings to North West Europe, 2 RCHA was very successful on the sports field.

With LCol Cotter as the playing coach, the basketball team lost only three games in the CFB Gagetown league, then swept the playoffs for the base championship, eliminating the 2nd Battalion Black Watch and 3 Service Battalion.

The 2 RCHA softball team, under the coaching of Sgt Spencer and Sgt Gero, lost only one game during the season and defeated 3 Signals Squadron three games to one in the finals to take the base championship.

Not to be outdone, the 2 RCHA volleyball team had a record of 39 wins and 3 losses during the season. They followed this up by sweeping the playoffs in four straight games to win the base championship. This team formed the nucleus of a CFB Gagetown team to enter the Zone 7 and Canadian Forces playoffs.

The regiment also won the light and heavy Tug of War and the CFB Gagetown small bore championships. An honourable mention goes to the 2 RCHA hockey team which, after finishing third in the regular season, eliminated the first place 1st Battalion Black Watch in the semi-finals. Under the coaching of Sgt Barnes the team lost the final series two games to one but in so doing, pushed the winners, the 2nd Battalion Black Watch, to their utmost effort to defeat the gunners.

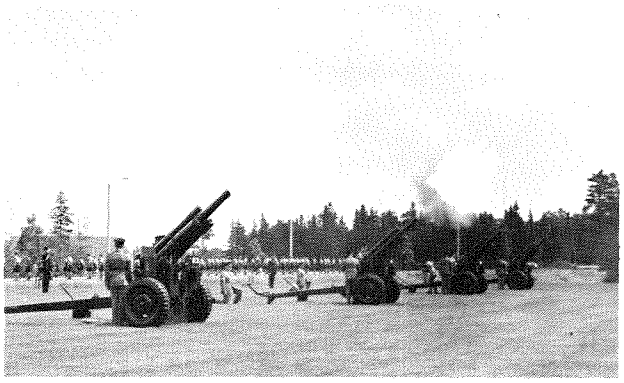
Special Occasions

It seems this last year has been a year of "good-byes" as 2 RCHA found itself honouring several gunners in some form of farewell. This was perhaps altogether fitting, for the year 1970 will see 2 RCHA itself say farewell to CFB Gagetown in compliance with the re-organization plan in which 2 RCHA will move to CFB Petawawa.

Visit of Chief of Artillery

On 23 May 1969, 2 RCHA hosted a past CO, Col J.P. Beer, MBE, CD, and held its annual track and field meet. The two events were linked by the fact that the track and field trophy was originallt presented to the Regiment by Col J.P. Beer in 1965 when he relinquished command of the regiment after serving as Commanding Officer for four years.

Col Beer was posted last summer to the staff of the NATO Defence College in Rome and so came to CFB Gagetown to bid farewell to his old regiment. As part of this visit Col and Mrs Beer attended the 2 RCHA annual track and field meet. In a close and spirited contest which saw "D" and "E" Batteries tied with only three events left, "E" Battery emerged as the winner. The awards, both team and individual, were then presented by Col and Mrs Beer.



A 2 RCHA troop of 105mm howitzers fires salute for Gen Drewry who has been posted to Nigeria. In background Warrant Officers and Sergeants of 2 RCHA towed Gen Drewry with drag ropes on a gun carriage along streets lined with soldiers of 3 Combat Group.

The guns of 2 RCHA roll past and salute retiring Gen Anderson.

Farewell to LGen Anderson

Monday 23 June was "Anderson Day" at CFB Gagetown as LGen W.A.B. Anderson, OBE, CD Commander Mobile Command, paid his farewell visit to the base before retiring.

The ex-gunner was honoured with a 15 gun salute fired by 2 RCHA and a roll past of virtually every form of mechanized vehicle in 3 Combat Group. The regiment, in its M109s and APCs, led the roll past. Attending the ceremonies were the Lieutenant-Govenor of New Brunswick, the Hon. Wallace S. Bird, and the Premier, the Hon. Louis J. Robichaud.

That evening General and Mrs Anderson were towed with drag ropes on a gun carriage by a group of Warrant Officers and Sergeants from the regiment to a mixed formal dinner at the 2 RCHA Officers' Mess.

Farewell to BGen J.L. Drewry

BGen J.L. Drewry, DSO, CD, Commander 3 Combat Group and CFB Gagetown was honoured in a noon-hour ceremony on 22 July at CFB Gagetown on the occasion of departure from his command, having been posted as the Canadian Military Representative on the International Team of Observers in Nigeria.

Presented with a framed pennant of 3 Combat Group, BGen Drewry was then towed on a gun carriage, by Warrant Officers and Sergeants of 2 RCHA, along streets lined with troops while the Regiment fired a salute in his honour. He was towed to 2 RCHA Officers' Mess for a luncheon where the officers of the regiment said farewell.

At the luncheon, BGen Drewry, also an

ex-CO of 2 RCHA, was presented with special mementoes from the CO of 2 RCHA, LCol Cotter, and the CO of 3 Signals Squadron, Maj D.A. Kidd, whose squadron shares the gunner's mess.

In August 1969 BGen Drewry exchanged appointments with BGen C.J.A. Hamilton – General Drewry going to Nigeria and General Hamilton becoming Commander 3 Combat Group and CFB Gagetown.

Changes

It seems the last few years have been years of changes for 2 RCHA. In 1967 the regiment returned from service in North West Europe. In June 1968 it became a two battery regiment and part of the then newly-formed 3 Combat Group. Shortly afterwards came the switch from the 105mm towed howitzer to the new M109 self-propelled 155mm howitzer which gunners in 2 RCHA agree is the best liked gun the regiment has ever had.

After approximately one year with this new equipment and new organization, the regiment, along with the rest of the Canadian Forces, listened to the reorganization plans announced by Defence Minister Cadieux on 19 September 1969. The ending of the mechanized role by 1972 along with the movement of the regiment to CFB Petawawa sometime in 1970 will mean more changes for the 2nd Regiment, Royal Canadian Horse Artillery.

Like most others in the forces at this time, the members of the regiment are not quite sure just what all this will mean to each individual. However, we know that the members of 2 RCHA, regardless of changes and innovations, will continue to serve the guns with the dedication and professionalism which have been the trademark of this unit since its formation twenty years ago.

A LETTER FROM CAMBODIA

by
LCol M.L.A. Chabot, CD

Last year, The Canadian Gunner asked LCol Chabot to describe what it was like serving on the ICC in Cambodia. Unfortunately his letter arrived too late for publication. Many gunners may overlook the fact that Canada does have an involvement in this area – an involvement which could well expand should peace return to South-east Asia. LCol Chabot's observations seem appropriate at this time in view of the continuing quest for peace in Viet Nam.

Dear Gunner,

You asked me what life is like on the ICC in Cambodia. First a word on the ICC, or to give its full title, the International Commission for Supervision and Control in Cambodia. The ICC was formed in 1954 out of a conception of the Geneva Convention. Its mission was to supervise the cease-fire between the countries of Indo China (South Vietnam, North Vietnam, Laos and Cambodia). I shall deal exclusively with Cambodia and not concern myself with the Commissions in Vietnam and Laos.

The Cambodia ICC actually completed its mandate of the CFA (Cease Fire Agreement) by 1956 at which time Canada so reported to the Co-Chairmen (the UK and USSR). However, Prince Sihanouk, Cambodia's Head of State, requested that the ICC stay on in his country. The Government of Canada acquiesced and the ICC in Cambodia was permitted to carry on; however, Canada's Delegation was reduced to a token establishment, one Commissioner provided by the Department of External Affairs. This was later expanded, in 1966, to a Senior Military Adviser, a Lieutenant Colonel provided by the Department of National Defence.

You may ask, if the Cambodian Commission has completed its mandate, what does it do? Actually, plenty. Since the expansion of the Vietnam war, the Vietcong (VC) and the North Vietnamese Army (NVA) have had the disturbing habit of spilling over into neutral Cambodia and using it as a sanctuary. As the NVA and the VC were party to the CFA, every encroachment into Cambodia by these Forces constitutes an infringement of the CFA, and must therefore be investigated and reported by the ICC. In addition, there was the so-called "Sihanouk Trail", now out of use, which was used as a communications route by the VC/NVA, and the Port of Sihanoukville on the Gulf of Siam from where, according to the Americans, the NVA receive supplies from the Chinese and Russians. These supplies are said to be transported to the VC/NVA through Cambodia. Both the Sihanouk Trail and the Port of Sihanoukville are subsequently subject to inspection by a Team of the ICC.

Frustration of the Troika

To inspect is easier said than done. The ICC is a "troika" organization, that is, it consists of three equal members, an Indian Chairman, a Polish member and a Canadian. Since all three members must agree before an investigation can be undertaken, and, all three members must be present on the Investigating Team before a proper investigation can be done, the result is often an exercise in frustration. The Polish member would never agree to investigate anything where even a suspicion of the presence of VC/NVA was evident, therefore, few investigations of reported Communist activities are possible. Some sites have been visited, notably the Port of Sihanoukville, but the investigation has never been completed.

On the other hand, Cambodia has often requested the ICC to investigate breaches of its frontiers by the United States or South Vietnamese Forces (US/SVN). Canada has never agreed that such investigations were legal, based on the premise that neither the USA nor South Vietnam were signatories of the CFA. Thus, Canada in turn votes against proposals to investigate these incidents. However, the other members of the troika do not interpret the Geneva Convention in this manner, and always vote in favour. Canada, however, does go along on these investigations, despite her negative vote, "to keep the investigation objective" and on the off chance that the Investigating Team might stumble onto evidence of VC/NVA activity.

During my tour, despite our "token" establishment, the ICC has already made about 20 investigations. These are invariably interesting. The Investigating Team consists of two Indians, two Polish and two Canadians. A stenographer and an interpreter who speaks the Cambodian language, Khmer, Vietnamese, French and English are also brought along. Because of our paucity of personnel, the Canadian representation consists of only the Commissioner and and his Military Adviser.

Investigating "Aggression"

Investigations follow a familiar pattern. It is invariably alleged that US/SVN Forces crossed the border and either destroyed Cambodian property and/or killed or maimed helpless Cambodian civilians. Provocation, in the form of presence of VC is never admitted. The aggressors, seem never to fire at the suspected VC – always at innocent Cambodian women and children! Witnesses sometimes have even denied all knowledge of the existence of VC! The Investigating Team, led by the Indian Chairman, is met by a Cambodian Army contingent which provides security and whose officer briefs the team on what has occurred. Briefings are usually prefaced by a long recital of all the previous "aggressions" on the frontiers for the past year. Following the briefing, the team visits the site of the incident and examines it thoroughly. A knowledge of weapons and their effects is an asset to the military adviser. Examination of the site always includes a careful scrutiny of the effects of weapons on the ground, inspection of any debris such as shell or rocket fragments and being able to identify them as American, Chinese or other other manufacture. Some interesting problems have arisen and some heated arguments develop. One famous incident involving the age of shell fragments allegedly found on a site was featured in an article in Time Magazine.

If deaths are involved the bodies are usually left on the site, even if the incident has taken place two or three days beforehand – and this in the tropics! Witnesses are interrogated as well. As some of the witnesses may be wounded, this entails going off to neighbouring hospitals to interview them.

Following the investigation, the real fun begins. Investigation reports must be approved by all three members and some sort of agreement must be reached on findings. These are sent to the Co-Chairmen. The Cambodian government, as the complainer, also receives a copy.

Investigating an alleged defoliation of Cambodian sugar cane fields, the ICC Investigating Team (with Cambodian hangers-on) views evidence at a Mimot Sugar Plantation along the Cambodia-South Vietnamese border. The author is at left.

Discussions of reports take place at formal meetings attended by the three Commissioners each of which is accompanied by an official alternate. The alternate Canadian Commissioner is the Senior Military Adviser. Meetings are most frustrating events and often turn into long sessions when one is forced to sit through hours of Communist propaganda and time wasting procedural delays.

With such procedural tactics, it takes ages before the report and findings can be finalized. Indeed very few reach unanimous decision and thus reports submitted usually contain a minority opinion.

What value does service in the ICC have for Army officers? First, it is an invaluable lesson in international politics. Dealings with nations with diverse ideologies are always valuable. This experience is gained not only in the relationship we have with the Indians and the Poles but also with Cambodians, South Vietnamese and Americans. The Canadian position on the ICC has always been to be honest and objective. This position has led other countries to appreciate Canada's open-mindedness and fairness, a reputation incidentally which we enjoy world-wide on all our peace-keeping missions.

The ICC gave us one of our first tastes of peace-keeping. As such it provided us with many lessons on how a future ICC in Indo China should be organized to function without the present frustrations. Whether Canada is invited to join a future ICC after the Vietnam war is immaterial. Her experience is available should it be requested in deliberations leading to a cessation of hostilities in Indo China.

Peaceful Cambodia

Cambodia is a charming country. It is tropical and always hot – but one quickly gets used to the heat. It is an old French protectorate and although the French have officially departed, their language remains. It is an ideal post for a bilingual Canadian, for French is the only foreign language spoken by most Cambodians.

Cambodians themselves are short, dark people and fairly handsome. They are pleasant but it is difficult for a European to meet them, mainly due to the Head of State's aversion to foreigners. However, when one does finally get to meet them, they are found to be friendly and are good company. Canada is very popular with the Khmers because they know we have no axe to grind. Therefore, Canadians usually have more Cambodian friends than other non-Asiatics.

The country is very Asian, but as unlike other Asiatic countries as Newfoundland is different from British Columbia. Cambodia has only six million people who are stretched thinly over 66,000 square miles. Thus, in the cities and towns, the teeming masses of other Asiatic centres, which a Canadian visitor finds overwhelming at first, are missing here. This makes the towns and the countrysides very refreshing, pleasant and peacefully quiet. It also makes it a favourite leave centre for members of the ICC in Vietnam and Laos, particularly those in Saigon who find it a haven from the thundering din of that city and the nerve wracking atmosphere of war.

An agricultural country, Cambodia is one of the few Asiatic nations which exports food, mainly rice. Its riches stem from water – the magnificent Mekong which flows through its centre, and its tributaries, the Bassac and the Tonle' Sap which in the north-west grows into a lake simply teeming with fish. Rice is grown everywhere but the riches of the country also include a variety of other fruits of the land like jute, rubber, coffee and many exotic tropical fruits. Rubies and sapphires are ''panned'' Yukon goldrush style near the Thai border.

One of the country's biggest sources of revenue is the tourist trade. A favourite with tourists is the capital, Phnom Penh. It is a very beautiful city with wide avenues and boulevards. There is comparatively little traffic. The streets are all fringed with rich green lawns and magnificent flower trees in gay colours. They are all swept and trimmed daily by female coolies in the colourful sampots (native wrap-around skirts) and head cloths of Cambodia. Phnom Penh has one unique feature – it has no taxis. Instead, three-wheel cyclo-pousses abound, pedalled by dusky ragged boys with whom one must bargain before agreeing on a fare.

Tourists of all nationalities swarm into this tourist paradise. Phnom Penh itself has

many interesting sights, many of them religious – Buddhist temples, shrines and cemeteries full of stupas, all magnificent. The colourful bonzes in their saffron robes and shaved heads are very hospitable and welcome visitors to their pagodas. The Royal Palace and State Palace (the latter where the Head of State lives) are also worth seeing. The three rivers, Mekong, Bassac and Tonle' Sap part here and provide much scope for photographers in the form of water dwellers, pirogues, junks, fishermen and villages on stilts.

The countryside too is interesting. The road network is good and one can get around easily to visit the villages surrounded by rice paddies and the teak and banyan jungle, the Buddhist monasteries, even the odd Muslim temple. All the houses are built in the unique Cambodian style, on stilts, a precaution against the annual flooding of the rivers. Under the houses, one sees the household treasures, a large water vat, some water buffalo, a few chickens, a cooking pot and the greatest treasure of all, a bicycle.

The most famous site in Cambodia, perhaps in South East Asia, is the world renowned Angkor Wat and its surrounding temples, all dating from the 12th Century and the famous Khmer King of that period, Jayavarman VII. Angkor is worth a three day visit and with the beaches, is a favourite holiday itinerary of many Canadian soldiers serving with the ICC. Angkor is an incredibly beautiful series of temples and stone carvings which reveal the genius of the Khmers of olden times. The monuments have withstood well the ravages of time and weather and have been developed into a magnificent tourist mecca by superimposing many comfortable modern hotels and restaurants.

Few Canadians who come to Indo China miss spending part of their leave at the beach of Sihanoukville. Here again one of the anomalies of Asia is evident. The public beaches are among the most beautiful in the world but are practically deserted. Thus one is assured of true privacy and can pick and choose one's spot anywhere on the beach to develop a stunning tan. The water is crystal clear and most refreshing after the heat, as is the cool fresh air coming in from the Gulf of Siam. Motels abound right to the water's edge so that one can rent a bungalow very cheaply just a few yards from the water. An extra treat is to taste the "fruits de mer" (seafood) which are as good as anything found in Canada.

There are drawbacks to service in Indo China, but if you are ever asked to serve in this troubled area, Gunner, make sure you volunteer for Cambodia.

Best regards to Shilo,

Luc Chabot

3 RCHA

Exercise WAINCON 1

From 27 January to 26 February 69, 3 RCHA took part in Exercise *"Waincon I"*, a winter concentration for 1 Combat Group. Many valuable lessons were learnt on the exercise, one being that RP-4 rations do in fact provide the necessary sustenance to keep men alive and functioning properly in an arctic climate. For this exercise, G Battery was equipped with M548s as gun towers and M113s for its OP parties. These tracks, along with one command post carrier, proved the superiority of tracks over wheels in snow and arctic conditions.

During Exercise *"Waincon I"*, G Battery received the first of its 105mm L5 Pack Howitzers. Anxious to be the first regiment in Canada to fire the new weapon, a gun crew was swiftly assembled and trained. Then, at Airfield 13, Border Lake, Camp Wainwright, Alberta, at 1729 hrs, 6 February 69, LCol R.G. Heitshu, CO 3 RCHA, pulled the long safety lanyard, and the first round fired in Canada from the new L5 Pack Howitzer was on its way towards the target.

Change of Command

On 7 March 1969, LCol C.R. Simonds, CD assumed command of 3 RCHA from LCol R.G. Heitshu, CD. The Inspecting Officer at the Change of Command ceremonies was MGen H.A. Sparling CBE, DSO, CD, Colonel Commandant of the Royal Regiment of Canadian Artillery. After the signing of the official Change of Command document, a regimental happy hour was held at which time LCol Heitshu was presented with a hand-tooled, gold-plated scale model of a 32-pounder muzzle loading gun.

The Colonel Commandant looks on as LCol R.G. Heitshu officially turns the Regiment over to LCol C.R. Simonds.

I really believe that if there were less gophers there would be more dykes!

Flood Control 1969

The Assiniboine is usually a gentle, quiet river, but once each year, usually springtime, it swells into a raging torrent. On 17 April 1969 the Provincial EMO asked 3 RCHA to assist St Francois Xavier and the Municipality of Poplar Point in fighting the expected floods. Capts A.J. Wilson, J.W. Nixon, and Lts Trimble, Wenek, Sanderson, and Mitchell took shifts controlling the regimental task force as they filled sandbags, plugged holes in dykes, and made new dykes as the need arose. The crest finally came on the evening of 25/26 April, but the task force had done its work well. The dykes held.

Exercise ANNUAL BARBARA 1969

It's not the weather at Camp D'Elsenborn, Belgium, that hurts, it's the cold coffee and bread. Exercise *"Annual Barbara" 1969* was a success nevertheless. The one week concentration of artillery units from Canada, Great Britain, Germany, the United States, Italy and Belgium was marked by long road moves, small safe target areas and good fellowship. The Barbara Cup for final standing in volleyball and basketball was won this year by G Battery, who, although they came only second in both events, had a higher win/lose points aggregate than any other competing nation.

LCol C.R. Simonds, CO, 3 RCHA; BGen W.C. Leonard, 1 Combat Group Commander; and Maj M.D. Calnan, BC G Battery, discuss the Pack Howitzer.

Inspection

On 7 May 1969, BGen W.C. Leonard arrived at the Selkirk Lines for a two day inspection of the regiment. The inspection included a regimental parade, a G Battery exercise on the puff range, and an internal security operation by J Battery. The inspection terminated Thursday evening with an informal Mess Dinner for BGen Leonard and his staff at the Officers Mess.

Firing Support to CFSA

3 RCHA has on numerous occasions provided firing support to courses at CFSA. Such support provides an added opportunity to conduct live firing beyond that normally permitted by our own regimental ammunition allotment. From 15 September to 15 November, bolstered by a troop from 5 RALC, 3 RCHA fired 3,000 rounds in support of the Artillery Advanced Course. Because of the imminent move of CFSA and 3 RCHA, this opportunity will soon cease to exist, as will the long treks from Winnipeg to Shilo and back. Lest in the midst of moving and reorganization, our debt to the school is forgotten, we wish to take this short space to say to CFSA, "Thank You" for providing the regiment with the opportunity to improve its technical competence in all aspects of gunnery.

Generally Speaking

These were the highlights of 1969. There were many other tasks and exercises that the regiment, batteries or troops were assigned as well – avalanche control at Rogers' Pass, British Columbia, a survival exercise entitled Exercise *"Northern Run"* for G Battery in northern Manitoba, unit training in first aid, intelligence, security, signals,

driving and so forth. In the period 1971-1972, the regiment will move from the Selkirk Lines in Winnipeg to CFB Shilo. Also during this period, the remaining M2A2s should be replaced by the L5 Pack Howitzers. New vehicles are also being discussed and may be a reality by that time. And so the cycle continues, as proficiency in one role leads to adoption of other roles and postures. Behind it all is the basic drive of all gunners – technical proficiency and professionalism in all aspects.

Deploying in the anti-tank role with members of the FGH looking on.

RIVERINE OPERATIONS

by

Capt David LaBoissiere, USMC
Major J.A. Beieler, FA
*LCol Thomas H. Simpson, USMC**

"Surface action, starboard ... direct fire ... fire at will!" This command pierced the early morning fog from what appeared to be naval craft moving along an inland waterway. The command had scarcely echoed into silence when the air was split with the roar of six 105mm howitzers delivering a broadside on the approaching right river bank. The fire did not come from naval craft, and the "Skipper" was not a Naval Officer but an Army artillery captain with his battery moving on three barges, each mounting two howitzers. The prime movers were Army landing craft. The "Skipper" initiated a preparation and fired on a position to be occupied by his riverine artillery battery. This battery, when moored in position, had the mission of supporting a riverine operation.

The concept of riverine operations is not new. The modern significance of this combat technique had its inception during the American Civil War. During that conflict, infantry and field artillery units were adapted for use on flat-bottomed boats. Riverine techniques were used in the operations conducted by US forces on Mindanao in the Philippine Islands during World War II; in the operations of British forces along the Nile River in 1898; in Japanese operations on the Yangtze River in China from 1937 to 1945; and, more recently, in the operation of the French Naval Assault Division in the Tonkin and Mekong Delta areas of Vietnam from 1946 to 1954.

By definition, riverine operations are those operations necessary to achieve and maintain control of a waterway system and the surrounding areas for the purpose of denying their use to the enemy. Riverine operations combine the characteristics of ground, naval, and air operations.

In order to achieve and maintain control of such a region and to deny its use to the enemy, it would normally be necessary to establish land bases and airfields. However, due to enemy action, topography, population density, or restrictions placed on the withdrawal of land from agricultural use, it may not be possible for a military force to establish these installations using conventional techniques. It is possible, however, to reclaim land from inundated areas for semipermanent bases, where land and naval forces and their supporting units can be stationed, or to use the "afloat base".

The afloat base consists of naval barrack ships, which house the personnel and provide them with all the "rear area" facilities and supporting craft to screen the ships and provide the defense. The infantry aboard the ships coordinate and control the perimeter defense.

Riverine operations employ both naval and land forces. When security is uncertain and contact imminent the force operates similar to convoys on land. Reconnaissance is conducted by helicopters and high-speed watercraft. The infantry are carried in armoured troop carriers with armament ranging from 7.62mm MGs to 20mm cannon. Minesweepers proceed the convoy and protection is provided by "Monitors". A command and communications boat provides the naval and ground commanders with a floating command post.

Indirect fire support for the mobile riverine force is provided by an array of hardware ranging from mortars to medium artillery. This support may be provided from fire support bases on land, from floating barges and landing craft, or from airmobile platforms that can be employed in flooded rice paddies. In a brigade-size riverine operation, close support is normally provided by a direct support artillery battalion reinforced. The weapons that have proved useful and adaptable in the riverine area include, but are not limited to, the 4.2-inch mortar, the 105mm howitzer M102, the 105mm howitzer M101, and the self-propelled 155mm howitzer M109.

Fundamental artillery tactics and techniques are equally applicable to both land and riverine operations. However, the special nature of a water environment necessitates special innovations

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* *This article was requested by The Canadian Gunner. The authors are instructors at the USA School of Artillery, Fort Sill, Oklahoma.*

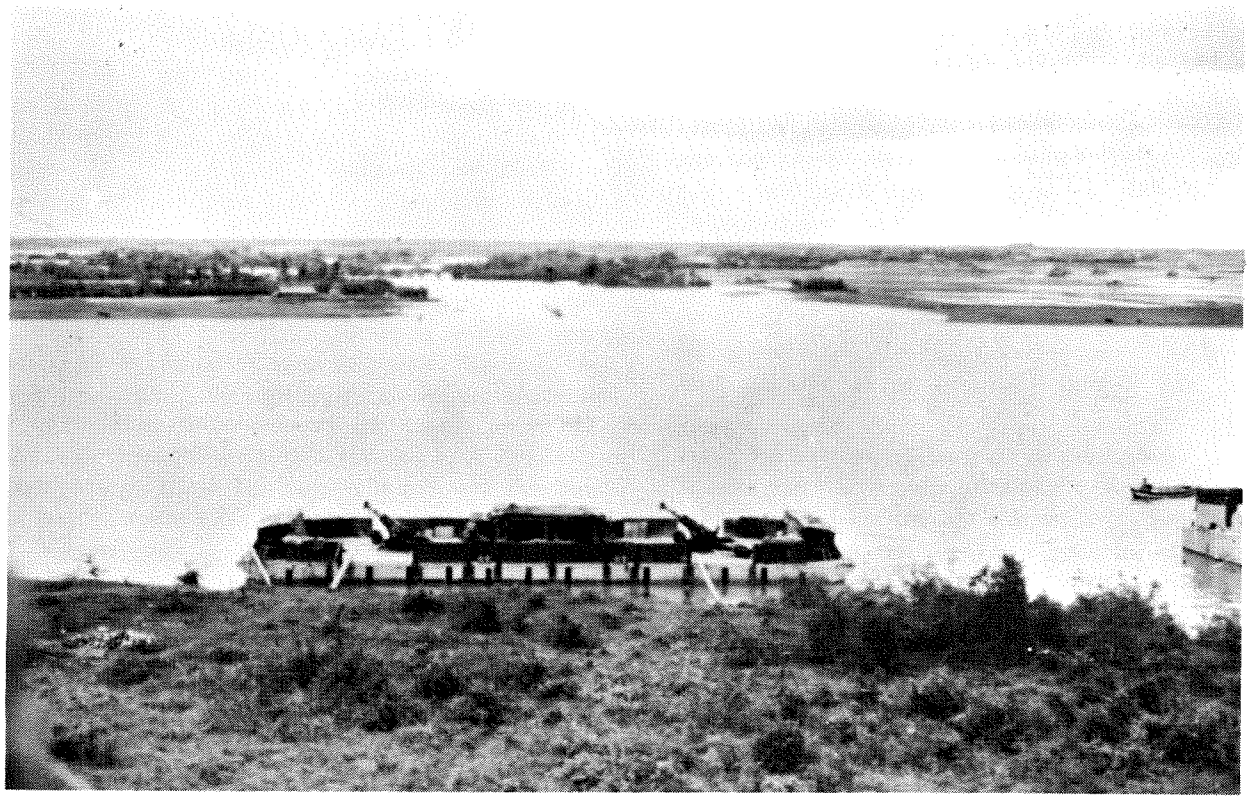
that enhance the use of our equipment or adapt it for use on the waterways in riverine operations.

The first innovation that had a marked effect on artillery support of riverine operations was the barge-mounted artillery battery. The watercraft for the floating battery consists of three barges and three landing craft, mechanized 8 (LCM-8) that are used as prime movers. The first test of floating artillery was conducted with a 105mm howitzer M101 mounted on a Navy ami barge. The success of this test proved the feasibility of firing artillery from a floating platform; however, the ami barge was not available on a permenent basis, was very expensive, and required additional modification for artillery use. The artillerymen turned next to the Navy standard 4 x 15 pontoon cell barge. This barge is 30 feet wide and 91 feet long, draws 22 inches of water, weighs 100 tons, and has the capability of carrying a load of approximately 290 tons. The M102 howitzer was found to be the most adaptable weapon for use on the pontoon cell barge. The firing plate of the M102 is secured with 3-inch bolts to a large metal plate welded to the deck of the barge. This allows the box trails to be easily shifted throughout 360° traverse.

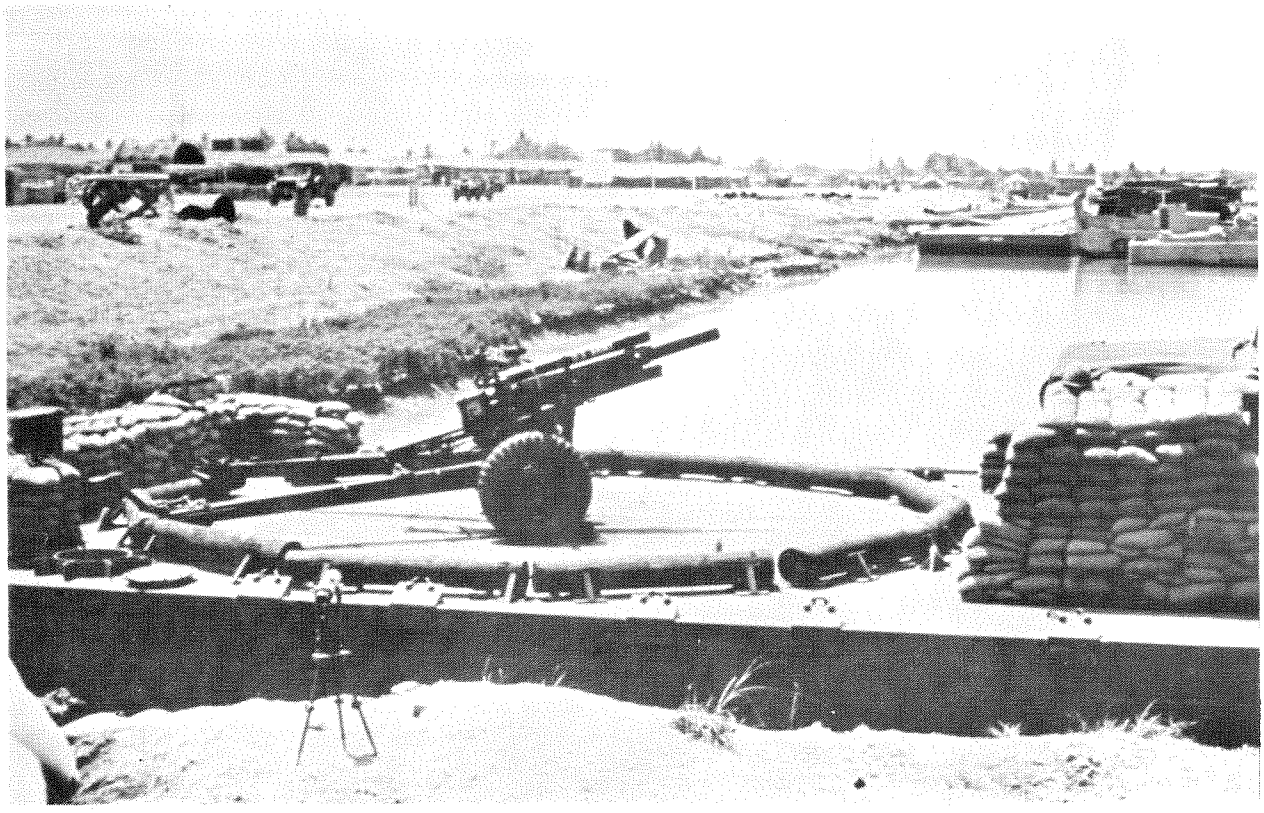
If the M101 howitzer is used on the pontoon cell barge, a speed shift jack is placed under the center of the axle to raise the wheels off the deck, allowing the trails to be moved through 360° around this pivot point. Logs are placed in a rough circle around the howitzer to brace the trail spades and to take up recoil during firing. Welded to the sides of the barge is ½-inch x 3-foot armor plate to deflect small arms and shell fragments. The basic load of ammunition carried for each howitzer is 600 rounds, which are stored in protected bunkers at each end of the barge.

