S E C R E T

24/AAI/1/5 (Hist)

CANADIAN MILITARY HEADQUARTERS

16 Nov 44

CANADIAN OPERATIONS - MEDITERRANEAN AREA
Extracts from War Diaries and Memoranda (Series 28)

1. Further to my 24/AAI/1/5 (Hist), dated 25 Oct 44, attached are further extracts from War Diaries and Memoranda dealing with the operations of Canadian Formations and units in the Mediterranean Area.

2. These extracts are circulated for general information only, and opinions stated are not to be considered as necessarily expressions of official doctrine.

(P.J. Montague) Maj-General,
A/Chief of Staff,
CANADIAN MILITARY HEADQUARTERS

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S E C R E T
24/AAI/1/5 (Hist)

CANADIAN OPERATIONS IN THE MEDITERRANEAN AREA

MAY - SEPTEMBER 1944

EXTRACTS FROM WAR DIARIES AND MEMORANDA

(SERIES 28)

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1. LESSONS CONFIRMED AND LEARNED (EXTRACTS FROM THE BATTLE REPORT OF 21 TK BDE - 25 AUG - 21 SEP, 1944.)

(The British 21 Tk Bde supported 1 Cdn Inf Div in the assault on the Gothic line. The association commenced in June of this year when joint training was first undertaken. The Brigade's narrative ends as follows:- "Thus ended for 1 Canadian Division a most successful advance, during which the infantry fought with great skill and dash... The standard of Infantry Tank co-operation reached a very high level, and a wonderful spirit of comradeship prevailed throughout. 21 Tank Brigade is proud to have fought with such a splendid division").

TACTICAL

Whether it be the attack, the advance or the pursuit infantry and tanks must work in close co-operation.

The following groupings are still considered to be basically the best:-

Inf Attack or Advance	Inf Bde: Tank Regt:	Inf Bn: Tank Sqn:
Armd Advance or Pursuit	Tank Bde : Inf Bde :	Tank Regt: Inf Bn :

The night attack by infantry and/or tanks followed, when occasion demands, by an infantry cum tank attack at first light is strongly advocated.

Due to the enemy's skill in defensive fighting, his cunningly sited weapon positions and the accuracy and range of his anti-tank guns both infantry and tanks are apt to suffer heavy casualties in daylight attacks.

At night fighting the GERMAN as a general rule is NOT so adept and the moral effect of using tanks aganist him at night has been found to be very great.

Tanks moving forward through unmopped-up area to support infantry, who have made a night attack, should pass through this area in darkness so as to avoid the risk of being knocked out by the unlocated tank or anti-tank gun.

Luminous signs or small shaded lights are required to help tank movement at night.

Artificial moonlight as used by 4 Division is most helpful to tanks.

Thorough mopping-up is more than ever necessary. A GERMAN OP was found in a house three days after that bit of ground had been in our hands directing fire by wireless on to our medium guns on which he got three direct hits.

Tactical surprise was once again achieved by use of the climbing power of the Churchill Tank.

The policy of NOT putting too many tanks on the ground has proved sound. The need for keeping a reserve at all levels has never been more apparent.

Bunching, however, is still a common fault among both infantry and tanks.

Sufficient time for Planning is one of the oldest cries, which brings success and fewer casualties. Forethought in arranging "tie-ups" for the next day's operations and anticipation as exemplified by outline planning, are most desirable.

Although deep penetrations are required, LIMITED OBJECTIVES from a Start Line firmly in our hands pay every time.

The rule in this Brigade that tanks will NOT go over the crest on to the forward slope of the objective unless this part of the attack has been included in the original plan or a new plan embracing infantry, tanks and artillery is made has proved absolutely sound.

The enemy sited many Spandaus on reverse slope positions with short fields of fire from which he frequently pinned our infantry, who advanced into houses (sometimes left unoccupied intentionally) on the far side of the objective. If tanks advance without a proper co-ordinated plan to deal with these machine guns they are knocked out by anti-tank guns sited in depth for that purpose.

A common difficulty experienced by tanks is NOT being able to locate the forward positions of our infantry. This cramps the fire power of the tanks often at a vital moment.

Answers to this problem seem to be:-

(a) More detailed planning including more RVs.

(b) Better intercommunication.

(c) Smoke or yellow screen displayed by infantry.

Long approach marches for tanks must be avoided so as to minimize mechanical casualties. Forethought in moving up tank regiments pays a big dividend.

ARTILLERY

The making of d good fire plan for all operations however small still leaves room for improvement, a s does the knowledge of the extent of artillery support available on call.

