

ARMOUR

BULLETIN

DES BLINDES



VOLUME 15

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EDITOR'S COMMENTS

At the RCAC Association Conference of October 1981 considerable discussion was devoted to the need for a professional journal which is truly representative of the Corps. The view was expressed that our journal should contain something of interest and importance for each member of the Armoured Corps, be he an officer or other rank Regular or Militia, at the unit or on ERE, at home or abroad. The stated preference of some delegates was for a slick, glossy, high-quality publication issued at sufficiently short intervals to serve as a journal and newsletter, to provide notice of professional and social events, to be topical and current. Clearly such a publication would be expensive in terms of both cost and editorial staff, and exceeds our current capability. Having said that, I make no apologies for the Armour Bulletin.

I believe that we have in the Armour Bulletin a first-class vehicle for the passage of information across our Corps and beyond. Its effectiveness is limited only by the willingness of members of the Corps to contribute.

The majority of articles contained herein were prepared by officers and other ranks serving at the Armour School or elsewhere in CFB Gagetown. Volume 15 does not suffer for this fact and I sincerely thank all contributors for the part they have played in the production of an interesting and informative edition.

Clearly, however, wider participation is required. To this end, it is intended that the next issue of the Armour Bulletin feature an article on each of the twenty-two Regiments to update the Corps on the status and activities of the Units. I earnestly solicit your support in this endeavour. Armour Bulletin Volume 16 cannot be a success without this support.


R.N. Lawrence
Lieutenant-Colonel
Editor in Chief



COLONEL COMMANDANT'S FOREWORD

We have often discussed within the RCAC Cavalry Association a method to improve our communications within the Corps and find ways and means of getting news out to our members. I suggest that the Armour Bulletin serves this purpose and with greater support to the Armour School from all of us, I'm sure we could find more articles and give greater financial assistance to increase our distribution not only to the Regular and Militia serving members but to all who belong to the RCAC Cavalry Association. This is a recommendation which I throw open to the Director, the RCAC Cavalry Association executive and to the Armour School, to ascertain if we could settle on one publication which would satisfy the needs of all. I suggest that this bulletin nearly meets the over all corps requirements now,

and with a little more energy, money and support, we may now have in our possession the solution to the problem which we have been struggling with for years. I recommend we discuss this approach at our next association meeting.

In the past twelve months I have had the opportunity to visit the Armour School, all the Regular Regiments and most of the Militia ones. There are still a few Militia Regiments to go but I intend to visit those home stations before the year is out. On these visits I am always struck with the kindness and hospitality I am shown and believe me the Corps spirit is alive and growing. The introduction of the Cougars and the new jeeps in some regiments has been a shot in the arm to all.

On 23 July I spoke to the Militia Staff Course in Kingston and attended their graduation Mess Dinner. On 14 August I attended the Armour School's graduation and met the new officers coming into the Regulars and Militia. There is nothing wrong with the quality of our instruction or the quality of our officers and men in the Corps. It is obvious that we lack modern equipment especially tanks in the Regulars, and modern training equipment in the Militia. As a Corps we must continue to pressure for more modern training equipment and training ammunition if we are to stay with the times and train realistically to meet our national commitments. Soldiering is not all "fun and games"; it is a serious business and success is based on being properly trained, properly equipped and properly led.

Last April I had an opportunity to visit the Royal Canadian Dragoons in Lahr, Germany. Their Commanding Officer, LCol Clive Addy, had arranged a battle-field tour in Normandy for his officers and asked Col Bill Matthews formerly 1 Can. Scots, and myself to conduct it. Both of us had landed in Normandy on D-Day 1944, he with the infantry and I with the tanks (Sherbrooke Fusilier Regiment). We reviewed the battle from the Normandy beaches, through to Caen, then the night push (Operation Totalize) through to Falaise and ended with the final closing of the Falaise Gap, between Falaise - Treen, St Lambert-Sur-Dives, - Chambois, -Argenton. For Bill and I it was truly a sentimental journey; for not only did we try to relate our experiences of those battles in 1944, but we had the occasion to visit our cemeteries and had a quiet moment by ourselves with our memories. I even had time to visit a farm at Claire Tizon and stood under an apple tree, with the farmer, who remembered that my tank was knocked out exactly at that spot on 13 August 44 - Thank God for the memories!!

The fact that struck me most on the whole tour was the keen interest shown by the officers concerning the tactics which were

employed at that time and their quest for tactical knowledge on "how to fight". I was bombarded with tactical questions throughout the tour, which made me think that maybe we don't spend sufficient time discussing and practising our tactical concepts. With less money to spend on field training, this lack of tactical knowledge becomes one of the evils of peacetime soldiering. We should be doing something to correct it.

Throughout my career I often dreamed that someday the Combat Arms would have a Tactical School at Meaford Range, where leaders from "Corporal to Colonel" could "bone up" on their tactics and become more proficient in the "cooperation of all arms" within the combat team. With a greater desire and cooperation among the three Combat Arms, this could be possible. That which seems to be Utopia today, could become reality tomorrow. A Tactical School for the Regulars and Militia at the Meaford Range is in my opinion just not a pious hope; it is a basic military requirement. We need to concern ourselves about our lack of tactical knowledge in peacetime and develop a plan to improve our tactical training. What do you think about this particular problem?

In the meantime, don't forget the sand table and cloth model exercises, the T.E.W.T.'s, the tactical walks with your young leaders, the junior officers and squadron commanders' tactical courses and most of all keep looking for those opportunities where you can get out on the ground with your troops and learn the "tricks of the trade". Remember that "Ten good soldiers wisely led will beat a hundred without a head".

General Had

This Bulletin is published under the authority of BGEN J.J. MORNEAULT, CD, Commander Combat Training Centre. Views expressed are those of the authors and do not necessarily reflect official policy or opinion unless otherwise stated.

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EDITOR - Capt J.A. Stuckart

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Le présent Bulletin est publié avec l'autorisation du BGEN J.J. MORNEAULT, CD, Commandant du Centre d'instruction de Combat. Les opinions exprimées n'engagent que la responsabilité de leurs auteurs et ne doivent en aucune façon être considérées comme des prises de position officielles à moins d'avis contraire.

Rédacteur en chef - LCol R.N. Lawrence, CD

Rédacteur - Capt J.A. Stuckart

Toute correspondance doit être adressée au rédacteur, aux soins de l'Ecole des Blindés, Centre d'Instruction de Combat, BFC Gagetown, Oromocto, N.B., EOG 2PO.

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DIRECTOR OF ARMOUR'S FOREWORD

The combat development process has laid down the future tasks for the Armoured Corps and "Armour 81-85" is a document which provides guidance on how to meet these tasks. What is required now is to get on with it. In the last Armour Bulletin, Volume 14, I strongly commended "Armour 81-85" to everyone. Since that time the Armour Board met again to bring this "living" document up-to-date. I was very pleased to have active militia participation at this meeting and with this, my desire to have a total Corps document is becoming a reality. If anyone has a recommendation on where the Corps should be going in the future let your Commanding Officer know about it. Use your chain of command, that is what it is there for. Again, I strongly commend "Armour 81-85" to everyone.

Using the advice from a former astute Armoured Corps soldier, life in the Corps is like a tank fire position, "You must continually

seek to improve it". Our technical skills and drills for the Leopard and Cougar must be fine-tuned at all times to ensure we are getting the maximum from the inherent characteristics of each weapon system. Techniques and drills must be constantly practised to achieve the proficiency and speed of true professionals. In the past year we have worked on the techniques employed with the Leopard fire control system and I am impressed with the training of Cougar gunners and drivers in the Militia Regiments. Unfortunately, we do not have all the main gun rounds nor the kilometres for all we would like to do; but, let us ensure we are getting the maximum benefit from what we have.

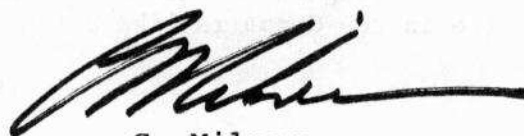
Let us not forget our reconnaissance skills. Accurate and timely information is vital for commanders at all levels and in this we play an important part. Certain Regiments have received new jeeps which should reduce the "down time" of our training vehicles; plus, by the time you read this, word should have been received on additional equipment, such as headsets, so we may train as crews. Several militia soldiers have received track training with the Regular Regiments and we must continue with this programme where possible. Remember, to complete our task in reconnaissance, properly, we must get to the right place, observe, protect ourselves, communicate, and interpret the information gained.

Congratulations are in order to 12eRBC(M) on winning the Worthington Trophy last year and to the Regional trophy winners, Regt de H, Windsor R, GGHG, BCR and FGH. I am sure they know the task at hand to retain these honours.

I must congratulate 8 CH for not only winning the Rams Head Trophy for Cougar gunnery this year; but also, for the fine job they did in hosting the competition at Meaford. The competition was close and all teams may be justifiably proud of their dedicated showing. A considerable improvement from RV 81 was clearly evident. The one area still requiring improvement is the control of troop fire.

In September the Corps Association will meet in Borden and for many it will be classified as going "home". The Association plays an important part in the day-to-day life of the Corps and it behoves all of us to give it our maximum support. I am confident the very active agenda will bear fruitful results.

I anticipate 1983 will provide us with many challenges and I look forward to meeting them with your support. My best wishes go out to all members of the Corps and their families.



C. Milner
Colonel
Director of Armour

FEEDBACK - WHAT OUR READERS HAVE TO SAY

Major G.J. Dubois

Comments on "Tank Obstacles" by Lt T.J. Grant

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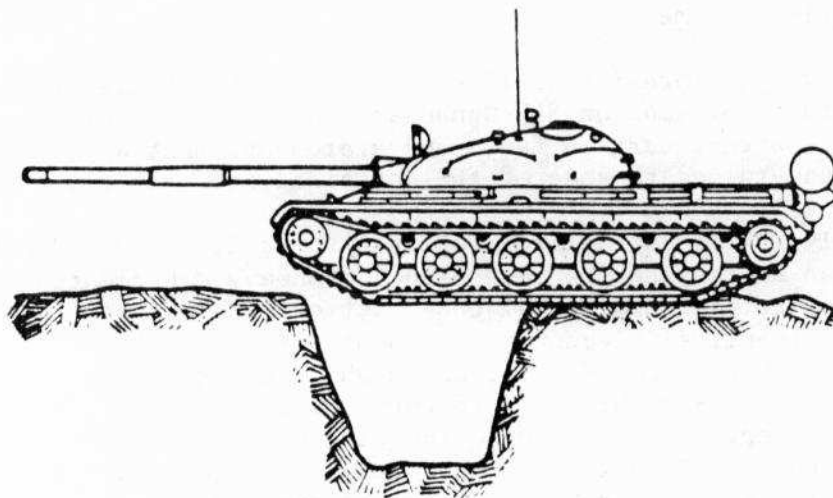
It is with interest that I read the subject Article written by Lt T.J. Grant, B Squadron 8th Canadian Hussars. I would, however, like to correct certain facts and statements that appear in the Article and to update some of the contained information.

Firstly, it is virtually impossible to produce 400-500 metres of ditch in an hour using the four pieces of heavy equipment mentioned in the Article. The ideal construction method is to use a team of two identical pieces of equipment working in the "T-push" method. One machine excavates the ditch while the second pushes the excavated material at right angle to form the berm. Two identical pieces of equipment are required so they can match each other's output. The output of 30 to 100 metres per hour stated in CFP 320 (7) is more reasonable and was further confirmed during RV 81. Naturally, the nature of the ground will dictate output; however, 60 metres per hour for a team would seem to be a reasonable average.

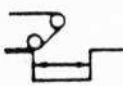
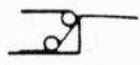
Secondly, the berm produced for a triangular ditch does not offer much more of a hull down position than the rectangular ditch berm. In both cases, the combined depth of ditch and berm is identical. In order to fire over the berm, the tank will only partially enter the triangular ditch thus leaving himself exposed. To enter any deeper into this ditch exposes the top armour as it does for the rectangular ditch. Also, since the combined depth is identical to the rectangular ditch, the main armament must also be pointed to the rear.

Thirdly, the diagram in the Article of the triangular ditch shows a width of 25 metres. This was obviously a typographical error and meant to be 2.5 metres. New information soon to appear in CFP 320 (7) has modified the width to 3.3 metres minimum. This information has been extracted from field trials conducted independently by both the US and British Army. The guideline used in both trials was to defeat the self-bridging and step-climbing capabilities inherent to Warsaw Pact vehicles. As can be seen from the attached figures, 2.5 metres would not defeat the self-bridging capabilities of most vehicles. However, 3.3 metres will. Furthermore it was selected for convenience because it represents the width of the standard dozer blade used by most NATO nations. The depth of 1.5 metres, which is critical to defeat the step-climbing capabilities, was determined by repeated trials in order to achieve the standard 15 minute delay.

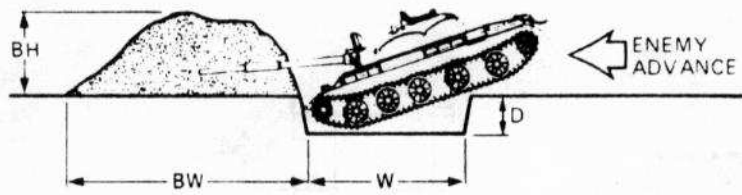
Lt Grant's effort is most commendable. Apart from these few corrections, the remainder of the Article is consistent with Canadian doctrine on anti-tank ditches.