Stabilizing the floating platform was one problem that had to be overcome to insure accurate firing. The problem was alleviated with a grappling hook and winch to moor the barge to the shore. The mooring lines, secured around the winch, can be reeled in or out to conform to tide changes so that the barge will not be caught on the mudflats during low tide. The barge must maintain its level attitude in the water to insure accurate firing. As the water recedes, the lines are slackened and the barge is allowed to drift out with the tide. As the tide comes in, the barge is winched in to shore and braced with large timbers to achieve greater stability.

A combination of collimators and aiming posts are normally used as aiming references in riverine artillery units. The aiming posts are modified with an 8-foot extension to facilitate reading deflection at low tide. Aiming post displacement may be large because the barge is floating, but it is



M102s on a Navy standard 4 × 15 pontoon cell.



An M101 on a Navy ami barge showing logs used to take up recoil

taken up by normal displacement laying. To reduce or eliminate the possibility of being "crested" the barges normally are moored to the river bank opposite the direction of fire.

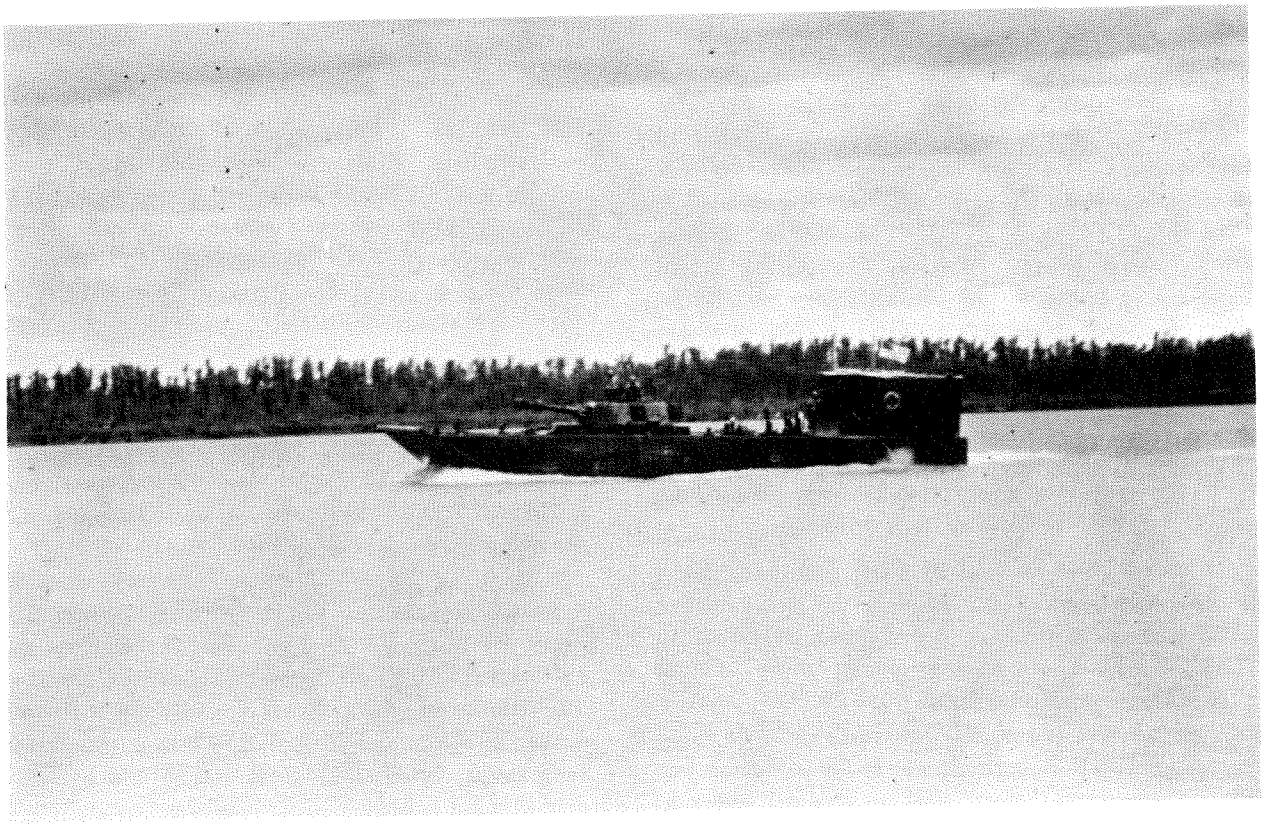
In the riverine area, the battery normally is laid by magnetic azimuth because of the lack of survey control. The direction of lay can be verified by comparing it to the gyro-stabilized compass on the LCM-8. The lay is usually checked and aiming posts adjusted once each hour. Pieces are relaid as necessary because the aiming reference can be lost as the barge drops due to extreme tidal changes that can fluctuate from 6 to 12 feet. Prior to a move by the barge-mounted battery, the commander must have up-to-date tidal information and the move must be planned with the tide changes in mind. The battery should arrive in a new position at high tide, since high tide facilitates occupation of position.

The riverine battery FDC has been built into the well deck of the LCM-8, the prime mover of the battery. The LCM-8 has been modified to include overhead cover and armour plate to meet the requirements of operating an FDC in a hostile environment. Wire is normally laid with radio or voice used for backup communications. If the situation permits, the executive officer will go ashore, where he can achieve better visual contact with all guns.

Another riverine innovation that has proved successful is the airmobile firing platform or "paddy platform". The firing platform was constructed for use in rice paddies and in inundated areas of the riverine environment and was designed to hold a M102 howitzer, 110 rounds of ammunition, and six crewmembers. Platforms with side armor, for protection against small arms and mortar fragments, are presently under development. The platform is 22½ feet square, is made of aluminum, and weighs less than 8,000 pounds. The corner pillars hold the platform off the surface of a rice paddy up to 3½ feet in depth. The platform is air lifted by a helicopter utilizing aerial delivery slings. A ratchet-type attachment on each corner post is used to level the platform in a level firing attitude. The heavy-lift helicopter, the CH-54 Crane, can lift the platform, together with the M102 howitzer and 20 rounds of ammunition, in one compact load.

The "paddy platform" battery presents an exposed, silhouetted target to enemy gunners. When employed in flooded rice paddies, the platform should be located away from commanding terrain if possible. The effects of enemy direct fire weapons can be minimized if the enemy is forced to attack the battery at long range. Infantry security forces and battery personnel form a perimeter around the battery for early warning and defense. The battery should locate it-

Bracing the barge with timbers for greater stability



An M109 employed on a LCM-8

self so that the surrounding, flooded rice paddies will assist in defeating an enemy ground assault on the artillery position.

In addition to the M102, the self-propelled 155mm howitzer M109 has been employed successfully from the LCM-8. The 155mm howitzer facilitates firing, since the turret can be transversed over the low bow ramp or over the sides of the LCM while the LCM remains on course. This ability to fire from the LCM provides an excellent direct fire capability and can be exploited in the event of an ambush while the LCM is moving along the waterway. At the battery position, the LCM-8 is moored to the bank in the same manner as the barges. The tube is then traversed in the desired direction of fire.

When the artillery is pre-positioned on land to support a river convoy, thorough reconnaissance is necessary. Because of the time factor, helicopters normally are used for the reconnaissance, but high-speed watercraft can also be used. The battery must be prepared to move by boat, barge, or air and to occupy whatever hardstand is available ashore. When the battery is to move by landing craft, beach exits must be available to facilitate off-loading of the howitzers at the objective area. Due to the size of operations and the lack of position areas, batteries may be required to operate independently for short periods of time.

Riverine innovations, such as barge-mounted and landing craft-mounted artillery batteries and air-mobile firing platforms, have given the artilleryman an added dimension in combat. Areas previously considered impractical for sustained combat operations are now being exploited by waterborne infantry supported by light and medium artillery. It has been said that fighting the environment in riverine operations can consume 90 percent of a unit's time and energy. However, with proper training, planning, and equipment, the obstacles can and have been overcome.

Once again the artilleryman, by resourcefulness, imagination, and energetic employment of his artillery, is living up to the spirit of Major General D.G. Barr's statement "There is nothing the artillery won't do or can't do; no place the artillery won't go or can't go!"

STRINGS AND THINGS*

A young, enthusiastic officer was finally given the opportunity to attend the course of his dreams: "Management." One of the exercises that he received as an assignment was to carry out an organization and management survey of a group with which he was not normally familiar and submit recommendations as to how their efficiency could be increased. He selected as his target a symphony orchestra and having read up on the tools of the trade, he attended his first concert and submitted the following analysis.

a. For considerable periods, the four oboe players had nothing to do. The number of oboes should therefore be reduced, and the work spread more evenly over the whole concert program, thus eliminating the peaks and valleys of activity.

b. All twenty violins were playing identical notes. This would seem to be an unnecessary duplication, so the staff of this section should be cut drastically. If a greater volume of sound is required, it could be obtained by means of an electronic apparatus.

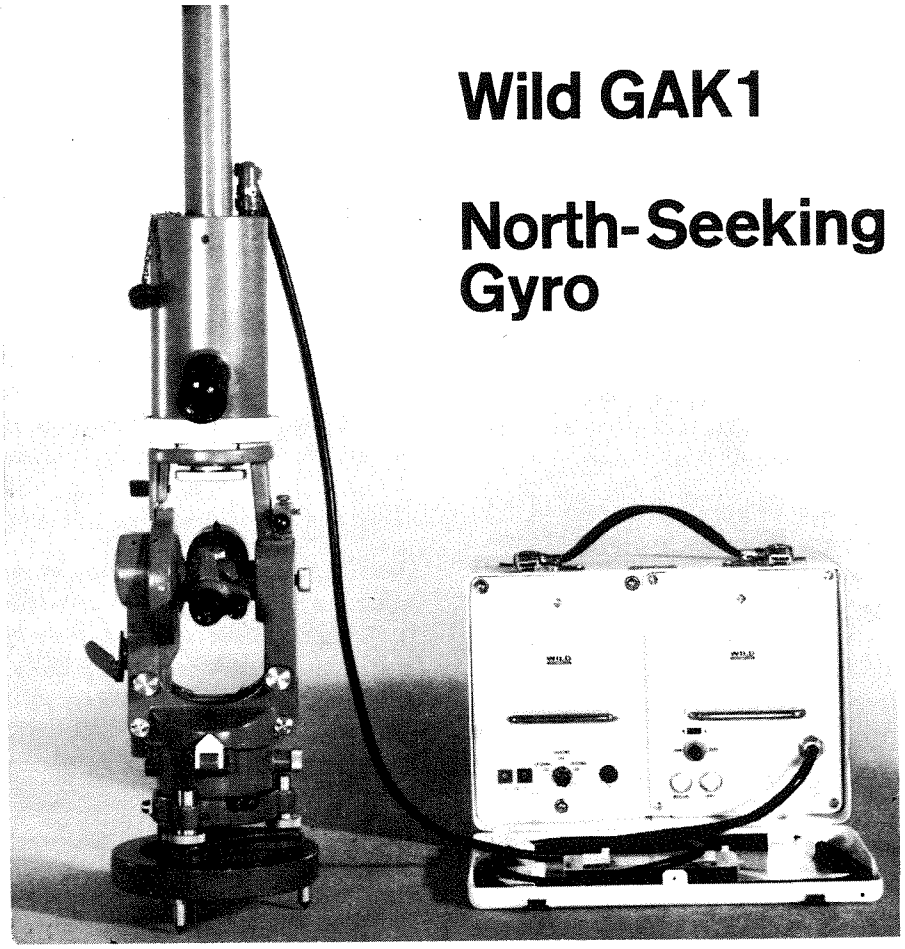
c. Obsolescence of equipment is another matter warranting further investigation. The program noted that the leading violinist's instrument was several hundred years old. Now, if normal depreciation schedules had been applied, the value of this instrument would have been reduced to zero and the purchase of more modern equipment recommended long ago.

d. Much effort was absorbed in the playing of demisemiquavers, which seems to be an unnecessary refinement. It was recommended that all notes be rounded up to the nearest semiquavers. If this were done, it would be possible to use trainees and lower-grade operatives more extensively.

e. In many cases, the operators were using one hand to hold their instruments. The introduction of a fixture would free that hand for other work. Also, it was noted that excessive effort was being used by the players of wind instruments, whereas, one compressor could supply enough air for all the instruments – and under more accurately controlled conditions.

f. Finally, there seemed to be too much repetition of some of the musical passages. Therefore, scores should be pruned to a considerable extent. No useful purpose is served by repeating on the horns something which has already been handled by the strings. It is estimated that, if all redundant passages were eliminated, the whole concert time of two hours could be reduced to twenty minutes – and there would be no need for an intermission.

* *Unfortunately the editors have been unable to find the name of the original author of this article.*



Wild GAK1

North-Seeking Gyro

The Wild GAK 1 is a lightweight gyro attachment (of the "Rellensmann System" type) which converts any normal theodolite into a North seeking instrument. The GAK 1 is merely set up on the special bridge, with forced-centering, which is mounted permanently on the theodolite's standards. True North is found with a standard deviation (m.s.e.) of ±30" of arc, in 20 minutes of time, including the setting-up of the instrument. This is possible under almost all weather conditions and within a temperature range of −22°F to +122°F (−30°C to +50°C).

The GAK 1 is ideally suited for the Wild T 16 and T 2 Theodolites.

Applications

Establishment and control of azimuth for surface and underground surveys; directional control for military units, especially artillery; orientation of navigational and telecommunication equipment; work in areas where compasses cannot be used or for magnetic declination determinations, elsewhere.

Further information is given in the pamphlet G1 1404 e, which may be obtained from

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Factory-servicing facilities in Montreal, Ottawa, Quebec, Toronto, Edmonton and Vancouver

4 RCHA

From gunnery to social events, 1969 was an active and successful year for Fourth Regiment, RCHA. With conversion to the L5 Pack Howitzer, it was a period of change as well. Participation in exercises in the climatic contrasts of Canada, Jamaica, Belgium and Denmark was interspersed with such events as commitments in the Mobile Command fire power demonstration, challenging Queen's University in hockey in an historic game on the frozen harbour of Kingston, and re-decoration of the Junior Ranks Club.

Icy Beginning for a Tropical Finale

After several preliminary exercises, "L" Battery, in early February, participated in Exercise *"New Terrain"*, an air portability and winter gunnery test. After a week of administrative preparation, the packets were emplaned at CFB Uplands for airlifting by the Hercules of "436" Squadron to Quebec City and a further road move to Valcartier for occupation of a tactical base.

Five feet of snow and spine-chilling weather provided the setting for the second phase of training, fire and movement. The unfamiliar terrain, deep snow and left hand drive conditions imposed for the preparation of R22eR personnel for Cyprus caused many frustrating problems. The tracked Nodwell vehicles proved a valuable asset for deploying in remote areas, but on numerous occasions, the gunners were forced to resort to tobogganing and man-packing equipment to reach their destinations. An enemy force of commandos further harrassed movement and generally proved a major threat to the battery security in the form of surprise ambushes and assaults on gun positions at unexpected times. The exercise terminated with one day of live firing into a mountain side. The targets proved challenging due to the necessity of dealing with false angle of sight, and of interest to the gun detachments who could see their shells impacting on the heights.

Two weeks later, in early March "L" Battery departed from CFB Uplands on Exercise *"Nimrod Express"*. Six hours later at Palisadoes International Airport Kingston, Jamaica, the aircraft lowered their ramps and the gunners set foot on new soil. Within minutes the skeleton battery consisting of three mortar detachments, three command post crews and three OP parties was airborne again in Buffalos, dipping and darting across the mountainous terrain to Ken Jones Airport six miles west of Port Antonio on the north shore. Meanwhile, the vehicles with drivers and crew commanders wove their way around the hilly but scenic eastern tip to rendezvous at Ken Jones. When they arrived at dusk, construction of base camp was well under way.

The next two days were spent acclimatizing. A lecture on jungle survival followed by a short hike introduced the men to the "Garden of Eden" surrounding them – tall swaying palm trees, cocunuts, bananas and other forms of vegetation. The battery was then exercised in dry deployments and ambush drills in the area of the Rio Grande River. By 10 March, all participants were eagerly awaiting the Battalion Group activity to follow. For this the RCR Battalion was divided into two company groups. The two troops each supporting

a different company were to find that gunnery in a jungle terrain presents many problems. "C" Troop's task was to support operations on the Rio Grande River by rafting equipment along the axis of advance and deploying when ordered for fire support. Material for raft construction was provided from the surroundings. Approximately fifteen green bambo logs 25 feet in length lashed together created enough flotation for the 1000 pounds of equipment. A combination of many rapids and deep water often made the journey slow and extremely treacherous.

A long hike in field gear is a job of work for a soldier, even in this tropical paradise.

"D" Troop's initiation to jungle operations occurred in an area known as Cockpit Country. Following a Buffalo airlift to a small grass strip at Braco, the vehicles drove twenty-five miles to the battlefield. Once communications were established the troop deployed just north of a remote native village, where continuous fire support could be given throughout the entire operation from one position. Resupply was by Iroquois airlift. For the final day of combat, the troop moved to a more northern position and then motored to Braco for the return flip to Ken Jones. The final week of jungle training for the battalion was identical to the first except that each company group moved to the other's geographical location.

A two day recreation period at the end of the first week was used for a variety of activities such as flights to Montego Bay or bus trips to St Ann's Bay and deep sea fighing. Others rented cars to tour the beaches on the north shore. At the end of the exercise, in Up-Pack Camp, the Canadians entertained local dignitaries and themselves were guests of the Jamaican officers for a taste of the local delicacies. By early Sunday, 23 March, all the gunners had returned to the cold winds of Petawawa with fond memories of the Jamaican sun and its people.

During Exercise *"Nimrod Caper"*, 4 RCHA received the first of twelve L5 Pack Howitzers. A vigorous training schedule was begun for "M" Battery and the remaining members of "L" Battery. The first round from the L5 was fired on 12 March 1969. The engraved casing of this round was presented to the Commander of 2 Combat Group, BGen Radley-Walters by LCol Sosnkowski on 12 May 1969.

PASS BLOCKER and GREEN EXPRESS

On 10 April 1969, men, vehicles and equipment of Petawawa's 2nd Canadian Guards Battalion Group arrived via Hercules at Mont Joli, Quebec to begin extensive manoeuvres in Gaspe Park. The aim of the exercise, named *"Pass Blocker"* was to practise this highly mobile group in all aspects of the AMF concept: standby, warning, movement, deployment operations and redeployment. "M" Battery and parts of RHQ were committed to this exercise. RHQ provided those parts of Force HQ that a British regiment normally would, the Force Artillery Officer (FAO), an FSCC, FDC and the Air OP Troop of Force Aviation. 2 Combat Group HQ reinforced from outside sources provided the men and equipment to simulate the host nation, the command and logistics organizations of AMF(L) and various levels of exercise command and control. The part of the enemy was played by a group of reinforced R22eR. There was a heavy air element input of Iroquois and Voyageur helicopters, Otter and Buffalo transport and T33 photo/strike aircraft. The total force engaged made it one of the largest exercises ever held in Canada outside a designated military training area.

Air transportability must be a procedure, not a theory, to be a fact in a Light Regiment's life, therefore the detachments learn how to make the L5 fit a CH113 Voyageur.

After landing at Mont Joli, "M" Battery moved via road and air to a staging area in the town of Ste Anne des Monts ninety miles to the east. Recce parties and other key personnel then pushed south another fifty miles in a show-the-flag operation along an imaginary border on the Little Cascapedia River. The battalion then deployed in a defensive position north of the border initiating a six day struggle with live enemy who at first had superior numbers and the advantage of air superiority. A strong enemy thrust was contained by a series of fighting withdrawals into a strong defensive position. After being scattered in a subsequent three day advance the insurgents sued for peace on the border-crossing bridge, making in the process, several outlandish demands and conditions.

During the exercise, "M" Battery was often stretched a distance of 30 miles between guns and echelon. The survey section attached from the Survey Troop were hard pressed to provide assistance due to the distances and lack of good survey points in the park. A very aggressive, heliborne enemy plagued the MSR as well as the guns. In addition, the simulation of the overseas airlift had restricted the total number of vehicles, further straining resources. Since no portee kit had been developed at this time, long moves necessitated an agonizing decision to either tow slowly or take the time to manhandle the guns into the few 2½ ton vehicles allowed to the echelon. Repair facilities were stretched to a maximum and mechanics had to work long hours in unfavourable conditions to keep the overloaded vehicles running. None of these difficulties proved insurmountable. Exercise *"Pass Blocker"* was a difficult exercise but one which provided valuable experience for the forthcoming *"Annual Barbara"*.

Within one and a half months, "M" Battery was again globe hopping, this time to join "G" Battery 3 RCHA as the Canadian contingent on Exercise *"Annual Barbara 69"*. This year from 25 June to 10 July, the annual AMF(L) Arty concentration was held at Elsenborn Artillery Ranges in Belgium. Batteries from the UK, Germany, and Italy and mortar platoons from Belgium and the USA were united in one force to practise gunnery procedures and tactics. The co-operation required to produce timely effective fire from the entire force and the coordination involved in long road moves made this exercise a challenge for all.

For "M" Battery, preparations for Exercise *"Annual Barbara 69"* had begun months before,

Ready to engage in the fire plan during "Annual Barbara", Sgt R.D. Fox's detachment chooses to start lunch while the opportunity presents itself. Bdr D.J. See, Bdr J.R.F. Desroches, Gnr R.B. Forrest and Bdr A.B. Lewis

but were changed in succession by the switch from 4.2 inch mortar and ¾ ton trucks to L5 and ¾ ton trucks to L5 with 2½ ton portee trucks. The battery landed in Dusseldorf, Germany and went to a staging area in Fort Qu'Appelle where it was hosted magnificently by 4 CMBG Battle School. From there, the contingent moved via the German Autobohn, Belgian Autoroute and other roads to Elsenborn. After a day of organization at Elsenborn, the practice began to progress logically from dry command post exercises and non-firing force deployment to live firing by batteries culminating in a six day fire and movement Force Artillery exercise. The exercise was an invaluable lesson. Higher level fire missions and fire planning dramatized the need for refinement of procedures and rigid fire discipline. Tight control by headquarters and enthusiastic cooperation among the participants proved to the Canadians that a group of seven units speaking four languages could be moulded into a cohesive effective force.

The challenge, excitement, and enjoyment of *"Annual Barbara 69"* made time and work pass quickly. In the late afternoon of 9 July, the rumble of Force Artillery died and the smell of burned cordite drifted away. "M" Battery bade farewell to her sister units and prepared for the trip home. After a short rest in Canada, "M" Battery began preparations for the next AMF(L) exercise with a refit, readjustment to new configuration and orientation of new personnel.

The Colonel Commandant MGen H.A. Sparling, CBE, DSO, CD accompanied by LCol A. Sosnkowski inspects 4th Regiment during the Artillery Birthday celebrations at Petawawa.

On 12 September, "M" Battery landed in Denmark, for Exercise *"Green Express"*. This exercise was a series of unexpected surprises. The experience of *"Annual Barbara 69"* made the technical aspects of working with Force Artillery a little easier but the AMF(L) was testing new ground and new challenges appeared. The Italian Contingent was unable to attend because of a rail strike, hence "M" Battery had to accept a greater share of ressponsibility. Reorganization at home had reduced the Luxembourg Army to a reinforced Infantry Battalion consequently the BK of "M" Battery was selected to go to the Luxembourgers as Battalion Artillery Officer in the capacity of BC and FOO. The battery was also subject to the first FMC evaluation during a major field exercise aimed at assessing the readiness of a regiment. Lessons were learned by both the assessed and assessor and the battery acquitted itself well. After a brief stay in a Danish camp near Copenhagen, the battery returned home by air leaving some vehicles to be brought later by HMCS Provider and HMCS Cape Scott.

AIR OP TROOP

It is evident from previous editions of the Canadian Gunner that Air OP Troops have had little to say about their own activities. Discussion with other gunner pilots confirms that this "information gap" is probably more of an oversight than an indication of gross inactivity. It is hoped, therefore, that the chronicle of involvement disclosed here will compensate in part for this previous lack of loquacity.

To launch 1969 in proper fashion the Air OP Troop 4 RCHA undertook the first tactical air movement operation using CUH-1H helicopters from 403 Hel (OTS). It was an unprecedented task, breaking ground never attempted before in the Canadian Forces. Few guide lines existed, thus demanding the most in imagination, experience and common sense from all ranks of the troop. Under Maj D.R. Foster's watchful eye the troop took two months to gather stores, plan, train, brief and finally execute Exercise *"Open League III"*. All helicopters (15 lifts) were tactically loaded and moved to a precise time program. The landing zone was just within the tactical range of the helicopters. All had internal loads of winter stores, tobbogans and personnel, along with external loads of "Avgas" for the L19s, aircraft maintenance equipment and the necessary winter survival stores. Four days later the Hueys returned to lift the troop from the frozen, wind swept surface of West Aumond Lake. The exercise proved that an Air OP Troop has the ability to live and operate in winter from a remote area accessible only by air.

All supplies, stores and equipment were air-lifted into West Aumond Lake by CUH-1H helicopters from 403 Hel (OTS). The first lift is shown preparing for departure.

As an extension of Exercise *"Open League III"* preparations were under way concurrently to move an Air OP Section by C130E in support of L Battery for Exercise *"New Terrain"*. Using the loading trial information from 3 RCHA Air OP Troop L19, Number 16703 was loaded along with a ¾ ton TPU, trailer and five personnel for the token move from CFB Uplands to CFB Valcartier. The incomparable L19 proved itself again. After stripping it of wings, rudder and elevators in Uplands it was hastily unloaded on arrival in Quebec City then reassembled by the four crewmen and one pilot. Four hours later the L19 was test flown on the way to its first mission in support of L Battery. Five days after being "racked" about the skies during arty shoots, recces, range clearances, radio relay and surveillance missions it flew LCol A. Sosnkowski home to Petawawa. This was crecible example of not only how robust the L19 is but also of the skill of the technicians that service them. The following quotation from the exercise report deserves mention:

> *"The ability of an Air OP Section to deploy in support of a battery was established on this exercise. Future exercises both in and outside Canada should include at least one Air OP Section. The benefits of using one C130 chalk to have an organic L19 available during an exercise is more than justified."*

Immediately after our return from Valcartier we participated in the first live airborne Forward Air Control (FAC) exercise to be conducted by the Canadian Forces. Using an A43R UHF radio strapped in the baggage compartment of an L19 a series of live bombing and cannon attacks were conducted over the Petawawa ranges. The coordination of artillery and high performance strike aircraft while airborne proved to be a demanding task. The live results of the strikes conducted by an airborne FAC clearly demonstrated the tactical potential of the system.

The airborne FAC experience gained in Petawawa proved valuable during 2 Combat Group's Exercise *"Pass Blocker"* in the Gaspe during April. The two weeks of flying in the Gaspe mountains during *"Pass Blocker"* was a unique experience. The weather, congested and limited airspace, wind sheers and the difficult tactical flying conditions helped expend a more than usual supply of pilot adrenalin. The full spectrum of Air OP tasks were carried out during this exercise.

Our float operations were launched hard on the heels of the spring break-up. For the first time the troop operated two L19s on floats throughout the spring and summer. To gain more experience in float operations Exercise *"Open League IV"* materialized. Since the Canadian Forces appear to be developing a northern orientation again – we

headed north. Using lakes as advanced landing grounds the troop staged to the end of the road north of Hearst Ont. From Wolverine Lake an L19 expedition was flown to the tidal waters of the James Bay, the aircraft returned to the base camp. The balance of the exercise was used to practice the troop in northern summer operations and float flying. The opportunity to rub shoulders and swap tales with some of Canada's intrepid bush pilots added an unexpected bonus to developing expertise in this type of operation. The value of float equipped aircraft capable of operating in this otherwise innaccessible terrain was fully realized during Exercise *"Open League IV"*.

The foregoing has been a brief chronicle of the more noteable events of the past year. A few others that deserve mention are:

Glider towing for the RCAF Association during their instructor qualification course at Mountain View;

Air shows and demonstrations in Petawawa, Pembroke, Barrys Bay, CFB Borden, CFB Meaford and Montreal;

Thousands of feet of color and black and white air photos taken and processed;

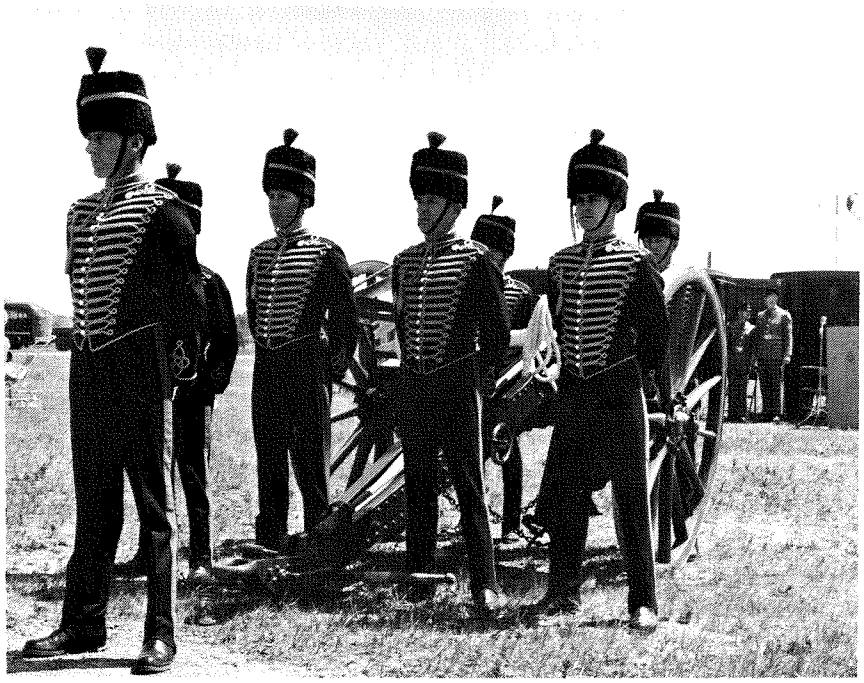
Assistance to 7 RHA's adventure training exercise in northern Quebec, the Combat Arms School, Canadian School of Intelligence and Security, Artillery Militia Training Regiment, Canadian Land Forces Command and Staff College and the Royal Canadian School of Signals;

Numerous liaison missions for all units of 2 Combat Group and other formations;

Ferrying of aircraft to Winnipeg and return for the DLIR rebuild program;

and last but not least, the multitude of early morning range clearances followed by our primary role both in the air and on the ground – firing the guns.

For 4 RCHA, 1969 was a year of extensive travel and training both in Canada and out. With "M" Battery still maintaining its AMF(L) role and "L" Battery becoming increasingly involved in jungle and desert warfare in support of 1 RCR, the unit is eagerly awaiting the new schedule of events with hopes of another adventurous year.



The 9 pdr detachment at ease; Bdr E.W. Campbell, Bdr C.M. Hurley, Bdr G.B. Livingstone, Gnr B.F. Burke, and Bdr D.H. Hunter

DESERT TRAINING IN LIBYA

by
*Lt D.G. Tudin**

Seven members of 4 RCHA were attached to 26 Field Regiment and 39 Missile Regiment RA during August - September 1969 as observers for desert environmental training in the north eastern region of Libya. The party consisted of two officers and five NCOs.

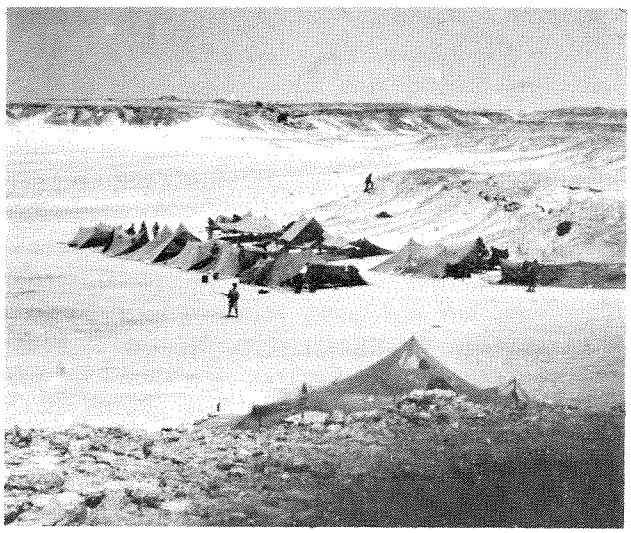
Exercise *"Volable"* was a three week desert warfare training exercise designed to familiarize Royal Artillery units with different aspects of infantry operations in the desert. It included acclimatization, desert navigation, minor infantry tactics, small arms training, basic APC training and a live battle run. For the purposes of Exercise *"Volable"*, the RA units were divided into three combat teams. Each covered the above phases of training, independently, and in rotation.