Artillery smoke was needed in large quantities.

Tiger and Panther tanks are often best dealt with by the air or by heavy and medium guns shot by air OPs or their own FOOs.

Towed anti-tank guns have been of little value and seldom, if ever, get a chance to fire. Self-propelled equipment is essential.

For future design a very low, armoured, tracked high velocity self-propelled gun is required.

RECONNAISSANCE

The value of dismounted reconnaissance by tank or reconnaissance troop personnel has been amply confirmed, but this must NOT be overdone.

The organization for the Reconnaissance Troop, which this Brigade would like is:-

Four Shermans
Seven Stuarts.

ENGINEERS

ARKS were used on two occasions and proved very satisfactory. Approach marches must be kept short and routes carefully reconnoitred.

Sherman dozers are much in demand.

Three extra Stuarts are required for the RE Troop to avoid milking the Reconnaissance Troops, for which there are endless jobs.

INTERCOMMUNICATION

The secret of success is to have as many different ways as possible.

The value of having a tank officer at infantry battalion headquarters has again been very evident. The best vehicle for him is a cut-down Stuart and three in lieu of scout cars are wanted by each regiment.

(NB - The shortage of Stuarts is realized: the ideal requirement is given).

The 18 or 48 Set in the Squadron Leader's tank has proved very successful especially when operated by an infantry officer from the co-drivers seat.

Three 18 Sets per Squadron are required.

The 38 Set has NOT been very successful, but it is worth persevering with.

The White Scout Car fitted with three 19 sets and used at Infantry Brigade Headquarters as a small wireless exchange has proved over and over again its worth.

Overlapping nets caused a lot of difficulty and often prejudiced operations actually taking place.

It can NOT be emphasized too strongly that, when these conditions prevail, officers and operators should co-operate to the maximum.

Anyone who persists in sending an unimportant Slidex message and thereby jams a tank squadron operating against enemy Tigers may be guilty of MURDER.

Breaches of security on the air were too numerous.

Many messages were too long. Much more use should be made of "ROGER SO FAR" particularly when interference is bad.

There is still much unnecessary use of originator's number, etc., which takes up valuable time on the air.

Lateral information was NOT good. This Brigade opened a lateral link which helped enormously.

GENERAL

Tank and Reconnaissance Troop crews have need to be expert with their personal arms.

There is a demand for one PIAT or better still Bazooka per Stuart Tank.

There were several instances of tanks running out of petrol and ammunition. Small scale unit or squadron dumps will be tried in future operations.

2. AIR OPERATIONS ON THE GOTHIC LINE (EXTRACTS FROM REPORT ON AIR OPERATIONS ISSUED BY 1 CDN CORPS - 4 Oct 44)

TARGETS

General

The intention is that all personnel should become sufficiently familiar with air sp to be able to judge on the spot just what constitutes a good air tgt and what does not. Practically every man is able to recognize an Arty tgt and every man should be able to recognize an air tgt just as readily. The reason for this is that while the fmns such as Bde and Div initiate the demand for the tgt, the actual tgt itself should come from the fwd tps. The Chief purpose of the air sp we are discussing is close and direct support to the ground tps, and every possible tgt which presents itself should be considered in the light of being an air tgt as well as an Arty tgt. Instead of asking whether a tgt is an air OR an Arty tgt, the tendency should be to treat all tgts as potential air AND Arty tgts. Practically the only objections to air attack on a tgt are

(i) if too close
(ii) if too difficult to describe to A/C
(iii) if MORE suitable for Arty.

WHAT CONSTITUTES A GOOD AIR TGT?

Many tgts seen by fwd tps from OPs will be good fighter bomber tgts. They must be easy to describe, (and the detailed description must accompany the demand); and if possible they should be visible to the pilot from some height. Single objects (i.e. Panther Turrets and Single MT or a gun) due to the very small tgt present are not easy to hit, and particularly in the instance of turrets and single guns, require a direct hit to knock them out, as they are usually well dug-in. Nevertheless, in recent ops direct hits have often been made on gun pits, and several times on Panther turrets. Infantry, well dug-in are also fairly immune to bombing unless a direct hit or a very near miss is scored, although straffing in such cases produces excellent results, P.W. have stated that the bombing does not cause anything like the casualties from straffing, both in personnel and to vehicles. Tanks are vulnerable to both bombing and straffing, and the latter will usually cause the tank to "brew up". Fighter-bombers will NOT attack "suspected" enemy posns, nor will they bomb a hill-top because the enemy is "suspected" of having an OP there. They cannot search ground for tgts. It is difficult enough to see a six-fig map ref tgt, let alone searching fields and slopes for one.