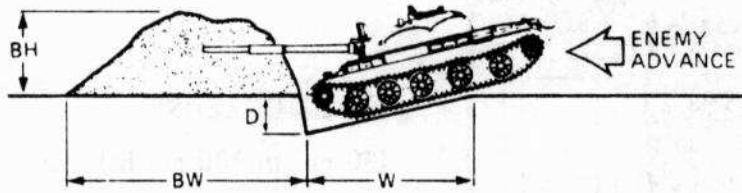
The Self-bridging Capability of a Tank

TYPE OF VEHICLE	DITCH CROSSING CAPABILITY	STEP CLIMBING CAPABILITY
		
T-72*	Not available	0.8 m
T-62	2.8 m	0.8 m
T-55	2.7 m	0.8 m
PT-76	2.8 m	1.1 m
ASU-85	2.8 m	1.1 m
BMP	2.8 m	0.9 m
BDRM-2	1.2 m	0.4 m
BTR-60P	2.0 m	0.4 m
BTR-50P	2.8 m	1.1 m
BTR 40	0.7 m	0.45 m

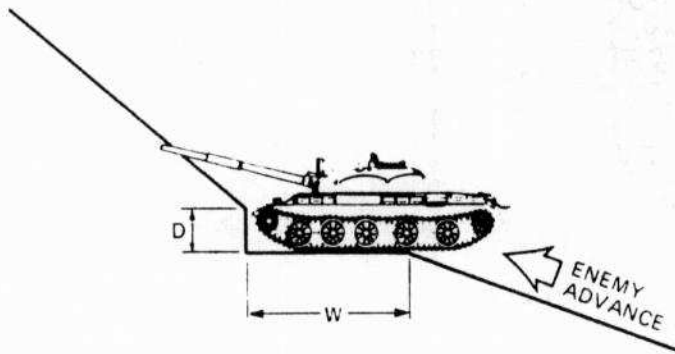
* Estimated value for T-72



(a) RECTANGULAR DITCH



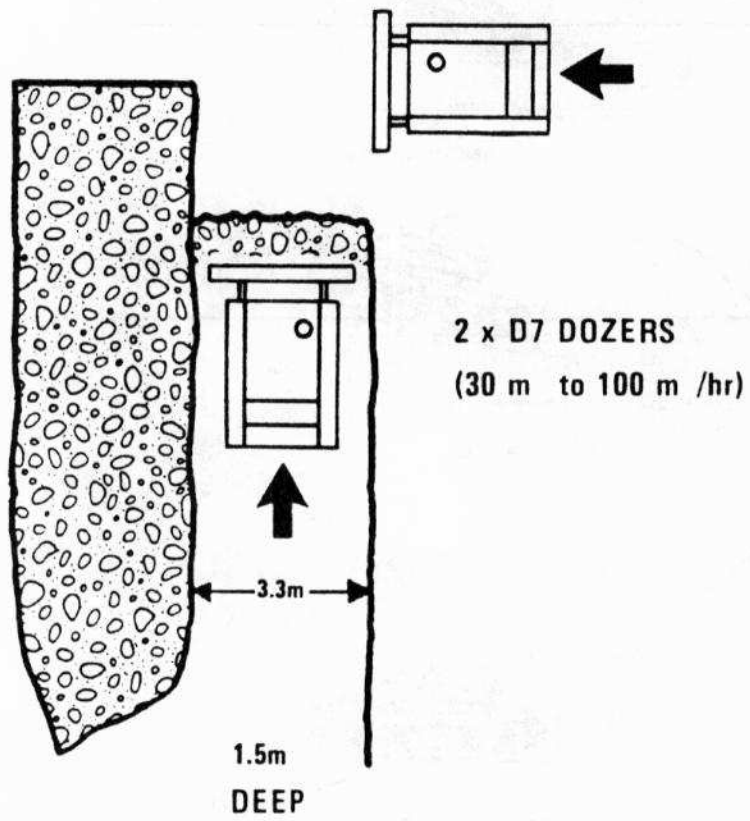
(b) TRIANGULAR DITCH



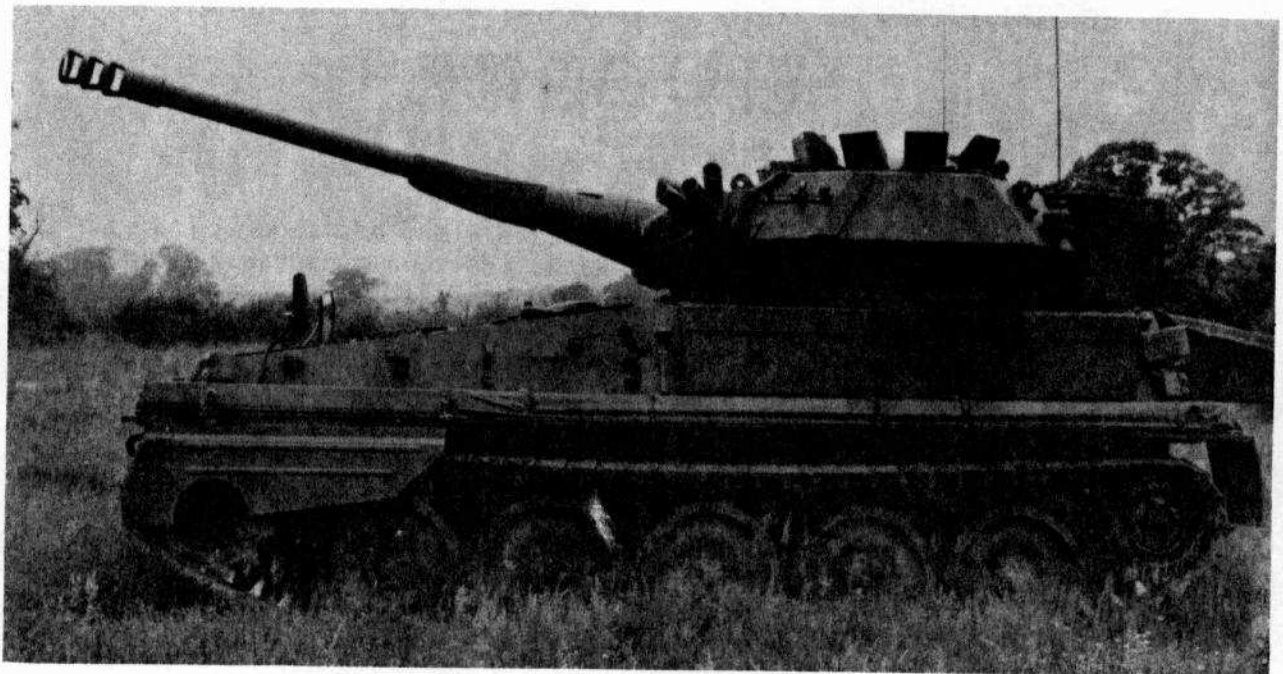
(c) SIDE HILL CUT

TYPE OF SOIL	IN METRES	DIMENSIONS OF ANTITANK DITCH		
		RECTANGLE	TRIANGLE	SIDE HILL
FIRM SOIL	D	1.5	1.5	1.5 (min)
	W	3.3	3.3 (min)	3 (min)
	BH	1 to 2	1 to 2	NA
	BW	3 to 6	2.25 to 4.5	NA
SAND	D	1.8	2	2 (min)
	W	3.3	3.3 (min)	3.5 (min)
	BH	1 to 2	1 to 2	NA
	BW	3.5 to 7	4.8 to 9.6	NA

Anti-Tank Ditch Dimensions



"T" Construction Method



SCORPION 90



ARMOUR SCHOOL UPDATE

EDITOR'S NOTE:

Our purpose in presenting the next few articles is to provide an update on activities here at the School. Very often, members of the Corps have many questions concerning the School as they have little direct contact with it. Hopefully, after reading these articles, those questions will be answered. The internal organization has been changed several times in the past ten years but the aim remains the same - to train the junior officers and senior NCO's of the Corps to the highest standard.

TRAINING SUPPORT SQUADRON

BY MAJOR T.A. NOONAN

Posted to the School, are you?

To officers and senior NCOs in the Corps, these familiar words have a connotation that suggests career progression and development. An Armour instructor's position is highly valued. To the young Corporal or Trooper the words carry little meaning. He undoubtedly wonders what is in store for him and how his upcoming tour of three or four years will benefit him.

In fact, there is a virtually 100 percent chance that the young soldier will be posted to Training Support Squadron at the School. The Squadron consists of 147 all ranks of which 124 positions are MCpl and below. When you stop and consider that there are only 1,072 trained Crewman MCpls and below in the Corps as of 17 Jun, the Squadron complement is a formidable commitment. For the vast majority, their tour at the Squadron is only a step in their career and they will subsequently return to their Regiments. In addition, the Squadron is augmented by up to 50 Militia Class B callouts for the period Mar to Aug annually. Within the School the Squadron's roles are to:

- a. Support Armour School training courses by:
 - (1) provision of vehicles (with or without drivers) either individually or in sub-sub-unit or sub-unit size;
 - (2) provision of personnel to assist in administration;
 - (3) provision of technical stores; and
 - (4) individual augmentation of instructors to training squadrons;
- b. Support the administrative and training commitments, other than courses, of the Armour School by provision of selected stores, vehicles and personnel;
- c. Conduct individual and School training as assigned through annual and periodic training plans;
- d. Provide training support assistance to the Infantry and Artillery Schools on request if resources are available.

To do its job the Squadron is equipped with 19 Cougar AVGPs, 41 light tracked M113 family vehicles and some 80 wheeled vehicles. The Squadron is organized along the lines of a mini-Regiment with 1st and 2nd Troops being field support operations troops, organized to support courses, with only A vehicles and crews. Each of the two troops has a complement of Cougars, M113s and Lynxs. Three Troop is similar to a Headquarters Squadron with three Sections. Number One Section is equipped with 28 $\frac{1}{4}$ ton and $1\frac{1}{4}$ ton vehicles to support course staff administration. Number Two Section, equipped with $2\frac{1}{2}$ ton vehicles, provides troop and heavy lift in meeting the School's missions and Number Three Section is equipped to provide wheeled and tracked echelons to field courses.

Manning policy within the Squadron is similar to that found at a regiment. All young, new soldiers are initially posted to the field support troop or the echelon section of Three Troop. Older, proven Cpls are employed as supervisors in the field support troops or in responsible positions within Three or Administrative Troops working with minimum or no supervision. As can be seen, job progression is possible and personnel are rotated within the Squadron or to limited positions in the training squadrons to provide both development and variety as in a regiment.

The soldier returned to the Regiment on completion of tour is normally well trained in individual skills and, through support to courses such as the TQ 6A, Officer Phases and the Squadron Commanders Courses, has developed or at least maintained his proficiency at the crew and troop levels. The Squadron, in the interest of flexibility, strives to have each man trained and proficient in: light track vehicles; AVGP; driver wheel for a large variety of vehicles; and an additional Primary Combat Function as either Cougar gunner, Leopard driver or gunner. Obviously young soldiers do not suffer training restrictions from their posting with the School. They are at least as well qualified if not better than their contemporaries at regiments.

In addition to the formal course training, the Squadron also conducts extensive individual skill refresher and upgrading as part of its annual training programme. In between support to courses and to other School commitments the Squadron runs gun camps, small arms training and general field refresher training. That the Squadron fielded a troop capable of competing for and winning the best Troop award in the recent Corps Cougar gunnery competition is indicative of the effort put into this aspect of developing our Crewman. By no means is this an isolated incident. The Squadron's soldiers strive for excellence in each aspect of their trade. Generally, personnel on course are pleasantly surprised by the personnel serving as their crew or directly supporting their courses.

The Squadron also conducts an extensive socialization programme because many of the formal programmes offered by Base recreational clubs do not meet the soldier's timetables. In the past year we have seen curling, golf and tennis clinics organized by the Squadron on top of the normal social functions you find at the School and Squadron levels. Exposure to new experiences such as adventure type training and deep sea fishing are also seized upon as opportunities to raise leadership skills and morale.

As you have probably ascertained, fairly extensive demands are placed on the young soldiers serving with the Squadron. They are frequently placed in positions where little supervision is possible because of course demands on student leaders. It is therefore essential that, to the maximum extent possible, each soldier be self disciplined, professionally competent and enjoy good morale. Standards within the Squadron are high starting with discipline.

All of the above translates into a heavy leadership role for the MCpls, Senior NCOs, Warrant Officers and Officers in the Squadron. With troops continually spread across a spectrum of tasks, their leaders face unusual problems and demands. Simple training and communication requirements often entail complex, flexible solutions. To accomplish all of the Squadron's goals each leader is forced to exert himself and he frequently finds himself working one or two levels higher than the rank he holds. Discipline, training and morale are onerous taskmasters and the Squadron is hardly the place to retire on the job.

From speaking to young soldiers posted to Training Support Squadron, it is evident that there are serious misapprehensions about the role of the Squadron and a general illusion in many minds that Troopers and Corporals are fodder to the training grist mill. The basic fact that highly trained drivers, operators, gunner, enemy patrol commanders and echelon personnel are key elements to the success of training must be borne in mind when selecting personnel for posting. Corporals and Troopers selected for posting should have had a good grounding in regimental life and operations with a suggested minimum of two year's service. The tendency to dump administrative and disciplinary problem cases does not help the School to meet its critical role of developing NCO's, Warrant Officers and Officers of the Corps through formal career courses.

Hopefully this article has provided the reader with sufficient insight and a true appreciation of Training Support Squadron. It is a major part of the School, dedicated to providing maximum support in the field and garrison to the many courses run yearly by Armour School.

TACTICS SQUADRON

BY CAPT D.J. MOORE

The instructors and SHQ staff of Tactics Squadron have, fortunately, the good sense not to regard themselves as an anatomical portion of the School (ie., "the heart of", "the brains of", "the backbone of", "the eyes/ears of" or "the strong right/left arm of"). Instead, they tend to properly place themselves at the focchi of all tactical and leadership training conducted at the School.

The training year is loosely based on a sort of delayed fiscal year in combination with the permitted manning levels. This means that money, instructors and students are usually available after the active posting season; thus the School considers the training year to start in September of each year. During the Fall, the concentration is on the Other Ranks courses, viz TQ 6A, TQ 6B and TQ 7. These courses run in a combination of varying schedules from September to mid-December of each year. With the TQ 6A being a particularly "instructor intensive" course and with course loading of fifteen to twenty-five students for each course, it tends to be an especially busy time for the rather small (in numbers only) permanent squadron staff of six officers and fifteen WO/Snr NCOs. This, combined with the requirement to run a Combat Leaders Course and a Fall LOFT serial, results in that infamous (to many) impressment of souls called "INCREMENT". Increment instructors are always highly qualified individuals who were caught with little to do at their respective units and failed to come up with a rational excuse for not leaving for Gagetown.

The next active period is the Winter/Spring phase of training. It is at this time that the prospective officers make their first appearance for AOCT Ph II (January to March) and AOCT Ph III (March to May). These, combined with TQ 3 training for the RCD and an additional TQ 6A serial are taught at a particularly intriguing time of the year. Every low front on the Eastern Seaboard and every quirk of the weather appears over the CFB Gagetown training area simultaneous with the start of field tactics training. Both instructors and students begin to feel "bulked-out" wearing thermal underclothes, two sets of environmental dress, a parka, a rainsuit and a poncho. There seems to be no in between; either one dies of exposure or collapses with heat exhaustion.

Also conducted during this period is the Squadron Commanders Course. This course allows OC Tactics Squadron to escape his office and conduct tactics lessons to teach senior Captains that withdrawals really don't have to be a rout and that a squadron advance really doesn't move in nineteen directions at the same time. This is followed by the final, and perhaps busiest period of the training year, the summer.

The June to mid-August period is devoted to the training of officer candidates. Starting with the Reserve Officer I/II, Reserve Officer III, AOCT Ph II, AOCT Ph III and AOCT Ph IV, there is seldom a break period for Tactics Squadron. This is one time of the year when traffic lights in the training area would be most useful. It is, again, during this period when there is a massive influx of increment instructors who each year fill the slots that help make the School operate effectively.

Light has perhaps been made of what is basically both a physically and mentally testing area of responsibility. With the much invigorated interest in leadership training, additional responsibilities have been given to the staff and instructors of Tactics Squadron. It is hoped by all that the students, from Corporal to Captain, leave the squadron both physically and mentally prepared to put into practice the essentials they have been taught.