88 (Arracan) Battery of 4 Field Regiment, provided the artillery support for the battle runs using six 25 pounder field guns. The Canadians spent one week with this battery, observing procedures on the gun position and at the sharp end. The 16/5 Lancers provided a squadron of six Centurion tanks mounting 20 pounder guns, as armoured support for the battle run.

The nerve centre of the training area was Camp Chatham, an administrative base sixty miles west of El Adem. The three principle areas utilized for training were, "Boothill", "Table Top" and "Pinders", located a further twenty miles north, west and south, respectively.

The terrain is generally rocky and bleak but with numerous small hills and ridges. The soil is a combination of rock and clay with a two to three foot thick sand layer. This is due to the fact that the year is divided into a heavy rainy season followed by a hot dry spell during the summer. The sand is of a silt like nature tending to cling to clothing and equipment very readily. The training area contained no trees of any appreciable size, but there was an abundance of low scrub. Although the water holes were scarce in this region, the nomadic herdsmen seemed to have no difficulty finding these isolated water supplies. There was an abundance of natural wild life, including camels, goats, birds, a type of desert rat resembling a miniature kangaroo, lizards of various sorts, snakes and occasional scorpions. Household flies were the predominant insects and these posed a major hygienic problem.

The period July to September is the hottest and driest season of the year. The average temperature during the day was 115° F. At night, it fell to about 55° F. A gentle breeze always blew in the afternoon and developed into a fairly brisk north east wind in the early evening. Condensation, always prevalent at first light, made overhead cover a blessing. On several occasions, we witnessed a heavy fog, which did not lift for several hours after sunrise. We were able to adjust to the climate with little or no difficulty, although normally, at least seven days are required for acclimatization. Strenuous physical activity however, was avoided during this period and the normal working day ran from first light until 1200 hrs and from 1600 hrs until last light. The afternoons were devoted to rest and relaxation, preferably in shade provided by improvised overhead cover.



"Table Top" training area

** Lt Tudin, a member of 4 RCHA, took part in Ex "Volable."*

Navigation proved to be one of the most important and interesting aspects of training. We had ample opportunity to journey across the desert using the sun compass, a simple but highly efficient piece of equipment which was mounted on the vehicle itself. Care had to be taken to avoid mine fields which are still very extensive in Libya and not always readily identifiable.

Minor tactics and small arms training were conducted at "Table Top" and "Boothill". Included, was a short desert march of about four miles. This gave a good indication of the fatiguing influence the desert has on a soldier especially on foot. Field firing certainly presented no problems as far as ranges were concerned. Preparations included a sweep of the area to ensure that the area was free of mines and blind ammunition and setting up improvised targets. Weapons were cleaned often using a minimum amount of oil or graphite, and were kept covered when not in use.

25 pounder field guns in action at Pinders in support of the battle run.

The Combat Team spent four days at Pinders, during which time it conducted APC training, culminating in a live battle run. The composition of teams for the battle run included, three APC mounted platoons, two troops of Centurion tanks and Arracan Battery with six twenty-five pounders. There was no appreciable difference in the form of the battle run from those conducted under Canadian conditions; however, more extensive use of smoke was required, due to the lack of natural cover. Fire control and movement was effected using three communication nets; a combat team net, a safety control net and an artillery net. A Libyan police constable was always present in the range areas to ensure that there was no damage to life or property. All infantry assaults were conducted in extended lines with strict observance to safety.

Although Arracan Battery was equipped with the 25 pounder many of the basic principles of employment are applicable to the L5 Pack Howitzer. The primary means of laying was with the parallelloscope and aiming posts since GAPs were scarce. Also, it took a short time to relocate laying points after firing due to the dust cloud created. Extensive care and maintenance of the equipment was required and an abundance of cleaning rags was a prerequisite. The British used graphite grease on the working parts of the equipment just prior to firing. The most effective method of removing sand was by steam cleaning. Due to the rough nature of the terrain, the L5 would either have to be porteed or air lifted.

Arracan Battery itself had no facilities for obtaining meteorological messages; therefore, all targets were adjusted. It was interesting to note, that although temperature changes were radical during the day, targets could be fired on subsequent days, at equivalent times, using the same data as for the previously adjusted targets, with excellent results. This was mainly due to the consistency of the day to day met conditions.

Survey posed interesting problems in the desert. The presence of few survey points necessitated carrying survey over long distances unless a false grid was initiated. The nature of the desert terrain however, allowed observation over great distances and the small flat topped hills were ideally suited as station sights. The only restriction was that heat haze in the afternoon not only prevented observation beyond 2,000 metres but concealed portions of the desert surface in the form of small lake-like mirages. The infrequency of clouds allowed excellent unobstructed freedom for orientation.

Communications during Exercise "*Volable*" were provided by VHF and HF radio sets in conjunction with RRBs. With the C45 VHF sets, it was possible to receive and transmit 30 to 40 miles with no problems. Man-packed A41/A42 VHF sets were also utilized effectively. At El Adem, there was a complete signals centre with high powered HF sets and facilities for teletype and Morse code, using sky wave, working to the UK and Germany. An HF sky wave SC11 set also employing Morse code and teletype, was used for communications between El Adem and Camp Chatham.

The vehicles used during the exercise were the commercial patterned Land Rover, Ferret Scout Cars, three ton Bedfords and M432 APCs. Tracked vehicles were ideal for desert operations with the only drawback being that they churned up a lot of dust.

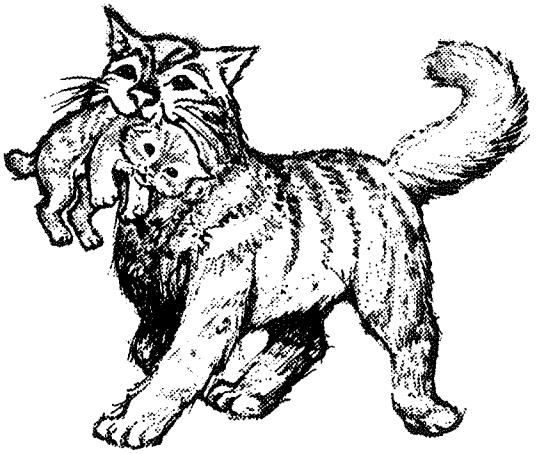
The base camp at Pinders was an excellent example of how a unit should set up to operate efficiently and hygienically in the desert with maximum personal comfort. The most common ailment resulting from poor hygiene is a type of infectious diarrhoea, commonly referred to as "gypo gut". This causes extreme stomach cramps, nausea, vomiting and constant trips to the latrines. It is capable of incapacitating entire units if strict measures are not taken to ensure proper hygiene. At Pinders, 88 Battery was very meticulous about the construction of its latrines. These were as distant from the living accommodations as possible. Swill pits for grease and wash holes for water and shower facilities were dug and burnt daily using gas and oil.

Water was strictly rationed. Drinking water was brought from El Adem and washing water from a well at Camp Chatham. Canvass water bags, known as "chuggles" were excellent for keeping water cool. Although we brought canned rations with us, the British meals were found to be quite acceptable and were often prepared in gourmet fashion. Lemonade power was used extensively to make the drinking water more agreeable. Overhead cover was provided by a type of fish net with hession sewn into it. The Canadian sleeping bag was found to be ideal for this environment.

One very important aspect of desert training was recreation. Ingenious thinking and aggressive scrounging produced excellent results within the battery, even with the limited facilities. Volleyball and softball were played extensively. Other activities included movies, variety shows, quizzes, and charades, all of which were excellent for morale. Although Canadian combat clothing was tolerable, the ideal dress for gunners was found to be bush shirts, short pants, desert boots and large brimmed hats when working. Beach dress was definitely in order during the off-duty daytime periods.

Our attachment to the British troops training in Libya was a very profitable and rewarding experience. In our opinion, a Canadian Artillery Regiment could adapt itself to a desert environment with little or no difficulty. The only unfortunate aspect of Exercise "*Volable*" was that the internal revolution in Libya upset all travel arrangements which has been made to return to Europe and prohibited any opportunity of exploring the country or meeting the native Libyans.

Even routine moves required the use of the sun compass, shown mounted on left side of turret, for desert navigation as land marks were very scarce.



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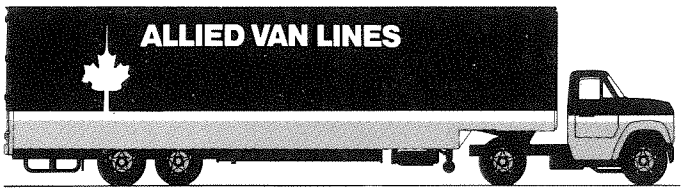

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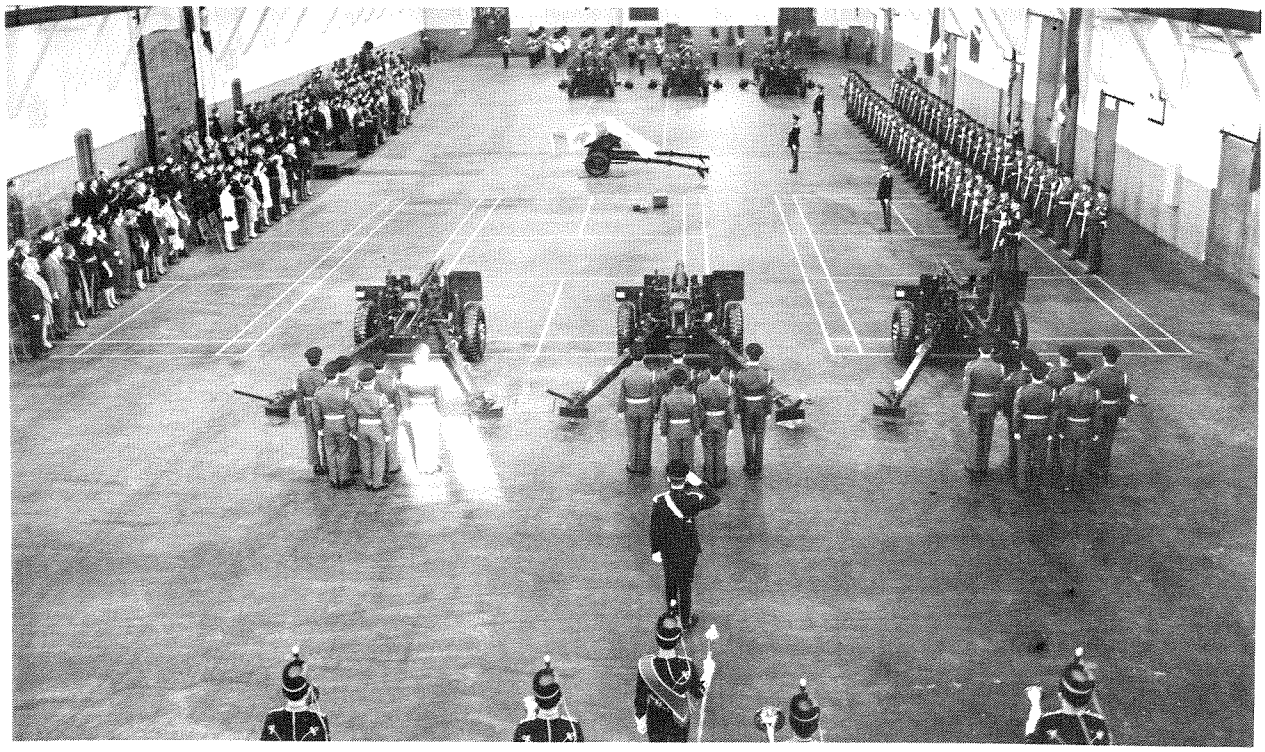
5 RALC

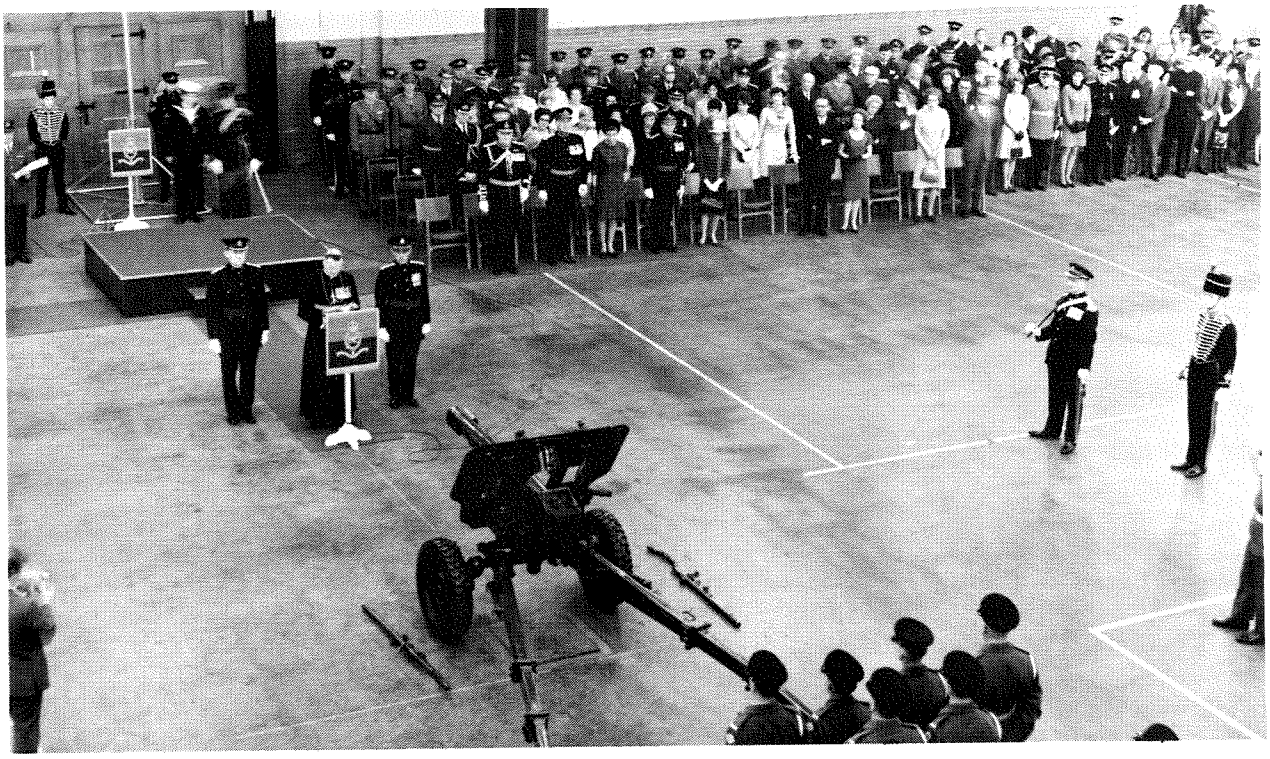
1969 started with a bang for 5e Regiment d'Artillerie Legere du Canada. On 6 February 1969, the regiment carried out its first firing practice. BGen R.A. Reid, Commander 5e G de C fired the first round. This signalled the beginning of a demanding year during which it had originally been intended to consolidate the progress achieved in its recent formation. The year would see gunners of 5e RALC serving the guns in two languages all over Canada; participate in ceremonies in Quebec City and Ottawa; become involved in aid to the civil power operations and undertake a wide range of exercises with 5e G de C.

Opening Ceremonies

The opening ceremonies for 5e RALC began on 12 February 1969 with a special guest night sponsored by a group of distinguished Quebec City gunners led by Col A. Perron. It was held in the Citadelle Officers' Mess which had been a Gunner Mess until 1922. It was a most eventful evening.



Royal Salute for Lieutenant Govenor of Quebec, the Honourable Hugues Lapointe, on 13 Feb 69



Blessing of the colours 13 Feb 69 by Cardinal Maurice Roy. Assisting him are Maj Samms and LCol Latraverse

Among the distinguished guests were: the Honourable Hugues Lapointe, the Lieutenant-Govenor of the Province of Quebec; Gen J.V. Allard, Chief of the Defence Staff; LGen W.A.B. Anderson, Commander Mobile Command; MGen H.A. Sparling, our Colonel Commandant; BGen R.A. Reid, Commander 5e G de C; Col J.P. Beer, Chief of Artillery; Col D.W. Francis, Commandant CFSA; LCol J.H. Turnbull, representing the RCAA and the Commanding Officers of 2, 3 and 4 RCHA. Highlights included the presentation of the Earl of Dunmore Trophy to the Royal 22e Regiment by the Senior Serving Gunner LGen Anderson and the announcement by Gen Allard of the formation of a Gunner Band in Montreal.

The next day was Gunner Day in Quebec City. The ceremonies in the Grande Allee Armouries began at 1400 hrs with the arrival of the Lieutenant Govenor. Following the Royal Salute by a 50 man guard of 5e RALC, the old colours represented by a battery of 105mm howitzers were inspected for the last time by the CDS and then retired to the sound of Bonnie Dundee. The new colours, represented by the first L5 to arrive in Canada in January 1969 were then presented to 5e RALC by the CDS. In his presentation address, the CDS granted full status to 5e RALC.

The benediction was then read by his Eminence, Cardinal Maurice Roy, and to the sound of the British Grenadiers, the new colours were raised. At this point, a gun detachment of selected Senior NCOs under the RSM, CWO G.N. Malcolm, gave a demonstration of the L5 in its various firing positions. The demonstration included stripping and assembling of the L5 to the music of the 3 RCHA and the R22eR Band.

Following this demonstration, the Colonel Commandant, MGen H.A. Sparling presented the Quebec Garrison with a commemorative plaque to be affixed to the wall of the Chapel in La Citadelle, and a book, listing all Gunner units which had served in the Quebec Garrison from 1750. The roll call of these units was read in French and English. The ceremonies were concluded with the Lieutenant-Govenor's word of welcome to Quebec City for 5e RALC. A reception followed, hosted by the Colonel Commandant on behalf of the regiment..

Training and Assistance

5e RALC held its first practice Camp on the Valcartier new ranges from 10 to 31 May 1969. The regiment could field at the time "X" Battery and a nearly complete RHQ reinforced after a few days by the Met Section of 4 RCHA. This was the first opportunity for the regiment to conduct serious

collective training. There were many highlights – the regimental net operated in French part of each day for the first time; Maj Mastine's Air OP Tp was formed just in time for a first and memorable shoot on the last day of the practice camp; and one must not forget an abortive but very interesting shoot in an out of bounds area by the SSO Arty.

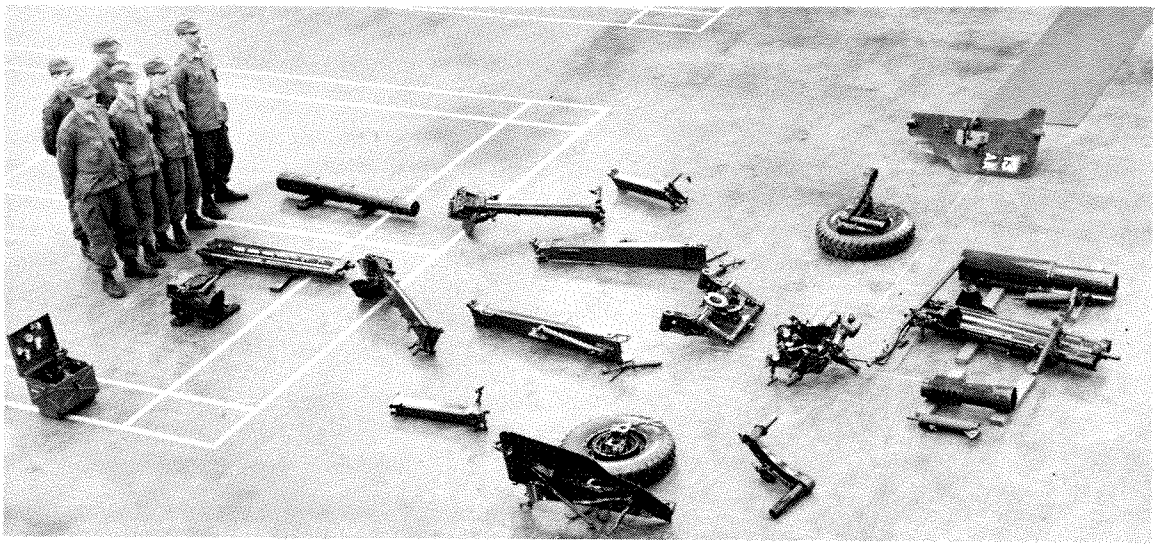
The practice camp was barely over when "X" Battery began training with the L5s. This training programme was interrupted in July for Operation *"Treize Juillet"* consisting of a series of ceremonies designed to show the population of Quebec what progress had been made in the formation of a French speaking combat group in Valcartier. Over 1200 troops took part in the parade and mounted march past led by the L5 Battery of 5e RALC. Assistance to the militia in Gagetown, the Artillery Advanced Course at CFSA and the Pay Level 3 Course at CAS Detachment Valcartier kept the regiment busy in the next four months.

5e RALC is, in many ways, in a unique situation and this is particularly true in the field of internal security operations. Events in Quebec in the last few months emphasized the necessity for 5e RALC to acquire expertise in the conduct of operations in aid to the civil power. What had always been taken more or less for granted proved to be far more difficult in practice then in theory. A hurried return to basic soldiering engaged the regiment in relearning personal weapons, riot control formations and many other basic tricks of the game which had been given second priority.

For the last few months, CFB Valcartier has been very busy on a major construction program. Included in this program is a modern complex of garages and other types of accommodation for 5e

RSM G.N. Malcolm raising the unit standard for the first time in CFB Valcartier – 9 Oct 68

G de C. 5e RALC is getting its fair share with a new gun drill building and a new garage. Thus in March 1970 when the first phase of the program is completed, 5e RALC will move into the most modern facilities in Canada for a gunner regiment. There it will continue to serve the guns in French and English.



Practising for the Gunner Day demonstration.

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MRA3

This well proven transistorized Tellurometer has been used for military and civilian applications since 1963 and continues in constant demand. Provision for internal or external battery.

Simple vernier dial readout direct in metres with CM resolution.

Plug in printed circuit boards are used to facilitate easy servicing.

With a temperature range of —40°C to +52°C this instrument has been the choice of several Antarctic expeditions.

Totally enclosed antenna system.

Weight of instrument with haversack and accessories — 38 lbs.

Dimensions 14″ x 13″ x 12″.

Current consumption average 3.7 amps.

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Cet appareil largement répandu a été utilisé pour applications civiles et militaires depuis 1963 et continue à être en constante demande.

Peut être alimenté par accumulateur interne et exterieur.

Lecture sur cadran-vernier simple calibré en mètres avec résolution de 1 cm.

Circuits imprimés enfichables facilitant le dépannage.

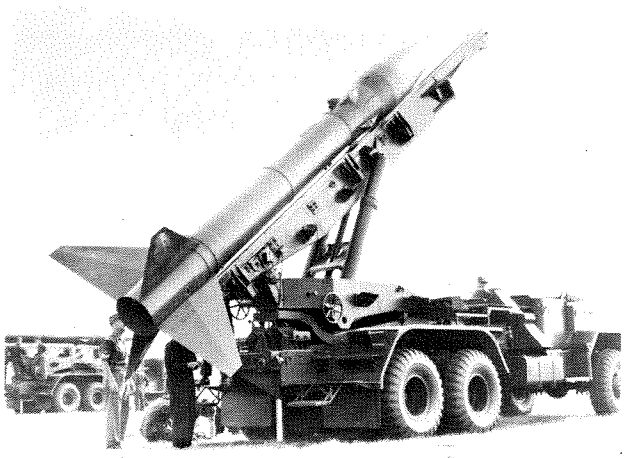
Grâce à sa gamme de température ambiante d'utilisation de —40°C à +55°C, cet appareil a été choisi par plusieur expéditions antarctiques.

Système d'antenne complètement protégé.

Poids y compris le havresac et les accessoires: 17,2 Kgs.

Dimensions: 35,5 cm x 33 cm x 30,4 cm.

Consommation moyenne de courant: 3,7 ampères.

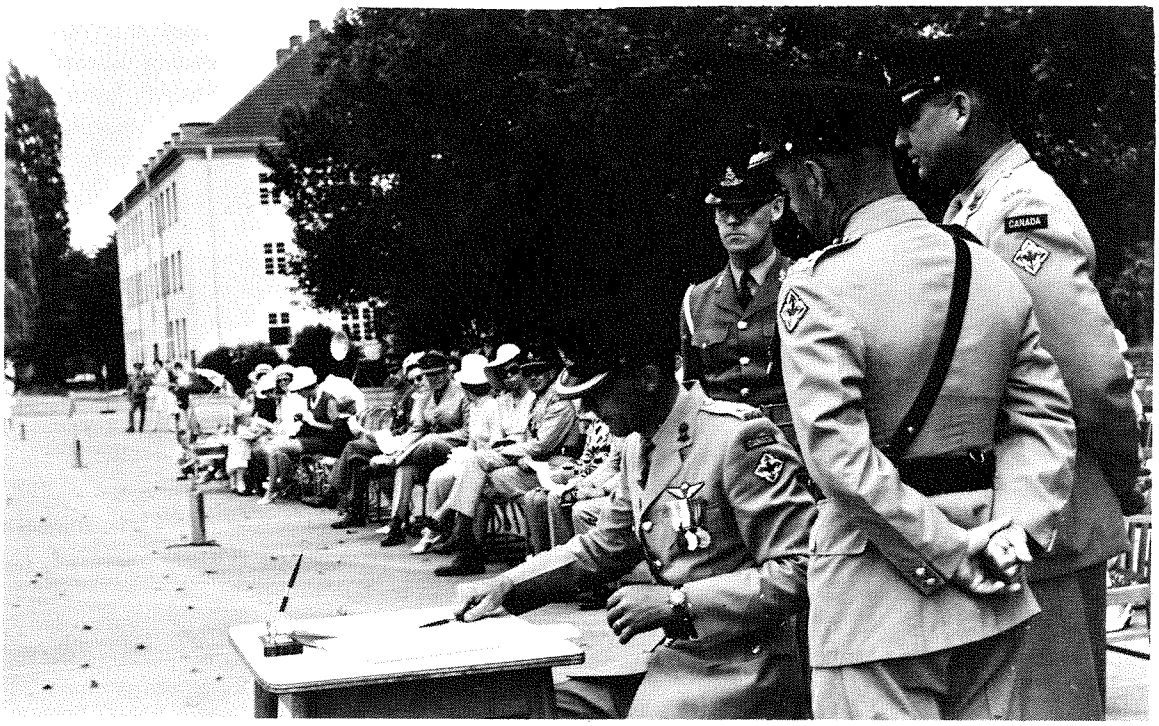


1 SSM BTY RCA

Exercises at all levels, unit tests, reorganization, a major rotation, acquisition of new equipment, a change of command and finally, news of our impending disbandment, have contributed to an active year for 1 SSM Battery RCA. We are now well settled in our new home, Fort Qu-Appelle, although teething problems still exist. Indicative of the enviable record of achievement established both in the field and garrison, was the attainment of an excellent grading on our Annual Training Test (ATT), a result achieved by very few units. Similarly, our other two tests, the Annual Alert Test (AAT) and Nuclear Surety Inspection (NSI) were impressively passed.

Change of Command

On Friday, 13 June 1969, Maj G.N.R. Olson, CD assumed command of 1 SSM Bty RCA from Maj J.E. Crosman, CD who was posted to Headquarters Mobile Command. BGen J.G. Gardner, CD, Commander 4 CMBG reviewed the change of command parade. After the battery had been inspected by BGen Gardner, Maj Crosman led a march past. The Commander then addressed the unit, congratulating it on a fine record over the years. After Maj Crosman said farewell to the battery, Maj Olson led the roll past of major equipment.



Major Olson has just signed the Handover Document witnessed by Brig-Gen Gardner and Major Crosman.

Roll Past of A Tp Launchers

Exercise FIRE WATER

Twelve persons participated in Exercise *"Fire Water"*. They were Capt J.A. Davidson, Bdrs W.R. Armstrong, J.G. Beaulieu, D.C. Slaunwhite, C.R.J. Day, N.R. Flower, S.E. Gracie, J.G. Montgomery, B.H. Oliver, J.H. Rafuse, D.G. Ward, and Gnr E.C. Cummings. The primary purpose of this exercise was to challenge the leadership and intelligence seeking capabilities of junior leaders and acquire new skills in paddling and cross-country trekking. Beginning at Cologne, the participants planned to travel upstream on the Rhine and Moselle Rivers to Trier. These rivers with their fabled castles, classic ruins, and world-renowned wines and vineyards are normally frequented by tourists in cars. 1 SSM Bty however, planned to travel in kayaks. When not kayaking it was planned to march cross-country along and over the high picturesque hills of the Moselle River Valley.

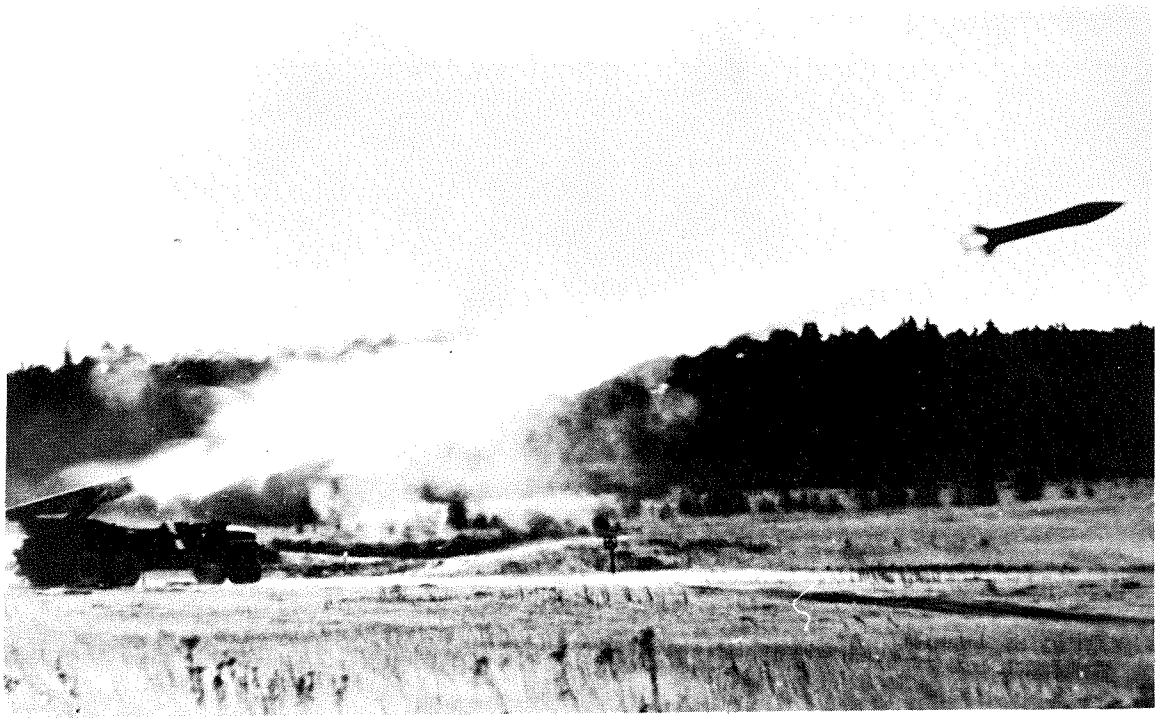
Prior to the exercise itself, a one week training period was held on the Sorpesee, then on 17 August, accompanied by a steady drizzle, the exercise began at Cologne. Difficulties were immediately encountered because of the very strong current. This forced abandonment of the initial phase and the exercise resumed at Koblenz on the Moselle. Although dogged by continuous and heavy rain, the two hundred kilometers to Trier were completed in six days, arriving on 24 August 1969.

After a short period of sightseeing and maintenance in Trier, a dozen weary, wet but wiser paddlers began the return trip, by vehicle, to Fort Qu'Appelle.