Also it is of no use to put Fighter-bombers on villages which are enemy occupied, unless you can produce one or poss two bldgs as the definite tgt. To properly flatten even a small village takes an enormous weight of bombs, and even then is usually most uneconomical type of air attack. Fighter-bombers are as much a pin-point weapon as a rifle, and area tgts are suitable only for straffing at best.

HOW TO DESCRIBE A TGT.

At least a six-figure map ref is necessary when describing a tgt, and if an eight-figure one can be given so much the better. Any landmarks near the tgt which can define either it or the special bomb-line will be invaluable to the pilot, and in addition, any artificial means of indicating thetgt - Arty smoke, Verey lights or flares, or mortar smoke, will be of great help. The only limiting factor here is that care should be taken not to use the same method too frequently within a given period, lest the enemy imitate us and confuse the pilots. If a suitable bombline exists on the ground - (some visible feature, stream or track) - it should be included. The distance of the tgt from our own fwd tps should not normally be less than 800 yds, but where a special bombline is very well defined (a highway or a river) then bombing by fighter bombers can be done (and has been done recently with excellent results) as close as 400 to 500 yards. In a recent case, a pocket of enemy which had been by-passed by us, and left on the coast, was afterwards bombed by fighter bombers some 1,000 yards behind our fwd tps. We were able to move in on the position within a matter of minutes after the bombing had ceased.

THE GOTHIC LINE BATTLE

GENERAL

During the recent operations, the entire resources of the Desert Air Force were at the disposal of the Corps, and in addition, certain Medium bombers of the 12th Tactical Airforce (USAAF) were used on special occasions. In order to give a clear picture of the operation from the air support point of view, it will be examined in four parts., as follows:

- Statistical Summary of Air Operations
- The Attack on the Gothic Line
- The Pursuit Beyond the Gothic Line
- The Attack on the FORTUNATO feature

STATISTICAL SUMMARY OF AIR OPERATIONS

Generally speaking, air operations in support of the attack on the Gothic Line and subsequent posns were conducted on a scale which was much larger than ever before in this theatre of operations. Between the 24 Aug and 22 Sep 44, a total of 11,510 sorties of all types were flown, 8,234 being Fighter-bombers, and 3,276 being Medium and Light bombers. The Cabrank was filled 317 times using 1902 sorties and 1103 planes flew in answer to 184 request tgts. It is stated by DAF that a greater weight of bombs was dropped in sp of the attack on the Gothic Line than in sp of any other attack in the entire war with the exception of the breakout from the bridgehead at CAEN in FRANCE. A detailed breakdown of the numbers and types of sorties flown is attached as App. "A" and gives a picture of the amount of air sp given each day. (Appx "A" omitted).

All the figures given above and in the Appx are exclusive of the considerable "softening-up" sorties that were flown prior to the attack for a period of weeks, with the intention of disrupting his rearward lines of comns and harassing his movement generally. These attacks were planned on a very high level and were directed on oil and pet dumps, ammo stores, barracks communication centres, both road and

rly, rolling stock and MT, and particularly on defiles in the Appenines. The attacks on the latter, since they were considerably off our immediate front had the twofold purpose of seriously hampering his sup routes and also directing his attention towards the central sector of the Gothic Line, rather than to the coastal strip. This was done by Fighter-bombers as well as lights and mediums and was intensified just before D Day.

THE ATTACK ON THE GOTHIC LINE

Meanwhile, Air Photos had been producing a wealth of information regarding the actual defences of the Gothic Line itself, and these were prepared as pre-arranged Fighter-bomber tgts. On D Day these were attacked in strength, and from then on these attacks were kept up whenever tgts presented themselves. Highlights of this phase were (i) the attack on BORGO S MARIA 0376 and OSTERIA NUOVA G.0275, where in the space of one hour 77 ftr-bmrs attacked within 800 yards of our fwd tps and dropped over 100,000 lbs of bombs on the tgt. (ii) a day or two later MONTECCHIO was attacked by 24 ftr-bmrs at once, just prior to our tps moving into the town.