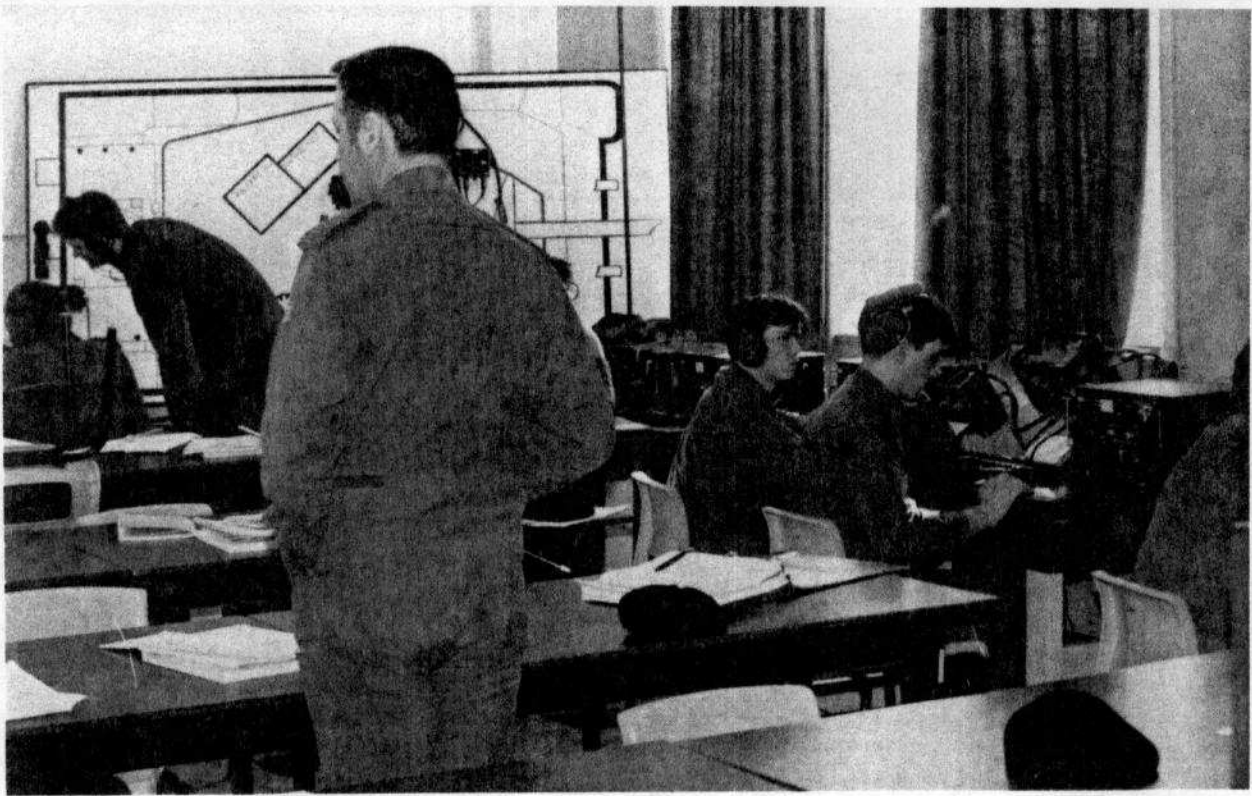
Finally, all Tactics Squadron personnel realize, in a serious vein, that to graduate a "tactically qualified" leader requires much more than simply moving vehicles or personnel tactically. It includes the full spectrum of that person's trades training. This requires massive input from the other squadrons of the School along with the rest of the Corps who are tasked, from time to time, to provide increment instructors. Without their assistance, Tactics Squadron would have an extremely difficult time in handling the number of students that now pass through the Squadron each year.

COMMUNICATIONS SQUADRON

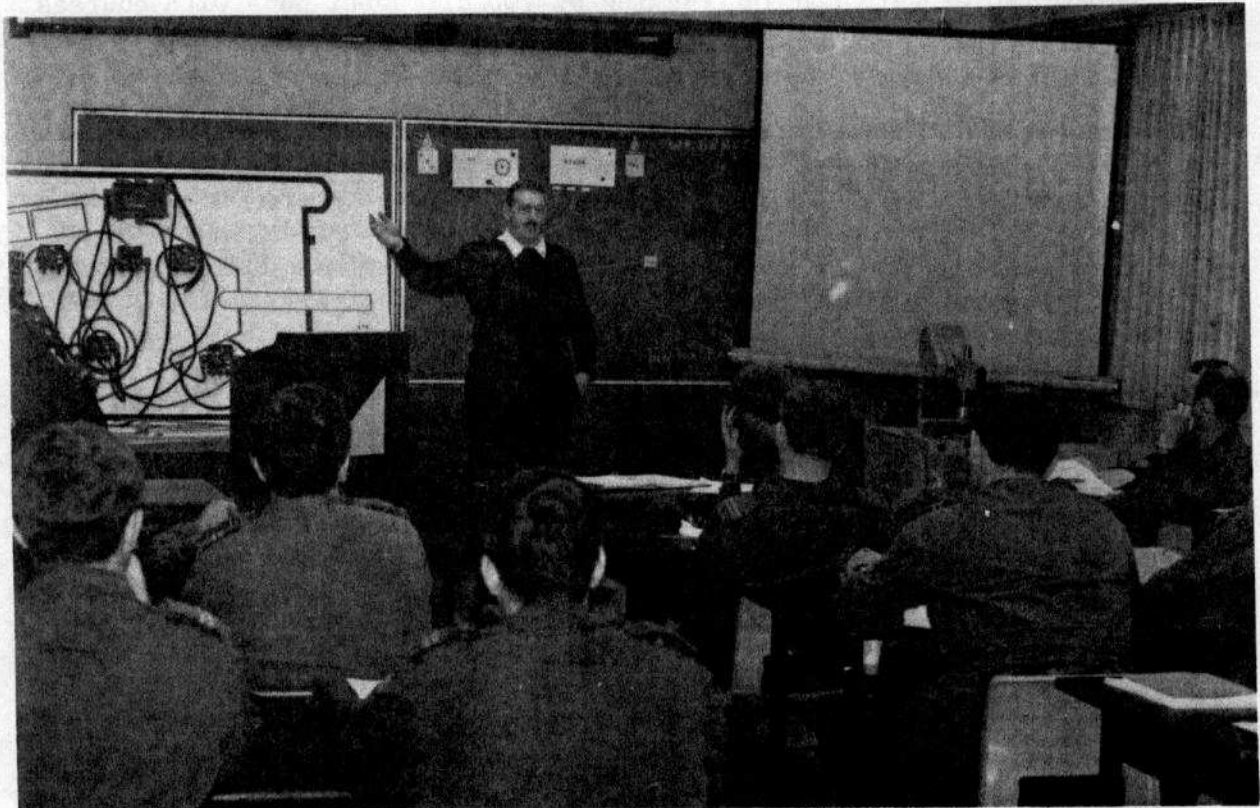
BY CAPT P.A. DONNELLY

Communications Squadron is a very busy part of Armour School. For example, during the period from September 1981 to August 1982, the squadron gave instruction to sixty-eight different courses. These courses ranged from one to thirty-seven days in length and involved eight hundred and seventy-four students. Virtually every course that is run at the School involves some portion of communications training.

Students that pass through on course come from all levels of training ranging from TQ 3 Armd to the Armoured Squadron Commanders Course. All are taught the basics on the technical nature of the equipment in use plus become conversant with "correct" voice procedure. This does provide a rather large task for the small core staff of one officer, two warrant officers and five sergeants. Thus, periodically, Communication Squadron is supplemented by increment staff from outside the School.



COMMS INSTRUCTION TO TQ3 8201



AND SCC 8201

The key course run by Communications Squadron is the Combat Arms Advanced Communicator. It's aim is to train officers and men how to instruct, organize and supervise telecommunications organic to the Combat Arms. Two serials are run yearly and it is the longest course run by Communications Squadron. Other courses that are run by the Squadron are geared towards the NCO and officer training conducted within the School and CTC itself. Most involve controlled VP exercises and as much hands on training as possible.

Of course, Communications Squadron does find time for other activities within its busy schedule. Annual refresher training and trips like the one to 1 CSR at CFB Kingston this past winter help round out the professional training required by the squadron's instructors. Looking towards the future, it appears that Communications Squadron will continue to be a busy organization within the School. With its developed pride and sense of teamwork, the Squadron intends to keep on producing the best possible communications for the Armour Corps and for the rest of the Combat Arms.

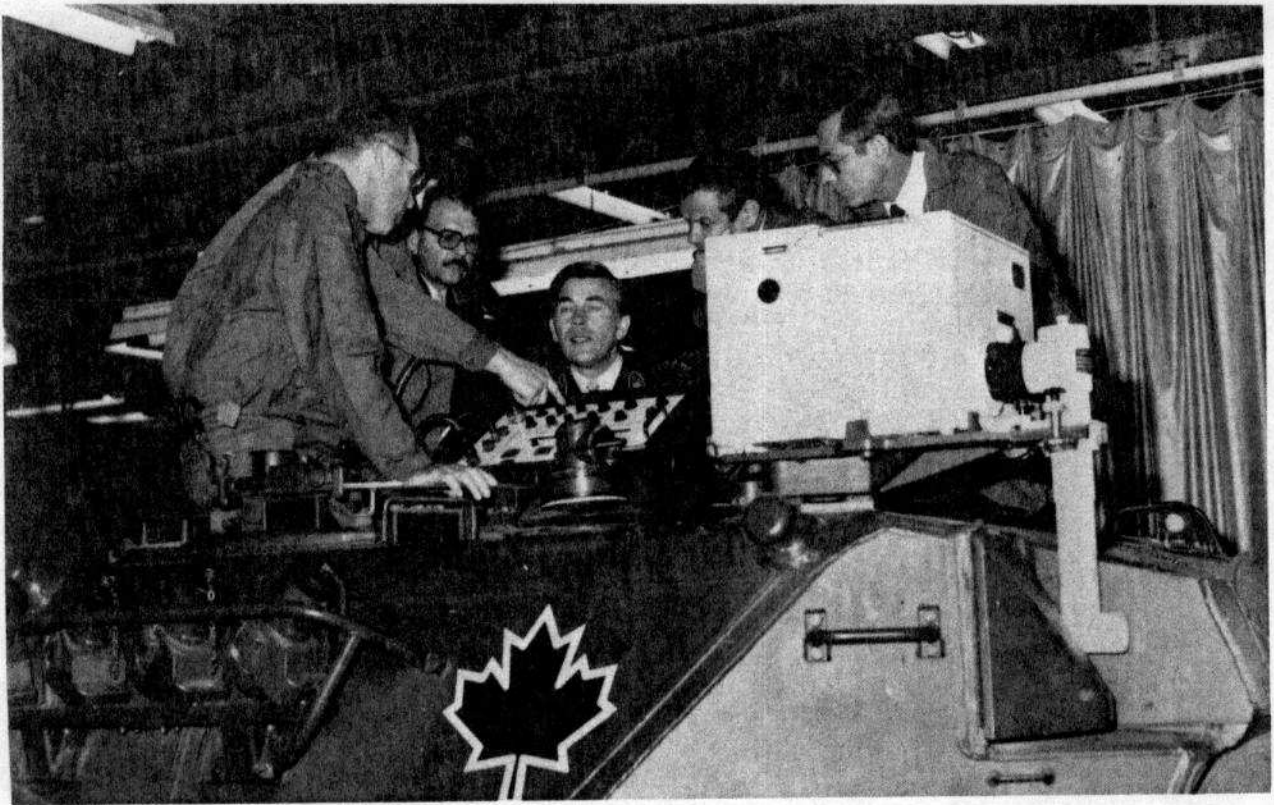
GUNNERY SQUADRON

The close of another busy year is at hand for Gunnery Squadron. Running two hangars and instructing on two different guns with courses running back to back in most cases, is indicative of the activity "down in the K-lines".

During this past year K-19, the Leopard Troop hangar, ran a total of seven courses; the Advanced Armoured Gunner course (Leopard portion), two TQ 6A Tank Crew Commander courses, two Basic Leopard Gunner courses, and two AOCT Phase III courses. In total, approximately 120 students qualified on the Leopard while expending approximately 8000 105 mm rounds. That amounts to about 1500 rounds per tank per year - a very heavy tasking for the tank.

The Cougar Troop, whose home is to be found in K-6, conducted six major courses. These included the Advanced Armoured Gunner course (Lynx and Cougar portion), a course for the VIII CH (M) from Sussex which qualified seven gunners, two AOCT Phase II courses, a RESO III course and a Basic Cougar Gunner course. A total of about 90 soldiers were qualified on Cougar while expending approximately 6000 76 mm rounds.

Even though the schedule was fairly tight in the conduct of training alone, the staff also managed to completely review and rewrite CFP 305(9) Parts 1, 2 and 3 (Theory of Armoured Gunnery, Application of Fire Leopard and Application of Fire Cougar), CFP 305(13) AFV Open Range Practices and a good start on the Leopard and Cougar Turret Manuals.



VISITORS TO K19 RECEIVING BRIEFING ON THE
TALAFIT GUNNERY TRAINING SYSTEM



GEN RAD SPEAKS TO AOCT PH3 8201
DURING THEIR FIELD TRAINING

The impact of the new vehicles is still being felt at Gunnery Squadron. Training aids à la Rothenburg/Penson have gone a long way toward standardization and professionalism of our 35 mm and OHP slide packages. The Franco side of the house is also starting to take shape very nicely as the finer points of terminology are being worked out. Also, in the near future, our new parallax correcter for the IFCS and the IMR will be available which will provide a quantum improvement in our training capability. It's arrival at K-19 is anxiously awaited.

To most the foregoing would seem to probably have taken up all of our available time during the past year. However, the artistic capabilities of the Squadron, known far and wide, has resulted in a self-help beautification programme which has seen the interior of both K-19 and K-6 decorated in Regimental colors. Being the "Royal Canadian Dragoon" hangar, K-19 now sports an impressive regimental showcase and display of gunnery memorabilia. K-6, the "12 RBC" hangar, displays the Regimental colours and crest.

The future appears to have more of the same in store for Gunnery Squadron. This year, it sent IG Teams to the LdSH, 8 CH and RCD to lend a hand where we could and it looks like there will be an even greater commitment next year. Well, if there is anyone who can pull it all together and get the job done, Gunnery Squadron is capable of doing it!

Driving and Maintenance Squadron

BY CAPT J.B. SENKO

Driving and Maintenance Squadron, the proud occupant of K-18 has spent a busy year instructing the various courses that passed through the hanger. Since last September, ten different serials have been conducted, varying in length from three to fifty-four days. In all, 268 individuals were qualified on the various vehicles of the Corps.

The Squadron's main task is the teaching of all D&M related subjects to all ranks of not only the Armour Corps but to selected members of the Artillery, Infantry and Engineers. Components, paths of flow, driving techniques, recovery and amphibious operations are just some of the topics instructed on by D&M Squadron's instructional cadre. These senior NCO's spend long hours in the classroom and in preparation and really must be blessed with raw courage and extreme patience! Who else would venture forth onto the driving circuit in the training area with an OCDT and/or Crmn "behind the wheel" for the first time in his life?

Of course, the Squadron plays host to a number of tours by VIP's and their entourage. Their people can be anyone from a local troop of "Brownies or Beavers" to prisoners from the local prison farm! These visits, known by D&M Squadron as the "dog and pony shows" occur throughout the year. A truly big hit is the Leopard Driving Tank which usually goes for a tour of the K-lines.

Squadron personnel continually update the reference material and handouts used on their courses. As all training is done in both English and French, this remains an ever present task. Another plus for the Squadron are the "fitters" who are located within K-18. They are never far away from the many questions/requests the Squadron has on the world of RCEME.

Socially, D&M Sqn personnel get together several times a year to swap "driving circuit war stories". Included also are the usual School functions of which D&M Sqn hosts the annual "Surf and Turf". The wives are not forgotten and amends are made for the many "late" nights that occur when student drivers develop troubles in the training area with the lights of Oromocto "blinking on the horizon".

Looking towards the future, the pace will not slow down. Most important, the instructors are waiting for, with anticipation, their latest toy - the new deuce and a half for the Forces.