Fall Exercises 1969

Beginning in September, and with the sure knowledge that these were to be our final series of such exercises, 1 SSM Bty RCA began to prepare for the final divisional exercise slated for October. Exercise *"Kodiak Bear"* in early September was a shakedown exercise in our own training area for the subsequent battery exercise in Hohne, Exercise *"Bad Actor"*, the following week. In Hohne, major stress was placed on ability to communicate over long distances and in training new LPOs and Launcher Sections. FADAC and the Gyro Orienter proved their worth, in increasing operational efficiency on this exercise. FADAC gave the firing troop a significantly increased capability to compute and store predicted targets for future engagement as well as considerably reducing computation time for targets and time of flight requests. The Gyro Orienter enabled surveyors to bring "B" level survey to the launcher area within twenty minutes of completion of recce. This "B" level survey was usually within "C" level or theatre tolerances. IG and AIG assistance was provided by CFSA for both *"Kodiak Bear"* and *"Bad Actor"* in the persons of Maj J.B. Howard, USA, now an honorary member of 1 SSM Bty, and Sgt Les Skinner.

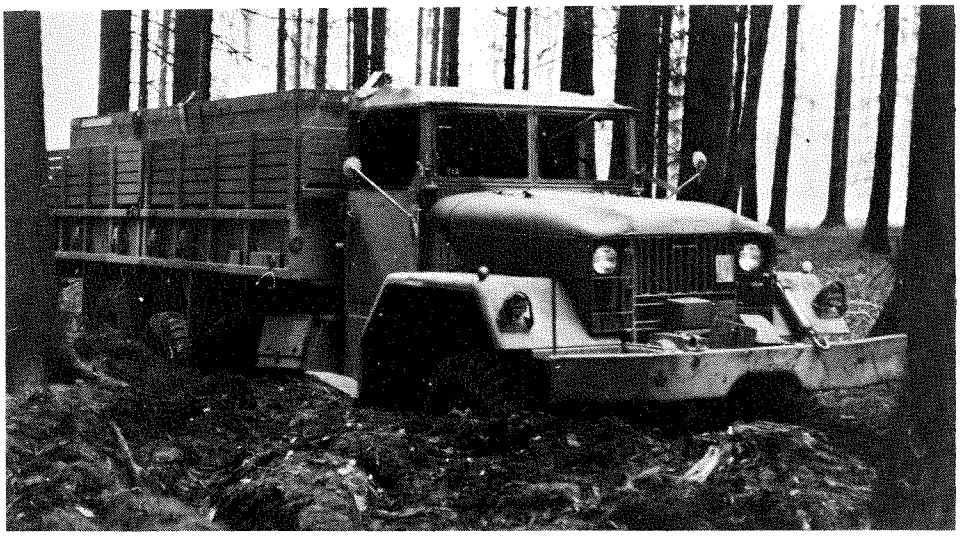
In late September, the battery participated to a limited extent in the brigade exercise, Exercise *"Tomahawk"*, by providing umpire control headquarters, operations, communications and umpire teams. Again the battery signallers tested their ability to communicate long range over difficult terrain.



Honest John Fired at Hohne-Munsterlager

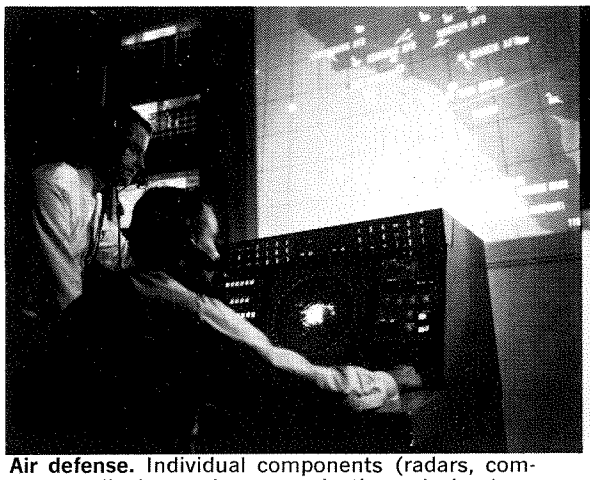
Exercise *"Marshmallow"* was the final fall exercise, held from 13 – 22 October. The exercise began near the East German border and rapidly progressed west towards the Weser River. 4CMBG reinforced by a British territorial parachute battalion and two German armoured units played the role of enemy throughout *"Marshmallow"* representing an Orangeland motor rifle division. The exercise was fast moving with a 60 kilometer per day rate of advance. 1 SSM Bty provided nuclear and chemical support for the motor rifle division. Our main job was to hide or move over long distances quickly.

As a sub-exercise of *"Marshmallow"* the battery assisted in Exercise *"Fresh Air"*. *"Fresh Air"* was sponsored by the defence Operational Analysis Organization (Germany), a British organization. This team was evaluating the ability of a combat pilot to gain information about an enemy while flying at high speed and low altitude. *"Fresh Air"* became our only real continuous action throughout *"Marshmallow"*. On 21 October a successful series of fall exercises came to an end for both the battery and the brigade – the final series for both, as 1 SSM disbands and 4 CMBG moves south to Lahr in 1970.

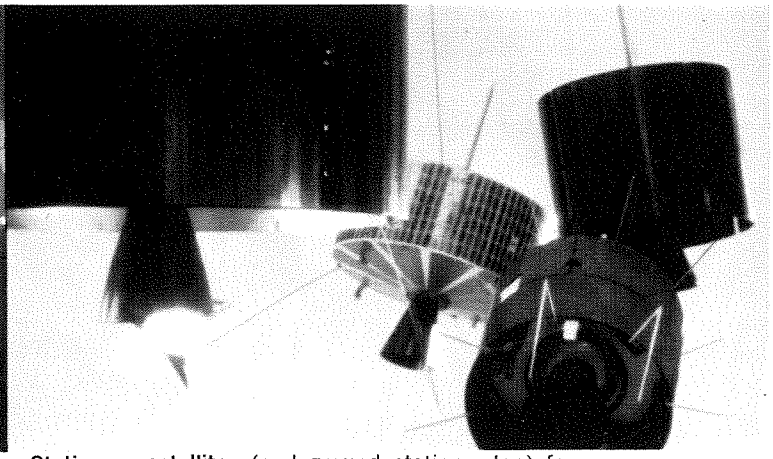


Stuck?
Or digging in.

Hughes is:



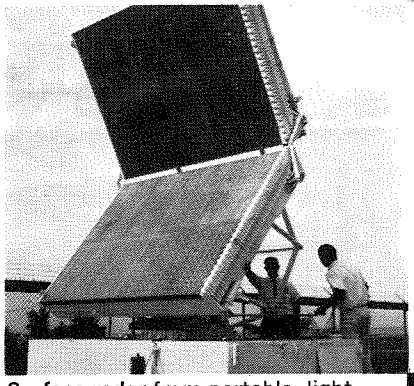
Air defense. Individual components (radars, computers, display and communications devices) or complete systems for an army unit, a naval fleet . . . or an entire nation, such as the Hughes systems in Belgium, The Netherlands, Federal Republic of Germany and Japan.



Stationary satellites (and ground stations, too) for communications and space explorations, including the Syncoms, Early Bird, ATS-1 and 3, and Intelsats.

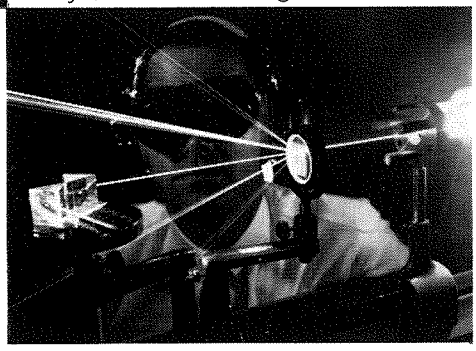
Communications equipment ranging from this portable, 16,000-channel combat radio to gigantic radio transmitters.

Missiles. Hughes, builder of the famous Falcon air-to-air missiles, is now developing more advanced missiles for the Army, Navy and Air Force. Shown is TOW, new heavy assault weapon developed by Hughes for the U.S. Army Missile Command.



Surface radar from portable, lightweight 3-D radar to far-scanning electronic eyes for the world's largest aircraft carrier.

The Laser. Hughes demonstrated the world's first working laser in 1960, now has developed and is producing for the U.S. Army the first laser rangefinder for tanks.



HUGHES

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1 AIRBORNE BATTERY RCA

"In this long awaited experience of mobile warfare, there was some regret that because of the rapidity with which the infantry advanced – batteries were prevented from firing as much as they would have liked. Yet events were to show that whenever a clear target presented itself, the guns were invariably on hand to deal with it."

Col G.W.L. Nicholson, CD – describing the Battle of Amiens in *"The Gunners of Canada"*

Although there can be no doubt that the nature of warfare and tactics has changed radically since 1918, field gunners still must be as mobile as their supported infantry, and as readily available to fire on targets. Because we, of 1 Airborne Battery, form an integral sub-unit of the infantry oriented Canadian Airborne Regiment, by training and exercising with out supported Commandos, we are able to provide as rapid fire support as they require. In fact at times, the only thing differentiating a commando and an airborne gunner is the acrid smell of cordite on the gunner's combat jacket, and the range table in his pocket.

The Battery has had all or most of it's members on exercise every month since October 1968. Because future commitments may lie in any of jungle, arctic, desert or mountain environments, travels on exercise or on course, have taken us to many regions of Canada and beyond.

"Exercise "Pouncing Tiger", in November and December 1968, was designed to give members of the Airborne Regiment practice in all aspects of mountain warfare. The Battery was bivouaced for three weeks at Cultus Lake near Chilliwack."

Despite learning the difficult techniques of observing fire in the mountains, and experiencing the fatigue of man-packing mortars over rough terrain, most of us found this a thrill-packed exercise. Each man took a concentrated course in mountaineering. We practiced cliff rappelling from a two hundred foot precipice; developed climbing techniques on a wet, muddy, rock wall; learned how to carry our mortars across streams and crevices using a rope bridge; and savoured the exhilaration of whistling down a rope from a helicopter hovering at a hundred feet. The exciting nature of our activities was continued during a two day break. Most of the members of the Battery were able to entertain themselves visiting the city of Vancouver or tried seducing the land-locked salmon in the surrounding rivers and streams.

"In January 1969, the Airborne Battery deployed for two weeks to the Airborne Regiment Ski School, which is located at Kananaskis, in the Rocky Mountains south of Banff, Alta."

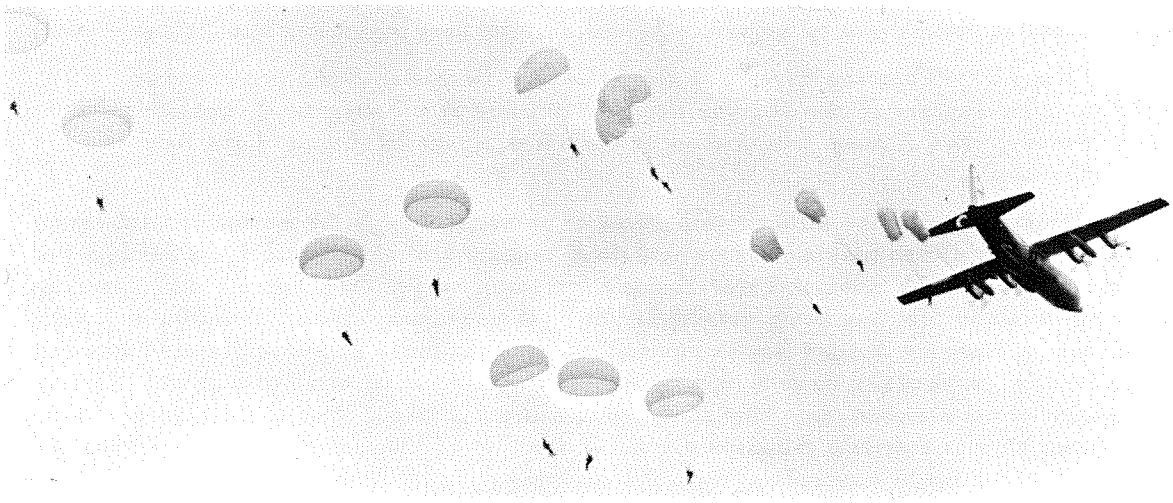
It could be said that never have so many slopes owed so many "zitz-marks" to so few. After receiving the best of professional instruction, we strapped our skis to frozen muckluks and travelled cross-country, ricocheted down snowy slopes, and "ski-jorred" on trails behind towing vehicles. We even had the facilities of commercial ski slopes available to us for alpine skiing. Stomach muscles were sore at the end of a day of skiing – not from the exercise, but from laughter.

Although many of us had not previously skied at all, we came away from the ski school feeling confident that we could navigate down any slope, and talk about it like professionals.

"After developing proper drills for cold weather operations on Exercise "Noble Challenge" in Wainwright during February, the Airborne Regiment embarked in March on Exercise "Noble Reply" in the Watson Lake area of the North West Territories."

Each man who boarded the aircraft in Edmonton carried his individual load-carrying equipment weighing some fifty pounds, his personal weapon and aluminum snowshoes. With main and reserve parachutes on and rigged, there was no unnecessary movement in the crowded belly of the aircraft. The flight to the DZ near Watson Lake took about three hours. Coffee and soup were served at the halfway point in the flight resulting in some jokes concerning the true definition of P Hour. Later the interior of the aircraft became charged with activity. The six aircraft, flying line astern, were approaching the drop zone. At 2230 hrs the air despatcher in the lead aircraft cut loose his palate of toboggans over the impact area. Within seconds, the following aircraft had done the same, and the tools of our trade were safely on the ground. Seconds later, after a short circle, three hundred men had committed themselves and were hanging in the arctic air.

The night parachute assault onto Watson Lake marked the beginning of a week-long battle against a live enemy force and very difficult terrain. Since the use of conventional vehicles was out of the question for this operation, all tent stores, equipment, and mortars had to be man-packed or hauled on toboggans. The snow in most areas was deep powder and eventually, hauling the mortars on foot proved to be unacceptably tedious. The Commandos, moving initially on foot then ski-jorring behind skidoos, made rapid progress in pursuit of the enemy. In order to keep the Battery within effective range for initimate support of the operation, the mortars leapfrogged by troops using helicopters, nodwells, skidoos, and M548 oversnow vehicles. By using such a variety of transport, we were able to appreciate and overcome most of the problems involved in moving artillery to support an arctic operation. At the end of the exercise, while awaiting evacuation to Edmonton, we were also pleased to find that the residents of the Watson Lake area were most hospitable and eager for us to enjoy their beautiful country.



"The Airborne Battery returned to the home of all Canadian Gunners, Shilo, in appropriate fashion when the Battery parachuted onto Proctor Field in May 1969."

Despite the fact that Manitoba greeted our drop with strong, gusty winds, we were happy to be in Shilo once again. Besides the pleasure of seeing old friends, we valued this opportunity to get down to some uninterrupted live gunnery. With expert IG and AIG assistance, we were able to polish our technical skills and to make sure that we were up to date on any new developments or changes on the gunner "party line". We culminated our efforts in the fire

and movement exercise *"Open Breech 1"*, and left Shilo very much aware of the critical function that the School of Artillery performs in maintaining the professional attitude and morale of Canadian Gunners.

Throughout the Spring of 1969, our six L5 pack howitzers arrived in Edmonton. We immediately began concentrated gun drill instruction and exercises aimed at producing a Battery that could provide effective fire support in any environment using either a gun or mortar. The two Commandos of the Airborne Regiment found that the versatility of the howitzer was such that the weapon could support any operation. Trials were conducted and drills were established for both the para dropping of the weapon, and for the porteeing of the piece in our three-quarter ton prime movers. In addition, we found that most of our gun deployments during exercises on diffi-terrain could only be accomplished by slinging the guns from helicopters.

"In June, the Canadian Airborne Regiment deployed to Canada's West Coast in Exercise "On Guard". The Battery spent two weeks in the wilds of northern Vancouver Island on a counter-insurgency type operation."

The British Special Air Service is held in great esteem by the members of the Canadian Airborne Regiment, and we enjoyed working with them on this exercise. The SAS members represented terrorists who were lodged in the many islands in the area. The Battery deployed to the Tofino area in support of the Commandos' missions against them. Extensive use was made of both Buffalo aircraft and Vertol helicopters in moving the guns and deploying the infantry. In addition to supporting the operation from gun positions on the ocean shore, we also succeeded in capturing two of the SAS insurgents. Although our ability to live and operate on the very lightest scale of equipment was critically tested on this exercise, some gunners were able to find a few moments relaxation by paddling around in the Pacific Ocean in front of a gun position using an air mattress as a vessel.

There are many opportunities for members of the Battery to participate in other than regimental courses and excersises. On 6 June, the date which has been designated as the official birthday of the Canadian Airborne Regiment, the Battery participated in a mass para drop of four hundred men. At a three week practice camp in September in Wainwright, the Battery pushed itself towards top proficiency with the pack howitzer. The rapid deployments both on the ground and from helicopters could not help but foster a competitive spirit among the gunners. This camp culminated in a gun competition, during which Sgt J.E. Walton and his detachment captured the top prize.

The Airborne Battery uses the "golf bag" principle of providing fire support. Either howitzers, mortars or both, are taken on an operation, depending on the environment and the requirements of the commandos. On the L5 at rear is Bdr J.W. McInnis; seated is Bdr M.W.E. Prosper. On the mortar from left to right are Bdr A.M. Anderson, Bdr C. Senechal, and Bdr J.K. Madore.

"Exercise "Passion Fighter" in October gave the members of the Airborne Battery a chance to see some of Canada's North. The Regiment deployed to Inuvik, one hundred and fifty miles north of the Arctic Circle."

In spite of the fact that this was a small scale exercise in terms of movement on the ground, some valuable lessons were learned concerning operations in the North at that time of year. Although the weather was cold at night, there was no snow and the muskeg was soft. Vehicle movement off the existing roads was virtually impossible, and once again it was necessary to rely heavily on helicopters to move the guns and mortars. At the end of the exercise, we had an opportunity to entertain children from a local school by giving them a tour of our gun position, and, to their great delight, by firing all of our extra pyrotechnics. We found the visit to this part of our country very educational, and in view of the current interest that is directed today towards the North, we shall undoubtedly find ourselves there again.

"Three weeks later, the Airborne Regiment flew to Montego Bay, Jamaica. Exercise "Nimrod Leap" was a period of tropical environmental and jungle training conducted in the area of Bracco Airstrip on the north shore of Jamaica."

Needless to say, this was the exercise for which everyone had been waiting. During the short weeks from the shores of the Arctic Ocean at Inuvik to our base camp on the beaches of Maria Buena Bay, the Battery was involved in hectic and concentrated preparations. Besides the packing and palletizing of all our stores, guns and mortars, we participated in pre-jungle training and attended detailed lectures on all aspects of jungle operations. When we arrived in Jamaica, we immediately started training in the Jungle School. In exotic sounding areas such as Flamingo Pond and Barbeque Bottom, we learned the various techniques of survival in the jungle, scouting and tracking, and watermanship. As we conducted ambush, counter-ambush, and patrolling exercises, we were impressed with how much care and skill was required to fight effectively in very close country. In the dense jungle training areas, cliff rappelling and helicopter operations proved to be more exciting than ever.

Our activities were not solely oriented towards infantry operations. On exercises *"Hot Tube 1"* and *"Hot Tube 2"*, we practiced our gun and mortar troops in the provision of fire support in the jungle. Moving either by foot, vehicle, or helicopter, the troops established fire positions in the rough terrain, provided support for an operation, and then created defensive positions in order to thwart commando patrol activity. Both FOO parties joined their respective Commandos to provide artillery support during the infantry exercises. We also enjoyed a relaxing two-day break, during which most gunners saw as much of the island as they could, tried their hand at salt water fishing or simply soaked up the sun. After three weeks on the island, it would have been very easy to volunteer for service in the Jamaican Defence Forces had it not been for the fact that we all knew we were looking forward to returning to Canada.

For the past year, we have found that service in the Canadian Airborne Regiment has been an exciting challenge. Working in close co-operation with other arms and services has rewarded us with an intimate knowledge of their operating procedures, problems, and desires, and has allowed us to retain the technical proficiency, tradition, and pride of an artillery unit.

COMMAND AND CONTROL OF SHOULDER OPERATED AIR DEFENCE MISSILE SYSTEMS

by
*Maj F.R. McCall**

Command and control of air defence weapons has been of primary concern to military planners since the early days of World War II. Strict controls were applied to both aircraft and guns in an attempt to avoid the engagement of friendly aircraft by friendly artillery. Joint headquarters were developed where SOPs and gun control methods were determined, and control orders were issued before and during an engagement. A system of communicaeions was set up to provide a constant two-way flow of information and orders between Anti-aircraft Operations Centres, Joint Operations Centres and Aircraft Control Centres which were designed to keep friendly flak and aircraft apart, and to employ the most effective air defence system available. Despite careful planning and mutual cooperation between air and ground forces, full advantage was not always taken of the capability of guns or aircraft and a great many instances were recorded during World War II of the destruction of friendly aircraft by allied anti-aircraft artillery and naval gun fire.

Command and control measures have been up-dated from time to time in an attempt to keep abreast of the development of high performance aircraft, air defence missiles, and automatic weapon systems. This has not been a particularly difficult problem as most modern air defence missile systems and aircraft are equipped with a multitude of surveillance and communication devices which can be tied into control systems and computers at the various levels of command. Also the organizational structures of air defence units are designed to fit into the air defence framework within the Field Army.

As missile systems such as Hercules, Hawk and Thunderbird have been developed, military planners have managed to incorporate them into an effective air defence command and control system which is compatible with the activities of the air element. The introduction of air defence systems such as Chaparral, Rapier and Vulcan has, however, increased the complexity of the problem as these lack the sophistication of the more complex systems. The major problem lies in the lack of a positive method of identification friend or foe (IFF), which can be employed by every air defence system from the forward edge of the battle area to the rear Army areas. Forward area air defence weapons do not have the surveillance devices nor the organic control facilities of the more sophisticated Corps and Army systems and, therefore, must rely primarily on SOPs and visual recognition. However, they are organized as integral units and can be tied into the overall air defence network for command and control. It is apparent, considering the present state-of-the-art, that the problem of command and control down to and including Divisional level, can be solved with a certain degree of effectiveness despite the lack of a positive IFF system.

Recent developments in rocket propulsion and micro-miniaturization of electronic components have made possible the development of a new type of air defence weapon, which does create a major problem in command and control. The forerunner in this area is the Redeye Air Defence Missile System developed by the U.S.A. In the early stages of its development, Redeye was beset with a multitude of problems and as a consequence very little thought was given as to how it would eventually fit into the air defence structure. The development problems were solved and Redeye was accepted into the U.S. inventory in 1968. Its success, coupled with its future development potential, prodded air defence planners into finding a home for this maverick missile.

Two schools of thought were rendered out of a morass of factors affecting its employment. Some planners felt it should be organized into air defence units and be incorporated into the Theatre air defence framework like all other air defence artillery systems. A greater majority insisted it should be given directly to the combat arms to be employed as a self-defence weapon in a like manner to machineguns, mortars and anti-tank guns. Per-

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* *Maj McCall is the Canadian Forces Liaison Officer, Air Defence, and prepared this paper for his Quarterly Digest 3/69.*

sonnel from the combat arms would be sent to the Air Defence School for initial training. To determine which of these two schools offer the best tactical solution for the employment of Redeye requires an examination of its characteristics.

Redeye is an IR seeking missile, which at the present stage of its development, makes it a tail chaser when employed against jet aircraft. It has no surveillance or early warning capabilities and, therefore, must rely on visual acquisition for initial pick-up and engagement. Redeye has no IFF capability and must rely on operator visual recognition. Redeye has a capability of destroying any aircraft, friend or foe, helicopter or jet, which produces a heat source and comes within its range. The effective engagement time is very short against a fast moving target and, therefore, there is very little time available for speculation on whether or not the target is hostile. If the target is attacking the area being defended by the Redeye it is unlikely that the Redeye operator in the attack area will be in a position to engage before or during the attack. He may be able to engage the receding aircraft after it has accomplished its mission. It is more likely that its effectiveness can only be utilized against aircraft attacking flanking formations or aircraft returning from a mission, which belies its use as a self-defence weapon. Should future developments of Redeye give it a forward hitting capability then the concept of its employment would necessarily change. Attacking aircraft could be engaged by the local defenders, which would make it more of a self-defence weapon than in its present configuration. The British are developing a shoulder operated missile system to be known as "Blowpipe". It will have a forward hitting capability and can, therefore, be considered as a self-defence weapon. Blowpipe will have similar characteristics to Redeye in that it will have no surveillance or early warning capabilities.

It is ludicrous to take a weapon such as Redeye, which is no larger than an overgrown anti-tank rocket launcher, and organize it into units having a command structure separate from that which is already available within the combat arms? Can the extra expense in manpower and equipment be justified? Is there, in fact, any need for a separate command and control structure for shoulder operated air defence missile systems? They can be easily absorbed into the inventory of the combat arms and any Infantryman, Sapper, Trooper or Gunner can be taught how to operate them. They can be controlled by a small section headquarters and commanded by unit commanders in the same manner as infantry support weapons. They could be considered as a secondary role for certain members of the unit, or an air defence platoon or section could be organized for each unit having air defence as its primary task. There is no doubt that in terms of manpower and equipment requirements this is the tidiest and most economical way to employ this type of air defence missile.

Redeye – This system consists of a missile sealed in a launcher approximately four feet long and three inches in diameter. The missile can only be removed by firing. Stabilized by four rear fins and steered by two movable fins in front, the missile has an IR homing guidance system.

Blowpipe – The Missile is contained in a cannister and to this is clipped an aiming unit which then forms a shoulder carried launcher complete with IFF. Looking through this sight, the aimer lays on the target and fires. The missile is automatically gathered into his field of view and he commands it onto the target.

Although the shoulder operated missile is small and requires very little support, it has a kill probability greater than that of a complete battery of World War II anti-aircraft guns. Thus, one Private equipped with a Redeye has a more potent weapon under his command and control than a World War II anti-aircraft battery commander. The World War II battery commander was under the strict control of an AAOC and was provided with some degree of early warning and identification. The Redeye operator can expect very little support in the way of early warning and identification and will be controlled primarily by SOPs. In order to protect friendly aircraft from the indiscriminate firing of Redeye, the SOPs employed may severely limit its use and effectiveness. Surely it is more ludicrous to put Redeye in the hands of a Private, whose primary training is not air defence, and who will receive less support and advice than was thought necessary for an air defence specialist of field grade equipped with a far less effective weapon.

Deployment of the shoulder operated missile must also be considered before deciding on the best method of control. The air defence umbrella is generally divided into three overlapping zones. High altitude is handled by missile systems such as Nike Hercules deployed at Army and Corps levels, while medium altitude is the responsibility of Hawk and Thunderbird type missiles at Corps and Divisional levels. Low altitude is covered by Chaparral and Rapier type missiles deployed at Divisional level. Low altitude forward of Division must be covered be a combination of Chaparral/Rapier and shoulder operated missile systems such as Redeye and Blowpipe. There seems to be no question in anybody's mind that weapon systems employed at Division and higher levels will be an integral part of the overall air defence framework, but because

Redeye and Blowpipe are one-man weapons it is advocated by many that they be issued over the counter with the same nonchalance as a Quartermaster issues rifles. Thus, the area of the battlefield, which contains those elements most likely to be attacked by low flying tactical aircraft, becomes the sole responsibility of a handful of other ranks under the rather loose control of a junior officer and a series of SOPs. Senior air defence planners would have little or no control over the defence of this block of air space, nor of the enemy's free use of it. An even more horrendous thought is that under this system of control, the final decision as to the destruction of a two million dollar aircraft and a half million dollar's worth of pilot training, lies in the ability of one man to distinguish between friend or foe and to interpret SOPs within a few seconds, and under combat conditions.

A more comprehensive solution to the command and control of shoulder operated missiles may lie in their allotment to Chaparral or Rapier units rather than by turning them over to the combat arms. Redeye and Blowpipe could then be deployed in terms of the air threat. They could be concentrated or disbursed as dicated by the flow of battle and relative air strengths. They could be deployed to cover the more likely avenues of approach and be mutually supporting. They could be used to fill in the gaps not covered by Chaparral or Rapier and thus become a part of the overall air defence structure.

As out stations on the air defence communications network, they would receive some assistance in early warning and identification with particular regard to friendly air activity. They would receive up to the minute control orders and status conditions and, therefore, would not have to rely almost entirely on SOPs. As part of an air defence unit, Redeye and Blowpipe gunners would receive continual refresher training and could maintain a high standard of efficiency in aircraft recognition and weapon handling, which would not likely be the case if they were recruited from within the line units.

Command and control of the shoulder operated air defence missile is analogous to command and control of a German Shepherd watchdog. When they are both puppies in their development stage, no one is concerned as to how they will be controlled when they mature. As the pups grow up, they often develop a mean streak and cannot always be controlled by their owners. They will not always obey commands and will bite friends as well as enemies. Authorities decree that they either have to be locked up in wire cages, or SOPs, and released only on a strong leash and at certain times, or they have to be put away. The alternative selected by most dog owners is to donate the dog to the Canine Corps, where they have experts who know how to command and control an aggressive dog and can put it to good use. The same solution applies to the aggressive little missile, it should be turned over to the air defence experts who have better command and control facilities, and can obtain the best results from its use.

The Editorial Staff of the "Canadian Gunner 1969" express their appreciation to the following persons whose diligence and good work contributed so much to this publication:

ART WORK

Mr. R. Stritz

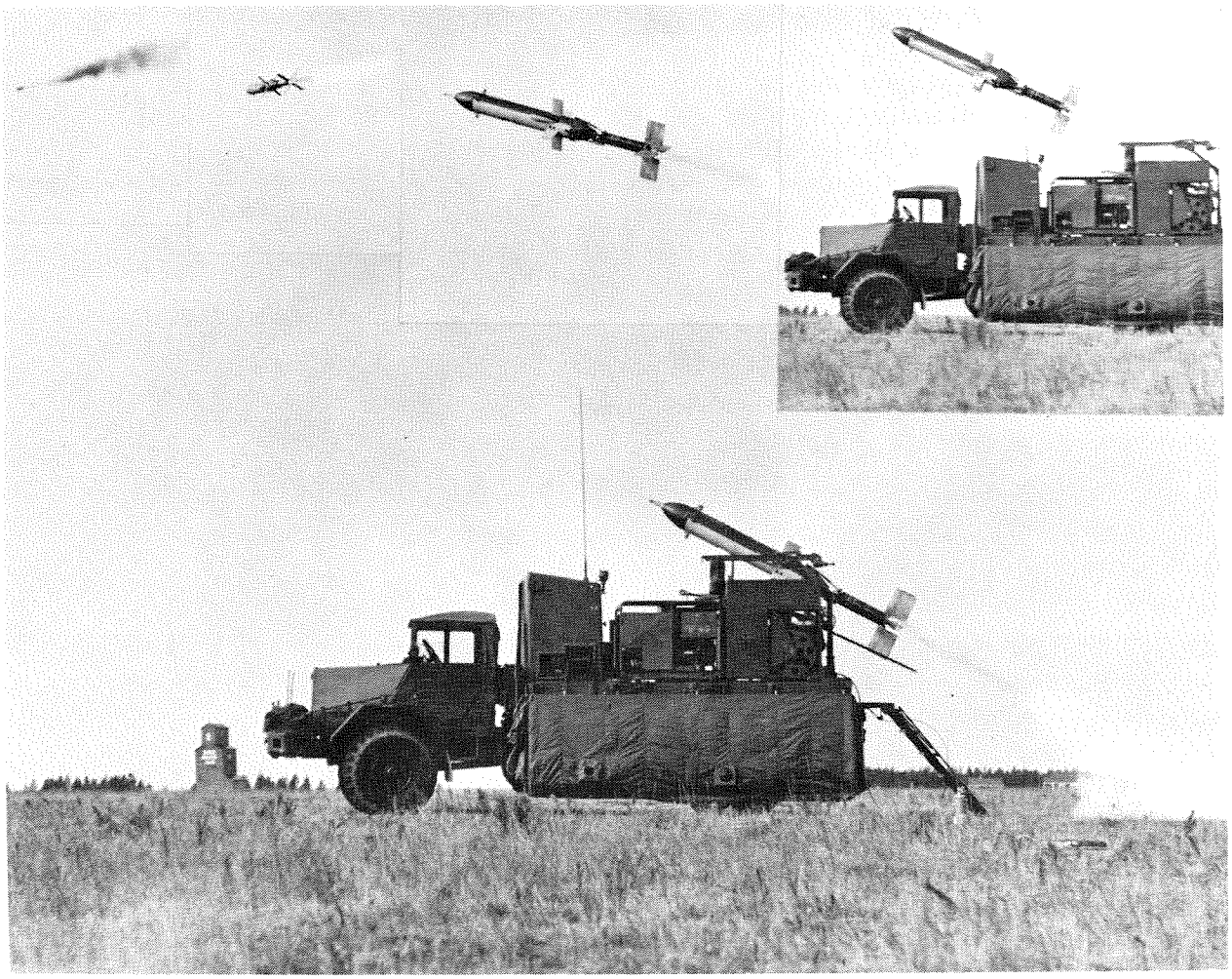
VARI TYPING

Mrs. L.M. Moore
Mrs. J.E. Gallien

1 DRONE TROOP RCA

Completion of the Demonstration of Conformance Trials in mid November 1969 climaxed a year of diverse but exacting accomplishments for 1 Drone Troop RCA. Facing the prospect of an uncertain future does not detract from the personal satisfaction felt by all members of the unit in being instrumental to the successful conclusion of this trial.