Since considerable difficulty was experienced by our fwd tps due to the fact that high ground gave the enemy very good observation, every aircraft that passed over the TOMBA DI PESARO feature was instructed to strafe as it returned from any other mission. In this way the enemy O.Ps. were harassed and his observation cut down accordingly, no doubt some material damage being done at the same time. At this stage in the operation, possible OPs and high features which overlooked the axis of advance were attacked with much the same purpose in mind, but this should not be done as a general practise. Ftr-bmrs should be used only on pin-point tgrs, and when they are required to drop their bombs on hilltops, the special value of the weapon is lost, and the effort likely wasted when more definite tgts might have been engaged. It is possible, however, for Rover David to divert aircraft from a tgt onto an Armd Recce of the roads if for example the enemy is suspected of pulling out.

During this phase Medium bombers were employed on gun positions and on centres of communication in his immediate rear, as well as on defended localities, prior to our attack. Generally speaking Medium bombers will NOT be used unless there is at least two thousand yards safety margin. They cannot be called for as readily as Fighter bombers, and a day's notice at least is necessary. On special occasions, and when the need is sufficiently urgent, even Heavy bombers can be employed, but in such cases authority from a very high level is necessary, and a great deal of planning has to be done in detail.

During this period considerable very close support was given and air cover over the battle area was practically constant. Rover David operated in sp of the Corps, and during the periods of heaviest fighting the CABRANK was kept full for most of the time. This was of especial value as often Rover David from his OP could see such tgts as Nebelwerfers firing, and deal with them himself. To hamper the enemy's movement on the roads Armd Recces were flown at first and last light.

THE PURSUIT BEYOND THE GOTHIC LINE

Once the Gothic Line itself was pierced, and the enemy engaged in a general withdrawal, the entire nature of the air war changed. Whereas most of the tgts had previously been taken from daily photo cover, it was now impossible, due to the fact that the enemy was taking up positions in unprepared defences, that is until he reached the next MLR. Even then the defences were not heavily dug in and emplaced, so that they did not show up on air photos to the extent that the ones in the Gothic Line had done. As a result, Rover David came to the fore, and requests from fwd tps now began to form the bulk of the tgts.

As the battle was more fluid now, movement drew a considerable number of our attacks, mostly at last light, Armd Recces being used more and more. In instances when the weather broke down, and photo cover could not be flown, tgts became even scarcer, and Tac/Rs were sent out to look for any possible enemy concentrations or dumps. In this respect there are several methods employed, each of which has a name

(a) A DIXIE: A Tac/R mission is arranged to fly out at the same time that a movement is expected, and during this time, the cabrank is filled once or twice. When the Tac/R a/c sees a tgt he tells Rover David, who briefs the Cab. The Tac/R pilot then leads them to the tgt, if necessary going down first himself to strafe the tgt as an indicator.

(b) A PINEAPPLE: If a Tac/R a/c is flying over the area and sees a tgt the cabrank may not be full at the time, so he can flash the tgt back to MORU (control) who will order a mission into the air. The Tac/R pilot then waits until the a/c appear and briefs them in the air and indicates the tgt. This has nothing to do with Rover David.

(c) MANGOE: If, in the case of the above, the Tac/R pilot then returns to the landing ground and briefs the fighter-bomber pilots himself the operation is known as a MANGOE.

THE ATTACK ON THE FORTUNATO FEATURE:

As we approached the FORTUNATO feature, two factors became apparent which affected the air operations considerably. First, the enemy was obviously taking up heavily emplaced and well prepared posns, which could be interpreted; second, the enemy had concentrated a large number of guns on our front and on 5 Corps front which were being directed on our fwd tps with unusual intensity. Thus air counter bty became more necessary, and a large number of planes were committed each day to deal with this problem alone.

As we could, as already stated, interpret the defences, it was possible to pre-arrange a hy blitz on the FORTUNATO hill, and this was done, to coincide with the attack of 1 Cdn Inf Div. Twenty two selected tgts were chosen for attack, twelve on the fwd slopes and ten on the reverse slopes, and these were attacked by approx eighty fighter bombers between 0600 and 0700 hrs 18 Sep. In addition to their initial run, aircraft had been instructed to strafe the feature as much as possible. Since our tps were advancing at this time, a special smoke bombline was laid down by the arty, which was visible to both air and ground tps, and beyond which aircraft were instructed to beat up everything they saw.

As the ground tps moved onto the feature, the air attacks were intensified on enemy rear posns, which contained mortars and guns, and in addition, constant watch was kept for any type of movement on the rds out of the battle zone. On this date, fighter bombers alone carried 128 tons of bombs over the bombline in sp of the Corps.