THE TAC HEL OBSERVER

BY WO R.J. MURPHY

Having noted with interest in one of the latest issues of the Armour Bulletin, the Director of Armour's call for us "out of the unit types" to get involved, I decided to take up the challenge. I have written an article about the Tactical Helicopter Observer, a job in the Corps that many of my fellow members know little about.

Much has been said about the observer business, both good and bad, but for those who have experienced the world of the "Flying Machines" it's hard to say that it's not rewarding and at times very challenging. Having done two tours myself in the Tac Hel world, both as an observer and observer instructor, I feel somewhat qualified to speak on our job and maybe help to enlighten some of the members of the Corps.

First of all, let me talk about the Tac Hel organization as we know it today. Since 1970, it has been part of 10 Tactical Air Group encompassing, at one time, six squadrons. In 1980, 422 Sqn became part of 403 (Hel) OTS. 444 Squadron in Germany for all intents and purposes works for 4 CMBG but is responsible to 10 TAG for such matters as flight safety, standards, etc. Each squadron has approximately ten Kiowas (13 in 444 Sqn) in which the observer along with the pilot form a small but efficient team. 403 Squadron is the Operational Training School and it is here where the new observer learns the trade.

Though the tac hel world is part of the Air element, it is unique in that it must be capable of operating and living in the field. With that alone the observer, because of his land background, fits in well. He will get plenty of opportunity to display and put to good use his land background expertise.

What about the observer himself? How does he get into the job? The observer role has been around since the early 60's. In those days he flew in the old Hiller Helicopter with 4 CMBG having the only operational "Hel Troop". Observers were drawn right from the Recce Sqn and training was conducted within the troop. Some training was conducted here in Canada at Rivers, Manitoba, but with the closing of the base in the late 60's, Germany continued to be the prime training location. In 1972 the first observer course was run by 403 Squadron at CFB Gagetown with both Armour and Artillery students attending. Since that time, three courses a year have been put through with an average course load of four students.

Under the present system, the first step to becoming an observer is to indicate to one's superior the desire and interest to get involved.

When his unit receives a screening directive from NDHQ and the unit is able to let him go, the individual's name is forwarded through normal channels and in due time he finds himself on an observer screening course. The observer screening programme is conducted by each Tac Hel Sqn under one standardized programme, so that aside from the "Army of the West", there is no requirement for the potential observer to leave his home base. The course itself is approximately two weeks in duration with approximately 12 hours flying. The programme is designed to check an individual's reaction to the air environment, and his ability to map read and to compute simple math problems in the air. Some other requirements must also be met. The candidate must be under 36 years of age, security cleared to secret, medically fit and qualified PL 6A. In the past few years the latter has been waived due to shortage of personnel so that now MCpls have filled the void.

What about the observer course itself. Personnel who are selected from the screening programme are course loaded on the CH 136 Tactical Helicopter Observer course. The courses are run along with the CH136 Pilot Operational Training course. During the 14 week course, the candidate receives a wide variety of air and ground school subjects. Air Navigation is the prime subject with about 68 hours allotted to air lesson plans on both the 1:50,000 and 1:250,000 map scale. The student is subjected to a variety of flying conditions and environments. These include day and night navigation on both maps scales, low level, contour and "Nap of the Earth" flying. Hand in hand with this the student receives a variety of ground school subjects on air navigation. Other subjects covered are AFV recognition, Meteorology subjects, photography, aircraft technical training, helicopter recce missions and engaging targets with artillery fire. During the 14 week course the students attend Land Operations Familiarization Training (LOFT II) at the Armoured and Artillery Schools, each of two weeks duration. Sounds like a lot and for most it is.

The biggest problem most of the students encounter is the air navigation. A few years back a 50 percent failure rate was common but things seem to have turned around. Of 13 students put through in 1981, only two failed to make the grade. The course was changed in 1981 to reflect a more logical sequence towards the individual's inherited ability. He now starts his air navigation on the 1:50,000 map, a map he is familiar with. Previously he started out on the 1:250,000 scale, not the type of map you find in every crew commander's repertoire. Couple this with the relatively new type of environment, it put the student against a decided disadvantage. From the instructor's standpoint, why waste two to three weeks on the 1:250,000 map scale and then find out that the student doesn't have what it takes to navigate on the 1:50,000 map, which in the armour world is our basic map.

Upon successful completion of the course, the new observer is awarded

his Tactical Helicopter Observer badge and a CSQ. Both of these items are relatively new to the business but no doubt have enhanced the position. The new observer is usually posted to a Tac Hel Sqn within a year. Upon arrival at his new squadron the eager observer adapts quickly to the daily flying routine. Starting out as a CAT III (Air Force category/standards level) he will hopefully work up to a CAT I by the time his flying tour is up. At sometime during his second year, he will become a section lead, which is similar to a patrol commander but this will vary with manning, experience, etc. Secondary duties will be numerous and varied, from running annual weapons qualifications, working in flight operations, to conducting AFV training. The list goes on. Time away from home varies with each squadron and training commitments but it can be considerable.

What does the future hold for the observer business? There is talk again of a MOC being inaugurated. The powers to be will decide that. The O31 trade has been mentioned again for providing possible candidates for the observer role. This probably hinges on whether the other two organizations continue to supply the needed manpower. The Kiowa itself is starting to show its age, not only in its framework but also its technology. There are no replacement aircraft. Aside from outright purchase of a brand new aircraft, the American Army Helicopter Improvement Programme (AHIP), with its upgrading of the existing Kiowa frame, appears to be the most attractive. The Americans think so. They are planning to upgrade 700 - 800 Kiowas, in their fleet of 2000. Five prototypes are scheduled for delivery in 1983. Whatever the future brings, the observer in years to come will work in a cockpit that features digital electronics and multifunction displays for navigation and communications information. Much of this information will come from a mast mounted sight, which features among other things, a laser, a video tracker, and separate day sight and night sight with gyros for stabilization. Sounds like something out of a Leopard tank.

In summary, until some authority says to stop, we will require observers. The Corps must somehow make these people available. The use of the Master Corporal is a good one. In most cases the younger soldier adapts more readily. His mind, though lacking the experience, is young and receptive. He is eager.

Like the tank on the battlefield, the LOH has its place also, and will be around for a long time. A quote from an old observer, "May your rotors keep turning and the downwash in your life be light".

SIGHTING SYSTEMS

BY CAPT D.B. HOBSON

AUTHOR'S NOTE:

The need to be capable of operating on a 24 hour basis, makes it imperative that any sighting system can be used during this period. Sights have progressed from the straight magnified lens, capable of mainly day time useage, to Image Intensifiers (II) and Low Light Television (LLTV) systems capable of operating under low ambient light conditions. There is a need for a sighting system capable of functioning under all light conditions including battlefield conditions (i.e. smoke, dust, etc).

The Thermal Imaging (TI) system was developed to overcome the deficiencies in II and LLTV systems and to be capable of useage during battlefield conditions.

The following precis is a brief description of TI systems including their advantages and disadvantages.

THERMAL IMAGING

All objects radiate electro magnetic energy. Very hot objects, such as the sun, radiate this energy in the visible region of the spectrum, but cooler objects radiate energy at much longer wavelengths in the invisible infra-red region, primarily between wavelengths of 3-5 um and between 8-14 um. This energy can be detected and used to form an image of the object being viewed.

Different parts of an object radiate different amounts of energy, so if one wants to obtain a representation of an object, it is necessary to scan it with an optical system which passes what it "sees" to numerous IR detectors, each of which measures the variation of the intensity of the infra-red radiation. Each detector generates an electrical signal proportional to the IR intensity it receives. These signals are amplified, processed and fed to a matching array of LEDs which in turn emit normal light proportional to the electrical signal received. Another optical system then scans the light sources, in the same way as the original object was scanned (TV Camera) and produces a visible light picture of the object under surveillance to the viewer. In fact, the optical scanner produces a picture built up of lines, similar to a TV picture, but, as in TV, because the scanner moves more quickly than the eye can respond, the resultant picture to the viewer is complete and flicker free.

One of the first uses of thermal imaging was in reconnaissance aircraft which searched the ground beneath them with an IR scanning

device. This device scanned successive strips of the ground as the aircraft moved forward, thus piecing together a map of the ground. Similarly, forward looking infra-red (FLIR) in an aircraft scans a strip of the ground ahead of it and detects the varying degrees of radiation from the earth, fields, trees, etc., and of course from a target. Although the term FLIR was originally used for aircraft equipment only, the Americans now tend to call any form of directional thermal imaging - FLIR.

The fixed directional thermal imager works in the same way, but it has a narrow beam and the scanning is limited so that it covers the width of the objects which it is desired to detect and is done by moving the vidicon itself. The resultant picture is shown on a small display which is viewed direct by the operator through a suitable viewing lens; alternatively, it can be placed on a remote TV type monitor screen.

ADVANTAGES OF TI

TI has a number of advantages over the only other passive night viewing system - Image Intensification (II). It can be used in complete darkness, while image intensifiers require some form of ambient light, be it only starlight. TI is virtually unaffected by smoke, dust, or haze. TI can detect objects even through camouflage nets, and, so far, no effective method of thermal imaging camouflage has been evolved. TI is not blinded by searchlights, flares and fires, which often completely shut down an II system. TI can reveal details which even the human eye could not detect; for example, the eye could not tell whether a tank's engines had recently been running, but the TI can because the engines would be hotter than the rest of the tank.

TI can be used to spot fall of shot (or missiles) since the position is indicated by the heat generated by the explosion. TI can detect objects at a considerably greater distance than can II. Most modern TI devices can recognize a 2M long vehicle at 2 KM and can detect men at 1 KM. Range of detection, however, is a function of the size of the device. TI can penetrate smoke and mist better than II, but its performance can be downgraded by damp conditions such as when there are small drops of moisture in the air. Such conditions would not affect II systems to the same extent. On the other hand, rain has little effect on TI but can block out an II system.

DISADVANTAGES OF TI

TI depends very much on the heat conditions and particularly on the contrast of heat (energy) emitted by the target to that emitted by the surroundings. The detector in a TI system must be cooled (-200°C). This is done by an external source, normally liquid nitrogen.

Glass is opaque to the type of radiation detected, therefore, a different material is required for the objective lens. TI presently uses germanium. The requirement for a scan, both vertically and horizontally, necessitates a very complicated system, normally a spinning mirror system. TI is considerably more expensive than an II System.

TI OF THE FUTURE

Future development is still very highly classified, therefore, the following is an outline of what can be done under the existing state of the art. One such area is remote scanning, whereby the sensors send back what they "see" by radio link to a central area where results are displayed on a screen. In this way, results from several different sensors in different locations could be monitored in one area giving a better overall picture. A second area of development is sector or all round scanning such as in a radar system. The scanner could merely give an indication when something is detected and then a more directional TI device could then be employed to identify the detected object. Such an example is a Thermal Pointer.

Another area of development is alternative methods of cooling the detector, such as the use of a sterling engine. Coupled with this, of course, is research into detectors of different material which do not have the requirement for cooling. Other research is being carried on for a substitute for the germanium objective lens.

It must be remembered that TI does not give range to an object and therefore, a laser rangefinder must also be employed if range is desired. The present NDYAG lasers such as in the AN/GVS 5 and also the Leopard C1, do not have the "Visibility" that TI has and therefore, other development is being carried on with gas lasers as their performance is much more compatible with TI.

ABBREVIATIONS USED IN THIS ARTICLE

IR - Infra-red
TI - Therman Imager
NDYAG - Neodymium in yttrium aluminum garnet
um - Micron equivalent to 10^{-3} mm

1



AFV RECOGNITION TEST

answers on page 63

IDENTIFICATION des VEHICULES BLINDES

reponses à la page 63

2

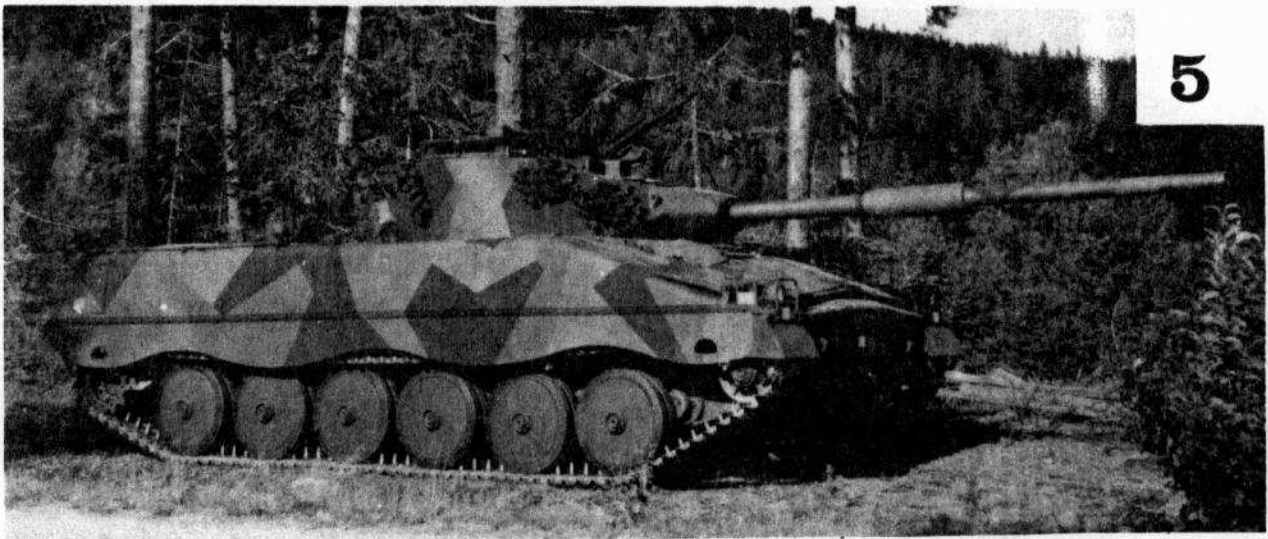


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THE REGIMENTAL SYSTEM

BY CAPTAIN E.J. MAC DONALD

Editor's Note: The following article is a condensed version of a Service paper written by Captain MacDonald while attending Canadian Forces Staff School in 1980. It deals with the author's view of the current situation in regard to the regimental system in the Canadian Forces. The author is currently on duty as part of the RSS, Charlottetown, P.E.I.

The Regimental system has a long historical background and it is clear from writings such as Homer's Illiad and Caesar's Commentarii de Bello Gallico that the Regimental system was used by both ancient Greek and early Roman democracies. It was subsequently adopted and utilized by most western nations. Even before Caesar's day it was found that systems which correspond to family, kinship or tribal groups best provided the incentives and cohesion necessary to win a battle. From an operational view it was clear that men were seldom prepared to risk their lives or die in battle for abstractions such as ideologies, or large social groups such as nations. Instead they fought to preserve their "face to face" groups built on the family system at section, platoon, company and battalion levels within regiments. For instance, a man was less likely to abandon a wounded comrade with whom he had worked and lived for several months than another man whom he recognized merely as another wounded soldier.¹

The Canadian Regimental system since post '67 integration has undergone major changes which have eroded the family tradition and have placed this once valued system in serious jeopardy. The Regiment has lost such valued traditional institutions as messes and replaced them with a central club system run on the base concept. Other areas are centralized supply system, man for man rotation and the devastation of the ranks of corporal, sergeant and junior officers.