In order to provide expertise in the troop's secondary role, that of retaining a sound ranging capability, a survey and sound ranging refresher phase was begun in October 1968 culminating in a successful exercise on the ranges in November. Inevitably, because of the large non-artillery component in the troop, various trades were found in strange locations, such as the air element Photo Tech in the Advanced Post, or two Instrument Electricians and a Radar Technician as "bangs" party. This training was followed by CB and Arty Intelligence courses. Prior to the advent of Unitrade it was necessary to cross train all unit specialists to Pay Level 5 Artillerymen. This course was conducted with the assistance of CFSA personnel. Within seven weeks all the troop artillery personnel had fully covered the 105mm, M109 communications and driving.

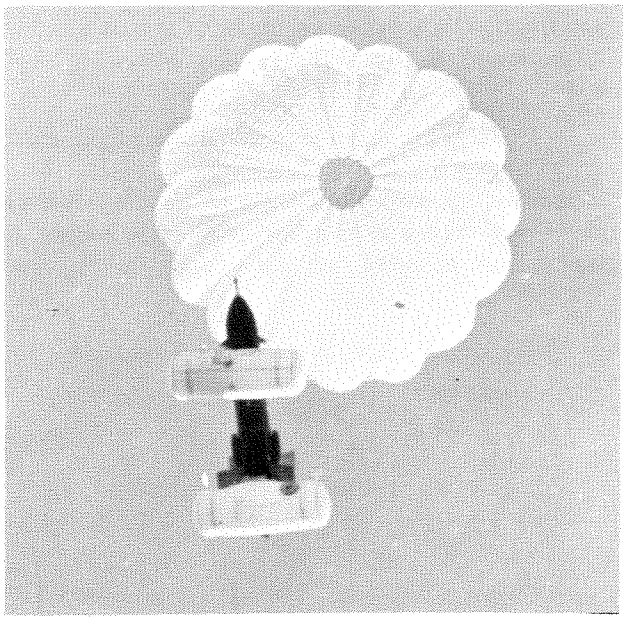


AN/USD 501 Surveillance Drone

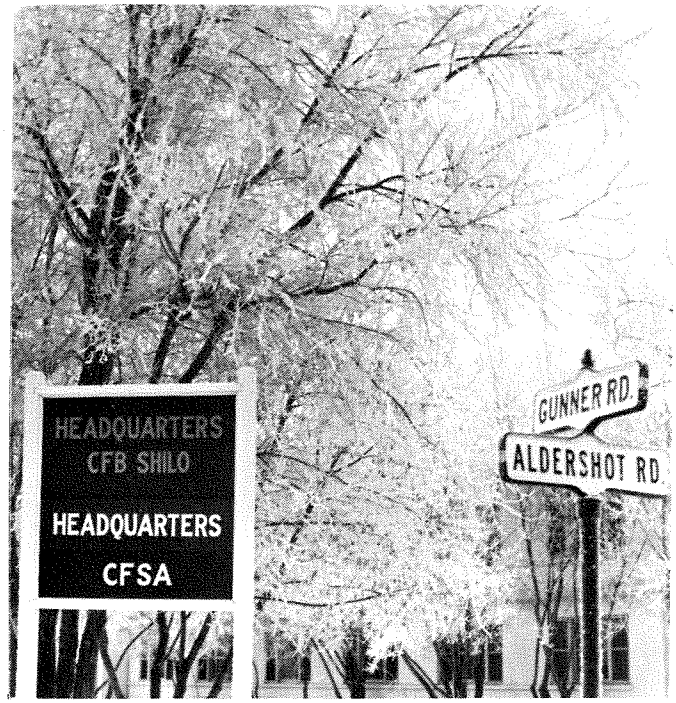
In late April 1969, 1 Drone Troop was called out in aid to the civil power along with other units from the base and surrounding area. The troop was tasked by CFB Shilo to provide the Task Force Headquarters and Administrative element for the forces assembling to fight the flood expected on the Assiniboine River west of St Francois Xavier, Manitoba. Under direction of Capt A.L. Harris, Task Force Commander for the north bank of the river, some 300 men from the land and air element were soon working around the clock against the swollen river. Boats and barges with outboard motors were the only means of transporting sandbags and other control materials to the weak spots. Eventually, the waters were successfully contained by the wet and weary troops.

In preparation for the tri-partite Demonstration of Conformance of the AN/USD 501 Surveillance Drone, two officers and 18 other ranks trained with British and German troops at Canadair in Montreal. Some aspects of this training began in January while the bulk took place during July. The majority of the tri-partite troops arrived in Shilo in mid August, having roaded the vehicles from Montreal. The Demonstration of Conformance came to a successful conclusion on 31 October 1969 although six special flights were flown during November to test the variable altitude controller and the IRLS sensor.

By mid November, the British and German troops had returned home. With only the final reports remaining to be completed, but the results as yet classified, little further can be said about the trials. Regardless of its future, as yet unknown, 1 Drone Troop RCA has pride in the knowledge that it has not only made a meaningful contribution to the development of this weapon and in so doing gained the respect and confidence of its allies, but has also lived up to the highest gunner traditions in all aspects of its work.



Eight minutes later



Even familiar landmarks change.

WHAT DO 'They' DO AT C ARTY

by
*Maj A.D. McMillan, CD**

Somewhere in CFHQ a sign, similar to the one former US President Truman made famous, hangs over a desk. In clear, concise – even terse language – it says, "The buck stops here" ("La Piastre arrête ici")! However, at any level of command lower than the location of the sign there is a group known simply as "They". "They" are responsible for everything unpalatable in a soldier's existence. "They" foul up postings and establishments. "They" change pay and trades regulations but "They" are always available if someone has to be blamed.

We at C Arty in HQ Mobile Command are "They" to the large majority of Canadian Gunners. This is as it should be, but, something should be said in our defence before we quietly smile and pass off the problem to "Them" in CFHQ.

C Arty Division has a total strength of five officers, one Chief Warrant Officer (Master Gunner), one Warrant Officer, one Sergeant and two Corporals. Just in case some gunner somewhere may want to substitute a proper name for the nebulous "They", names, appointments and responsibilities are as follows:

Col D.W. Francis, CD – Chief of Artillery (Any Gunner who is not aware of his duties or responsibilities should request an immediate interview with his career counsellor);

LCol D.F. Elkins, CD – Senior Staff Officer Artillery, who supervises all staff activities in the Division;

Maj R.R. Doyon, CD – Staff Officer Arty 2, who is responsible for operational plans, exercises and evaluation;

Maj J.O. Ward, CD – Staff Officer Arty 3, who is the division technical staff adviser;

Maj A.D. McMillan, CD – Staff Officer Arty 2-2, who is responsible for training matters and Air OP planning;

CWO (Master Gunner) M.J. Fraser, CD – Staff Officer Arty 3-3, who deals with equipment and establishments. Master Gunner Fraser retains more than thirty years' accumulation of establishments and equipments in his head;

WO C.J.J. Desmarais, CD – Chief Clerk;

Sgt J.O. Prud'homme, CD – Clerk Adm, who has been with HQ Mobile Command since its formation;

Bdr J.H.G. Gareau – Clerk Adm, one of three bombardiers on staff of HQ Mobile Command; and

Cpl G. Paquette, CD – Clerk Adm.

An additional position in C Arty Division is currently occupied by Maj N.M. Pettis who is seconded to Rapier User Trials in Wales.

At first glance, one may feel smug and satisfied that "They" have very little to do and much assistance in doing it. However, many of the nebulous details of any properly staffed task do not come to the surface until the implications to the services as a whole are examined. For example, winter catches every element of the Canadian Armed Forces by surprise – annually! With winter comes snow, and with the snow comes a typical staff problem for C Arty Division. What is the Royal Regiment's stand on oversnow vehicles? It is not the intent of this article to discuss the subject of oversnow vehicles but consideration of the topic should indicate some of the problems facing the staff at C Arty.

The clerical staff, functioning more or less as a sub-CR must decide which of the staff should see the paper first – Maj Ward (because its subject is equipment), LCol Elkins (since all members must eventually have input in the decision) or Col Francis (where the piastre eventually will arrête). There are a number of factors which the Chief Clerk will consider when making this decision. In order, these are;

a. It's somewhat distasteful. Who am I mad at this week?

b. It requires a lengthy answer. Whose handwriting can I read best if I have to type the long-winded answer?

c. It really doesn't matter so I'll use the time-proven method used by clerks the world over – the "random guess" method.

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* *Maj McMillan is a Staff Officer at C Arty.*

Suppose the paper goes directly to Col Francis and just suppose he doesn't have a ready answer, then we may have a mini-conference. The mini-conference occasions a really top-notch opportunity for accusing "Them" of being in the mess, on the golf course, etc, because during the time that we are discussing the problem, half the telephones in the Division are unmanned. Should anyone telephone during this period he can honestly declare that he "phoned them and "They" weren't even in".

Back to the problem of snow.

C Arty will no doubt ask some very pointed questions of the staff. For instance, how many batteries are tasked for northern operations – Maj Doyon? Can the M548 carry an L5 plus detachment and ammo – Maj Ward? Can the M113 drag an L5 through snow without damage – Master Gunner? How much will it cost to equip batteries with tracked vehicles – SSO? What is the infantry using – Maj McMillan? Are there any more developments on the long-haired, West-Andean, extended-legged ass – Maj Ward?

When answers are not readily available a flood of memoranda moves out of C Arty to other elements of HQ Mobile Command who deal more intimately with the various subjects. As the replies are received they shortly form a picture of probabilities and possibilities which are again considered by the staff. For instance, Plans and Operations report, "nine batteries are tasked for northern operations however this figure came from a study conducted in 1943. This study is being up-dated in light of present budgetary limitations". SSO Maintenance informs C Arty "the M548 can carry an L5 with detachment and some ammo. It should be noted, however, that one gunner's weight equals four 105mm rounds, therefore if the gun could be fired by a one man detachment, an additional 20 rounds of ammo could be carried." The Master Gunner ascertains through the "old buddy net" that the L5 can be towed through snow without damage but, only for a short distance! The SSO receives the following reply from CFHQ regarding costs: "A study is being carried out at this time regarding your query. It is felt that the artillery should continue its interest in the development of the long-haired, West-Andean, extended-legged ass. In this regard, OEO ——— pertaining to this vehicle is attached." The infantry, who are next door to the artillery in HQ Mobile Command are more helpful. They suggest that since they plan on operating on skis and skidoos in the north, we investigate lashing five skis to each wheel of the howitzer and towing it with 16 skidoos hitched in tandem. Maj Ward gathers the final information to complete the puzzle. On the "technical net" he learns that the third generation (not yet in production) of the long-haired, West-Andean, extended-legged ass will in fact be capable of traversing the deepest snow forecast for northern operations. Since the production model will not be available until late 1972 CFHQ feel that development of an "animal corps" in the land forces should be complete by that time.

A carefully worded reply is then sent forward to the next higher HQ. It might look something like this: "C Arty agrees with the present stand taken by CFHQ on the question of oversnow capability for the Royal Regiment of Canadian Artillery. There is no doubt that artillery will continue to support infantry in Canada's land forces and to this end every effort will be made to use existing facilities until the third generation of the long-haired, West-Andean, extended-legged ass becomes available."

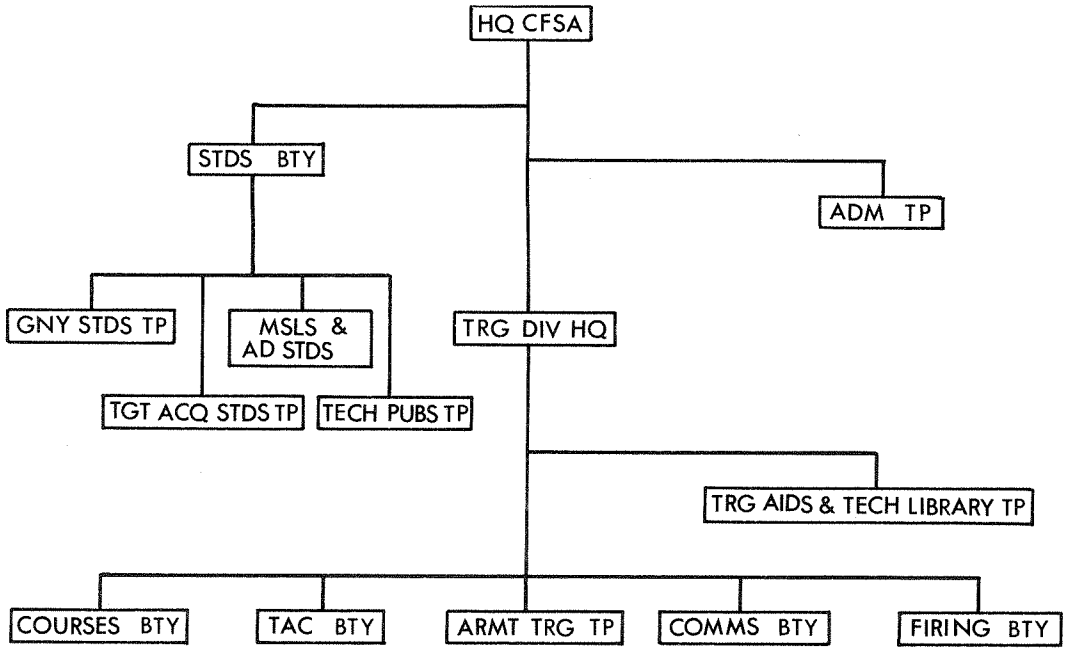
We at C Arty, having done our work and rendered our decision, have nothing left to do but sit back and see how long it takes "Them" in CFHQ to figure it out.

C F S A

Revaluation, reorganization and uncertainty characterized the year 1969 at CFSA. The uncertainty has been resolved by the announcement that CFSA will move to CFB Gagetown and become part of the Combat Arms School in 1970. This then marks the end of an era, one which began on 1 October 1946 with the establishment of the Royal Canadian School of Artillery at Shilo.

In March 1969, the school received a new name, Canadian Forces School of Artillery (CFSA). This was the first of a series of changes which would eventually result in a complete facelifting but not appreciably alter its role and purpose. Later, in June, the position of CIG was redesignated as Commandant. The Base Commander who had served in the dual role of Commandant and Base Commander, relinquished the former appointment. The value of a Base Commander who is intimately familiar with the operation of CFSA is of great value, but however, a luxury which CFSA will not in all likelihood, long enjoy.

Work continued throughout the late winter and spring on an analysis and revaluation of the role and method of operation of CFSA. This was in order to conform to the MASCOT (Management System for Control of Training) system for control of training in Training Command units. A primary requirement of this system was the formation of a Standards Unit from within the present establishment. The organization designed to meet this requirement is shown in the accompanying diagram. Subsequently, in July, CFSA adopted this organization and will continue to use it until further reorganizational changes are required in CFB Gagetown. Aside from the formation of Standards Battery, it should be noted that all instructors are concentrated in Courses Battery, and, Range and Met Troops are given to Base. In addition, it was hoped at the time to establish an organic firing battery to support school courses. With the absence of a Depot and no Pay Level 3 courses, the nucleus of a firing troop had been formed by the former personnel from 2 SSM Battery. When these



personnel departed on posting it became evident that CFSA could not possibly offer firing support within its present resources and perform its other work as well. Generous assistance was given both by 3 RCHA and 5e RALC however, these units too have training priorities of their own to meet before accepting other commitments. In view of the move to Gagetown, CFSA would like at this time to express its appreciation and thanks for the firing, air and other support it has received from 3 RCHA in this and past years. In addition it thanks 5e RALC for the firing support provided this fall.

For the second year in a row, the summer months brought almost a complete change of staff. Col D.W. Francis who had relinquished the appointment of Commandant to Col D.H. Gunter was posted to HQ Mobile Command as C Arty. Col Gunter was promoted and became Commander CFB Shilo. LCol D.R. Baker was appointed Commandant, CFSA. Maj R.D. Smyth arrived to replace Maj W.J. Ready as OC Trials and Evaluation Section. Maj G.N.R. Olson became CO 1 SSM Bty RCA and later in the fall Maj H.K.C. Collins, British Exchange IG, returned to the UK to become Second in Command of 49th Field Regiment RA, Larkhill. Maj W.E. Hall, PPCLI replaced Maj J.A. Collingwood as Infantry Adviser, and Maj W.R. Dawes arrived from 1 RCHA to become OC Courses Battery. Numerous other personnel left on posting to various parts of the country and Europe and were replaced by graduates of Pay Level 7 and Arty Staff courses. Establishment reductions in the form of restrictions to 18 vacancies and the loss of six positions to CAS Valcartier compounded adjustment problems to the new establishment while career courses exacted an unusually high toll of instructors. Concurrent with this activity, CFSA continued to provide IG and AIG assistance to regular and militia units in greater numbers than ever before.

Finalization and adoption of the Unitrade system involved a great deal of preparatory work culminating in yet another change to the establishment, updating unit records and providing personnel for briefing teams to assist units. The difficulties facing units in this conversion were well appreciated in view of the many questions originating within CFSA alone. Unitrade specialty courses commenced in the fall. Among the more unique of these was the Artillery Air Observer Course. Many other courses were revised or completely rewritten. In early 1969, CFSA undertook a study on Artillery Officers Training subsequently tabled at the Annual Artillery Conference. Certain recommendations made in this study were incorporated in courses such as the Fire Planning Course which became the Artillery Advanced Course. Eventually, through more detailed study it is hoped to provide a more coherent and consistent training system for artillery officers at all stages of their careers.

Course Summary

A total of 546 students were graduated from CFSA in 1969, as follows:

Artillery Instructor (Officers)	- 10
Artillery Staff Duties	- 9
Command Post Officers	- 14
Survey Officers	- 7
Artillery Advanced	- 12
ROTP Phase 4	- 5
ROTP Phase 3	- 7
ROTP Phase 2	- 16
ROUTP Phase 1	- 58
Captain Qualifying (Militia)	- 29
Chief Artilleryman Pay Level 7	- 15
Artillery Technician Pay Level 4	- 19
Basic Artillery Technician	- 20
Artillery Surveyor Pay Level 4	- 14
Basic Artillery Surveyor	- 14
762mm Launcher and Assemblyman	- 15
Artillery Air Observer	- 9
Artilleryman Pay Level 3	- 13
Land Environment Training	- 31
Junior NCO	- 163
Senior NCO Qualifying (Militia)	- 59
Artillery Technician Pay Level 3 (Militia)	- 7

CFSA received its first L5 in March and its last two in July. Training on this weapon was initiated shortly after arrival of the first one. Pro-

blems arose throughout the year because of the Slant GFTs and Met for the L5. In February and March CFSA received its chronographs while some theodolites have still not arrived. Shortage of personnel and organizational changes in the last year have delayed a comprehensive examination of some aspects of the problems associated with these equipments; however, it is hoped that those remaining will be satisfactorily resolved on a corps basis, in the near future.

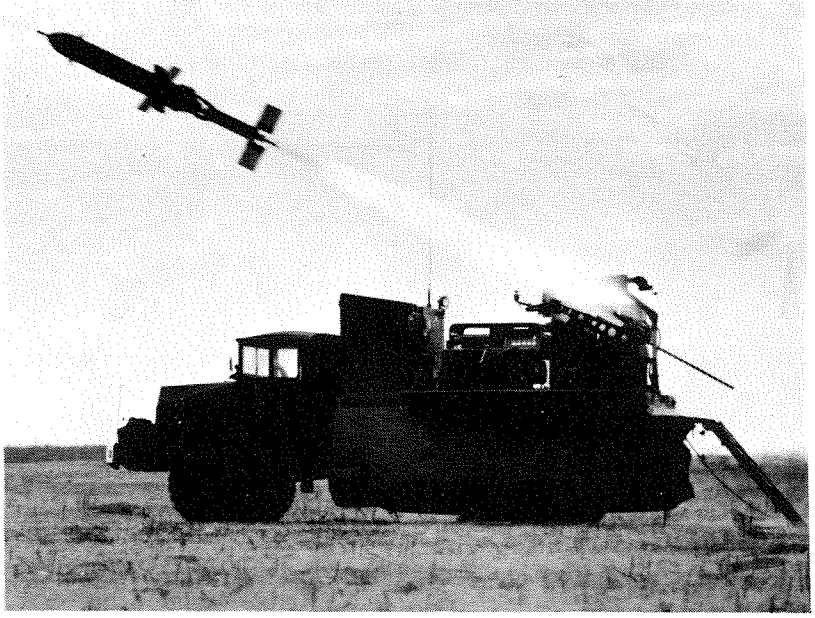
CFSA in conjunction with CFB Shilo received a steady stream of visitors all year. Many of these were in connection with Drone Trials, Reorganizations, Forces Study and other. Among the more notable were Brig P.K. Rooke, CBE, Deputy Director Royal Artillery and Col E.D.V. Prendergast, MBE, DFC, CIG School of Artillery, Larkhill. In addition to other forms of support CFSA personnel assisted in various tests and trials. Assistance to Drone Trials continued from January until their conclusion in November. CFSA assisted in the evaluation of the British 105mm Light Gun and in the FACE/FADAC comparative evaluation.

As announced in the new force structure, CFSA will become part of the Combat Arms School to be located in CFB Gagetown. Many of the details have yet to be worked out, but it is known that this move will take place in the summer of 1970. CFB Shilo will retain its Gunner affiliation with the relocation here of 3 RCHA. CFSA personnel regard the move with mixed feelings. The school has established deep roots in and around Shilo and the available range space for artillery training is unmatched in Canada. However, CFSA has always supported the concept of integrated Infantry, Armoured and Artillery training. Greater opportunities will be available for inter arm co-operation and awareness, to standardize training methods and to take advantage of specialized knowledge at all levels. The challenge to us, of CFSA, more than compensates for the loss of our own independent corps training school.

The home station

AN/USD-501 "D.O.C." Trials at Shilo Successful




The recent extremely successful "demonstration of conformance" trials held at Shilo for the military observers and the international press, reflect credit on all personnel of the trials troop and of the whole base. The success of the press day can be gauged by the laudatory newspaper stories and television reports which followed. Our thanks go to all personnel concerned.

Missiles and Systems Division

CANADAIR

LIMITED MONTREAL

THE BRITISH LIGHT GUN

The British Light Gun trial was conducted by

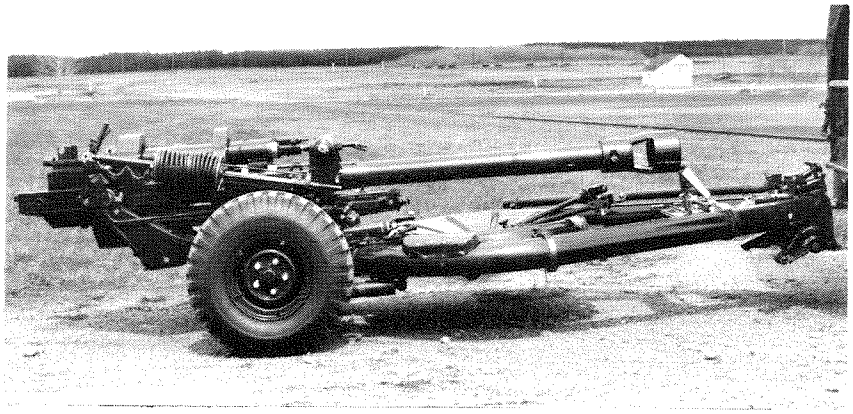
*Capt B.A. Reid**

During May and June 1969, the Canadian Forces School of Artillery conducted a user evaluation of a prototype British light gun obtained on a standardization loan. The equipment was designed by the Royal Armament Research and Development Establishment as a successor to the L5 pack howitzer. Officially termed Gun, 105mm, field, L119 with ordnance, 105mm, L20A1, it was designed to provide maximum performance for a minimum weight, to be capable of helicopter lift, and to be easily manhandled, operated and maintained. To achieve these objectives a welding fabrication process using light, stressed materials was used in the construction process. Two barrels were designed for use on the same carriage to cater for two different ammunition systems. The L19A1 is used for Abbot ammunition and the L20A1 is used for American M1 ammunition also used by Canada.

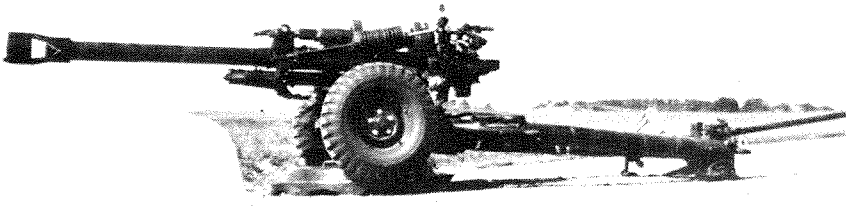
The light gun incorporates a number of interesting features not usually found in field artillery equipments. In its "folded" travelling configuration it is under six feet wide, less than four feet high and approximately sixteen feet long. It can easily and quickly be broken into two loads for lifting by helicopter. Some of the other features are:

a. It is equipped with a circular dish-type firing platform giving it the capability of being quickly traversed through wide arcs similar to the 25 pounder;

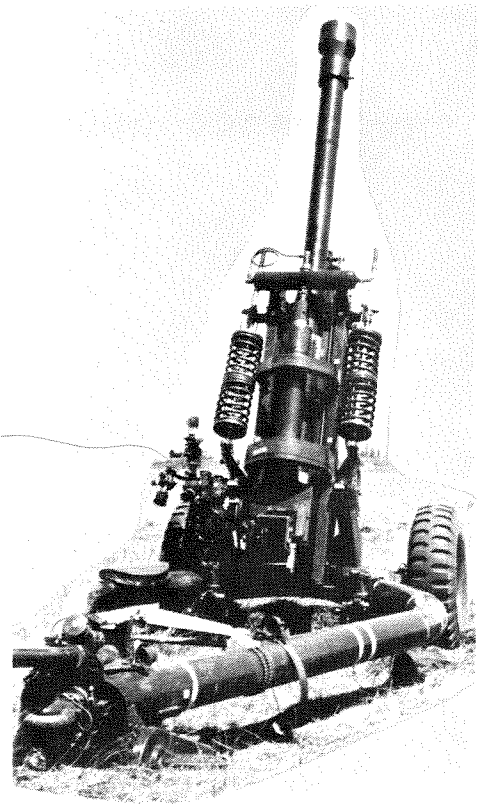
b. It is equipped with a torsion-bar suspension system with shock absorbers. When being towed, the tendency of the gun to bounce and sway has practically been eliminated. The suspension is "locked-out" for firing;



British Light Gun – Travelling Folded Configuration



British Light Gun – Side View



British Light Gun – Rear View

* *Capt Reid was OC Armt Trg Tp, CFSA.*

c. To "fold" the equipment for transportation or long moves, the saddle and ordnance swing through 180°. This is accomplished by means of a quick-disconnect traversing gear and the use of a travelling stay mounted on the rear of the trail;

d. A multi-position spade is provided. The assembly consists of a plate that can be adjusted to three positions by using two brackets that are pivoted and locked in the three positions by their captive pins. The spade plate and bracket configuration permits the gun to be fired without the platform, while the flat sole plate position is used when the gun is being traversed on the platform. When required, two rock spades are available.

e. A hydraulic brake system with an "over-run" feature is provided to overcome the tendency of the gun to push the vehicle. The "over-run" mechanism can be locked out for backing the gun with the vehicle;

f. The gun is equipped with an independent, variable hydropneumatic recoil system. The cylinders are attached to the gun rails and recoil with gun. The piston rods are attached to the cradle. The system will vary the length of recoil from 45 to 20 inches in accordance with the angle of elevation. It can be fired high or low angle; and

g. The one man sighting system is basically a reciprocating, rocking bar sight employing a dial sight with integral trilux lighting to illuminate the graticules, the main and slipping scales and the micrometer scales. The anti-tank telescope sight is so designed to make it a central laying sight. All deflections for lead corrections and range settings are external settings on the sight.

The gun is currently undergoing User Trials at the School of Artillery, Larkhill and could well be a contender for the next generation light field artillery weapon system.

Basic Data (Approximate)

Gun with Platform		3,600 lbs
Length Travelling		
	– folded	16 ft
	– unfolded	20 ft
Length at low elevation with handspike		24 ft
Width		6 ft
Height		
	– travelling folded	4 ft
	– unfolded	7 ft
Range	– similar to the 105mm How C1	

☆☆

More new equipment being tested at Flewin, formerly Proctor, Airfield, Shilo.

AN INTRODUCTION TO FACE

The FACE/FADAC trial was conducted by

*Maj D.B. McGibbon**

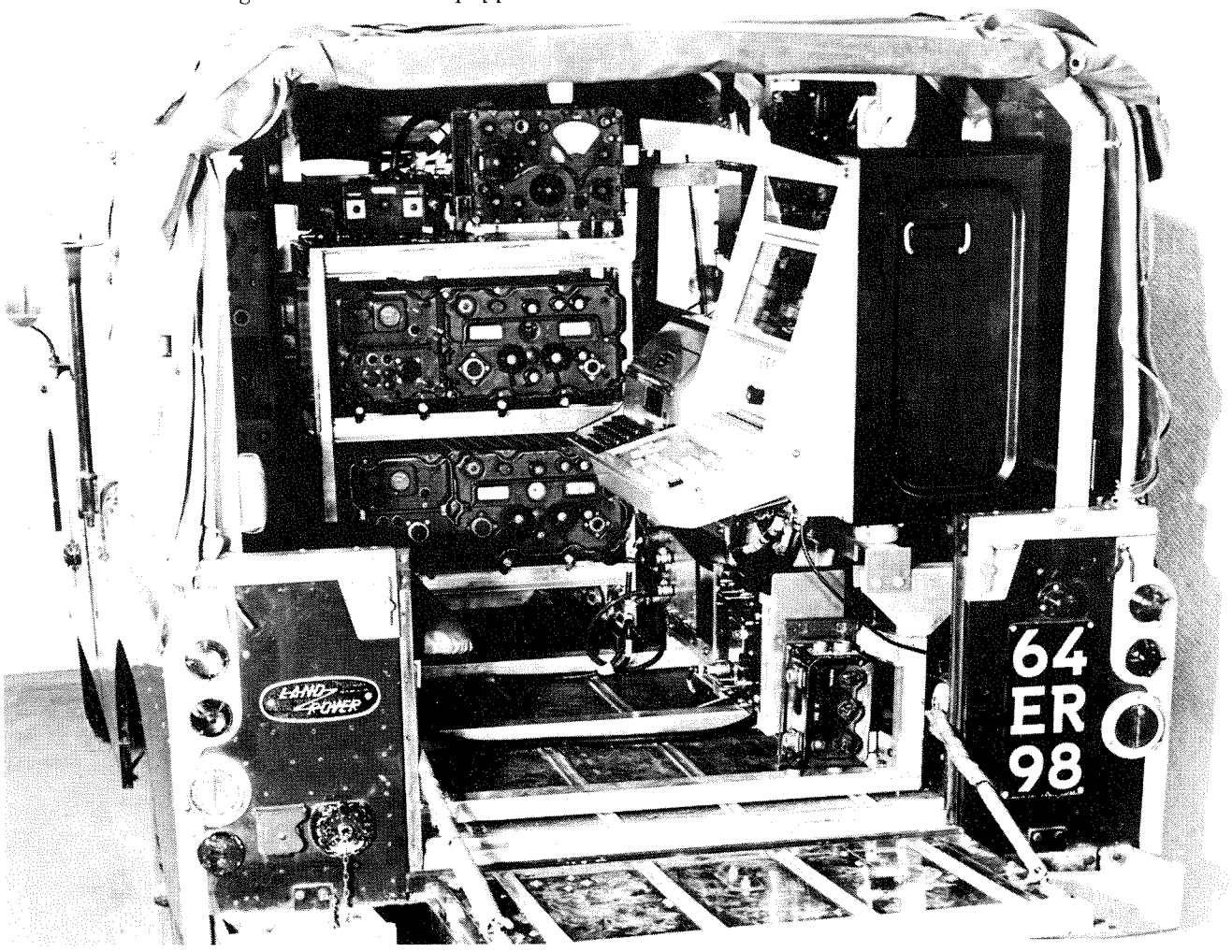
Introduction

During the summer of 1969 the Canadian Armed Forces conducted a comparative evaluation of FACE and the gun direction computer M18 (FADAC). Most readers will have had some exposure to FADAC (Canadian Gunner 1965 and 1967) but may never have heard of FACE.