ROVER DAVID

Since close sp is our chief concern (and generally speaking, the closer the better) Rover David, and the manner in which he can best be employed is of the greatest importance. Briefly, Rover David consists of an Air Force Staff Offr, and an Army Staff Offr, both of whom are required to have recently concluded a tour of operational duty, so that they fully appreciate the problems of both air and ground. They have a staff who can operate the various wireless links, and these links are as follows:-

Two Air Sp tentacle sets (one for each Div net)
One R/T set to divs and to Corps
One V.H.F. set to the aircraft.

The Army Offr controls the ground sets, and is responsible for keeping a check on the bombline, and the posn of fwd tps. He also accepts or refuses tgts and is responsible for indicating them to the Air Staff Offr so that the latter can accurately brief the pilots in the cabrank. The RAF Offr calls up the aircraft and is responsible for guiding them correctly to the ground tgt, and can, in an emergency, divert any other aircraft provided that they have not got a priority tgt. In order that Rover David can operate properly, it is obvious that certain conditions and requirements are necessary:

(i) He must be infm of the posn of our fwd tps at frequent intervals, and by the quickest means possible.

(ii) He must receive a constant supply of good tgts from fwd tps so as to avoid wasting the CABRANK.

(iii) He must be infm of our intentions, and must receive the earliest possible infm of any sudden advance.

CABRANK

To get the best results from the cabrank and Rover David - units and fmns should arrange to have the cabrank filled at the time at which they expect to get the most tgts. If an attack is being planned, and sufficient time is given to lay on a cabrank, (usually 1½ hrs is enough) it is possible to keep aircraft in the air throughout the most crucial hour or two hours of the whole battle, or longer. Any unit can request cabrank to be filled, and since this is a very wasteful type of airsp if no tgts are forthcoming,

it should be the aim of the troops to produce good close tgts if at all possible.

As has been already stated it is essential that ground troops learn to recognize good air sp tgts as readily as they do others. If this is done, air sp can be produced in a matter of minutes, and, as has happened in several cases recently, can result in our tps moving right onto their objective within a few minutes of its having been bombed. It is the soldier and the junior commander on the spot who will first see a good air tgt and if they initiate the request, Bdes have the necessary comns to obtain the air sp within a very short time from the cabrank.

AIR OP CUM ROVER DAVID

The greatest part of the country through which we have been fighting up to the present has provided hills and mountains for suitable OPs not only for the enemy, but also for ourselves. As we advance towards the PO RIVER, the ground becomes flatter and flatter, with the disadvantage of being fairly well wooded, and limiting observation to about 200 yds in many places. This lack of command of the ground has seriously affected Rover David's ability to control a/c properly and in consequence tgts have been scarce.

As a result of this it has been suggested that Rover David's eyes should be uplifted 500 ft or so off the ground in an Air OP. The procedure is at present being decided, and will be tried out at the earliest possible opportunity. Roughly, the form is as follows: Rover David will be provided with a 19 set link to the Arty/R Air OP net, and it will be arranged to fill the CABRANK at such time as to coincide with a flight of the Air OP. When the Air OP pilot sees a suitable tgt, he will warn Rover David that he has an air tgt, and will proceed to register with HE. In the meantime, Rover David will have been warning the CABRANK of the general area and type of their tgt, and when the Air OP pilot is ready, and has registered his tgt with HE, he will fire several rounds of coloured smoke - indicating the colour to Rover David. When the Air OP pilot gets "shot" from the guns, he can pass it to Rover David, who will in turn pass it to the CABRANK. Just what difficulties will crop up in actual practise are yet to be found, but judging from the fact that a considerable number of tgts are even now coming from Air OPs, it is reasonable to believe that this experiment should prove worthwhile.

3. INFANTRY-CUM-TANK SCHOOLING (EXTRACTS FROM "OPERATIONS IN ITALY - MAY 1944," ISSUED BY 1 CDN ARMD BDE).

(The following syllabus and aide-memoire were developed during the period of "marrying-up" the tanks of 1 Cdn Armd Bde and the infantry of 8 Indian Div, prior to the successful assault on the GUSTAV LINE on 11 May 44).

SYLLABUS -- INFANTRY CUM TANK SCHOOL

DAY ONE

The company or companies move to Armoured Regiment areas.

Regimental Commander or Second-in-Command together with F.O.O's visit armoured regiment commander at Regimental Headquarters of armoured regiment. They are put in tactical picture for the attack scheme, recce of ground carried out, and infantry and tank plan made.

F.O.O's receive instruction on crew control and operating from a tank on this day, as arranged by armoured regiment commander concerned.