Brigadier-General Loomis wrote:

"...if one fails to understand the nature of the Regimental Family which exists in our Volunteer Services then serious error could be made by anyone attempting to reorganize them in the interests of saving money. For instance, any attempt to amalgamate functionally similar activities on a military base, to better use material and manpower, may be likened to someone attempting to institute an "Apartment Consolidation Plan", in which we may assume six families are living. For this analogy we must assume the economist either does not think families are useful or does not recognize he is dealing with families. Rather he sees only individuals,

and attempts to place individuals therefore breaking up the family in the interest of economies. Capital, equipment and manpower takes no account of the fact that in the end the families are destroyed and a defective form of society is produced. Thus within military forces of a democracy, the proposals for consolidating all units on a few large bases, for establishing large centrally controlled common messes or clubs and for reorganizing combat units to better utilize manpower must be examined from the point of view that these units, in the first instance, are artificial kinship groups or Regimental families." 2.

I would like to deal with some of the problems facing the Regiments and present solutions that could be taken to reverse the trend that exists today.

MAN FOR MAN ROTATION

The decision for man for man rotation was one of the most regrettable ever taken against the Canadian Forces under the guise of cost effectiveness. During the early sixties when Regimental rotation to Europe was still in effect, the attrition rate was comparably small in comparison to the present mass exodus. From this we can conclude that the serviceman did not mind rotating because the Regimental family was moving which he felt a part of. In addition, his immediate family did not find this move too unpleasant because their friends and school mates were part of the move.

Today we send personnel from various Regiments to fill vacancies as required. Men are posted as individuals, as "human resources" formed into a common labour pool sent wherever needed; the results are not surprising. Servicemen resent losing their Regimental affiliation, families are reluctant to move because their friends and neighbours are not going. The serviceman's morale is affected, he feels alone and abandoned and in many cases seeks release.

The spirit of the Regimental family has proved itself in both war and peace, and we must not fail it now. Liddell-Hart has written about the first battle of Ypres (Nov 1914);

"... the family spirit was its keynote, and the key to the apparent miracle by which, when formations were broken up and requirements reduced to remnants, those remnants still held together." 3.

The solution to this dilemma is to return to our former system of rotating Regiments. The attrition rate would be reduced which would help offset the additional cost, and most important, it would return to the Regiments the pride and family spirit they once enjoyed.

MESSES

The decision to close Regimental messes and move to the base concept, has broken a long standing tradition which was held in high esteem by all who belonged to them. Within the mess all members are socially equal even though their military status makes them most unequal. Within this context members may communicate freely within the bounds of good taste, just as members of a well ordered family are able to communicate in a meaningful way.

Brigadier-General Loomis writes:

"... the fragile counter-balancing mechanism of our democratic institutions has been built into our mess system to preserve our citizenship. This most practical approach, is under severe pressure and in danger of extinction because of its apparent economic efficiency. Messes, like all democratic mechanisms for balancing power, distributing responsibility and rationalizing authority, are founded upon a calculated inefficiency when considered from a short economic point of view". 4.

The need to return this vital institution to its former place of importance cannot be overstressed. The use of military personnel in messes and clubs is not only to save money. There are always servicemen, who, due to illness, or sickness in the immediate family can be employed in such institutions until their problems are solved. The use of these personnel helped to reduce operating expenses and enabled the serviceman to enjoy an evening in his mess at a reduced cost. The decision to employ civilian personnel has increased the cost of services to such an extent that local civilian clubs are now competing on an equal basis. Consequently, mess attendance is down causing a number of clubs to fold or be amalgamated. Hence the loss of these valued institutions which helped so magnificently to foster the spirit of the Regiment in former years.

RANK STRUCTURE

The devastation in NCOs and junior officer's ranks has placed our system of authority at this level in a very awkward position. Formerly a corporal commanded an eleven man section in an infantry platoon; now he is one of the men. To solve this impasse the rank of sergeant, which was one of our most coveted positions of authority, was downgraded from platoon sergeant to section commander, the position previously held by the corporal, and to replace the sergeant's position, the rank of warrant officer was created. The junior officer who commanded a troop or platoon in the rank of 2Lt/Lt are now commanded by captains. However, in recent years this position has been rectified to some degree.

The logic behind these moves is difficult to fathom. The current explanation is that Treasury Board would not pay privates more money: solution, promote them to corporal. This in turn started a chain reaction which resulted in our present situation. A possible solution would have been to reinstate trades pay as was the case prior to 1967. "Where do we start now?" Firstly, waive the automatic promotion to Corporal after 48 months and promote only on merit, qualification and vacancies, and return them to their former position of command. Reduce the positions of WO through normal attrition retaining the SQMS/OPS position only within the Coy/Sqn, thereby easing the sergeant back to his former position. The rank of corporal would then equate to the former appointment of LCpl and the master corporal would be in the first command position. Commanding officers should then have the authority to promote corporals based on a percentage of his unit strength and the authority to promote master corporals subject to NDHQ approval and existing vacancies.

CENTRALIZED SERVICE SUPPORT

The Regimental family has further suffered through the base concept, which centralized many of the support systems that were part of the unit such as pay services, food services, postal and clothing. Previously a Regiment was a self contained unit with all support personnel under command of the Commanding Officer. This system enabled them to become part of the family and a mutual respect and confidence between support and operational troops fostered. The situation today is resentment and friction. Should we be involved in Combat operations, the unit commanding officer commands the operational troops and outside agencies command the support personnel. Therefore, the unit is deprived of the flexibility so necessary to win battles. The solution should be to return to the field units command of their support personnel regardless of costs.

The points outlined are by no means all that has happened to the Regimental system over the past ten years. However, they are the ones that are causing the most pain. Brigadier-General Loomis writes:

"It can readily be seen that today these two systems are clashing as our society changes. Again by analogy on the one hand, the Regimental system may be said to be rurally oriented in that great pride is taken in being self-contained and independent - the sort of idea of being able to do all things not necessarily expertly but well enough. On the other hand, the continental system may be said to be urban oriented in that it fosters functional specialization and inter-dependance - the sort of idea that if the plumbing needs repair call in a specialist plumber or if the roof leaks call in a specialist carpenter. In reality, there is a great deal of overlap, but it is equally clear that not all parts of the Canadian Forces

are equally adaptable to either systems. Therefore, let us have the wisdom and courage to be different and to reorganize the needs of different elements which must be interwoven to form the strong military fabric required to secure Canada in the most uncertain world we all face." 5.

The Regimental system is one of our oldest and most cherished institutions. To destroy this proud system which has proven so loyal to our country in war and peace, is a sad dilemma for those who serve and have served. Let us have the courage to admit that we have failed, and take the necessary steps to rectify the situation before it progresses beyond the point of no return. "Let's go back where we were".

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LEO 1



LEO 2

EQUUS BELLUM

BY CAPTAIN C.S. OLIVIERO

AUTHOR'S NOTE:

This article is the result of a small wager I once took. The credit for the original idea must go to Captain Dennis Moore 8CH(PL). I submit it here, tongue in cheek, in the hope that it may amuse.

Man is estimated to have first domesticated the horse about 1400 B.C. Since that time he has bred, raised, lived with, and fought with this noble animal. In some societies the horse has even taken on special significance. At least one steed is even known to have been made a Roman Senator by the crazed Emperor Caligula.

AIM

The aim of this article will be to demonstrate that the horse can once again become a useful instrument of war.

APPROACH

I know what you're probably thinking. This man has been sitting for too long in the sun. Would it not be madness to suggest that we should return to horseback in an age when cruise missiles threaten their targets from halfway round the globe? No, it wouldn't. In fact, the irony is that it would be the very same technology that put the horse out to pasture that would once again introduce equine nostrils to the smell of cordite.

I shall cover the topic in four stages. They will be:

1. Complexity of design;
2. Maintainability;
3. Cost; and
4. Possible uses.

STAGE ONE - COMPLEXITY OF DESIGN

Most modern military equipment, whether an assault rifle, a tank or a jet aircraft, are really too complex for the ordinary soldier to fully understand it. In fact, it would not be incorrect to say that a large part of our military equipment inventory is too complex for any single person to fully understand how it works. The soldier may be able to operate it but the moment that it stops functioning an expert must be called upon to repair it. In wartime this would not always be possible. Of course, the ideal solution would be to have all personnel fully able to operate and repair all equipment but this is, of course, an impossibility,

Equipment should be simple to use, but the paradox is that in order to make a piece of equipment simple to use we must usually make it complex in design. Evidence the Leopard tank. It is simple to use in relation to the Centurion but is a much more complex piece of equipment as a result.

The horse on the other hand, is neither complex to use nor is it complex in design. It is a living, breathing, thinking being. It has innate intelligence which we can put to use by training the animal to respond in predictable ways to a variety of different situations. Certainly there is the threat of biological disorder and of illness, but we humans suffer from the same drawbacks, and the same preventative measures that we take to protect our men will also protect our mounts.

In sum, with a horse we would obviate the need for the phalanx of highly trained specialists that tends to accompany our modern army to the field. Any soldier that could be trained to care for himself could be taught to care for his horse. This was true in the Bronze Age, and it is no less true in the Nuclear Age.

STAGE TWO - MAINTAINABILITY

By the term maintainability I do not mean maintenance. The latter is the act of keeping something functional. The former refers to the logistical support required to keep something operational on the battlefield. Vehicles require fuel, coolants, lubricants, parts, varying types of ammunition, and specialized repair teamsThe list seems endless. Anyone who has seen a "combat support unit" follow fighting troops knows what I mean when I refer to the tail wagging the dog.

This would not be so with cavalry units. Food and water would still be necessary, certainly, but these items could be temporarily forgotten with little reduction in the fighting effectiveness. At times these items could even be foraged on the battlefield itself.

Perhaps the best argument in favour of the horse with respect to maintainability is that unlike any other piece of equipment the horse can lend itself to the maintainability of its rider instead of vice versa. In foul weather, horses could provide body-heat to soldiers; they could give psychological support in a companionless environment; they could even give shelter to the wounded, but above all, in extremis, the horse could provide food for his master.

So we see that in terms of maintainability the horse is by far preferable to any vehicle as a machine of war.

STAGE THREE - COST

The question of cost is so obvious as to be self-evident. Horses are good weapons because cheapness recommends them. An

entire regiment of horseflesh is cheaper to buy, to train, to equip, and to maintain than is even a single mechanized reconnaissance troop. It would be foolish to draw comparisons between horses and modern military machinery, but consider just for a moment what it costs to keep a modern army equipped, fed, mobile, and effective. Without going into detail let me say that the costs are astronomical.

Allow me to continue this line of reasoning. Think back to an accident which occurred last year onboard the aircraft-carrier USS Nimitz. One aircraft failed to negotiate a safe landing and within minutes over 100 million dollars worth of equipment became useless scrap-metal. One hundred million dollars! Think for a moment how many horses you could buy with one hundred million dollars.

No one is suggesting that we should replace jet aircraft with horseflesh, but there are certain things which horses could do - and cheaply - and that brings me to my final stage.

STAGE FOUR - USES

Horses could be re-introduced to at least one area of land warfare with relative ease: reconnaissance. Mounted troops would be mobile, they would be quiet, and they would be flexible. They could perform many, if not all of the tasks which are now assigned to the Reconnaissance Troops. Forward reconnaissance; flank surveillance; rear area security; and anti-airborne operations are but a few of the more obvious possibilities. The micro-computer has brought the technology necessary to equip these mounted troops with a vast array of sophisticated communications equipment as well as the necessary weaponry. Body armour would give adequate protection from both small arms fire and shrapnel. The possibilities are truly staggering - if you can make the mental adjustment to consider them seriously.

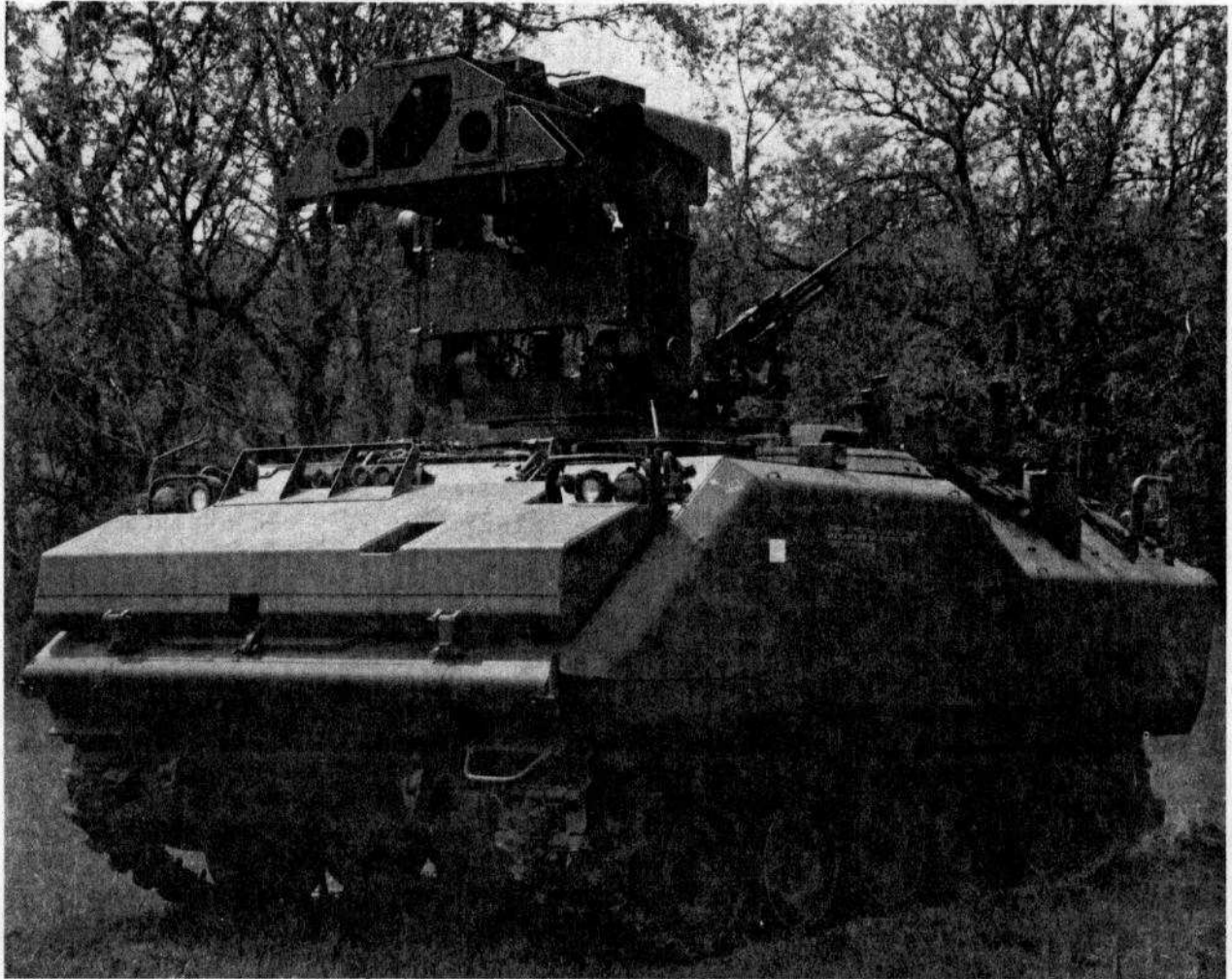
SUMMARY

Horses are simpler than any other weapon both in design and in concept. Soldiers can relate to other living creature far better than they can relate to machines. Horses have been shown to have a high maintainability factor. There are limited numbers of things to go wrong and in the worst of cases the horse will sustain the rider instead of vice versa. Horses are cheap in comparison to most other modern equipment, and they could easily replace armoured reconnaissance troops in a myriad of rôles.

