

IMPROVING CP SURVIVABILITY

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There is little doubt that battalion command posts (CPs) generate too many signatures for an enemy seeking them. CP vehicles are generally different from other vehicles in a unit (the M577, for example, has a profile different from that of the M113 or the Bradley, and the profile of the 5-ton is different from that of other trucks). Generators make noise and heat. Lots of people come and go, creating a discernible traffic pattern. And radios create an electronic signature that virtually begs for enemy counteraction.

The problem of signatures, especially electronic and thermal, is made more difficult by the requirement to position a CP where it can maintain reliable FM radio communication. Generally, such positions are on or near high ground, which increases a CP's chance of detection. It also eases the enemy's workload if he is smart enough to use our templating techniques against us before or during a battle. Since we are creatures of habit, we are also predictable.

Moving a CP frequently is one way to increase its survivability—and a good way to reduce the effective-

ness of the staff and the commander. But there is a way to “move” the CP electronically while keeping it physically stationary for longer periods.

This technique uses currently available radio equipment and requires little local fabrication. It does, however, depend entirely on training and maintenance and is not a substitute for radio net discipline and short transmissions. This technique by itself, of course, will not make a CP invulnerable; it must be used as part of a comprehensive system of operations security.

Figure 1 illustrates the basic concept, which is called REBRO (for re-broadcast). It allows a CP to hide electronically by giving the appearance of almost constant, or at least frequent, movement. REBRO makes templating CP locations more difficult by eliminating the need to use communications-friendly (and, therefore, obvious) terrain for CP sites. It provides more physical protection from enemy fires by allowing a CP to go into relatively harder-to-hit positions such as in a village located in a valley or at the base of a steep hill.

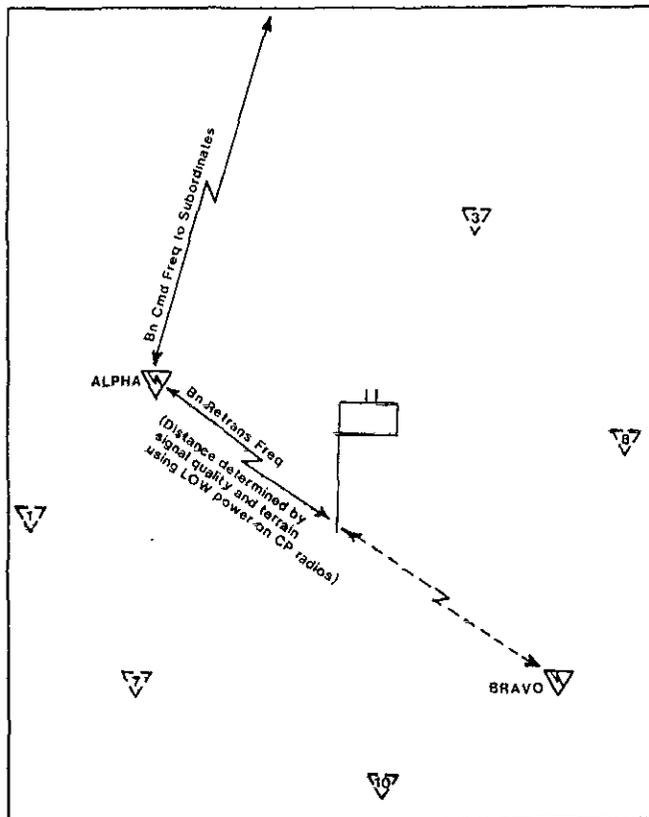


Figure 1. Basic REBRO concept.

REBRO will draw an enemy's attention away from a CP itself, and will allow a CP to occupy any protected position longer, because the enemy will be targeting highly mobile and frequently moved radio retransmission vehicles rather than the CP itself.

Keeping a CP in one position for longer periods of time reduces the disruption to staff work that results from more frequent moves. The retransmission (retrans) vehicles are physically smaller, easier to set in motion, and more mobile than armored CP vehicles. If moved judiciously, the retrans units should have at least as good a chance of survival as CPs have with the current methods.

Conceptually, REBRO resembles a planet (the CP) with two moons (retrans units) in orbit around it. Procedurally, the CP communicates with subordinates through one retrans (active) while the other retrans (dormant) monitors and provides a back-up at another position. The CP alternates the retrans units between their active and dormant roles, ordering the last active retrans to go dormant and displace when it orders the dormant retrans to go active.

Although REBRO is obviously appropriate to defensive operations, especially in a deep sector, with practice and refinement it offers good possibilities for offensive applications as well. In the attack there would be less emphasis on the deception and survival aspects of REBRO and more emphasis on the retrans units' more traditional role of extending the range of FM communications.

In the basic REBRO concept, the CP is put in the

most protected position available in the sector or zone. This position should be "in a hole"—not communications-friendly and therefore an unlikely place for the enemy to look. The CP site should provide physical protection and terrain masking, and it may be farther from the line of contact than we are accustomed to now. Other CP site considerations as outlined in FC 71-6, such as space, access, drainage, and hard stand, apply equally here.