DAY TWO

0600 - 0930 hrs - all ranks of infantry and F.O.Os attend lectures covering:

(a) Tank armament and characteristics

(b) Tank capabilities and limitations

(c) Tactical employment of troops within the squadron

(d) Intercommunication and target indication

(e) Questions

0945 to 1030 hrs -- all infantry, artillery and armoured officers attend lecture and discussion on AIDE MEMOIRE as attached.

0930 - 1630 hrs -- infantry platoons, less officers, meet their co-operating troop. Tank personnel show infantry-men over tanks, answer questions, and give all a chance to ride in tanks in various crew positions. During this period intercommunication should be practised using all methods except tracer unless a suitable area exists for the latter and usual safety precautions are observed.

1030 hours -- platoon commanders join platoon taking part in above programme until required for their company "O" Group, recce, etc.

1030 hours - infantry regimental commanders (or Seconds-in-Command) and armoured regimental commanders hold their respective "O" groups.

1100 hours -- for rest of day -- steps in the "teeing-up" of the attack, as laid down in AIDE MEMOIRE, carried out.

DAY THREE

Move to FORMING UP PLACE as provided in orders. (move will be under cover of darkness).

Steps in FORMING UP PLACE detailed in AIDE MEMOIRE.

Attack on two-company front with one squadron in support.

Discussion in the field, all ranks attending as follows:

(a) Infantry commander deals with infantry points.

(b) Armoured regimental commander deals with armoured points.

(c) Each company and squadron commander deals with any points that they have.

(d) Leading platoon and trcop commanders give observations.

(e) Forward Observation officer of squadron gives observations.

(f) Questions.

Infantry and tanks return to their respective areas.

Armoured regiment Commanding Officer will arrange a get-together of tk and infantry troops in the evening.

AIDE MEMOIRE

INFANTRY CUM TANK

INFANTRY COMMANDER AND TANK COMMANDER

(a) Start line - map, photo, ground.

(b) Objectives - map, photo, ground.

(c) Enemy Positions - map, photo, ground.

(d) Reference point code names.

(e) Axis of advance.

(f) Action - intermediate objectives.

(g) Action - final objective.

(h) How net.

(i) When net.

(j) Where net.

(k) How attract tank attention.

(l) How indicate targets.

(m) Arrange and visit Rendezvous at Forming Up Point.

(n) Time at Rendezvous.

(o) Settle on ground Forming Up Point of each troop and platoon.

(p) Time tanks in position.

(q) Time infantry in position.

(r) Routes forward and times.

(s) Route marking.

(t) Guides

(u) Mine clearance.

(v) Forward rally -- map, photo, ground.

(w) Rear rally -- map, photo, ground.

WITH TROOP LEADERS

(a) Sets and batteries.

(b) Guides to see routes and Forming Up Points in daylight.

(c) Troop areas and responsibility.

(d) Troop formations.

(e) Troop leaders. See opposite numbers re points in paragraph 1.

4. WHAT IS TANK COUNTRY? (EXTRACTS FROM "OPERATIONS IN ITALY - MAY 1944" ISSUED BY 1 CDN ARMD BDE.)

In the past it has been recognized that there were certain tasks which tanks could reasonably undertake, and others which did not come within the scope of their capabilities. One by one these limitations have been eliminated as experience has been gained in the widely varied types of country encountered in Italy. For instance, the generally accepted rule that tanks should not fight in small packets, but concentrate at the vital point at the right time, has become one casualty. Time and again tanks used by Squadrons and Troops, in country which did not permit the deployment of larger numbers, have proved invaluable. Naturally, where the going permits, concentration is usually the logical answer, but such occasions have been the exception rather than the rule in Italy. Again, tanks have been used by night, in various roles, with definite success, and have proved invaluable co-operating with infantry in the carefully planned and methodically executed clearing of towns and villages. Possibly the greatest limitation of all has been the last to die. What is tank country and what is non-tank country?

It was formerly generally conceded that tank country was that type of country which offered good going, and contained successive features, permitting good fields of fire from hulldown positions and support tank by tank or troop by troop. It is suggested, however, that in Italy at least, this is the type of country which is now considered most desirable as far as the tank man is concerned. Wherever large stretches of this type of country are encountered, the difficulty of adequately covering all approaches still affords tanks reasonable opportunities of making good progress without too high a cost. But this is hardly ever the case in Italy. Such good going is confined to comparatively small stretches of the country, and almost invariably such stretches are covered by carefully sited Panther or Tiger tanks, or Anti-tank guns of various types. In prepared defence lines, the Panther turret, mounting the stepped-up 7.5, is encountered, and a formidable tank stopper it has proved to be.