CONCLUSION

It may sound strange to be asking to reconsider bringing back a long gone form of warfare but the point is that it is not only a possibility; it is a feasible alternative to what we now have. If the problem is considered rationally and not merely dismissed as a young cavalry officer's whim it becomes apparent that the idea is not nearly so far fetched as it originally may have sounded.

Horses are a viable alternative to many of the lightly armoured or soft-skinned vehicles in use today. They have been a proven weapon in the past, and they can become so again!



IMPROVED TOW VEHICLE (ITV)



APACHE (AH)

THE FORMATION OF "Y" TROOP 8 PL (NB) HUSSARS

EDITOR'S NOTE:

The following article offers the reader a view into the not too distant past. It is written by a soldier who began his career in the Militia just after WW II and later found himself a member of the Regular Force. He deals with a method used to obtain the required manpower for our "new" NATO commitment in the early fifties. The author is still a member of the regular force and has stated a preference to remain anonymous.

In early 1951 Canadian Army (Active Force) was still recovering from the post-WW II slump of demobilization. The demand for trained all-ranks to support, train and in many cases form part of the Canadian U.N. Contingent for Korea, was still an ongoing commitment. The bulk of this force, 25 Canadian Infantry Brigade Group, had been recruited as individuals and used to flesh out the skeletal units and sub-units formed by personnel of the Active Force.

With the commitment to form another force of brigade size for NATO, the experience gained in forming the U.N. Brigade, perhaps fostered a slightly different approach in recruiting this new force for Europe, the 27 Canadian Infantry Brigade Group. Militia units from across Canada were tasked to provide formed sub-units complete with officers and NCOs, wearing the badges and titles of the parent unit. This factor alone was to become a shot-in-the-arm to the Militia Unit in prestige and recruiting potential. For the Active Force it provided a depth to its organizational base as well as a regional and traditional identity that even CF integration has been hard pressed to erase.

As a young New Brunswick high school student with three years in the militia and the same number of stripes, the events of the world and the workings of the military organization above unit level were distant factors. The first effect of the planning for the new force was the opening of a call-out position at No 2 Personnel Depot (PD) Fredericton which I took. Three other members of my Unit (8 PL (NB) Hussars), Lt Russel Knox, Sgt J.W. "Digger" Marion and Sgt George Ewing had taken call-out positions earlier. My new job at the Recruit reception desk was made much easier by the efforts and guidance of these "old hands" at the PD. All three have long since retired from the Forces but for many years our service careers were interwoven.

Over the next few days, the steady increase in inquiries, successful entries and hopefuls indicated the growing interest in this new adventure. I suspect the reasons for joining-up were varied but, as I recall, there were a few major motivators. Some, like me, were just leaving incompleted schooling and were caught up in the adventure of "going it on your own". Others, having tried it on their own, thought

the army way might be a better approach and a high percentage were war-time vets who were trying either to recapture the military savour known while in uniform or to correct a suspected error made by not continuing a military career at the end of the war years. Add to this the seasonal slump and the omnipresent insufficiency in the East Coast job market, the prospects of steady employment with an over-seas tour thrown in, "joining-up" at this time was a very attractive option.

As the picture continued to unfold, it was inevitable that I would be caught up in the process. Confirmation of the decision was a symbolic coin-flip, ceremoniously carried out during the latter stages of a well celebrated but impromptu birthday party - my seventeenth. The next new entry group to be escorted through the routine was of added interest as we were members now, as well as conductors of the group.

Camp Sussex, where our group was assembled, had been a training and staging camp for many thousands of wartime soldiers and a militia training focal point for decades. It also served as the major training ground for the local militia unit, The 8th Hussars. At this time, RHQ and two of the four sqns were headquartered there and the bulk of the unit's equipments were located in what remained of the wartime accommodation and training facilities.

Most of the few who assembled there in the first few days of May 1951 were returning to familiar surroundings and finding it not unlike many previous militia training exercises. We had literally grown up in the unit under the tutorship of war wise officers and NCOs who had not forgotten the value of comradeship in a group endeavour and who had learned a serious game that survived on its lighter moments. They had found it could be played with equal vigour in peace time. I feel we became their beneficiaries.

The 8th Hussar troop, designated "Y" Troop, started to take shape at Camp Sussex in mid-May. We would not for a time have a troop leader from The Hussars although Lt Russ Knox would join us later in Petawawa and 2/Lt Bob Sear was with us for a short period before our departure. Capt John Beaumont (RCD) had been detached from the Royal Canadian Dragoons, Camp Petawawa, to form the Hussar troop. His task was to lead and administer us through this critical formation period and to lay the groundwork for our inclusion as a troop in a yet to be formed squadron at Petawawa.

The short month stay at Sussex was filled with activity although no attempt was made to conduct formal recruit training. Physical fitness training, arms and foot drill and basic military familiarization are a part of every new soldier's life. Ours was no exception. Kit and

quarters started to respond to much needed attention. Initial awkwardness gave way to growing confidence and friendships were established that have survived the many years since. New faces kept arriving from the Personnel Depot at Fredericton and were fitted into the program. New soldiers were kitted complete while ex-reservists were brought up to full scale by the addition of items not part of the militiaman's kit.

Our messing arrangements were an adventure. The Hussar mess hall only operated during weekends when the unit trained. Our troop strength was not sufficient to justify full time operation so arrangements were made for us to take all meals at a restaurant in the town. Vehicle departures to and from each meal were times of good natured harassment and a few side bets as to the number of consecutive meals attended by all hands or whose table would get the good looking waitress.

By the time we were to leave for Camp Petawawa our troop strength had reached sufficient size to warrant a bus for "troops and baggage" with little else to spare. Late on 09 June 1951 we were bussed to Moncton to board the C.N. train for Montreal. In Montreal after a short stop-over for "refreshments" and train change, it was on to Camp Petawawa arriving the evening of 10 June. One of our party, Tpr Muck, was to make the trip a few days after the main body. I can't remember the outcome of his summary trial but it seems his story of having dozed off and stirring just in time to see the bus for Moncton fade away into the distance did not succeed in impressing the OC.

The "1st Armoured Squadron" of "PANDA" Force (Pacific and Atlantic Force) that assembled at Camp Petawawa in June 1951 was somewhat less than a highly disciplined body of "crack troops". We were a conglomeration of old sweats and green youths and all shades between. There were educated ones and illiterate ones, smart ones and some not so smart, some with criminal records and some who had only just escaped being caught. Two had served in the French Foreign Legion and one had been in the Polish underground. Our arrival must have presented some uncertainties for the permanent military residents of the Camp.

The Hussar troop and its beginning was duplicated at four other Eastern militia centres each supplying a troop. The Halifax Rifles, The Prince Edward Island Light Horse, The Three Rivers Regiment and the Regiment de Hull, with the Hussars made up 1st Armoured Squadron bringing with them the multiplicity of unit dress. At Calgary, the Lord Strathcona's Horse (Royal Canadians) were the hosts of the 2nd Armoured Squadron similarly raised from Militia Armour units of Western Canada.

Troop individualism, a nightmare to the starched hauteur of the SSMS and NCOs of our host, The Royal Canadian Dragoons, was probably our greatest asset. Within each troop there was a viable balance of experience and fresh blood with sufficient personality characteristics to make life interesting. Problems were mainly sorted out within the troop framework with the assist of the natural endeavours of all to keep these localized. Inter-troop competition was easy to generate by the esprit de corps of regional origin and Regimental affiliation. Carried to squadron level the trend was eventually strong enough to overcome the disdain of the old soldiers of The Dragoons and win for us, their acceptance as junior members of the fraternity. Initiation being a form of

flattery, it was our means of responding to the high example we found all around us as set by the RCD. It was our way of learning to meet them on their own ground.

As much as it may appear otherwise, excepting a few isolated skirmishes, there was an atmosphere of cooperation and assistance between the RCD Squadrons and the new arrivals. The initial cool reception and subsequent developments can be likened to the brazen, inexperienced and independent orphaned cub and the close-knit family pack which is forced by circumstances to provide a stable environment for an outsider. The chemistry appeared to be right. RCD Officers were assigned to the senior squadron positions and "Dragoon" NCOs initially supervised then assisted our NCOs during the following weeks of GMT (General Military Training).

While the 1st Armoured Squadron was braving the mid summer suns of Camp Petawawa, ensuring the smallest part of "F" parade square received our undivided attention, other parts of the NATO Brigade were assembling, training and shaking-out into unit sized groups in other parts of the country. It was soon evident that our squadron would not fit into the time frame to meet the October/November sailing dates for the 27 CIBG. This basic fact, although obviously well known by anyone who took the time to assess it, was a true disappointment to all of us. Our squadron strength had by now reached near that of the RCD itself. Our suspicions were soon to be confirmed.

Near the end of summer the squadron was mustered on "F" Parade Square and the situation explained. "C" Squadron RCD would fill the Armour Commitment in Germany. Officers, NCOs and men would come from the other RCD Squadrons. 1st Armour Squadron would become D Sqn RCD and would, for the present, retain the Regimental Affiliation of each of the current militia units. Personnel who wished to take their chances with another branch of the service were invited to choose one of a few choices and volunteer for transfer. Many did, and were on their way within a few short hours. Some I've met in later years, few stayed in the Forces but all admitted to some degree a resentment to what has been described as a Corps recruiting drive under the umbrella of the enthusiasm of the situation.

For those of us that remained, the fall months were spent on collective training and trades courses. "C" Sqn completed training, were dispatched to Germany and we settled into the void left in the Regiment. The die having been cast, the final blow came late in the year. Inter troop postings had broken the unit identity and finally the Regimental badges and accessories we had worn from the start were taken down. The last barrier to complete assimilation had been removed. Inter squadron postings were the coup de grace.

Fostering of new loyalties are sometimes difficult through legislation. A different badge and in some cases a different squadron did not favourably contribute to an easy transition. I found myself for a time in B Squadron but by late spring 1952, most of the scattered original Troop sergeants were back in D Sqn and destined to form part of the Fall rotation to Germany to replace married personnel of C Sqn who were completing their year commitment. The summer was spent in squadron training working out of a Squadron field camp situated just west of Orange Road. In November those of us slated for Germany made our way by train from Chalk River to Camp Valcartier, the overseas staging camp and within the week boarded "TSS Neptunia" at Quebec City for Rotterdam.

Although the original 1st Armoured Squadron did not, as a squadron formation, serve in an operational role many of the personnel were to find satisfaction in accomplishment of the initial aim. In retrospect the way in which it was accomplished was perhaps the most productive for all. Both C and D Squadron were stable professional units. Each operated as an independent squadron, were commanded and manned by personnel well trained to meet the demands of the situation and as such, provided an ideal environment to learn, practice and refine the art of soldiering.

It was in this environment that I found the pride in becoming and being a Dragoon was as rewarding as being an Hussar had previously been. One did not take from the other. Each was an expression of involvement during a particular period of time. This period was an enrichment to a lengthening career.

I have since reversed the same course but take a little inner pride at being sometimes referred to as an "Old Dragoon". Being an "Old Hussar" as well does not suggest the need to state a preference. A wise man never discusses with his wife the attributes of an old girlfriend. He just smiles with the memory of both.

THE ANTI-TANK HELICOPTER THREAT

BY CAPT K. MCKAY

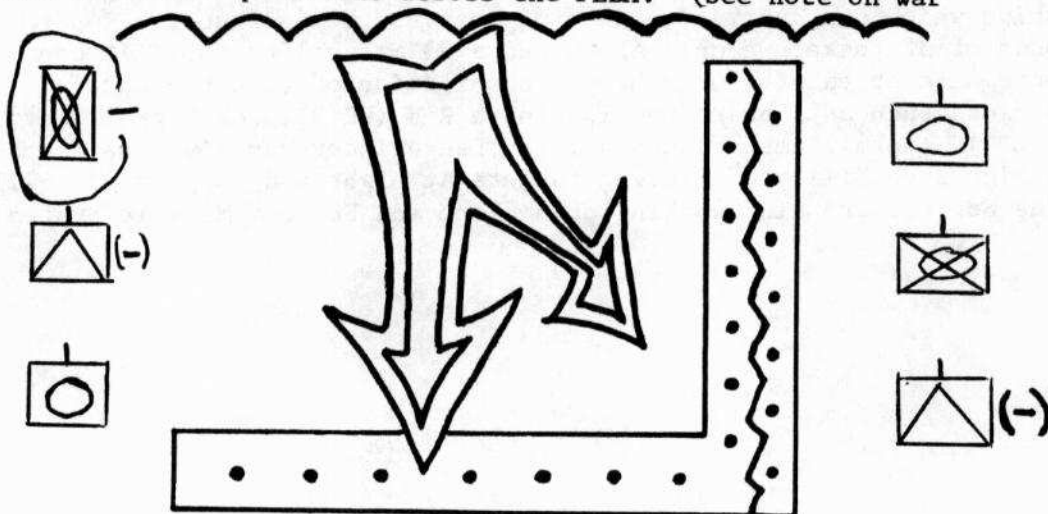
EDITOR'S NOTE:

The following article is one more on the theme of the anti-tank helicopter. Previous articles on this topic have appeared in Vol 12 and Vol 14 of the Armour Bulletin. The author bases his article upon his experience during a recent "Exercise Final Drive".

I recently had the opportunity to command several battle groups during "Exercise Final Drive". This exercise is a CPX and war game which concludes the five month course conducted for land officers at CLFCSC in Kingston. The following scenario describes what happened to one of my battle groups.

The Brigade Guard (infantry heavy) had deployed recce detachments to a distance of 4 kms in front of the FEBA (a river). The recce detachments began to report enemy recce vehicles and the noise of heavy helicopters two hours before first light. The initial firefight destroyed most of the enemy recce vehicles and forced the enemy guard to deploy. The Brigade Guard withdrew from its initial defensive position and started to head towards two gaps in the prepared brigade obstacle. Enroute, still before first light, several tanks and APCs were destroyed by direct hits from missiles while moving through low ground. There was no successful return fire from friendly troops.

In another scenario, (see Figure 1) two tank battalions of T62s and a Motor Rifle Battalion were destroyed along the northern boundary of the brigade when they entered a killing zone comprised of minefields and anti-tank ditches. The killing zone was covered by many anti-tank weapons (MAW, HAW and TANKS). In the engagements, few friendly vehicles were destroyed by enemy AFVs however, a squadron worth of tanks were lost in engagements by Hind. The Hind were engaging the tanks from positions across the FEBA. (See note on war gaming).





Unless one has seen and/or participated in a war game of this nature, it is difficult to visualize the tension and desire to win each player exhibits. I fired everything I had at the Hinds when I was told I could see them. I was not able to destroy all of the Hinds. The initial group of Hinds (which had been in contact since before first light) withdrew shortly after dawn (reported by layback patrols). As a battle group commander, I breathed a sigh of relief. Five minutes later, the layback patrols reported that several more heavy enemy helicopters were approaching. A new wave of 12 Hinds arrived to attack the brigade. My losses to Hind recommenced. In all, I attacked the Hinds with A-10s, tanks, Blowpipe, TOW, Milan Cobra Attack helicopters, mortars and artillery. I destroyed many Hinds but not all of them. I suffered more casualties to Hinds than to all other enemy actions. (It was not the same in the battle group to my south, but that's another story).