The Field Artillery Computer Equipment (FACE) is a British developed digital computing system for use in surface-to-surface artillery command posts and artillery survey computing centres. At present only the 2nd Field Regiment RA is equipped with FACE but by mid-1971 all RA surface-to-surface fire units including the Parachute Regiment and the Commando Regiment will be so equipped.

Deployment of Face

Units are equipped on the basis of one FACE per battery and one for RHQ. Additional FACEs can be deployed with regimental survey parties or remain within divisional survey units. In the gunnery role, one FACE can produce individual gun data for two batteries and centre-to-centre data for three additional batteries. The two initial batteries may each be fired as two troops provided no gun is more than 300 metres from its battery centre. Batteries may consist of from one to eight guns and troops of up to seven guns. All guns must be of the same type. Up to thirty target records may be stored under their four figure target numbers.



FACE mounted in the ¾ ton Land Rover showing the battery command post installation.

** Maj McGibbon is a student at RMC of S, Shrivenham.*

Physical Characteristics

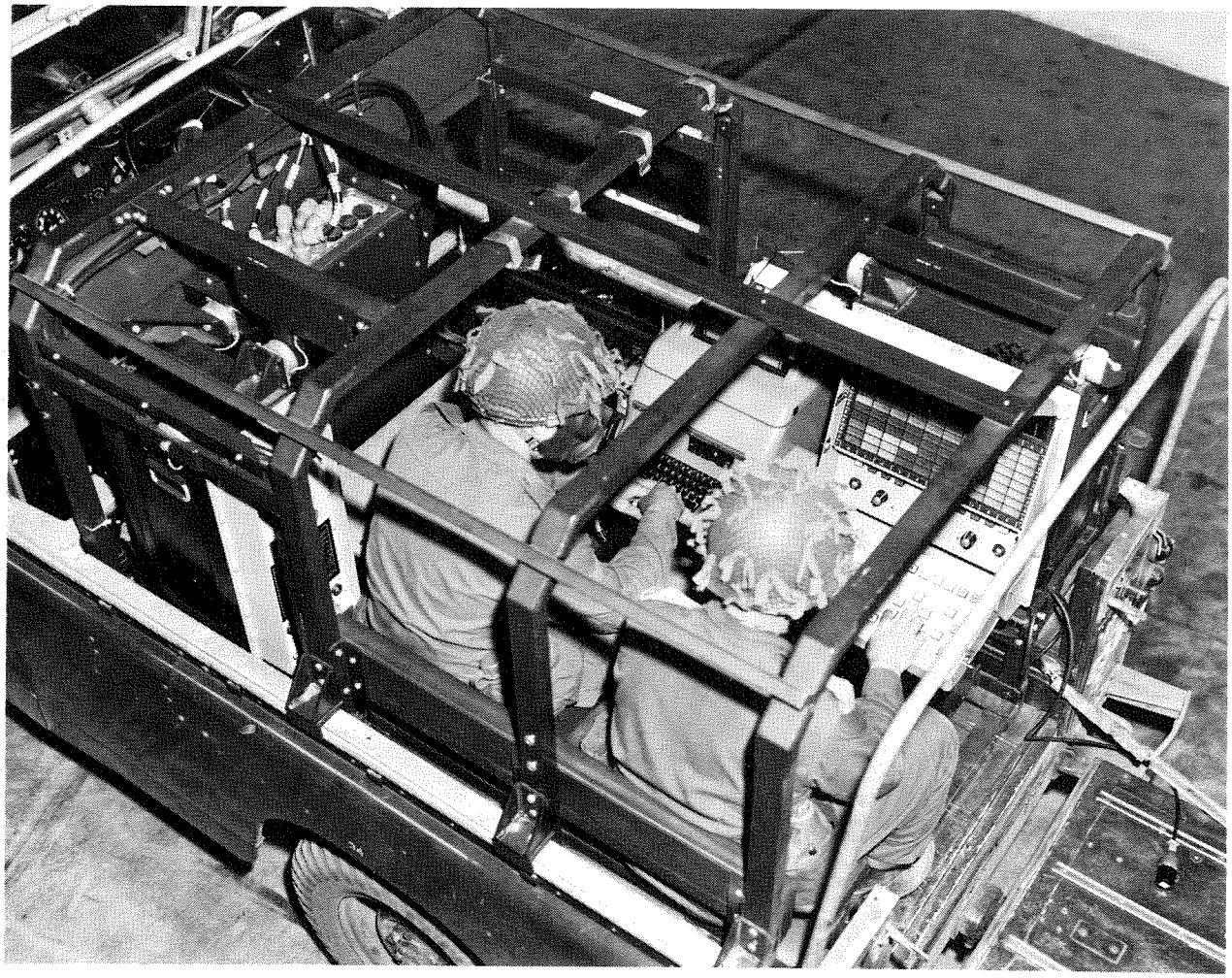
The FACE system consists of the following components:

a. the power supply system including
   (1) batteries,
   (2) supply control unit,
   (3) power supply unit, and
   (4) teleprinter inventor;
b. the computer, an ELLIOT 920B with an 8K memory using 16 bit words;
c. the control console;
d. the program loading unit and program tape cassettes;
e. the teleprinter with a reperforator and line adapter; and
f. spares box.

The various components are connected together by co-axial cables in a special installation. FACE is normally installed in either the FV 432 (an APC similar to the M113A1), the FV 610 (Saracen) or a ¾ ton Land Rover. The batteries, (2 x 12 volt, 100 Ah, lead acid) are usually charged by the vehicle engine, although two "chorehorses" can also be fitted. It is normal to use the FACE batteries to power the command post radio sets as well as FACE. When this is done, charging every two hours is necessary. The batteries will run the FACE itself for five to eight hours depending on whether the teleprinter is used. FACE is switched off when not in use as warm up time is less than one second and the memory is unaffected. The entire FACE installation weighs under 800 lbs.

Software Facilities

FACE programs are contained on metallic punched tape in sealed cassettes. Each weapon has a separate program but all survey routines are



FACE in the Land Rover with two operators in position. The remote enter button is on the vehicle tail gate.

contained on one tape. Re-programming takes fifty-five seconds for any weapon program or about two minutes for the survey program. Gunnery programs include:

a. 25 pounder;

b. 105mm pack howitzer L5/C14;

c. 105mm SP Abbot Mk 1 ammunition;

d. 105mm SP Abbot Mk 2 ammunition;

e. 8" howitzer 240 lb projectile;

f. 8" howitzer 200 lb projectile;

g. 155mm howitzer SP M109; and

h. 175mm howitzer SP M107.

An Honest John program for the MGR-1B rocket is being produced and a program for the 105mm howitzer M2A2/C1 is planned.

The survey program contains:

a. three major survey routines including

(1) traverse; up to 50 stations and automatic adjustment,

(2) trilateration; up to 14 stations, any number of triangles, and

(3) triangulation; up to 14 stations any number of triangles;

b. ten minor terrestrial routines including

(1) bearing and distance from co-ordinates,

(2) barometric heights,

(3) trigonometric heights,

(4) sub-base,

(5) skew-base,

(6) reduction to centre,

(7) resection,

(8) intersection,

(9) change of grid, and

(10) grid convergence;

c. eight field astronomy routines including

(1) star identification,

(2) azimuth by altitude,

(3) azimuth by hour angle,

(4) azimuth by polaris - star almanac,

(5) azimuth by polaris or sigma octantis (formula),

(6) latitude by polaris or sigma octantis,

(7) latitude by altitude (sun or star), and

(8) longitude by altitude (sun or star);

d. two transformations of co-ordinates including

(1) geographic to grid (UTM), and

(2) grid (UTM) to geographic;

e. six conversions including

(1) feet to meters,

(2) meters to feet,

(3) degrees to mils,

(4) mils to degrees,

(5) slope to horizontal distance, and

(6) horizontal to slope distance;

f. three routines for selection of appropriate units (mils, degrees, etc.);

g. a routine to allow the operator to interrupt one problem in order to complete another; and

h. a routine to select the desired printout mode.

Deployment Time

Loading of all data for a single battery (individual MVs for each charge, latitude, grid reference of position, etc.) takes about five minutes by keyboard or about 25 seconds by tape. Such data can be recalled and amended on demand. Meteorological data can also be entered by keyboard in 3 to 5 minutes or in about 25 seconds by tape. On most deployments the only data entries required are the new position of battery centre, CPC and FC data and occasionally a charge temperature. This data can be entered in about 30 seconds. Such data can be entered on the move and hence deployment time can be reduced to zero if data is available.

Meteorological Support

FACE accepts meteorological data in the standard computer format. Such data is considerably more accurate than ballistic meteorological messages. FACE meteorological messages arrive over the normal meteorological radio link. A punched paper tape is then made of the message using the teleprinter/punch. This function does not interfere with the production of firing data. When the tape is completed it is loaded into the machine using

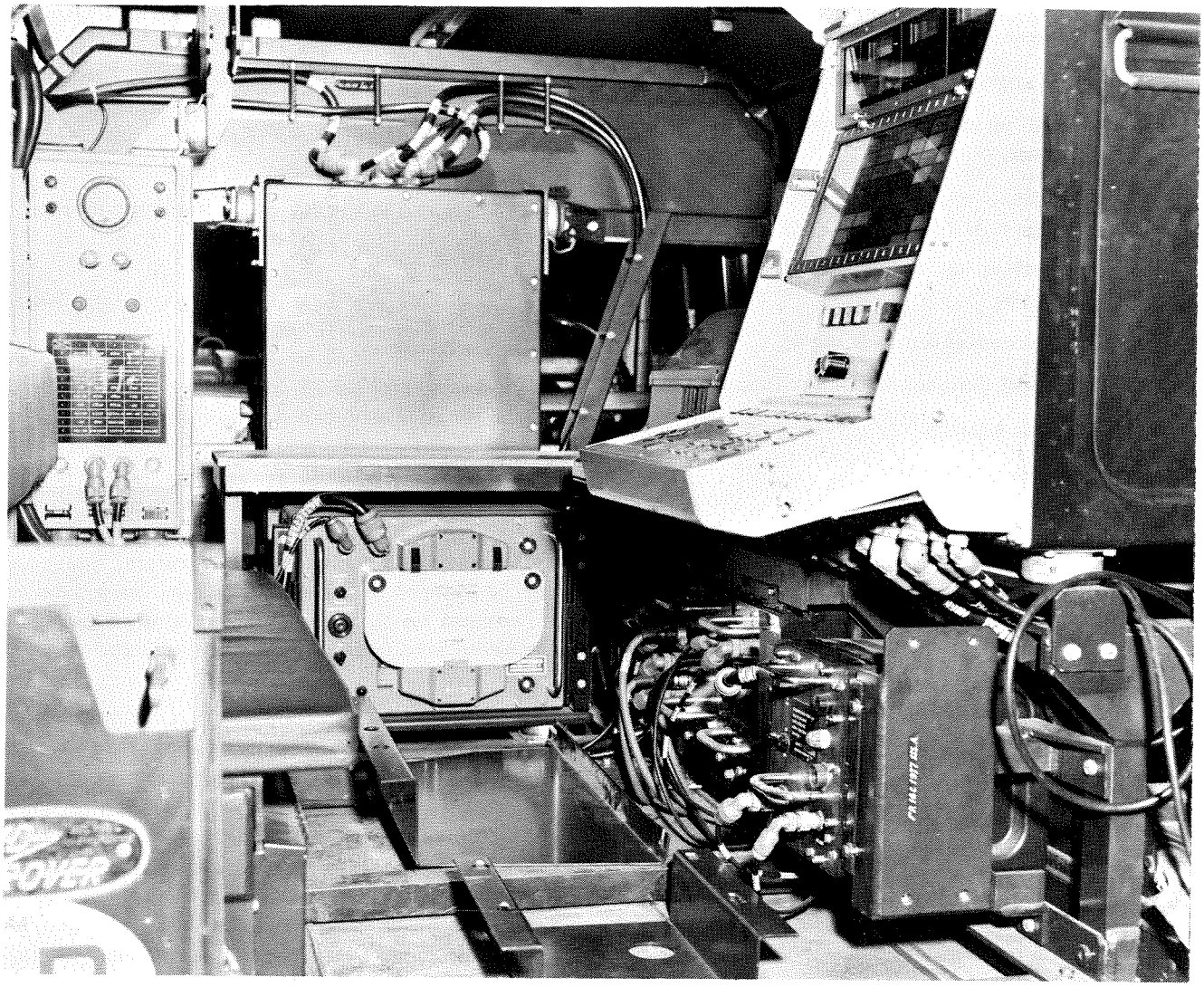
the tape transmitter. Meteorological messages may also be loaded via the computer console. The FACE system will receive a new meteorological message every hour.

Back-up Facilities

When deployed and fully loaded a setting up data (SUD) tape is produced using the computer and the teleprinter/punch. This function takes about 30 seconds. One copy of this tape is retained at the CP and others are circulated by dispatch riders to the other batteries and the RHQ computer. The designated back-up battery loads the data and the others merely retain the tape. If the initiating computer breaks down the back-up battery provides immediate computational facilities and all the other batteries and RHQ have this facility. Firing data is sent by radio or line to the firing battery in clear. When operating independently or if all back-up computers are not available a manual back-up system is provided. This system consists of a difference eastings, difference northings book, a CPC and FC graph, a wind graph and graphical firing tables. The RA plotter was rejected as it required too much training and was too bulky for an alternate system.

Program Controlled Entry

FACE provides all gunnery routines in use in the RCA. In many routines program controlled entry ensures that all entries are made in the correct order and the correct number of digits is entered. Gross errors in entered data are detected by the machine and an error code generated. Control of all entries is retained by the CPO/GPO using the remote enter button. No data can be entered without the officer checking and physically approving of the entry.



FACE in a ¾ ton Land Rover configured for the survey role. Kick plates have been removed to show detail of the installation.

Speed of Computation

FACE does a general ballistic computation in about forty per cent of the time of flight. Targets can be recalled from the machine target records in under five seconds. If the data is available a target can be entered in about 10 seconds. Where program controlled entry controls the sequence, even more startling times are possible. For instance, adjustment of range for false angle of sight takes about 20 seconds and a change of grid on thirty fired targets takes about 10 minutes. In all cases the machine produces firing data faster than the data can be passed to the guns by present means.

Maintenance Support

Organic test routines provide the operator with a continuous confidence check of the system. Operator maintenance is confined to changing burnt out bulbs, and general care and cleaning of the vehicle and equipment. Unit maintenance is performed by two computer mechanics REME who are organized as a mobile repair team. They do repairs up to the changing of circuit boards. Special diagnostic programs are available for testing the console and the program loading unit (PLU). Special test equipment is used to test the computer and power supply. Major repairs and modifications are handled by the manufacturer or a base maintenance facility.

Training Necessary

Operators require a nine day conversion course to convert to FACE. New artillery technicians are trained in three weeks. Both courses include training on the manual back-up system. The more complicated gunnery procedures (change of grid, adjustment of range for false angle of sight) are much more easily taught. Maintenance personnel require a course of about three months duration. Subsequent training is through experience with the equipment.

Additional Items

In the near future FACE will be equipped with gun display units (GDU) allowing display of firing data at each gun. Radio Telegraph Adapters (RTAs) will also be used to pass meteorological data, target records and SUD data in tape format from battery to battery. The RTA will operate by multiplexing existing voice circuits.

Conclusion

FACE presents a relatively simple and reliable gun data computer for use at battery level. It does all gunnery computations with little change in doctrine or procedures.

LOCATION AND STRENGTH SUMMARY

Regular Gunner officer strength again declined in the past year. Comparing the Canadian Gunner location lists for the last five years shows these figures:

	1965	1966	1967	1968	1969
LGen	0	1	1	1	0
MGen	2	2	2	2	2
BGen	6	5	6	4	3
Col	13	12	11	9	8
LCol	42	45	46	46	46
Maj	147	160	160	143	133
Capt	239	209	253	268	244
Lt	180	168	116	86	63
Sub Total	629	602	595	559	498
CWO	Not	42	41	35	28
MWO	Available	99	93	73	66
Sub Total		141	134	108	94
TOTAL		743	729	667	592

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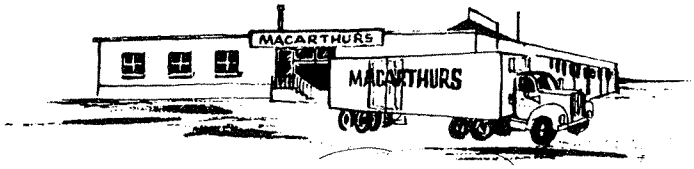
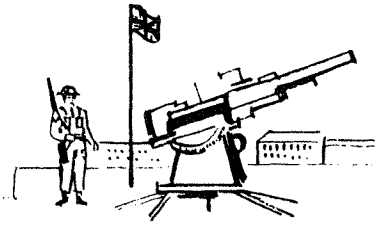


BRANDON



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RTHQ

Militia Highlights

For the uninitiated, Artillery Regiment Training Headquarters (RTHQ) were formed in 1967. There are three in the artillery – 1 Arty RTHQ in Shilo, 2 in Borden and 3 in Gagetown. Their terms of reference, though generally the same across the country, vary in details between regions. Essentially they are charged with supervising the operational training of the Mobile Command Reserves while the units and I Staffs are responsible for the recruit and trades training. A certain amount of overlapping and confusion was inevitable at the beginning, but this system has now begun to show promising results, as outlined in the chronicle of activities following.

2 ARTY RTHQ

Last summer militia gunners of the Mobile Command Reserve in Ontario completed their most intensive artillery training concentration to date. Under the watchful eye of 4 RCHA, six militia field batteries proved their operational capability in the conduct of battery fire and movement, preparation of simple fire plans and the firing of more than 3,000 rounds of 105mm ammunition including MTSQ, VT and smoke. Fire missions ran the full spectrum from "Single Gun" to "Fire Mission Regiment" with Fourth Regiment's command post in control. The accurate and consistent fall of shot confirmed a remarkably high state of operational preparedness and professionalism by all batteries exercised. This was undoubtedly attributable to the determination of militia gunners to satisfy the stringent demands of the local headquarters operational training programme built around a series of weekend exercises spaced throughout the training cycle.

Mobile Command Reserve field batteries attended summer camp at Petawawa during one of two, one-week concentrations. The first took place during the last week of June 1969. Batteries were provided by 11 Field Regiment, Guelph, 49 Field Regiment, Sault Ste Marie and 57 Field Regiment, Niagara Falls. The following week, batteries attended from 7 Toronto Regiment, 30 Field Regiment, Ottawa and 56 Field Regiment, Brantford. High point of the concentration was Exercise *"Rolling Thunder"* – a 36 hour regimentally controlled fire and movement exercise. Commencing shortly after first light of the fourth day, the exercise involved the deliberate deployment to one position which was occupied for the remainder of the day. All manner of standard, smoke, time fuze and technical shoots were conducted progressing to regimental concentrations with stress on concealment of the individual battery positions. That night, the batteries occupied new positions under cover of darkness, received DF lists and prepared to fire DF (FPF) tasks at first light.

The second day of the exercise was devoted to fire and movement. Battery and troop commanders executed simple fire plans demanded by the tactical setting of a combat group conducting a search and destroy operation. Within this context, each battery occupied and fired from at least three different positions before the end of practice that evening. During Exercise *"Rolling Thunder"*, each battery also participated in the RCA (Militia) Efficiency Competition Part 2. The competition was made a natural sequence in the fire and movement exercise and a logical event on the regimental net traffic. However, in the interest of uniformity, this event was suitably scheduled to permit each battery in turn to compete from the same OP and gun position.

The militia concentration was the highlight and climax of a busy training year for the Ontario units tasked with a Mobile Command role. A number of weaknesses were revealed, but more important the value of team training during the normal training cycle was confirmed. It should be realized that available training time in a militia unit is very limited. A plan was devised consisting of weekend exercises co-ordinated with local headquarters training. The exphasis was on the development of individual skills and team techniques, and,

retention of the same teams in the tasked battery throughout the training cycle. To complete the training cycle progressively from individual to collective training, it was necessary to standardize training by individual militia units. A comprehensive training programme for observers, command post and gun detachments stressing the training of tactical teams was written and issued to each tasked unit complete with outline lesson plans, precis, projectuals and training aids. The units themselves bore responsibility for the implementation of this programme. To complement local training, four training weekends for each battery during the period of January to June were arranged. Drawing heavily on the instructional resources of the I Staff and Fourth Regiment RCHA, practice weekends were conducted by 2 Arty RTHQ at Borden, Meaford and Petawawa ranges. The weekend operational training periods were designed to teach, assess progress and to develop deployment and firing techniques. Fortunately sufficient ammunition was allotted to permit each battery to fire over 600 rounds in practice prior to the summer concentration. With this emphasis on live firing, attendance by militia gunners was assured and most gratifying.

In practice, the training cycle commenced in the fall of 1968 with emphasis on individual trades training for the men and tactics training for the officers. Over 60 artillery officers attended a special weekend at the Combat Arms School in Borden where a series of cloth model demonstrations illustrating the company combat team in offensive and defensive operations was conducted. Appropriate emphasis was placed on offensive and defensive fire planning to fix in correct perspective the combat role of the gunners. In the period from January to June, training weekends commenced consisting of a weekend of course shooting for each battery during the month of March. Two batteries were exercised simultaneously for shooting. This was followed by a weekend of deployment training for the observation post and reconnaissance parties of each battery in April and a weekend of live fire and movement during May. With this background of local and weekend training at the battery level, militia gunners joined 4 RCHA in last June for a week of gun camp. The planned programme was a natural continuation of the fall and spring periods of training. The camp commenced with individual training the first day and progressed through troop and battery deployments culminating in Exercise *"Rolling Thunder"*.

The Honourable J.L. Robarts examines charge bag held by Sgt A.G. Panther of 7 Toronto Regiment, while CO 7 Toronto Regiment, LCol J.C. McKenna looks on.

The artillery units in Ontario Region have responded well throughout the training year to the heavy demands made upon them by the Mobile Command Reserve concept. The intensive training programme resulted in a significant improvement in the operational capability of tasked batteries. Key personnel at all rank levels have gained a a sound foundation of artillery knowledge and experience which is readily recognized in their confidence and professionalism as gunners. Progress was perhaps best demonstrated during the 1969 RCA Association Competition when each of the tasked field batteries completed the gun competition with relative ease, confidence and with the feeling that, "it was just another deployment with three simple shoots".

3 ARTY RTHQ

The concentration of Mobile Command Reserve Artillery held in Gagetown during the week of 17 August 1969 was visible proof of the tremendous progress made by the militia in the last two years. The concentration was organized and conducted by 3 Artillery Regiment Training Headquarters (3 Arty RTHQ) under command of 3 Combat Group. Militia artillery units tasked to the Mobile Command Reserve in Quebec and the Maritimes participated. Three batteries were deployed this year and they were a credit to the guns. The week's exercise, called *"Ever Ready"*, was a demanding one, leaving very little free time. Yet, the consensus of opinion amongst the militia personnel who attended was that they went away tired, but very happy and much more knowledgeable.

In comparison, the same concentration a year ago was not worthy of the name. A small group, less than one militia battery, gathered for five days to round out the practical portion of their training. Why was the attendance so poor? Where were the others? One of the reasons advanced for the poor turnout, was the timing of the camp. As a result it was agreed to hold the 1969 exercise late in August. This would not interfere with high school students who wanted to get summer jobs first, and it would also be suitable for those who were attending artillery trades courses during the early part of the summer. The concentration was timed to follow these courses immediately so that a student could continue to serve for most of the summer without a break.

Hersey OP

The home of 3 Arty RTHQ is in Gagetown, co-located with 2 RCHA to facilitate arrangements for support from the regular force. The militia batteries are provided by two regiments in each of Quebec and Atlantic Regions. The headquarters of these regiments are at Montreal, Levis, Saint John and Halifax. In addition there is an independent battery in Yarmouth which provides one troop.

One can easily see the difficulties in conducting operational training to a common standard with the units so spread out. Periodic training visits, suggestions and comments to the militia Commanding Officers and the I Staffs, provision of precis and pamphlets, periodic live firing exercises in Gagetown and a lot of good will and hard work laid the groundwork for the concentration in August. In the first place, great emphasis was placed on command posts, OPs and communications. The gun drill itself seemed to present the least problem, and the gun detachments had no difficulty with their part of the training. At first, command post staffs, OP staffs and signallers were trained separately, but later in the year they were trained together in command post exercises.

There are two main problems which make training in the militia difficult, or at least frustrating. One which is only solvable under the present system by the militia themselves, is the erratic attendance of many individuals who hold key jobs in the battery organization. This means that when an exercise is being conducted and a technician or signaller is missing there is often nobody else to fill in and the training suffers. The problem varies in extent among militia units, and usually is less serious in those having a rigid training schedule, a strong group of young officers, warrant officers and senior NCOs, and a demanding aim or objective which is known to all ranks and which they all aspire to achieve.

The second difficulty which cannot be overcome by the militia themselves is a shortage of proper equipment. Only recently were plotters issued to the training regiments for the FMC Reserve, and then in insufficient quantities. Aiming circles have never been issued – militia units use old directors in degrees and minutes, and convert to mils. Many of the directors are beyond repair. Vehicles are in short supply, particularly the smaller ones, and there are not always enough radio sets to equip a battery.

Officer training is vital in the militia. Under the 1967 concept a lieutenant (GPO) received

no formal artillery training until he attended the Captain Qualifying Course at CFSA. This meant that all the gunnery learned by these officers had to be picked up locally, and sometimes left a lot to be desired. This deficiency was partially overcome by conducting a technical day once a month at several artillery centres during the winter.

Not the least of the factors leading to a successful year was the hard work and dedication of the militia officers and men themselves. Many of them spend long hours in the armouries, and one often wonders what motivates them so strongly. Without such hard work little could be accomplished, and although the erratic attendance of some causes difficulties, the faithful attendance and hard work of others keeps the unit together.

The hard work paid off in Exercise *"Ever Ready"*. Seeing the three batteries in operation last August was a very satisfying experience both for the militia and the regular force. Some 1,750 rounds were fired with no accidents and no serious errors. In addition, the militia batteries ran their own administration under a minimum of regular force supervision. This in itself proved to be an excellent training expedient. The tented camp was erected in advance by the regular force about 20 miles down the ranges from Base Gagetown. The regular force support was provided by 2 RCHA (a composite battery based on D battery and commanded by Maj D.E. Stothers) and 5 RALC (a composite battery based on Q battery and commanded by Capt J.H. Ryan). Exercise *"Ever Ready"* was a continuous one week exercise, with CO's orders being issued daily at 1800 hours to cover generally the next 24 hour period. As the battle progressed each day additional orders were sent by radio.

10 boxes of potatoes?

An interesting sidelight of the exercise was the delivery of ammunition which took place nightly after dark at a delivery point (DP). It was brought up by the RCASC (M) under supervision of 3 Service Battalion to a location which had been arranged the previous night. The whole thing was done by the militia, including the recce, the protective party and the tail-gate to tail-gate delivery. Some of the regular force young officers who were assisting with the training found these DPs most interesting as they had never seen one in operation before.

Humorous incidents also occurred. The first day, one BK picked up ten hay boxes of food from the field kitchen and rushed them out to his hungry troops for lunch only to find to his chagrin that when they were opened they all contained potatoes! Another lucky battery had all the meat that day but this sort of thing only occurred once. There was the day on the ranges the regular force RSM could be heard half a mile away when he saw a young militia gunner opening an ammunition box with an axe; or the day the I Staff Captain fell through the ice into an old sump hole; or the young gunner who tried three times on being released from hospital to rejoin his battery in the field only to become involved in another accident enroute resulting in a quick return to hospital; or the time the CO spent a peaceful undisturbed day in the field after being sprayed by a small skunk. These things all helped to weld the sub-units together and build the type of morale which was a key factor in the training programme.

THE GUNNERS OF CANADA

A Book Review
by
*Mr. R.H. Roy**

Since the end of World War II military historians have produced a number of corps histories. None, however, has been as well written and thoroughly researched as this first (of two) volume of the Royal Regiment of Canadian Artillery by Colonel G.W.L. Nicholson. The author has already made a distinguished reputation for himself by two of his earlier books – The Canadians in Italy and The Canadian Expeditionary Force, 1914-1918. Although he had the resources and staff of the Army Historical Section at his call when writing these volumes, it is this reviewer's belief that The Gunners of Canada is by far the finest book Colonel Nicholson has written.

The Gunners of Canada begins with an account of the impact of the first guns brought to Canada by the early explorers, and moves quickly through the French and English colonial periods. The role of the artillery in the battles for Louisburg and Quebec, for example, is well told against the background of the sieges. In these and in later actions Colonel Nicholson is always careful to describe the battle in general and the artillery's role in it in particular.

Let no one think, however, that this book is concerned solely with one battle after another. It is almost an account of Canada's military achievement both at home and overseas, for there was no major military encounter by Canadian troops in which the gunners did not play a significant role. It is also the story of the development of the artillery from the time of the militia batteries with their ancient, smooth-bore guns to the period when Canadian artillery officers, at Vimy Ridge, commanded almost 1000 guns and mortars which fired over 3,000,000 shells and bombs in one of the most successful operations in the Great War.

There are few aspects of a gunner's life which are not touched in this volume. Weapons, equipment, manoeuvres, training, social life, drill, uniforms – they are all here, together with frequent humorous anecdotes which help to relieve the periodic dull pages when the author lists the raising, disbandment, or reorganization of militia batteries in the post-Confederation era. There are few such pages, however, and considering the nature of the work one can appreciate the necessity for them.

The Gunners of Canada is well illustrated with excellent maps and sketches of major battle areas. The appendices cover such subjects as decorations, awards, casualties, and appointments. It is an exceptionally good meld of a history and a reference book, and will long be regarded as a model of its kind.

THE GUNNERS OF CANADA, VOLUME II

The following report on Volume II of The Gunners of Canada has been prepared by the RCAA History Committee:

"Preparation of Volume II of the History, while not progressing as fast as had earlier been forecast, has advanced beyond the half-way mark with eight draft chapters out of the tentative fifteen having been distributed successively across the country for comment by Gunners who have knowledge of the period dealt with by each chapter. These eight chapters cover the period from 1920 to the end of our participation in the Italian Campaign. They reflect the high standard which is the hallmark of our author and give promise of a second volume which will be a fitting match to the first.

The longer than anticipated preparatory period for Volume II has arisen because of two factors. First, the very considerable extent of the Canadian Artillery's contribution in the Second World War has required much more research than first expected. Second, only sporadic success has been achieved in providing the author with the necessary research assistance. While efforts

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**Mr. Roy, of the University of Victoria, recently completed this book review which appeared in The Canadian Historical Review, Volume L, Number 3 of September 1969.*

to solve this research problem will continue, it has to be appreciated that Colonel Nicholson's one-man task is very large indeed. Your Committee Chairman has told the author that under the circumstances the longer preparatory period is preferable to reducing the scope and standard of the work.

It is hoped the Royal Canadian Artillery Association and the many Gunners anxiously awaiting Volume II will view the problem with understanding and be tolerant of the extended preparatory period. Because of past experience, the RCAA Historical Committee hesitates at this time to give a new forecast of completion date. A useful indication should be practicable by mid-1970."