Crossing such country is normally costly in vehicles and man. It is suggested, therefore, that in Italy such going should rather be avoided than sought. The country which offers the greatest opportunity for success is that over which the tanks can move, but, only by careful study of the ground and skilled driving. Slopes up to 45 degrees, and on short humps even steeper, can be negotiated by the Sherman tank expertly handled. Time and again experience has shown that such approaches are seldom covered by Anti-Tank fire, particularly in these days when such weapons are none too plentiful with the Germans. Enemy Anti-Tank guns are normally sited to cover the more obvious approaches, and much going which can be negotiated with skill and care is often regarded as tank proof. With his shortages in both men and material it is seldom that some line of approach cannot be located which presents many difficulties so far as the going is concerned, but offers prize beyond price of surprise, and the natural consequences of that surprise.

The system of carrying Sappers in Honey Tanks, with two Honeys under command of each Squadron as the basic distribution, is of considerable assistance. It enables the selection of lines of approach which the enemy regard as even more unlikely than he otherwise might. A great deal can be done with explosives, carried in the Honey, in the overcoming of natural obstacles. Again, the Sherman Dozer offers possibilities to the tank man who is prepared to use it boldly and well forward.

It is therefore suggested that "good tank going" in Italy is not the type of country normally thought of when that term is used, but country which in fact can only be negotiated with care and skill, and at times with assistance of Sappers and Bulldozers. The ultimate object of any operation is the destruction of the enemy opposing it. That can, in most cases, be best attained by surprise. Surprise in its turn can best be attained by the unexpected or seemingly inpossible.

Another type of country which the tank man in the past has looked upon with hatred, ridicule and contempt, is "close country". The ubiquitous olive grove, vineyards, grain crops, broken country, walled cemeteries and other detestable features combine to make a large portion of the battle fields of Italy "close country".

Stout hearted infantry with FAUSTPATRONES and OFENROHRS, cunningly concealed and low lying Anti-Tank guns, magnetic beehives and other inventions of the devil, together with the greatly increased blindness of the tank due to the above mentioned features, make the tank man's reluctance to commit his vehicles in such country obvious to the initiated.

Nevertheless it is suggested that such country need hold no unusual terrors for the tank, and that it should operate therein without hesitation on one condition, namely that it is co-operating with infantry schooled in the existing lessons of infantry-cum-tank warfare.

In most parts of Italy a great variety of ground is encountered over comparatively short distances. Within the limits of the day's objective it is not unusual to encounter several patches of close country, mountainous terrain, groups of houses and in fact most types of country that can be fought over. When infantry and tanks have a thorough knowledge of the capabilities and tactics each of the other, and have complete trust one in the other, such country offers no problem calling for discussion as to who is to lead and should the tanks have anything to do with the affair in any case.

It is most satisfactory to watch the ensuing attack. The infantry automatically lead when the close country is encountered, winkling the Anti-Tank guns and discouraging the Bazooka man. The tanks hand back. Blind, they can offer little assistance. But they are never far behind and as soon as the next bit of country is reached they are at once back in their supporting role, or, where the situation permits, pushing into the lead. There is no need for conference, and therefore delay, on intermediate objectives. Such delay invariably results in needless casualties to both infantry and tanks, for the German has the lost positions accurately taped with mortar and artillery fire. The ground to the next objective may not have been visible from the Observation Post from which the original attack was planned, and maps may have given a false impression as to what was likely to be encountered. Still this does not call for decisions as to the role of each arm. The country dictates the role, and each knows exactly what is expected from it in whatever type of terrain is encountered. Such co-operation has time and again achieved success. Indeed it takes something rather more than formidable to stop a carefully teed up attack by well trained tanks and infantry which know and trust each other, regardless of the ground over which the attach takes place.

To summarise the points mentioned. The more difficult the tank going the better the tank country, so long as the tanks can get through by skilful driving and possibly with Sapper assistance. Subject to the single qualification that the infantry and tanks should be schooled in each other's peculiar habits, close country is not non-tank country.

On the basis of these arguments it is contended that there is only one type of country that can now be regarded as non-tank country -- namely, that terrain over which it is physically impossible to move the tanks even with Sapper assistance.

5. LESSONS FOR ARMOUR FROM THE GOTHIC LINE (EXTRACT FROM WAR DIARY, H.Q., 5 CDN ARMD BDE, SEPTEMBER 1944).

LESSONS AND REMARKS ON OPS FROM 30 AUG TO 14 SEP 44

EQPT

(a) Azimuth Indicators - these proved their worth in a number of cases where we did indirect shoots by res sqn or regt supporting up to 7000 yds and this supporting fire was both effective and accurate and reasonably quickly laid on.