It was only a war game, a war game which was played too realistically for me. I did not like what I saw. My interest in the Hind helicopter has since increased. Just exactly what is the Hind? How many Hinds could I expect to attack my area? What can the Hind do to me? What do I have to defeat the Hind? How can I defend myself from the Hind?

The Hind D and now the Hind E are all weather helicopter gunships which can carry a variety of weapons: bombs, rockets (up to 4 pods of 32 rockets each), ATGMs and a 23 mm gatling gun. It can move at a speed of 320 km/hr. A combination of electric-optical sensors such as Forward Looking Infra Red (FLIR), Low Light Television (LLTV), thermal imagery and a laser rangefinder can give the Hine E a high probability of hitting targets at night and in poor visibility. The Soviets are also working on a "Fire and Forget" Missile System.

The Hind is heavily armoured and is capable of withstanding head-on small arms fire. It is painted in a disruptive camouflage pattern. The Hind D fires the Swatter (AT-2) ATGM while the Hind E will fire the Spiral (AT-6). The Spiral has a longer range (more than 4 km) and a higher speed than Swatter. A speed of 400 m/sec would enable the missile to travel 3 km in 8 seconds! Spiral is a semi-automatic command, laser guided missile (similar to TOW) and has a high probability of a hit.

A Soviet attack helicopter regiment has 40-50 Hinds and 20 to 25 Hip helicopters. There are several hundred (more than 500) Hinds facing the Central Region now. The Soviets are producing Hinds at a rate of 30 per month. ². There are sufficient Hinds in the Soviet inventory to ensure that most Russian Divisions in contact will have Hinds in support.

Hinds operate in multiples of 2. If our forces were in a defensive position, we could encounter Hinds at the same time as the enemy recce (especially at night). Hinds will definitely arrive with the enemy guard. Prior to first light, the initial enemy recce probes will have been stopped and several enemy recce vehicles destroyed. Artillery fire will be falling in the brigade area. Our layback patrols will have reported the sound of enemy tracked vehicles.

The enemy guard and first echelon will have closed onto the brigade obstacle and crossed it in several places into killing zones. Tankers deployed in battle positions will see the enemy entering their Killing Zone. Artillery will be landing in the area as well. In this scenario, a realistic one, most if not all personnel will be concentrating their attention on searching for any enemy recce vehicles, preparing to engage the AFV targets and observing the artillery fire. Needless to say, their pucker factor will be high.

I believe that most personnel would become aware of the danger of an attack helicopter in the immediate vicinity when a friendly vehicle explodes or receives a near miss from an ATGM. The enemy armour would be attempting to bypass our positions. The tanks could be head on to enemy AFVs and at the same time be broadside to the FEBA. As such, our tanks would be presenting a very small target area to AFVs but a large target area to Hinds. Assuming our tactics would be that the tanks would be in turret down or at most, hull down position. The destruction of friendly vehicles, which are concealed to most enemy ground forces by an accurate direct fire weapon could and should indicate the probability of Hinds. Now, what can we do about it?

Depending upon the requirements of the immediate battle (camouflage, does the enemy ground forces know where we are, etc), vehicles in the

immediate area could employ local protective smoke and temporarily back into concealed positions. All crew commanders would be looking for the attacker.

Assume that the Hind is seen, (not likely in my opinion) and is engaged by tanks firing APDS. To quote Capt Snell (Vol 12) "Most tankers would readily welcome a 20-second exposure and a clean engagement with a kinetic round". I agree with the statement but will it happen? I do not believe it will. The Hinds will approach the target area flying nap of the Earth (5 to 10 m off ground). They will pop up to a height of 20 to 100 m to engage targets at a range of 2000 to 3000 metres from the target. The Hinds will employ "sneak and peek" tactics until engaging a target.

Will we see the Hind the second it commences to hover and commences its attack? Probably not. Is the Hind firing a Spiral missile (increased velocity; therefore shorter time in hover)? Is the tank cannon loaded with APDS? The Armour School, CTC, teaches that tanks will load with HESH until a specific hard target is to be engaged. Most important will be the range to the Hind from our tanks. In accordance with procedures and data established at the Royal Armour Center, a tank gun with a standard deviation of .6 mils has a probability of hitting a target 4 metres high by 2 metres wide (Hinds head on) at 1500 m of 71.4% with one round. But at 3000 m, the probability of a hit is only 31.1%.³ The moral of the story is that, if we see a Hinds in a hover, and if it remains stationary for the duration of our engagement, we still have a 68.6% chance of missing at 3000 m. We will hit some Hinds but will we be able to slug it out with them and survive with enough tanks remaining to defeat the enemy AFVs? To quote General Reznecheako, a Soviet professor of military tactics: "The correlation between tank and helicopter losses is 12:1 or even 19:1 in the helicopter's favour, according to practical experiments".⁴

How can we defeat the Hind or minimize its effect upon our plans? Obviously, we can defeat the Hind by hitting it with a round from a 105 mm tank cannon. In order to be assured of a higher probability of a hit, we have to engage the Hind at as close a range as possible.

Effective passive defence is our best method of dealing with the Hind at this time. Effective use of camouflage, ground and terrain features will minimize and help to negate the effect of attack helicopters. Proper camouflage will hide the tank and the Hind gunner might not readily see the tank. If the tank was placed in hull and turret down positions so that buildings, trees or other hills cover his flanks, a helicopter will not be able to see the tank at tree top level from a distance. A helicopter will have to either climb higher in its hover or come closer to the target area. In each case, the helicopter is more vulnerable to our fire especially if he closes the range to a distance of 1500 m. Good camouflage and concealment will draw the Hinds closer to our positions; thereby increasing

our probability of a hit,

If our tanks are being engaged by ATGMs, local protective smoke will prevent a Hind gunner from guiding a missile onto a target he has difficulty in seeing. This smoke screen would also be effective at night. Although we would have trouble spotting a Hind at night he can engage us at night with ATGMs. An immediate smoke screen could save one's life. In the same light, I am not advocating an immediate smoke screen upon the hint of danger; but, it can obscure a vehicle from an ATGM gunner at night.

In the heat of battle, many crew commanders will become overly concerned with the amount of enemy AFVs to their front. It will be up to the Troop Leaders and Squadron Commanders to keep the enemy attack helicopter threat present in their tactical plans at all times. Reserve tanks or tanks in depth should be observing for enemy helicopter. As a side note, some reports from Afghanistan say that some Hinds have been shot down with small arms fire by guerillas who waited until the Hinds had flown past and then shot at them from behind. 5.

It is my opinion that the threat of the Soviet attack helicopter has been taken too lightly. The Canadian Forces do not have a weapon integral within their inventory which can adequately defeat the Hinds. Hopefully, they will have Divisional Air Defence resources such as Gepard (Hinds E can engage out of range of Gepard) or DIVAD which would be deployed well forward in the battle group. Until the Canadian Forces have a weapon which can defeat the Hinds early in the battle, all armoured crew commanders must recognize the threat of the Hinds, understand it and know how to deal with it. Now is the time to learn these lessons. The battlefield will be too late!

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NOTE ON WAR GAMING

The following are some examples of engagements in the War Game conducted during "Exercise Final Drive".

- Example 1 War Game: A troop of Leopards in a defensive position are engaging 8 T62s on the move, broadside at 1300 m in good visibility.
- Statistics: 3 T62s destroyed and no Leopards hit by return fire.
- Example 2 War Game: 2 Hinds range 2700, can they be seen by a troop of Leopards in good visibility.
- Statistics: Yes, but only one.
- Example 3 War Games: Leopard tk firing at a Hind range 2700 m.
- Statistics: Leopard misses, but on lookback, Hinds see Troop of Leopard tanks and destroy two.

In the wargaming, many factors are considered for every engagement: weather, range of weapons, weapons system, range to target, action of enemy and friendly vehicles at time of engagements, intervisibility, light, terrain, lookback, (return fire by weapon after it has been engaged and not destroyed), artillery i.e., crew is only 50% effective for 30 minutes after surviving a barrage by a MRL battery, etc). I believe the results to be realistic.

SOVIET TANK DEVELOPMENTS

BY CAPT B.K. WHITE

Tanks were first introduced into the Soviet Forces in the late 1930's. Initial development of the tank was slow and cumbersome as was the development found in other nations. However, progress was achieved and has now entered into the modern age. The Soviets still believe that a strong tank force is necessary in all phases of war.

The Soviets also believe that all arms co-operation is a necessity. To this end, the Soviets have structured their forces to include tanks, infantry, artillery and engineers. Their tactics are practised in concert with all of these forces and, at times, tanks will be tasked for independent operations. An example of tank/infantry co-operation is exemplified in a Soviet Motor Rifle Regiment which is predominately infantry. An independent tank battalion of 40 tanks is found in this organization. In the organization of a Tank Regiment, normally 31 tanks/battalion, the Soviets have included either a company or battalion of Motor Rifle troops.

Soviets tank developments have also received much emphasis over the last two decades. The T54/55, which at one time was the mainstay of the Soviet forces, relinquished its place to the T-62. Progress has now seen the T-64 and the T-72 replacing the T-62's. It should be noted that in the development process there appears to be a time spacing of approximately ten years. This would appear to be consistent throughout the Soviet's system of development and production. It should not be forgotten that the Soviets will never throw anything away. As new models are produced they will replace the equipments of the front line organizations. The older equipment is then given to organizations in the second line or units on lesser degrees of readiness. An example of this would be that 30% of the reserve tank forces in the Group of Soviet Forces Germany are comprised of the T54/55's.

Soviet tank strengths have also increased by 30% in the past years. In an approximation, the Soviets now possess about 42,000 tks, 30,000 of which are assigned to Tank and Motor Rifle Divisions. Quantitatively the Soviets are superior but qualitatively there still appears to be some room for doubt. Their latest developments have been noted in the T-64 and T-72 tanks. Both of these vehicles incorporate the 125 mm smooth bore gun with auto loader. Figure 1 indicates a comparison of the Leopard 1A4 to the T-64 and T-72.



T-64



T-72



LEO 1A4

FIGURE 1

COMPARISON FIGURES LEO 1A4 VS T-64 & T-72

	LEOPARD 1A4	T-64	T-72
Weight	44 Tons	38 Tons	40 Tons
Height (without antennae)	2.62 m	2.3 m	2.3 m
Power Pack	830 HP	700 BHP	700 BHP
Main Armament	105 mm	125 mm (auto loader)	125 mm (auto loader)
Secondary Armament	7.62 mm co-ax MG 7.62 mm AA MG	7.62 mm co-ax MG 12.7 mm AAMG	7.62 mm co-ax MG 12.7 mm AAMG

	LEOPARD 1A4	T-64	T-72
Ammo Maingun	60 (APFSDS, APDS, WP, SMK, HESH)	40 (APFSDS, HEAT, HE)	40 rds (APFSDS, HEAT, HE)
Snorkel Depth	4.0 m	5.0 m	5.0 m
Cruising Range	450 km	500 km	500 km
Max Speed	62 km/h	80 km/h	80 km/h
Crew	4	3	3

The new generation of Soviet tanks also have improved technology. The T-64 and T-72 have advanced their sighting systems with the possible employment of laser rangefinding equipment. The auto loader has also cut down the crew requirement from four to three. Mechanically the T-64 and T-72 have an increased speed and maximum range capability. The track system has also adopted the guide rollers vice the old Christie suspension. Visual differences between the T-64 & T-72 are varied and few, for example:

1. T-64 has small stamped road wheels whereas the T-72 has larger die cast road wheels;
2. the T-64's snorkel tube is stowed on the rear of the turret and the T-72's is stowed on the left rear side of the turret;
3. the IR searchlight of the T-64 is located on the left side of the main gun and on the T-72 it is located on the right side; and
4. the T-64 has additional stowage bins situated on the turret sides.

The Soviet Union will continue to update and modify their equipments. Although they are now superior in numbers, the actual quality of the machinery is not known. It is expected that the T-64's will be the main Soviet battle tank deployed in Europe, but remember that Soviet principle where no piece of machinery outlives it's usefulness.



RECENT CORPS EVENTS

NATO ARMOUR SCHOOL COMMANDANT'S CONFERENCE

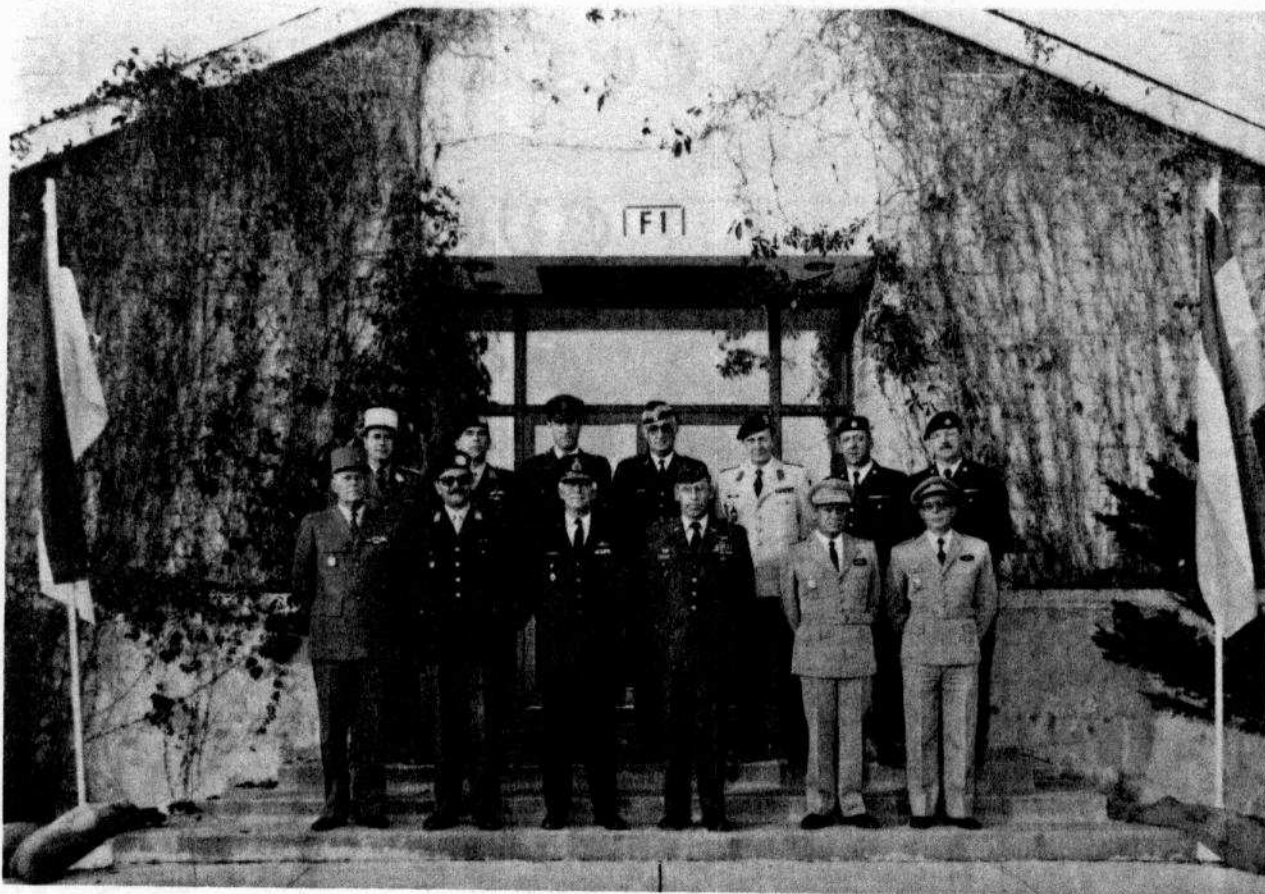
BY CAPT J.A. STUCKART

Armour School was the host, in 1981, of the annual NATO Conference of Armour School Commandants. From the 12th to the 16th of October 1981, ten delegates gathered in Gagetown for the conference which was designed to allow a formal discussion on all aspects of armour training. As well, it provides the opportunity for the host country to present, in detail, its operations and show how Armour training is carried out by the host country.