30th FIELD ARTILLERY REGIMENT

30 Field Regiment, the "Bytown Gunners", commenced its 1968-69 training year on 11 September 1968, and the following day fired a salute to mark the occasion of the opening of Parliament. Annual rifle classification and the beginning of refresher, trades and recruit courses maintained the hectic pace. At the annual regimental dinner on 2 October, awards were presented to members of the unit. The recipients of some of these awards were:

Lt Col Ryan Memorial Award	- Lt A.J. Breakspear
MacLaren Trophy (Best Sgt)	- Sgt H.P. Allen
Hutchison Trophy (Best Bdr)	- Bdr E.R. Ring
Beament Trophy (Best Gnr)	- Gnr C.G. Brown
Adams Trophy (Best Gun Det)	- Bdr G.B. Frost

For the remainder of the calendar year, the unit participated in dry deployment exercises, the RCAA Competition, and an officers' tactics exercise at Camp Borden.

With the turn of the year, the pace quickened. The training commitment called for maximum effort by all ranks. The FMC Battery lent its fullest support to collective training exercises conducted by 2 Arty RTHQ in the next five months. High school break periods in March and June were put to maximum use with tara's and drivers going to Petawawa for a week of professional instruction under 4 RCHA, and the recruit battery and gun numbers training at home. The unit sent 73 all ranks to the summer concentration in July. Those who were fortunate enough to make the trip gave an excellent account of themselves. Other members of the unit availed themselves of the many trade and professional advancement courses offered this year. Five subalterns, seven Senior NCOs, one Junior NCO, and one Staff Course candidate successfully passed their courses. In addition, 33 gunners of the summer GMT course also successfully passed their artilleryman's course. The latter is held to be a proud achievement.

The unit trumpet band also lent its strength to the unit's accomplishments by performing at engagements of a military nature as well as for various communities. They further proved their worth as gunners by serving the guns on 2 and 3 July during the playing of the 1812 Overture for the CBC Summer Festival. Social aspects were not overlooked. Time was taken to celebrate our Corps' special birthdays, enjoy informal parties, participate in the garrison ball and many other social events.

A final note on unit organization. During the past year, the 30th Field Regiment was under command of LCol N.F. Scardina, CD with Maj G.E. Ward serving as 2IC. Maj B.G. Brule retained command of 1 Bty (FMC), Maj K.G. Farrell of 2 Bty (recruiting and recruit training), and Maj J.J. Shaver as training co-ordinator. On 1 September 1969 a new chapter in the history of the 30th Field Regiment began. LCol Scardina retired from his command after 18 years of continuous service with the Corps and was succeeded by Maj G.E. Ward. LCol Ward takes over his command in times fraught with uncertainty, and certainly with difficult days ahead. However, he has in direct support a corps of dedicated officers and NCO's to make his task that much easier. A little further in depth and always on call, he has some heavy artillery in the persons of the Regimental Senate.

The units accomplishments of the past year can only be attributed to a tremendous spirit of team work. There were no heroes – every person contributed to the best of his ability and then some, and often under trying circumstances.

From the CP Log

* * *

On 10 July 1969, at HQ Mobile Command, Col D.W. Francis, CD assumed the appointment of Chief of Artillery from Col J.P. Beer, MBE, CD who was appointed to the Directing Staff at the NATO Defence College, Rome. Above, Col Francis signs the Record of Handover as Col Beer looks on.

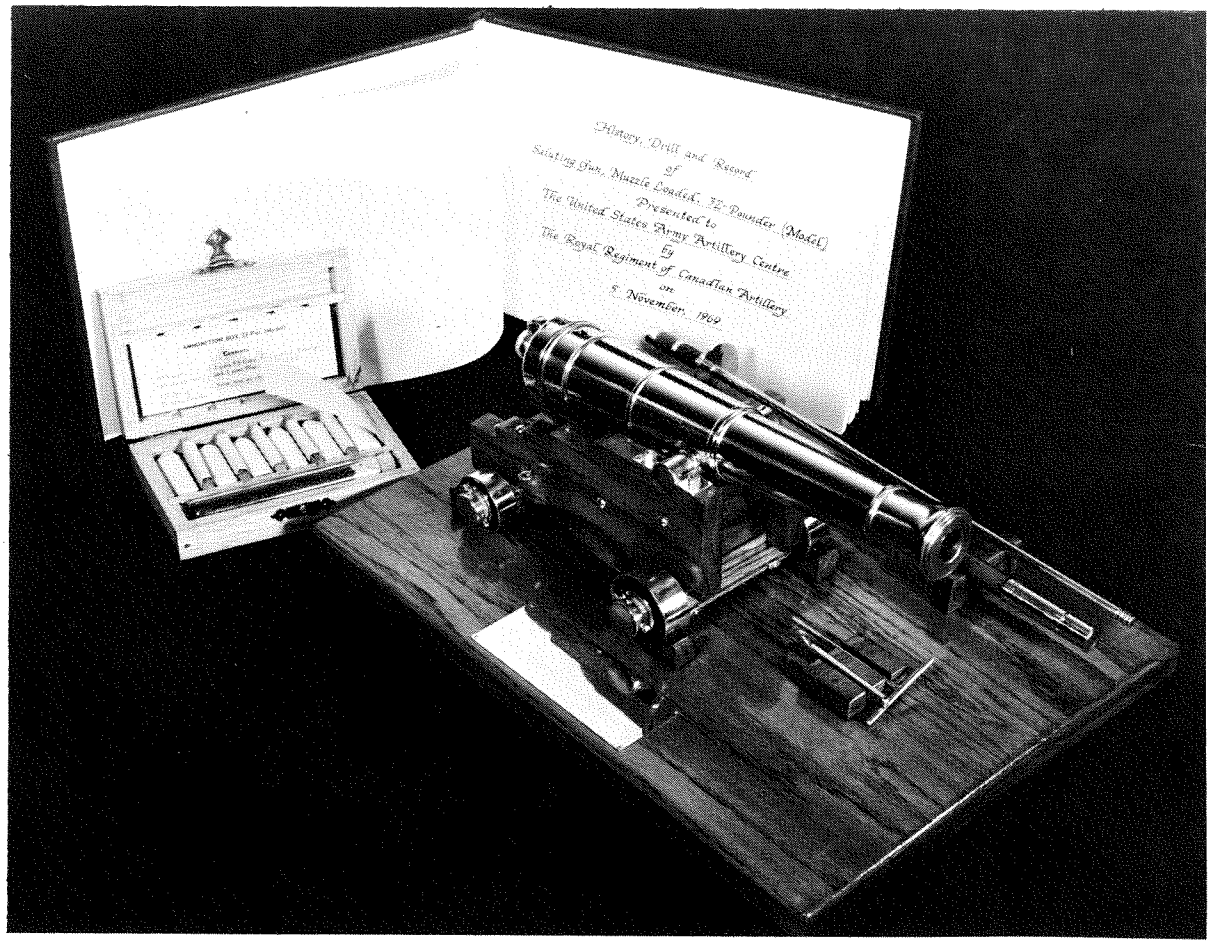
* * *

Ecole d'Application des Unites de Combat (Combat Arms School Detachment, Valcartier) has been in existence now for a little over one year, however it has only been since August 1969 that the armoured and artillery elements joined the detachment. On 1 October 1969 the first Artilleryman Pay Level 3 (Niveau de Solde 3 - Artilleur) Course commenced when 20 French-speaking recruits undertook to become the first gunners taught completely in their mother tongue.

Space for lecture rooms and gun drill; provision of equipment such as guns, vehicles and radio sets; translation of training programs, precis, lesson plans and extracts, all added to the difficulties encountered by the six instructors. Fortunately, the co-operation of 5 RALC helped greatly in minimizing the problems, particularly since the section as yet has no equipment of its own. The present "pilot" course will graduate in late January 1970.

The Colonel Geoffrey Brooks Memorial Prize Essay Competition this year was won by Maj F.R. McCall, CD, Canadian Forces Liaison Officer, Fort Bliss Texas. Maj McCall deserves congratulations not only for this fine accomplishment, but because he has always been one of The Canadian Gunner's most generous contributors. Perhaps this is because he himself "sweated" it out as an Associate Editor not too long ago. Lt G.P. Fisher, RCIC, of CFB Rivers submitted an entry this year and, though ineligible, was awarded Volume 1, The Gunners of Canada, in recognition of his efforts and interest.

* * *



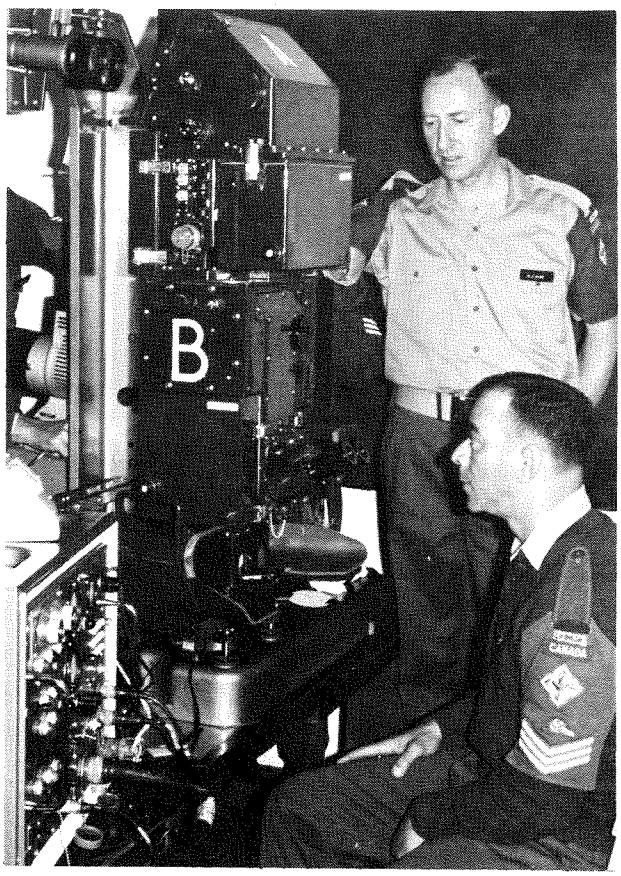
Shown above is a scale model presented to the US Army Field Artillery Centre, Fort Sill, Oklahoma by Col D.W. Francis, CD on behalf of the Royal Regiment of Canadian Artillery, on the occasion of the Fourth Quadripartite Working Group held there from 3-7 November 1969. The gun is a model of a 32 pounder muzzle loading saluting gun which was used as secondary armament on Nelson's Flagship, Victory, at the Battle of Trafalgar. The model was manufactured by the CFB Shilo Maintenance Section and proof fired by CWO (Master Gunner) W. Sonnenberg, CD. It was officially fired at the closing ceremonies on 7 November 1969 by a gun detachment consisting of:

BC	*Maj J.O. Ward, CD*	*HQ Mobile Command*
Number 1	*Maj D.H. Clark, CD*	*CDLS(W)*
Number 2	*Maj F.W. Bayne, CD*	*CFSA*

In May 1969 a Canadian Team was formed to participate in the Rapier Trials at the Trials Establishment Royal Artillery (TERA) on the Island of Anglesey in North Wales. The eight man team commanded by Maj N.M. Pettis consisted of officers and NCOs from 1, 2, 3 and 4 RCHA and CFSA. The first step in training personnel to effectively participate in the Rapier Trial was a trip to the school of Artillery, Manorbier, South Wales where they received a warm welcome. Following a course on general aspects of Air Defence, the team returned to TERA to concentrate on the Rapier system itself, and after a month of theory, was ready to acquire practical skills. The Rapier system is being put through its paces in Woomera, Australia and Singapore in addition to North Wales.

* * *

Sunday 15 December 1968, marked the first appearance of a Santa Claus Parade through the streets of Hemer and Iserlohn, Germany. Floats were constructed by Hemer garrison units and several local businesses. Prizes were awarded in various categories. The Santa Claus float of 1 RCHA Corporal's Club was judged the winner in the military category by Herr Caminadi, Mayor of Hemer. Much of the parade's success was due directly to the efforts of Bdr D Boatman of A Bty 1 RCHA, the parade organizer and interpreter.



The Rapier Tracker is fixed to an aircraft simulator training aid for the training of tracker operators on aircraft tracking drills. Pictured are MWO Rice and Sgt Bell of the Canadian Rapier Trials Team.

* * *

CFSA has ready access to the RCA Museum to verify birthdays and anniversaries. Other units do not have such a ready source of information. For the record, the following are the officially recorded birth dates and anniversaries of the regular units in the corps:

Royal Regiment of Canadian Artillery	*26 May 1716*
St. Barbara's Day	*4 December 1509 (1)*
1 RCHA	*20 October 1871*
2 RCHA	*7 August 1950*
3 RCHA	*4 May 1951*
4 RCHA	*10 April 1952*
5 RALC	*6 May 1968*
1 SSM Bty RCA	*15 September 1960*
1 Airborne Bty RCA	*6 June 1968*
1 Drone Tp RCA	*1 July 1968*
CFSA	*1 October 1946*

(1) Historical estimate

"A" gradings were achieved on courses at CFSA during the past year as follows:

Artillery Instructor (Officers)	*Capt C.A. Moogk*	*CFSA*
	Capt A.Z. Palmer	*CFSA*
Artillery Advanced Course	*Maj H.P. Beaudry*	*5e RALC*
	Maj S.D. Green	*3 RCHA*
Command Post Officers	*Lt D.J. Rooke*	*2 RCHA*
ROTP Phase Two	*O/Cdt J.P. Culligan*	
	O/Cdt J.F. Slievert	
ROUTP Phase One	*2Lt D.J. Beveridge*	
	O/Cdt J.G. Javornik	
	O/Cdt B.D. MacKinnon	
Artillery Technician Pay Level 4	*Cpl D.A. Guttin*	*4 RCHA*
	Pte G.E. Thompson	*2 RCHA*
	Pte J.G. Gendron	*5e RALC*
Artillery Surveyor Pay Level 4	*Cpl B.E. Paddock*	*1 Drone Tp RCA*
Basic Artillery Surveyor	*Cpl D.G. Leslie*	*4 RCHA*
	Pte B.W. Britton	*1 AB Bty RCA*
Junior NCO	*Pte E.A. Wilson*	*CFB Chilliwack*
	Pte J.E. Wilson	*CFB Nanaimo*

* * *

Gunners of 1 Airborne Battery RCA should have no qualms about their jungle training with an NCO such as Sgt A. Carter as their instructor. Sgt Carter was not only an Honour Graduate at the Jungle Operations Training Center but he was also the top student out of 275 US and 25 Canadian personnel on the two week course held at Fort Sherman in the Canal Zone during October 1969. For achieving this double accomplishment, he was awarded a plaque and a suitably engraved machete.

> *"Your professional attitude and your personal conduct while at the Jungle Operations Training School reflect great credit upon yourself and the Canadian Army"*

is a quote from a letter signed by the Commandant of the School, Col H.B. Winkeller, Infantry.

* * *

Col D.W. Francis, CD Chief of Artillery presents the Canadian Forces Decoration to CWO (Master Gunner) M.J. Fraser on 4 September 1969, The award signifies 30 years of service since CWO Fraser also holds the Canadian Medal for Long Service and Good Conduct. CWO Fraser has been a member of the Chief of Artillery Staff at HQ Mobile Command since 1 March 1966.

For the past several years Canadian Gunners in NWE have been well known for their prowess in Tug of War competitions. Since 1964, they have acheived the following successes:

2 RCHA

1964 - 1966:	*Winner, Division Tug of War Competition*
1964 - 1966:	*Winner, Brigade Tug of War Competition*
1965:	*BAOR Runner-Up, Light Team (88 Stone)*

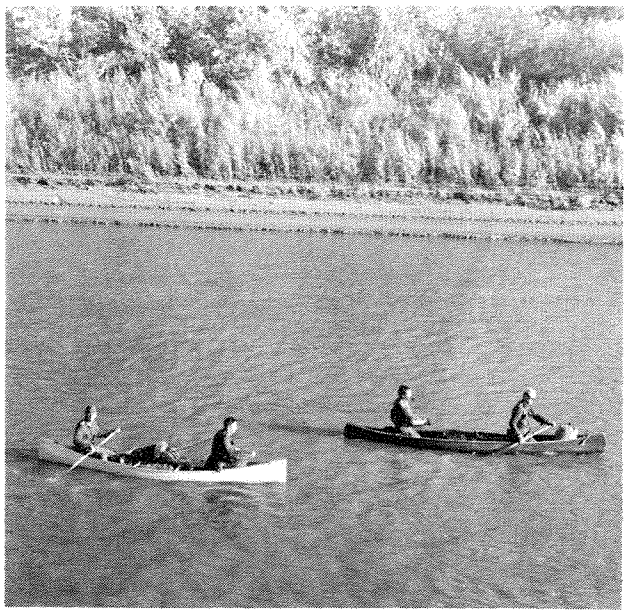
1 RCHA

1967 - 1969:	*Winner, Division Tug of War Competition*
1967 - 1969:	*Winner, Brigade Tug of War Competition*
1967 - 1968:	*Winner, Silver Gun Tug of War Competition*
1968:	*BAOR Runners-Up, Light and Heavy Team*
1969:	*BAOR Runner-Up, Light Team*

Coach, Cpl J.C. Ferlotte encourages his team to take that last heave that won for 1 RCHA the 2 British Division, 1968 Light weight tug-of-war championship held at Osnabruck, Germany.

* * *

In keeping with the trend of interest in the field of water exercises, four officers from CFSA undertook a canoe trip of some 310 miles along the Saskatchewan River from Prince Albert to The Pas, Manitoba. Appropriately named Exercise "Fur Trader", the trip began on 12 September 1969 with a DC 3 flight from Brandon. Using two canoes, the four adventurers, Capt J.A. Watts, Capt J.J. Fraser, Capt A.Z. Palmer and Capt J. Tattersall covered the distance in seven days. An upset in rapids the first day and continuous headwinds were more than countered by the change in environment. Pollution was sadly in evidence during the entire journey in spite of the northerly location and sparsely settled state of this area. The exercise ended at The Pas on 19 September 1969 and the wiser adventurers were flown back to Brandon by DC 3 aircraft from the Air Navigation School, the next day.



Exercise "Fur Trader", 10 miles east of Pemmican Portage, Saskatchewan.

Forty children from grades four and five of Sir Alexander MacKenzie School, Inuvik, NWT were entertained on the 1 Airborne Battery gun position during Exercise "Passion Fighter" in October. A few days later Father Tom Hasset, the RC Chaplain who had arranged the visit received about thirty letters of thanks. The following two unedited letters are typical.

S.A.M. School
Inuvik N.W.T.
Oct 21, 1969

Dear Father Hasset and soldiers,

I would like to thank you for the most exciting visit to your camp. It was quite breath-taking when I shot my first shot with a real army gun and pistol. It was also exciting when I was looking through the microscope for one of the soldiers told me it was the pole and all along I had thought it was the grave yard. It was very interesting for me because an army hasn't been up in Inuvik before.

I hope you didn't use up all your fire crackers for you wasted a lot on us.

Thanks ever so much again for the nice time.

Yours truly,

Karen Norris

Dear Father,

Thank you for letting us go to your camp near the oil tanks. Also I thank you for letting me shoot the guns and have some candy.

I am keeping the blank shells for a souvenir. We saw some flares go high up and light in the sky. Lawrence Trasher had a long green case and a parachute. I had a stumach-ache when I got home. I ate four packages of raisins, one chocolate bar, one bag of J.B. peanuts, two bags of candy and five packages of juice mix.

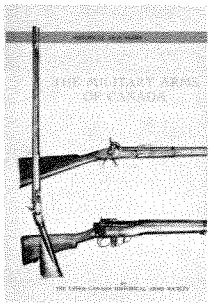
With all the candy you have I think i'll join the army when I grow up.

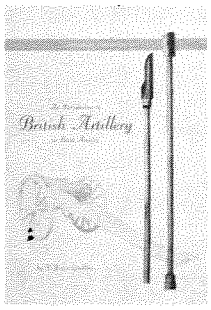
Yours truly,
Samuel Raclcddi

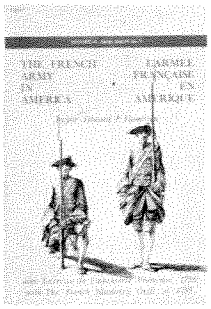
* * *

For the second consecutive year, 1 SSM Battery RCA entered a 16 man team in the Military II Division of the Nijmegan March, Nijmegan Holland. Each participant was required to march 40 km carrying a 10 kg load daily for four days. The march this year took place from 15 – 19 July. The Canadian contingent consisted of eight teams from 4 CMBG. Contending with high temperatures and humidity as well as blisters, the 1 SSM Battery team successfully completed the march without losing anyone and became the first Canadian Gunner unit to become a two time medal winner. At right, the 1 SSM Battery Team relaxes near a Dutch farm during the Nijmegan Marches. Regimental affiliation of horse is unknown.

Arms Books of National Importance







No. 1. THE MILITARY ARMS OF CANADA by The Upper Canada Historical Arms Society; 56 pages, 74 illustrations $1.50

No. 2. THE SNIDER-ENFIELD by Charles J. Purdon; 8 pages, 13 illustrations ..... $ .50

No. 3. AMERICAN SOCKET BAYONETS, 1717-1873 by Donald B. Webster, Jr.; 48 pages, 64 illustrations $1.50

No. 4. AN INTRODUCTION TO BRITISH ARTILLERY IN NORTH AMERICA by S. James Gooding; 56 pages, 100 illustrations $1.50

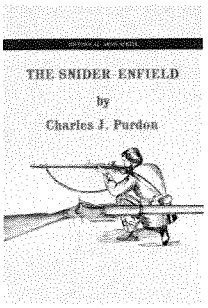
No. 5. HIS MAJESTY'S REGULATIONS, 1828 by Maj. T. L. Mitchell; 32 pages, 88 figures on 26 plates $1.50

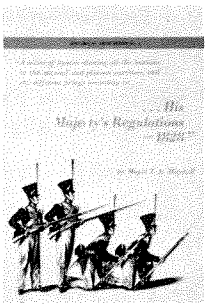
No. 6. SMALL ARMS OF THE MOUNTED POLICE by Roger Phillips and S. J. Kirby; 32 pages, 45 illustrations ..... $.150

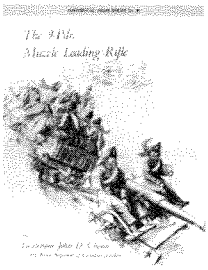
No. 7. THE FRENCH ARMY IN AMERICA by Col. Edward P. Hamilton, with THE FRENCH ARMS DRILL OF 1755 by G. Baudouin (in English and French); 108 pages, 75 illustrations $3.00

No. 8 SNIPER RIFLES OF TWO WORLD WARS by Wm. H. Tantum, IV; 32 pages, 30 illustrations $1.50

No. 9. THE 9-Pdr. MUZZLE LOADING RIFLE by Lieut. John D. Chown; 32 pages, 35 illustrations $1.50







A TREATISE OF ARTILLERY by John Muller. A reprint of the 1780 edition of the standard work, supplemented by 33 illustrations from a contemporary note book and a Preface by Harold L. Peterson. Limited to 850 numbered copies. 310 pages, 61 illustrations $17.50

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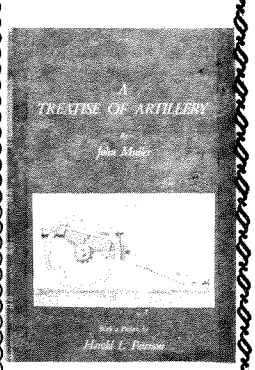

COMMANDING OFFICERS RCA (M)

1st (Halifax-Dartmouth) Field Artillery Regiment
LCol L.W. MacDonald, CD

2nd Field Artillery Regiment
LCol W.L.M. Cloutier, CD

3rd Field Artillery Regiment
(The Loyal Company)
LCol M.T. O'Leary, CD

6th Field Artillery Regiment
LCol J.C. Samson, CD

7th Toronto Regiment
LCol J.C. McKenna, CD

8th Field Artillery Regiment
LCol H.D. Chapman, CD

10th Field Artillery Regiment
LCol A.G. Strickland, CD

11th Field Artillery Regiment
LCol R.G. French, CD

15th Field Artillery Regiment
LCol B.A. Clemons, CD

18th Field Artillery Regiment
LCol R.A. Jacobson, CD

20th Field Artillery Regiment
LCol L. Magnacca, CD

21st Field Artillery Regiment
Maj J.R.S. Brown, CD

26th Field Artillery Regiment
LCol D.M. Doig, CD

27th Field Artillery Regiment
LCol J.D. Flewwelling, CD

30th Field Artillery Regiment
LCol G. Ward, CD

49th (Sault Ste Marie) Field Artillery Regiment
LCol D.W. Geddes, CD

50th Field Artillery Regiment
(The Prince of Wales Rangers)
LCol I.P.F. MacLeod, MM, CD

56th Field Artillery Regiment
(Dufferin and Haldimand Rifles)
LCol E.E. Cox, CD

57th Field Artillery Regiment
(2nd/10th Dragoons)
LCol L.M. Salmond, CD

62nd (Shawinigan) Field Artillery Regiment
Maj Y.E. Begin, CD

5th (British Columbia) Field Battery
Maj A.E. Sherwin, CD

84th Independent Field Battery
Maj D.W. Burns

116th Field Battery, 40 Field Regiment
Maj W.N. Sinclair, CD

OFFICERS' AND WARRANT OFFICERS' LOCATION LIST

MGen	RP	Rothschild, MBE, CD	Deputy Comptroller General, CFHQ (Retires Dec 69)
MGen	DAG	Waldock, CD	Deputy Chief Engineering, CFHQ
BGen	GRA	Coffin, CD	Commander Ontario Region
BGen	JL	Drewry, DSO, CD	Canadian Observer Nigeria
BGen	EMD	Leslie, DSO, CD	Chief of Staff, UNFICYP
Col	JP	Beer, MBE, CD	Directing Staff, NATO Defence College, Rome
Col	DW	Francis, CD	Chief of Artillery, HQ Mobile Command
Col	DH	Gunter, CD	Commander CFB Shilo
Col	R.G.	Kingstone, MBE, CD	Canadian Forces Staff College
Col	JOVF	Menard, CD	Commander CFB St Jean
Col	JS	Orton, MBE, MC, CD	Canadian Forces Attache, Turkey
Col	NW	Reilander, CD	DCOS Combat Arms Training, HQ Training Command
Col	WW	Turner, CD	Directing Staff, National Defence College, Kingston

LCol	DC	Badenoch, CD	CDLS(W) CLO USA MATCOM, Virginia
LCol	CR	Baker, MC, CD	Canadian Forces Attache, Brussells
LCol	DR	Baker, CD	Commandant CFSA
LCol	LC	Baumgart, CD	Directing Staff, Canadian Land Forces Command and Staff College
LCol	CE	Beattie, CD	SSO Standardization and Combat Development HQ Mobile Command
LCol	RER	Borland, CD	Directorate of Equipment Requirements Air, CFHQ
LCol	GO	Brown, CD	Directorate of Armament Engineering, CFHQ
LCol	RP	Bourne, CD	SO to the Privy Council
LCol	RGG	Buell, CD	CO2 Arty Regt Trg HQ, Borden
LCol	MD	Calnan, CD	CO 1 RCHA
LCol	JEJ	Caryi, CD	Secretary Defence Staff, CFHQ
LCol	MLA	Chabot, CD	SSO Flight Safety, HQ Mobile Command
LCol	JA	Cotter, CD	CO 2 RCHA
LCol	CJ	Crowe, CD	B Adm O, CFB Rockcliffe
LCol	DB	Crowe, CD	Directing Staff, Canadian Land Forces Command and Staff College
LCol	JD	Crowe, MC, CD	Sr Ops O, NSAWS
LCol	JE	de Hart, MC, CD	Directorate of Equipment Requirements Land, CFHQ
LCol	JJ	Doucet, CD	SSO Plans and Operations, Quebec Region
LCol	RH	Duke, CD	Directorate of Armament Engineering, CFHQ
LCol	DF	Elkins, CD	SSO Arty, HQ Mobile Command
LCol	JK	Ewing, CD	Directorate Operational Requirements and Training, CFHQ
LCol	DE	Gayton, CD	Directorate of Manpower Programming and Control, CFHQ
LCol	C	Giokas, CD	CFB London
LCol	RG	Heitshu, CD	Plans Offr D Instr Francophone
LCol	JG	Henderson, CD	SSO Org, HQ Mobile Command
LCol	JA	Hilliard, CD	Director General Personnel Plans Requirements, CFHQ
LCol	W	Johnston, CD	Seconded Department of Defence Production
LCol	MD	Kearney, CD	SSO Operational Training, HQ Mobile Command
LCol	SV	Lloyd, CD	B Adm O, CFB Comox
LCol	JW	MacNaughton, CD	Directorate of International Plans, CFHQ
LCol	RN	McKay, CD	Cdn Def Edn Cen Pg, CFHQ
LCol	AC	Moffat, CD	Syndicate Director, Canadian Forces Staff College
LCol	OR	Monette, CD	CFB St Jean
LCol	JF	Pendergast, CD	HQ AFCENT Brunnsum, Holland

LCol	JSG	Peterson, CD	Director of Policy Implementation, CFHQ
LCol	GH	Reid, CD	B Adm O, CFB Winnipeg
LCol	WO	Roney, CD	HQ Western Ontario District
LCol	WE	Sills, CD	Directorate of Strategic and Force Planning, CFHQ
LCol	W	Simcock, CD	SSO NB District
LCol	CR	Simonds, CD	CO 3 RCHA
LCol	A	Sosnkowski, CD	CO 4 RCHA
LCol	JC	Stewart, CD	Eastern Ontario District
LCol	RAD	Stokes, CD	SSO Individual Training, HQ Mobile Command
LCol	DG	Struthers, CD	LO CONARC, Ft Munro, Virginia
LCol	JM	Sutherland, CD	SSO Plans and Operations, Ontario Region
LCol	JAR	Vandal, CD	CO 5e RALC
Maj	EY	Adkins, CD	CFOCS, Esquimalt
Maj	FC	Ayers	Comd, 3 RCHA AOP Tp
Maj	NH	Barrett, CD	Directorate of Staff Duties, CFHQ
Maj	FW	Bayne, CD	CI, CFSA
Maj	AK	Beare, CD	BC, 1 RCHA
Maj	RP	Beaudry, CD	BC, 5e RALC
Maj	SB	Benton, CD	PWC Atlantic Region
Maj	JC	Berezowski, CD	2 Arty Regt Trg HQ, Borden
Maj	EJ	Berris, CD	Directorate of Personnel Careers Policy, CFHQ
Maj	JP	Bouvette	BC, 5e RALC
Maj	MC	Brown	Staff College, India
Maj	CF	Burant, CD	Directorate of Combat Development, CFHQ
Maj	FA	Bussieres, CD	2IC, 5e RALC
Maj	C	Butler, CD	Directorate of Equipment Requirements Land, CFHQ
Maj	FS	Card, CD	HQ Pacific Region (Nanaimo)
Maj	RV	Carriere	Staff College, Pakistan
Maj	LL	Charest, CD	HQ UNFICYP
Maj	JP	Cheevers, CD	Directorate of Equipment Requirements Land, CFHQ
Maj	DH	Clark, CD	Armament Officer CDLS(W)
Maj	WB	Cheadle, CD	HQ Atlantic Region
Maj	WS	Conrod, CD	Directorate of Land Reserves, CFHQ
Maj	RS	Cork, CD	Administrative Unit, CFHQ
Maj	ELK	Cowan, CD	Directorate of Policy Control and Co-ordination, CFHQ
Maj	WD	Creighton, CD	HQ Ontario Region
Maj	JE	Crosman, CD	HQ Mobile Command