(b) Phosphorus Smoke - we believe that if we had had a few rounds per tk of phosphorus smoke it would have been of assistance, not only for target indication but also for firing of hay-stacks, which was done in a number of cases during the hrs of dusk to light up the battlefield and also at night, when regts were out in rather isolated posns.

(c) Binoculars - it is again mentioned that higher-powered binoculars than the ordinary issue would be of great assistance to tp leaders and crew comds.

(d) Armd Amn Bins - it is believed that these more than proved their worth as, up to the 12 Sep, there were no cases through med channels of serious burns as compared to a large number of serious burns previously. It is believed that the extra few seconds given the crew to evac in the case of a 'brew-up' by these bins makes the difference.

(e) Cam Brackets - all tks going into battle had brackets placed on the sides into which natural foliage was placed to cam the tks. We believe this is of great advantage and it is suggested that these brackets should be incorporated into manufacture.

(f) Cut-down Stuarts - the recce tps with their cut-down Stuarts again proved invaluable for both recce and sup. It is suggested that consideration might be given to equipping of Al Echs with a certain percentage of tks (Shermans or equivalent) with turrets removed, for sup purposes.

TACTICAL

(a) Fire and Mov - the importance of stressing fire and mov at all trg ests, particularly for offrs and crew comds at all stages, i.e., tk supporting tk within the tp, tp supporting tp within the sqn, and sqn supporting sqn within the regt, cannot be overemphasized. In the open country NORTH of the GOTHIC LINE, mov by sqn supporting sqn proved to be very effective.

(b) Inf - Tk - sqn and bn or coy comds working closely together on the ground worked and no difficulty was experienced in changing from inf to tks leading, it being more or less automatic depending on the ground.

(c) Smoke Screens - these were used in several cases on flanks when tps or sqns had to adv over exposed ground and also for rec purposes.

ARTY

(a) Stonks on likely enemy posns in adv of the leading tps were used and leading tps reported they were satisfied with this op.

(b) FOOs with the leading sqns proved satisfactory for the engaging of targets as they appeared.

AIR

(a) Air Phs - the value of air phs and arty ref pts was again brought out.

(b) Air OP - proved invaluable and worked very well both for recce and fire control. Again it is brought out that in an armd bde op an air OP flight with the armd bde for recce close in front of the leading tps would be of great value.

(c) Air Tentacle - at Bde HQ was valuable in the getting of early tac R reports.

COMNS

(a) Throughout the op, the normal wireless links were maintained when units were under comd or in sp of other fmns and the extra wireless sets necessary for this more than proved their worth when rapid re-grouping was necessary.

(b) Flicking from regt freq to sqn freqs was done in several cases and no difficulty was experienced in doing this.

GERMAN TACTICS

(a) The siting of the dug-in Panther turrets in most cases was to cover down draws or re-entrants and they were knocked out at close range by moving along the tops of ridges which enabled tps to get very close before being seen.

(b) There were a number of cases where the German lay 'doggo' while the tanks were passing and came to life again after they had passed to engage the inf. In a number of cases results were definitely obtained by tks firing at all likely bushes etc, as they passed.

REC

The system of rec used was two Shermans equipped with the necessary rec eqpt working with the units close to the battle and doing all rec jobs under fire. T2s of the AWD were used to recover more difficult jobs after the main battle had passed. It was felt that this eqpt (T2) was too valuable to be used in the most fwd jobs. The detail of tk cas and rec reported is shown in the previous summary. It will be seen from this that vehs were put back on the rd reasonably quickly with this system and, with the exception of the first day through the GOTHIC LINE, at no time was any unit below 40 fully fit Sherman tks and the majority of the time were up between 47 and 50. On the first day through the GOTHIC LINE, at the end of the day one regt was down to 18 'A's but by the next morning was back to 38, without incl rft tks.

SUPS

(a) There were several cases of the Stuarts being used to sup sqns in inaccessible places or when it was necessary to go across fire-swept ground. Suggestion as per para 1 (f) is emphasized.

(b) Rations - FS tinned equivalent rations were used throughout the op for the tk crew personnel and the carrying of several days of these in the tks was done and is recommended as at no time during this period were personnel short of rations but, if res had not been carried, they would have been, particularly when individual vehs got bogged-down and had to remain for several days in isolated posns.

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