Major G.R. MacLean was the OPI for the conference and provided a busy three day schedule, both professionally and socially, for the delegates. Several delegates brought their wives and these ladies were escorted on tours of Saint John, Oromocto and Fredericton by Capt B. Finn. The delegates began with a welcome by the Base Commander, BGEN Cheriton and a visitors' briefing on CTC. Several formal presentations and tours of the School's facilities rounded out the Canadian presentation to the conference.

Interwoven with the professional activities were social events in the neighbouring communities of St John, Fredericton and a tour of King's Landing Historical Settlement. This allowed the delegates a chance to meet with local dignitaries and experience Canadian hospitality. The final social event was a mixed dining-in with the officers and their wives of Armour School.

In the end, the delegates found the conference to be a most fruitful exchange of ideas and came away favourably impressed with the standard of training at Armour School. This fall, the conference will be held in Denmark with the Commandant, LCol R.N. Lawrence, representing Canada.



PARTICIPATING DELEGATES OF THE 1981 ARMOUR SCHOOL
COMMANDANTS CONFERENCE

Back Row L to R: Col P. Lacoste (FRANCE), Col H.J. Huijts (NETHERLANDS),
BGEN S.C. Cooper (UNITED KINGDOM), Col R.C. Jorgensen (DENMARK), BGEN J.
Von Schwerin (WEST GERMANY), LCol R.N. Lawrence, Maj G.R. MacLean.

Front Row L to R: BGEN G. Robert (FRANCE), LCol L.P.J.A. Storimans
(NETHERLANDS), BGEN G.R. Cheriton (COMMANDER, CTC), MGEN L.C. Wagner Jr
(U.S.A.), LCol H. Gdodinho (PORTUGAL), Maj G. Correia (PORTUGAL).

DEDICATION OF A FERRET SCOUT CAR AT FMC HQ

BY CWO K.H. MAYBEE

On the 17th of March 1982 coincident with the second annual Armour Board a special dedication ceremony took place at FMC HQ St Hubert to commemorate the retirement of the Ferret Scout Car from service. In attendance for this auspicious occasion were all the "Black Hatters" in the area as well as the Board members. Col D.A. Nicholson, CD unveiled the commemorative plaque inscribed as follows:

"Ferret Scout Car MK 2 Cdn

The Ferret Scout Car was taken into service by the Canadian Forces in 1954. Since that time it has been in service across Canada, Europe, Cyprus and the Middle East. It was officially retired on the 27 July 1978. This scout car was unveiled at its present location by Col D.A. Nicholson, CD on the occasion of the Second Annual Armour Board".



THE DIRECTOR PRESENTS A MEMENTO TO COL NICK ON
BEHALF OF THE CORPS



" THE GOOD OLD SIX PACK "



1982 COUGAR GUNNERY COMPETITION

BY CAPT C.J. CORRIGAN

Excellent weather, renewing old friendships and making new ones, and a high standard of shooting typified the 1982 Corps Cougar Gunnery Competition held 4-13 June 1982 in Meaford. The Competition was a Corps event with troops from each of the Cougar equipped regiments and a troop from Training Support Squadron, the Armour School which had members from each of our four regiments taking part.

The Competition saw three troops plus RHQ and support staff come from each of LdSH(RC), 8 CH, and 12eRBC, and one troop plus support staff participate from the Armour School. Personnel flew to Borden or Trenton and proceeded to Meaford where the 8 CH acted as hosts and had set up a superb tented camp.

Immediately upon arrival each of the four teams was issued Cougars from the 8 CH fleet. Lack of funding prevented teams from bringing their own Cougars. Allocation of Cougars was determined by a draw which was influenced by the vehicle state, sights (#54 vice RADNIS), and not having 8 CH crews compete on their personal Cougars. Each of the four teams was issued five or six Cougars which allowed one or two spares in excess of the four required by each troop. Next, each team was allocated sufficient range time to zero their Cougars and familiarize their crews with Meaford Range.

The ten troop competition lasted two days. The format was simple due to the austere state of Meaford. For the past decade the upkeep of Meaford has been the responsibility of Canadian Forces Training System Headquarters (CFTSHQ). As CFTSHQ has had little requirement for Meaford, it no longer resembles the training facility older and bolder "Black Hats" may remember. The increased training activity of Central Militia Area and the units of the Special Service Force, primarily the 8 CH, who lack a range that can accommodate more than just basic gunnery practices, has resulted in renewed interest in Meaford, leading hopefully to its redevelopment as a tank gunnery range with battle runs for Cougar. Already APS 82 will result in permanent Range Control Staff being re-established.

The competition consisted of two phases. Phase One was troop controlled direct fire and Phase Two was a troop semi-indirect shoot. Both phases were conducted static from the Caen Firing Point pad. The rules governing each phase included bonus points for main armament ammunition conserved and time penalty points.

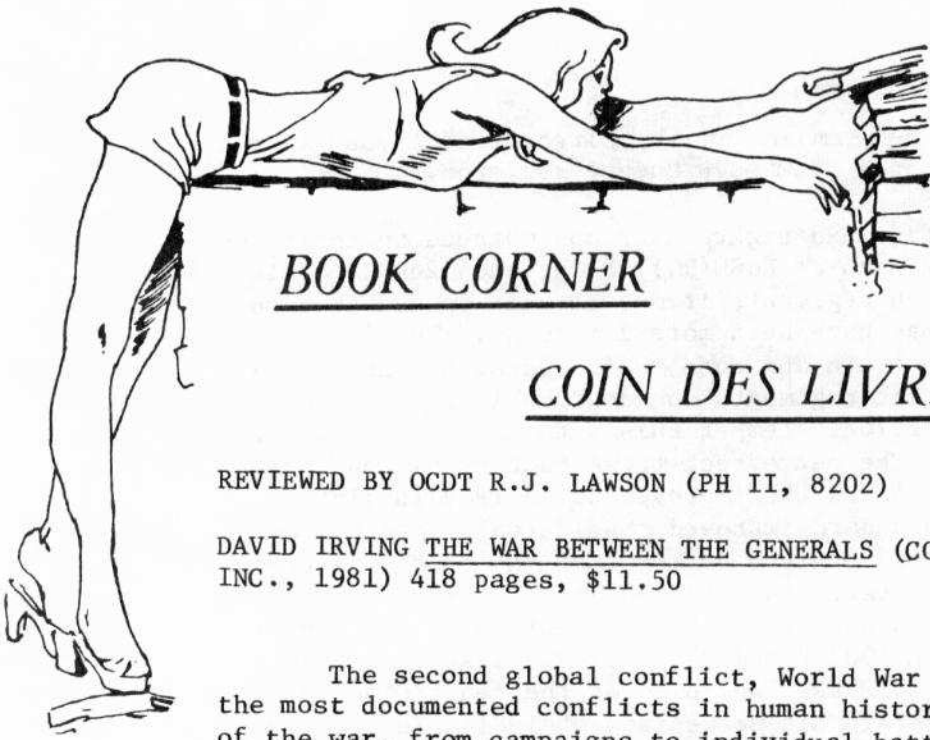
The Committee of Control and Control Team members were from the

FMC HQ Armour Section, the Armour School, Director of Armour's Office NDHQ, and selected personnel from each Cougar regiment.

The 1981 Competition had eighteen troops compete on their own Cougars, six troops from each of LdSH(RC), 8 CH, and 12eRBC. This year with less troops from each regiment, it may be fair to say that the crew selection process may have been more demanding. The regiments have had another year to train and hone their Cougar skills. Also, without an RV exercise, the regiments could probably focus on and train more for the 1982 competition. Temper this with crews not competing on their own vehicles. The net effect these factors had on the gunnery standard displayed in 1981 and the improvement in 1982 is difficult to quantify. However the standard improved considerably. In Phase One, six of the ten troops in 1982 fired better than the best 1981 troop. The Phase One average hit percentage in 1982 at 69% exceeded the 1981 average of 37% and even surpassed the hit percentage of the best 1981 troop. All ten troops in 1982 fired Phase One in less time than the average troop in 1981. In Phase Two, nine of the ten troops in 1982 fired better than the average hit percentage of 1981. In terms of overall hit percentages for Phase One and Phase Two, all ten troops in the 1982 competition achieved a higher hit percentage than that of the best troop in 1981.

Winning the Ram's Head Trophy as best regiment was 8 CH. First and second place was separated only by one main armament and one falling plate target. LdSH(RC) placed second and 12eRBC third. The winning troop was from Training Support Squadron at the Armour School.

For two consecutive years the Armoured Corps has held successful Cougar gunnery competitions. Already staffing has begun for the 1983 competition, which will hopefully include the Militia and make the competition truly a Corps event. The importance of this annual competition and its contribution to Regimental and Corps spirit and to the pursuit of gunnery excellence cannot be overstated. The improvement in the gunnery standard shown between the 1981 and 1982 competition clearly substantiates this. Armour gunnery is the key to our existence as crewmen and our position as the decisive combat arm. In training for war during peace-time this annual competition gives the Royal Canadian Armoured Corps a training target to shoot for.



BOOK CORNER

COIN DES LIVRES

REVIEWED BY OCDT R.J. LAWSON (PH II, 8202)

DAVID IRVING THE WAR BETWEEN THE GENERALS (CONGDON AND LATTES, INC., 1981) 418 pages, \$11.50

The second global conflict, World War II, has become one of the most documented conflicts in human history. Almost every aspect of the war, from campaigns to individual battles have been studied and commented upon. Many personal diaries have also been written, giving the historian a brief glimpse of the events as historical figures saw them. In contrast, very little has been written about the interaction of these figures. David Irving's The War Between the Generals attempts to fill that gap.

The focus of Irving's account is the uneasy Anglo-American Alliance (known officially as SHAPE) that was established to coordinate activities in the European theatre of operations. The author has managed to interview some of the participants as well as an extensive research into personal diaries, many of which have only recently become available. With these sources, he has compiled for the first time, an extensive account of the professional and personal conflicts that existed amongst the leaders of the Allied Armies.

A glimpse into these "backrooms" of power, as usual, provides the reader with an uneasy feeling. These individuals had millions of men under their command and their decisions and responsibilities, on the most part, were not taken lightly. At times, however, Irving's portrayal of these figures gives an impression that being allies in a "common cause" did not necessarily mean the implied friendships and/or trust.

Most of the new information presented in the book presents the leaders in an entirely new image. Most are in conflict with their post war "media" image. Moreover, the reader is left with a sense of disbelief that the Allies managed to win the war when they did. The book is worth reading as it will definitely shatter some illusions in regard to the grand Anglo-American Alliance of World War II.

REVIEWED BY OCDT D.J. MILNER (Ph II, 8202)

R.E. SIMPKIN TANK WARFARE (CRANE HUSSAK AND COMPANY, INC. 1979) 214 pages, \$12.50

Tank Warfare is a book by Brigadier R.E. Simpkin on main battle tank design. In it, he deals with the seven major developers of main battle tanks in the Western World; United States, Soviet Union, Great Britain, West Germany, France, Sweden and Israel. The purpose behind all this is an attempt to answer one of NATO's major problem areas in regard to a conventional conflict - the current imbalance of MBT's between the Warsaw Pact and NATO.

The author goes into some technical detail in regard to the MBT's developed by each country. He has been closely associated with tank development and philosophy during his career and uses this experience in addressing the topic. Mobility, fighting power, crew size and survivability are all dealt with. The argument of quality versus quantity is also presented with some surprising conclusions. As far as Simpkin is concerned, smaller vehicles, smaller crews and better mobility are presented as possible solutions.

As stated in the book's introduction, Tank Warfare, provides a new perspective for main battle tanks in the future. This book will not appeal to everyone. It is necessary to have some background on tanks and tank warfare otherwise the technical data presented will "bog down" the reader.

REVIEWED BY CAPTAIN J.A. STUCKART

MICHAEL MACLEAR THE TEN THOUSAND DAY WAR (ST. MARTIN'S PRESS, NEW YORK, 1981) 434 pages, \$14.50

The Vietnam War has become familiar reading in regard to the main events and principle figures. What has been missing, until now, has been a comprehensive yet objective account of the most controversial war that has occurred to date. Michael MacLear, with the assistance of Peter Arnett, addressed this specific problem and has written a superb book called The Ten Thousand Day War.

As the author points out in his introduction, the book was not written as a "definitive record of all events, policies and personalities". Instead, it is a comprehensive account of what transpired in Vietnam from April 1945 till the victory by the North Vietnamese in April 1975. Thus, both French and American involvement are covered plus scores of interviews with the planners and participants on both sides. As the interviews are presented, the reader is given some background information on the people and events. No attempt is made to judge the events. The author, with his assistants, has made every attempt to clarify many of the statements made during and after the war.

Michael MacLear is certainly no stranger to Canadians and has reported on events from around the world. He has spent over twenty-five years as a television correspondent with his reports being used in more than 90 countries. Many of the interviews incorporated in the book are those done by Peter Arnett. Mr Arnett was the Associated Press bureau chief in Saigon (now Ho Chi Minh City) from 1961 to 1975. Together, they have spoken with every major political and military participant on both sides of the conflict. The result for the reader is an unprecedented account of the conflict.

The book was the basis of a major television series that was shown in 1981 on the CBC. For those who have seen the series, the book will fill in much of the information that could not be included because of time. No one can go away after reading this book without a conviction that something was amiss with the war. An interesting aside is the fact that over two thirds of the American soldiers who saw combat in Vietnam (approximately 1,750,000) required psychiatric counselling afterwards.

All the familiar events are covered. The fall of Dien Bien Phu; the plot to overthrow Ngo Dinh Diem; the Tet Offensive; the fight for Khe Sanh and the withdrawal with the familiar slogan "Peace with Honor" give the reader a perspective on the war's events that probably will never be equalled. The Ten Thousand Day War is a book that I would recommend to anyone interested in the Vietnam War.

ANSWERS TO RECOGNITION TEST

- | | |
|--------------------|-------------------|
| 1. JAGUAR | W. GERMANY (NATO) |
| 2. CHALLENGER | U.K. (NATO) |
| 3. T-62 | U.S.S.R (WP) |
| 4. BRDM-2 SPANDREL | U.S.S.R (WP) |
| 5. IKV 90 | SWEDEN |
| 6. BRADLEY AIFV | U.S.A. (NATO) |
| 7. PANHARD ERC 90S | FRANCE |