Maj	JD	Currie, CD	Personnel Management Information Service, CFHQ
Maj	CR	Davidson, CD	Directing Staff, Canadian Forces Staff College
Maj	FA	Davies, CD	DAA & QMG, Canadian Land Forces Command and Staff College
Maj	WR	Dawes, CD	OC Courses Bty, CFSA
Maj	JK	Devlin, CD	UNTSO
Maj	JJ	Donahue, CD	Directorate of Policy Formulation, CFHQ
Maj	RR	Doyan, CD	HQ Mobile Command
Maj	WA	Emery	BC, 2 RCHA
Maj	FJR	Ervin, CD	NB/PEI L & A Staff
Maj	RA	Finney, CD	2IC, 4 RCHA
Maj	DC	Fitzgerald, CD	BC, 4 RCHA
Maj	JC	Fleming, CD	BRIXMIS, Berlin
Maj	DR	Foster, CD	Comd, 4 RCHA AOP Tp
Maj	RN	Gleason-Beard, CD	UNTSO
Maj	THC	Goodfellow, CD	Directorate of Financial Management Development Project, CFHQ
Maj	JE	Goodine, CD	Directorate of Nuclear Weapons, CFHQ
Maj	RE	Gorham, CD	Director General Intelligence, CFHQ
Maj	RD	Gowland, CD	Directorate Branch Trades Training, CFHQ
Maj	T	Graham, CD	DRB Defence Chemical Biological Radiation Lab Ottawa
Maj	SD	Green, CD	BC, 3 RCHA
Maj	GM	Guy, CD	CAS, CFB Borden
Maj	GF	Hammond, CD	2IC, 3 RCHA
Maj	PF	Heenan, CD	Directorate of Personnel Requirements Control, CFHQ
Maj	WB	Helman, CD	Student, Canadian Forces Staff College
Maj	DA	Henderson, CD	Directorate of Personnel Career Policy, CFHQ
Maj	GR	Hirter	Student, Canadian Land Forces Command and Staff College
Maj	JE	Howes	Post Graduate Studies, RMC
Maj	GH	Howitt, MC, CD	BTSO, CFB Shilo
Maj	RR	Howsam, CD	Directorate of Scientific & Technical Intelligence, CFHQ
Maj	NF	Hull	BC, 1 RCHA
Maj	JMA	Hulsemann, CD	OC Tactics Bty, CFSA
Maj	SP	Hunter, CD	Directorate of Equipment Requirements Land, CFHQ
Maj	RG	Hurley	Directorate of Manpower Requirements and Establishments, CFHQ

Maj	RK	James	Student, Canadian Land Forces Command and Staff College
Maj	NW	Johnstone	BC, 3 RCHA
Maj	JC	Kennedy, CD	HQ Mobile Command
Maj	TJT	Kennedy, CD	NSAWS Carp
Maj	E	Lasch, CD	Directorate of Armament Engineering, CFHQ
Maj	KD	Lavender, CD	Directorate of Armament Engineering, CFHQ
Maj	VJ	Legere, CD	Canadian Armament Design and Experimental Establishment
Maj	HF	Leggett, CD	HQ Mobile Command
Maj	OJ	Lester, CD	HQ UNIFICYP
Maj	WDW	Lewis, CD	Comd, 1 RCHA AOP Tp
Maj	G	Logan	CFB Soest
Maj	AGM	MacIsaac, CD	Directorate of Equipment Requirements Land, CFHQ
Maj	EB	MacLatchy, CD	CO, 1 Airborne Bty, RCA
Maj	NM	MacLean, CD	Directorate of Integrated Defence Programmes, CFHQ
Maj	RB	Mallory, CD	CO, CFS Carp
Maj	JL	Mantin, CD	CAFTT Ghana
Maj	H	Marston, CD	CDLS(L)
Maj	EH	Martin, CD	Directorate of Armament Engineering, CFHQ
Maj	GN	Mastine, CD	Comd, 5e RALC AOP Tp
Maj	FR	McCall, CD	CFLO, Ft Bliss, Texas
Maj	JB	McCanse, CD	HQ Mobile Command
Maj	GA	McDonald, CD	HQ Prairie Region
Maj	DB	McGibbon	Student, RMC of S, Shrivenham
Maj	J	McGregor, CD	UNTSO
Maj	HA	McLellan, CD	Directorate of Personnel Management Services, CFHQ
Maj	RL	McLellan, CD	HQ CFB Soest
Maj	AD	McMillan, CD	HQ Mobile Command
Maj	RF	Morrison, CD	CFB Gagetown
Maj	GR	Mummery, CD	CFLO, Fort Sill, Oklahoma
Maj	TW	Musgrave, CD	2IC, 2 RCHA
Maj	CA	Namiesniowski, CD	Directorate of Operations, CFHQ
Maj	MT	O'Brennan, MC, CD	UNMOG(IP)
Maj	GNR	Olson, CD	CO, 1 SSM Bty, RCA
Maj	CEDEL	Panet, CD	HQ NORTHAG
Maj	GBC	Parenteau, CD	CFB Valcartier

Maj	NM	Pettis, CD	Rapier User Trials (UK)
Maj	KS	Pickard, CD	OC Standards Bty, CFSA
Maj	DG	Porter, CD	CDLS(L) Exchange Ministry of Technology
Maj	NE	Ramsey, CD	Directorate of Equipment Requirements Air, CFHQ
Maj	WJ	Ready, DE	United States Command and General Staff College, Leavenworth
Maj	DJ	Redknap, CD	Directorate of Intelligence Production, CFHQ
Maj	ME	Rich, CD	Exchange Offr, 2 British Division
Maj	JK	Robertson, CD	Directorate of Armament Engineering, CFHQ
Maj	NA	Robertson, CD	Directorate of Postings and Careers Land Operations and Logistics (Artillery Officers), CFHQ
Maj	WG	Robson, CD	Emergency Measures College, Arnprior
Maj	MJ	Sadler, CD	Canadian Forces Part 1 Establishment, Short Range Recce Drone System Ottawa
Maj	JK	Sangster, CD	CO 1 Arty Regt Trg HQ, CFB Shilo
Maj	HD	Saxon, CD	Exchange Officer, School of Artillery, Larkhill, UK
Maj	EL	Schrader, CD	Directing Staff, Canadian Land Forces Command and Staff College
Maj	WM	Scott	HQ Training Command
Maj	JM	Skinner, CD	Director General Operations Land, CFHQ
Maj	RD	Smyth, CD	Trials and Evaluation Establishment, CFB Shilo
Maj	DD	Snow, CD	HQ Ontario Region
Maj	HJ	Stein, CD	Secretary to Deputy Chief of Personnel Policy and Resource Management, CFHQ
Maj	HP	Stickley, CD	British Columbia District I Staff
Maj	WB	Stoddart, CD	Directorate of Land Operational Research, CFHQ
Maj	DE	Stothers, CD	BC, 2 RCHA
Maj	RL	Strawbridge, CD	2IC, 1 RCHA
Maj	BE	Thorsteinson, CD	Directorate of Electronic Systems Equipment, CFHQ
Maj	WJ	Tippett, CD	Canadian Forces Part 1 Establishment Seconded to the Department of Defence Production
Maj	HD	Thompson	Student, Canadian Land Forces Command and Staff College
Maj	RV	Thompson, CD	Director General Operations Land, CFHQ
Maj	RK	Wallace, CD	Directorate of Continental Plans, CFHQ
Maj	DJ	Walters, CD	Comd, 2 RCHA AOP Tp
Maj	JO	Ward, CD	HQ, Mobile Command
Maj	BRH	Watch, CD	Saskatchewan District, L&A Staff

	Maj	DW	Wellsman, CD	BC, 1 RCHA
	Maj	CME	West, CD	Deputy Chief Plans, CFHQ
	Maj	LE	West, CD	HQ Training Command
	Maj	WJ	West, CD	HQ Training Command
	Maj	GL	Wetherup, CD	UNMOG(IP)
	Maj	HR	Wheatley, CD	HQ 3 Service Battalion
	Maj	T	Wheeler, CD	HQ Mobile Command
	Maj	PA	White, CD	CDLS(L) Exchange DRA Office
	Maj	WMJ	Wolfe, CD	BC, 4 RCHA
	Capt	EJ	Adams, CD	Directorate of Policy Implementation, CFHQ
	Capt	RI	Adams	4 RCHA AOP Tp
	Capt	LC	Adkins	1 RCHA
	Capt	RF	Alessio, CD	CFB Shilo
	Capt	EH	Anderson, CD	NB/PEI District I Staff (M)
	Capt	CJLH	Archambault	1 RCHA
	Capt	TH	Argue, CD	HQ Prairie Region
	Capt	RB	Armstrong	1 RCHA
	Capt	RL	Armstrong	2 RCHA
	Capt	JJ	Baker, CD	Directorate of Armament Engineering, CFHQ
	Capt	P	Baldaro, CD	1 RCHA AOP Tp
	Capt	RJ	Beardmore	3 RCHA
	Capt	DJ	Beatty	Student, Canadian Land Forces Command and Staff College
	Capt	JW	Beese	4 RCHA
	Capt	EB	Beno	1 RCHA
	Capt	MV	Bezeau	3 RCHA
	Capt	DB	Bianco	1 RCHA
	Capt	JGR	Bigras	CFB Calgary
	Capt	RW	Boadway	RMC Kingston
	Capt	JNGG	Boudreau	5e RALC
	Capt	SJ	Bowers, CD	Directorate of Ceremonial, CFHQ
	Capt	ABC	Bowles	1 RCHA
	Capt	GWR	Bowman, CD	HQ Training Command
	Capt	LA	Branum	1 SSM Bty, RCA
	Capt	TE	Brewster	1 SSM Bty, RCA
	Capt	JJ	Brotherton, CD	CFB Kingston
	Capt	DH	Brown	1 RCHA

Capt	FS	Brown, CD	Western Ontario District I Staff (M)
Capt	JEF	Bryce	CFSA
Capt	JE	Bulger, CD	HQ Prairie Region
Capt	AF	Cameron, CD	Directorate of Armament Engineering, CFHQ
Capt	AW	Carnell	Student, Canadian Land Forces Command and Staff College
Capt	AP	Carroll	3 RCHA
Capt	RJ	Chamberlain	3 RHA, Detmold
Capt	FH	Champion-Demers	5e RALC
Capt	JP	Chartres	1 RCHA
Capt	RW	Chaulk	1 SSM Bty, RCA
Capt	JD	Chown, CD	Directorate of Land Reserves, CFHQ
Capt	MF	Clark	1 RCHA
Capt	RC	Coleman	2 RCHA
Capt	NH	Connolly	HQ Mobile Command
Capt	GR	Conway, CD	Central Ontario District I Staff (M)
Capt	AVA	Coroy	4 RCHA AOP Tp
Capt	AK	Court	1 RCHA
Capt	JA	Crowder, CD	Directorate of Armament Engineering, CFHQ
Capt	LWF	Cuppens	1 Flying Training School, Gimli
Capt	JA	Davidson	1 SSM Bty, RCA
Capt	HL	Davis, CD	CFB Borden
Capt	GA	Decker	HQ 4 CMBG
Capt	RA	Diespecker	HQ Training Command
Capt	JT	Dolan, CD	CFRC Ottawa
Capt	JA	Dorman	1 Airborne Bty, RCA
Capt	HR	Eamor	4 RCHA
Capt	BG	Earl	Student, Canadian Land Forces Command and Staff College
Capt	FG	Earl, CD	NSAWS NNR, North Bay
Capt	HC	Ellery	1 Flying Training School, Gimli
Capt	DA	Elrick	1 RCHA
Capt	RG	Elrick	Long Gunnery Staff (Locating) Course, Larkhill
Capt	DB	Fenny	1 Airborne Bty, RCA
Capt	DR	Ferguson	3 RCHA
Capt	TAD	Fetterly	Student, Arty Instr (Offrs) Course, CFSA
Capt	H	Finestone	1 SSM Bty, RCA
Capt	PW	Forsberg	1 SSM Bty, RCA

Capt	JJ	Fraser	CFSA
Capt	FL	Furness, CD	HQ Western Ontario District
Capt	GA	Gallop	1 RCHA
Capt	IWC	Gibbons	CFSA
Capt	JV	Glaus	1 RCHA
Capt	RG	Glover	Student, Arty Instr (Offrs) Course, CFSA
Capt	H	Goertzen, CD	Directorate of Armament Engineering, CFHQ
Capt	WE	Gordon	2 RCHA
Capt	WD	Gowanlock	HQ 1 Combat Gp
Capt	GF	Gower	2 RCHA
Capt	BM	Grace	Royal Roads, Victoria
Capt	PJ	Graves	HQ Training Command
Capt	OL	Greenizan	Directorate of Postings and Careers Land Operations and Logistics, CFHQ
Capt	LL	Creig, CD	Eastern Ontario District I Staff (M)
Capt	DA	Gronbeck-Jones	5e RALC
Capt	WH	Groom	AO, Canadian Forces Command and Staff College
Capt	TJ	Guiler	Student, Arty Instr (Offrs) Course, CFSA
Capt	CO	Gustafson	1 RCHA
Capt	EC	Hague	5e RALC
Capt	RG	Hall, CD	CFSA
Capt	RL	Hanbury	2 RCHA
Capt	MJ	Harmston, CD	Director General Operations Land, CFHQ
Capt	FH	Hansford	HQ 2 Combat Gp
Capt	AV	Harris, CD	Tp Comd 1 Drone Tp, RCA
Capt	DB	Harrison	HQ Pacific Region
Capt	DW	Hawthorne	CFRS Cornwallis
Capt	JE	Hawthorne	Western Quebec District I Staff (M)
Capt	FC	Haynes	Directorate of Manpower Distribution Control, CFHQ
Capt	JD	Hetherington, CD	HQ Pacific Region
Capt	MW	Hewes	CFSA
Capt	RP	Hill, CD	CFSA
Capt	RP	Hitchman	5e RALC
Capt	JM	Hoffman	HQ Training Command
Capt	DR	Hopper	5e RALC
Capt	FC	Hummell, CD	Alberta District I Staff (M)

Capt	JR	Hutchison, CD	HQ Eastern Ontario District
Capt	RY	Hutton	UNTSO Palestine
Capt	DGH	Hyman	Student, Canadian Land Forces Command and Staff College
Capt	RM	Hyslop	Student, Arty Instr (Offrs) Course, CFSA
Capt	GF	Ireland	CFANS, Winnipeg
Capt	TT	Itani	2 RCHA
Capt	WR	Johnston	Directorate of Equipment Requirements Land, CFHQ
Capt	GH	Jussup, CD	Directorate of Project Formulation, CFHQ
Capt	JM	Kavanagh, CD	CFSA
Capt	LC	Kempffer, CD	1 RCHA
Capt	DJ	Ker-Hornell, CD	3 RCHA
Capt	GD	Kerr	CFSA
Capt	JB	Knapp	4 RCHA
Capt	DC	Knight	Student, RMC of S Shrivenham
Capt	MA	Kryzanowski	4 RCHA
Capt	RG	Kyle	4 RCHA
Capt	FK	Laforge	1 RCHA
Capt	JB	Lapointe, CD	1 RCHA
Capt	BM	Lees	1 RCHA
Capt	RJ	Lees	Arty Regt Trg HQ, Gagetown
Capt	PR	Learmonth	1 RCHA
Capt	SW	Lobban, CD	Directorate of Operations, CFHQ
Capt	DA	Lockridge	Student, Arty Instr (Offrs) Course, CFSA
Capt	RJ	Lovell	1 RCHA
Capt	JA	Lowe	412 Transport Squadron
Capt	RJ	Lucas	Trials and Evaluation Establishment, CFB Rivers
Capt	MJ	MacDonald	1 Flying Training School, Gimli
Capt	JM	MacFie, CD	CJATC Rivers
Capt	JG	MacGregor	1 RCHA AOP Tp
Capt	JA	MacInnis	Student, Canadian Land Forces Command and Staff College
Capt	JM	MacInnes	1 Drone Tp RCA
Capt	AA	MacLeod, CD	British Columbia District I Staff (M)
Capt	WR	MacNeil	2 RCHA
Capt	JOA	Maher	CFB Edmonton
Capt	MD	Maher	Student, Arty Instr (Offrs) Course, CFSA

Capt	R	Malcolm, CD	CFSA
Capt	JAG	Marceau	Student, Canadian Land Forces Command and Staff College
Capt	CW	Marmo	5e RALC
Capt	RB	May, CD	1 RCHA
Capt	RN	McAlpine	3 RCHA
Capt	TJ	McBurney	4 RCHA
Capt	JP	McConville, CD	Arty Regt Trg HQ, Borden
Capt	BTN	McGrath	Student, Arty Instr (Offrs) Course, CFSA
Capt	JA	McKay	5e RALC
Capt	RW	McKinlay	CFSA
Capt	L	McKinnon, CD	Assistant Director General Ordnance Systems, CFHQ
Capt	WE	McLeod	Directorate of Electronic Systems Engineering, CFHQ
Capt	LH	McMorran, CD	2 RCHA AOP Tp
Capt	WL	McMullen, CD	1 Flying Training School Gimli
Capt	CJ	Mialkowski	Student, Canadian Land Forces Command and Staff College
Capt	DG	Miller	3 RCHA Air OP
Capt	KL	Miller, CD	CFB Chilliwack
Capt	AG	Mills	1 Airborne Bty RCA
Capt	LTB	Mintz	Student, Arty Instr (Offrs) Course, CFSA
Capt	CA	Moogk	CFSA
Capt	SR	Moore, CD	Directorate of Postings and Careers Land Operations and Logistics (Artillery Men), CFHQ
Capt	JW	Mortlock	1 RCHA
Capt	N	Mulikow, CD	4 RCHA
Capt	AW	Nethercott, CD	HQ Training Command
Capt	JDE	Niles	CFRS Cornwallis
Capt	JW	Nixon	3 RCHA
Capt	R	O'Banion	Student, Arty Instr (Offrs) Course, CFSA
Capt	GJ	Oehring	HQ Mobile Command
Capt	AF	Ouelette, CD	Manitoba District I Staff (M)
Capt	JW	Owen, CD	HQ Eastern Ontario District
Capt	GS	Paech	3 RCHA
Capt	AZ	Palmer	CFSA
Capt	JAR	Paquette	HQ 5 Combat GP
Capt	JA	Parnham, CD	HQ Ontario Region
Capt	WL	Pender	1 Airborne Bty RCA

Capt	RE	Peterson, CD	Directorate of Personnel Career Policy, CFHQ
Capt	MAS	Pittman, CD	HQ Ontario Region
Capt	KW	Pizer	2 RCHA
Capt	JR	Pleasance	HQ 3 Combat Gp
Capt	JA	Poh, CD	1 RCHA
Capt	WF	Pollock, CD	450 Squadron, St Hubert
Capt	TG	Power, CD	Student, Arty Instr (Offrs) Course, CFSA
Capt	H	Prior	Directorate of History, CFHQ
Capt	GDL	Protz, CD	NSAWS NNR, North Bay
Capt	WJ	Quinn, CD	HQ NB/PEI District
Capt	LG	Ramsey, CD	Director General Ordnance Systems, CFHQ
Capt	EW	Rance, CD	Seconded to National Research Council Ottawa
Capt	BA	Reid	CFSA
Capt	CHG	Reid, CD	HQ 1 Combat Gp
Capt	SJ	Reid	5e RALC
Capt	WB	Rendell, CD	Sub Base, St Johns Newfoundland
Capt	JH	Rennie	Directorate of Manpower Requirements and Establishments, CFHQ
Capt	DM	Robb	1 RCHA
Capt	TE	Roberts, CD	1 SSM Bty RCA
Capt	LH	Robitaille, CD	Canadian Armament Design and Experimental Establishment
Capt	TAW	Robson	HQ Ontario Region
Capt	RB	Rogers	3 RCHA AOP Tp
Capt	JA	Roszell	3 RCHA
Capt	JGVN	Rouleau	5e RALC
Capt	DE	Rousseau, CD	CFSA
Capt	RDC	Rowdon	CFSA
Capt	JH	Ryan	5e RALC
Capt	RA	Salisbury, CD	CFB Soest
Capt	GH	Sawatzki	Student, German Staff College
Capt	DG	Schott, CD	Student, Canadian Land Forces Command and Staff College
Capt	GDC	Scott	CFSA
Capt	FE	Seely	NS District I Staff (M)
Capt	RJM	Selman	1 RCHA
Capt	JD	Shaver, CD	Director General Senior Appointments, CFHQ
Capt	GM	Shellard, CD	2 RCHA AOP Tp

Capt	P	Sherrick, CD	Artillery Regiment Training HQ, Shilo
Capt	JFLP	Simard, CD	CFRC, Montreal
Capt	AHC	Smith, CD	HQ 2 Combat Gp
Capt	GR	Smith	2 RCHA
Capt	MW	Smith, CD	Post Grad, University of Alberta
Capt	SM	Smith, CD	CFB Petawawa
Capt	TAH	Sparling	5e RALC
Capt	JB	Stephens	Central Ontario District I Staff (M)
Capt	BE	Stephenson	1 RCHA
Capt	AG	Stoddard, CD	Directorate of Personnel Requirements Control, CFHQ
Capt	DB	Struthers	1 RCHA
Capt	SS	Takahashi	Student, Arty Instr (Offrs) Course, CFSA
Capt	JJG	Tanguay, CD	CAS Det, Valcartier
Capt	JER	Tattersall	Student, RMC of S Shrivenham
Capt	LU	Thibedeau, CD	429 Sqn St Hubert
Capt	RG	Thomason, CD	CFSA
Capt	GE	Trainor, CD	CFSA
Capt	VA	Troop	CFSA
Capt	RS	Usher	Directorate of Land Operational Research, CFHQ
Capt	OE	Van Rooyen	1 RCHA
Capt	KD	Varey	1 SSM Bty, RCA
Capt	HA	Walinsky	CFSA
Capt	D	Walker, CD	Director General Ordnance Systems, CFHQ
Capt	GM	Walker	1 RCHA
Capt	TJ	Walsh	Directorate of Land Reserves, CFHQ
Capt	DB	Walton	Rapier User Trials (UK)
Capt	RB	Wark	CFOCS Esquimalt
Capt	WR	Watling	1 SSM Bty RCA
Capt	JAS	Watts	CFSA
Capt	AR	Weeks, CD	HQ Alberta District
Capt	DI	Whalen	HQ Ontario Region
Capt	ET	Whalen, CD	424 Sqn Trenton
Capt	WB	Wheaton	5e RALC
Capt	AJ	Wilson	Student, Arty Instr (Offrs) Course, CFSA
Capt	MR	Wilson	CFSA
Capt	RS	Wilson	1 RCHA
Capt	NA	Wright, CD	Director General Ordnance Systems, CFHQ

Capt	WF	Wright, CD	4 RCHA AOP Tp
Capt	GL	Younger-Lewis, CD	Standardization, CFHQ
Capt	AM	Zamoyski, CD	Eastern Quebec District I Staff (M)
Capt	WL	Zawrucha	CFSA
Lt	JP	Abbott, CD	HQ New Brunswick District
Lt	CR	Anderson	4 RCHA
Lt	JA	Ball	2 RCHA
Lt	DV	Bentley	5e RALC
Lt	FB	Brake	2 RCHA
Lt	JD	Briscoe	5e RALC
Lt	JZC	Chamberlane	CFRC Det, Chicoutimi
Lt	KL	Clarke	4 RCHA
Lt	AB	Cooney	4 RCHA
Lt	RN	Crooks	2 RCHA
Lt	RL	Dallaire	5e RALC
Lt	MD	Elkins	1 Flying Training School, Gimli
Lt	TA	Favier	2 RCHA
Lt	W	Filonik	1 Airborne Bty, RCA
Lt	FJ	Forsyth, CD	Canadian Armament Design Experimental Establishment
Lt	RM	Foster	1 RCHA
Lt	PB	Fowler	4 RCHA
Lt	AG	Gallant	5e RALC
Lt	WF	Gee	3 RCHA
Lt	TD	Gerow	3 RCHA
Lt	JW	Gillenwater	5e RALC
Lt	BA	Hamilton	2 RCHA
Lt	TP	Haney	CFOCS, Chilliwack
Lt	MN	Hargest, CD	Alberta District I Staff (M)
Lt	RN	Haslett	3 RCHA
Lt	FG	Hickey	2 RCHA
Lt	RP	Hodgson	1 RCHA
Lt	JV	Howard	4 RCHA
Lt	R	Hoyland	4 RCHA
Lt	MK	Jeffery	1 RCHA
Lt	JDL	Krauter	1 Airborne Bty, RCA
Lt	JR	Laberge	5e RALC

Lt	DJ	Lacey	1 Airborne Bty, RCA
Lt	RW	Lindenbloom	5e RALC
Lt	NB	Linton	4 RCHA
Lt	TS	McCoy	4 RCHA
Lt	TW	Melnyk	3 RCHA
Lt	DG	Miller, CD	Canadian Armament Design Experimental Establishment
Lt	JE	Miller	2 RCHA
Lt	KR	Mitchell	3 RCHA
Lt	MB	Morrison	1 RCHA
Lt	HP	Mundell	4 RCHA
Lt	BW	Olynick	3 RCHA
Lt	JK	Orton	3 RCHA
Lt	WJ	Parton	2 RCHA
Lt	AE	Roach	1 RCHA
Lt	DJ	Rooke	2 RCHA
Lt	TP	Ross	5e RALC
Lt	PS	Sanderson	3 RCHA
Lt	BS	Saunders	2 RCHA
Lt	WM	Shellnut	1 RCHA
Lt	HN	Simister	2 RCHA
Lt	JMA	Siple	5e RALC
Lt	WJ	Soucie	3 RCHA
Lt	JC	Stewart	4 RCHA
Lt	SM	Tolsen	4 RCHA
Lt	GW	Trimble	3 RCHA
Lt	DG	Tudin	4 RCHA
Lt	JG	Trepanier	5e RALC
Lt	JM	Vanstone	3 RCHA
Lt	KW	Wenek	3 RCHA
Lt	MJ	Winter	4 RCHA
Lt	VW	Zaharychuk, CD	Canadian Armament Design Experimental Establishment
CWO	JFW	Barham	Arty Regt Trg HQ, Borden
CWO	LF	Binkley	CFSA
CWO	AJ	Brim	Assistant Director General Ordnance Systems, CFHQ
CWO	WT	Chilton	British Columbia District I Staff (M)

CWO	HA	Clarke	CFB Shilo
CWO	MJ	Fraser	HQ Mobile Command
CWO	SR	Holtom	New Brunswick District I Staff (M)
CWO	DL	Hughes	Western Ontario District I Staff (M)
CWO	R	Jackson	CFWOS, Clinton
CWO	GN	Malcolm	5e RALC
CWO	GW	Miller	CADEE
CWO	DA	Moreside	Nova Scotia District I Staff (M)
CWO	RD	Nickerson	Directorate Armament Engineering, CFHQ
CWO	JS	Richmond	4 RCHA
CWO	W	Sonnenberg	Trials and Evaluation Establishment, CFB Shilo
CWO	KJ	Stinson	Directorate Armament Engineering, CFHQ
CWO	RG	Sutherland	Directorate Manpower Programme Control, CFHQ
CWO	R	Syrette	2 RCHA
CWO	E	Tremblay	CADEE
CWO	LJ	Vallee	1 RCHA
CWO	RA	Vidler	CFSA
CWO	LE	Walker	Directorate Armament Engineering, CFHQ
CWO	FD	West	CFB Gagetown
CWO	DE	Williams	CADEE
CWO	SG	Wilt	3 RCHA
CWO	PA	Winter	CFSA
CWO	SG	Witt	Manitoba District I Staff (M)
CWO	FC	Wood	British Columbia District I Staff (M)
MWO	GS	Armstrong	1 RCHA
MWO	CH	Arnold	2 RCHA
MWO	JP	Begin	5e RALC
MWO	ER	Bell	CFSA
MWO	DD	Bittle	CADEE
MWO	EJ	Blackwell	2 RCHA
MWO	AF	Brown	CFSA
MWO	EA	Brown	Directorate Land Operational Research, CFHQ
MWO	RB	Byer	CFSA
MWO	TH	Campbell	1 RCHA
MWO	JA	Charles	3 RCHA

MWO	LH	Clarke	Directorate of Postings and Careers Land Operations and Logistics (Artillery Men), CFHQ
MWO	PD	Cloutier	1 Airborne Bty, RCA
MWO	EF	Cobham	CFB Borden
MWO	W	Conway	2 RCHA
MWO	MJ	Cove	CFSA
MWO	DJ	Crawford	3 RCHA
MWO	WD	Darling	Assistant Director General Ordnance Systems, CFHQ
MWO	RJ	Fenske	CFSA
MWO	WM	Fleet	1 RCHA
MWO	LE	Gargan	Atlantic Region
MWO	RC	Goodwin	1 RCHA
MWO	C	Harrup	HQ Alberta District
MWO	DW	Hawkes	1 SSM Bty, RCA
MWO	RA	Heitshu	1 SSM Bty, RCA
MWO	RT	Hibbett	4 RCHA
MWO	T	Holodisky	CADEE
MWO	BE	Johnson	1 RCHA
MWO	CK	Kitching	1 RCHA
MWO	TL.	Larkin	3 RCHA
MWO	SWJ	Lentle	3 RCHA
MWO	WM	Lunan	4 RCHA
MWO	DB	MacDonald	3 RCHA
MWO	FJ	MacDonald	1 SSM Bty, RCA
MWO	JAR	MacDonald	2 RCHA
MWO	MN	MacDonald	1 RCHA
MWO	CB	McBay	2 RCHA
MWO	JE	McCabe	CFSA
MWO	BR	McMillan	1 Management Study Unit, Halifax
MWO	AE	McTaggart	1 RCHA
MWO	EJ	Morris	1 RCHA
MWO	FE	Moss	Directorate of Postings and Careers Land Operations and Logistics (Artillery Men), CFHQ
MWO	AJ	Mulherin	Central Ontario District I Staff (M)
MWO	LJ	Nesdoly	3 RCHA
MWO	TW	Niles	Saskatchewan District I Staff (M)

MWO	JCW	Parsons	CFSA
MWO	EE	Patrick	4 RCHA
MWO	RL	Patrick	1 RCHA
MWO	RG	Pyke	CFSA
MWO	RMI	Rhyno	Directorate Armament Engineering, CFHQ
MWO	HJ	Rice	Rapier User Trials (UK)
MWO	MR	Sauve	5e RALC
MWO	R	Sawatzky	1 RCHA
MWO	E	Schoen	CFSA
MWO	RH	Speare	CFSA
MWO	W	Stephenson	Directorate Engineering Plans and Co-ordination, CFHQ
MWO	DC	Thomas	1 SSM Bty, RCA
MWO	RL	Thomson	3 RCHA
MWO	WE	Tripp	Assistant Director General Ordnance Systems, CFHQ
MWO	J	Turner	1 RCHA
MWO	GH	Wade	1 Drone Tp, RCA
MWO	BB	Walker	Directorate of Policy Implementation, CFHQ
MWO	FH	Walsh	Central Ontario District I Staff (M)
MWO	EE	Wells	4 RCHA
MWO	SG	Williams	Eastern Ontario District I Staff (M)
MWO	CC	Yavis	2 RCHA
WO	JB	Aucoin	HQ Pacific Region
WO	WR	Bader	CFSA
WO	JR	Baird	Arty Regt Trg HQ, Borden
WO	EG	Barrett	3 RCHA
WO	JM	Brawn	CFSA
WO	DW	Brown	1 RCHA
WO	HC	Clifton	4 RCHA
WO	WW	Dent	2 RCHA
WO	PE	Fournier	5e RALC
WO	FJ	Gardner	CFSA
WO	JP	Garneau	Combat Arms School Detachment, Valcartier
WO	JA	Gordon	Manitoba District I Staff (M)
WO	HE	Hart	HQ Prairie Region
WO	WE	Hebner	Saskatchewan District I Staff (M)
WO	WF	Higgins	CFOCS, Chilliwack

WO	CA	Hogan	CFSA
WO	A	Kehler	1 RCHA
WO	MJ	Landry	Eastern Quebec Distr ict I Staff (M)
WO	LP	Leblanc	5e RALC
WO	MA	Lepage	4 RCHA
WO	AM	MacLean	British Columbia District I Staff (M)
WO	RO	MacLeod	2 RCHA
WO	JA	McLean	2 RCHA
WO	AA	McPherson	2 RCHA
WO	JA	Mossey	CFSA
WO	GL	Parkinson	1 Airborne Bty, RCA
WO	IB	Parsons	HQ Atlantic Region
WO	WK	Perry	2 RCHA
WO	RA	Pilch	3 RCHA
WO	WS	Pittman	Canadian Forces Recruit School, Cornwallis
WO	GD	Resch	CFSA
WO	EP	Ryan	CFSA
WO	MR	Sabean	4 RCHA
WO	GW	Schofield	1 Airborne Bty, RCA
WO	EJ	Shouldice	2 RCHA
WO	D	Snell	1 RCHA
WO	KJ	Surrette	1 SSM Bty, RCA
WO	P	Ukrainetz	1 RCHA
WO	FG	Wagg	1 RCHA
WO	HS	Walker	CFSA
WO	DJ	Willett	1 Airborne Bty, RCA
WO	AT	Wolfe	3 RCHA