The two retrans units are offset on communications-friendly terrain as far from the CP as possible so long as the CP can still use low power to reach a retrans reliably. Retrans units can be positioned forward of the CP, laterally, or even behind it in some cases.

In a battalion, the companies are kept on the command frequency so the battalion commander, the S-3, and the second-in-command (2IC) can communicate directly with them when not in the CP. The CP uses the retrans frequency to send to the retrans units on low power and the retrans units use high or low power to retransmit to the companies.

Numerous retrans sites should be planned and the retrans units moved often, or a racetrack-type circuit route should be planned for the retrans units to use on the move. Communications must be good over most of the racetrack (Figures 2 and 3).

Some situations or positions may allow the CP to connect a GRA-39 remote set by wire to the retrans radios (offset at least one kilometer) and to avoid using the CP radios entirely. On order, the retrans disconnects the WD-1 wire and drives away to another retrans position, while the CP crew reels in the wire (new, well-spliced WD-1 should be used so that it will reel easily without snagging). This may be a good method to use during lulls and battle preparation, but

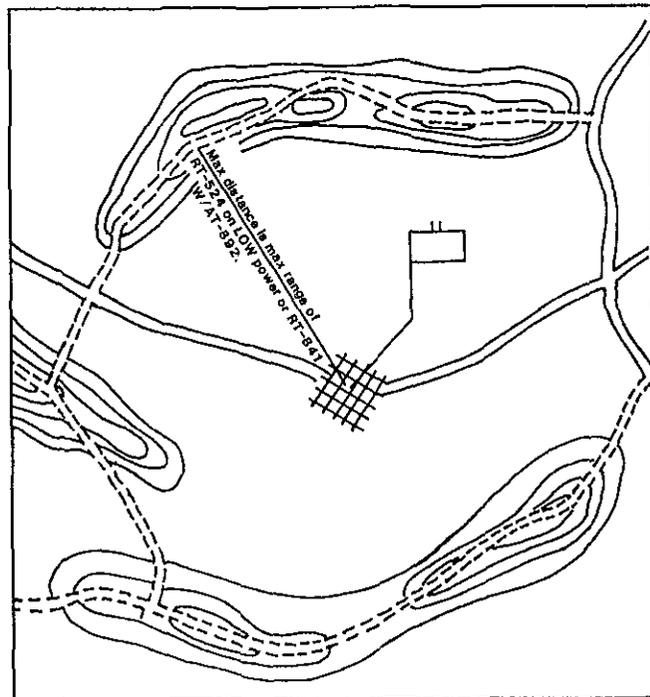


Figure 2. Basic racetrack circuit.

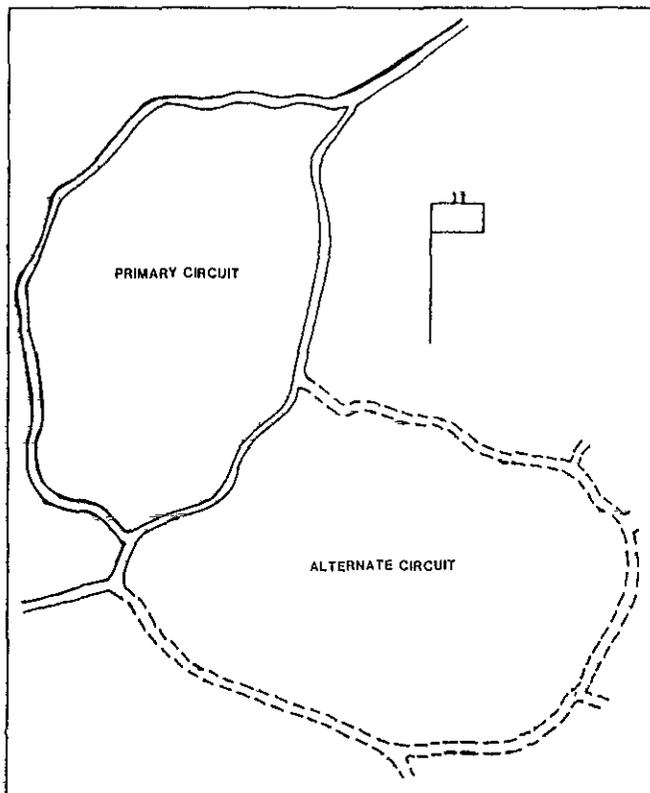


Figure 3. Second racetrack circuit.

not for actual combat because of the relatively short distances over which the wire can be used.

A well-trained retrans crew of three men will give the unit a better sustained operations capability and will make set-up and take-down faster. The retrans can probably get by most of the time with the vehicle's normal whip antenna (AS-1729), but it should also have an OE-254 or an RC-292, especially if used between the battalion and brigade CPs. Each retrans vehicle should have a short (two-to-three-foot) length of ordinary water pipe (about three inches inside diameter), U-clamped on a bracket and bolted vertically on the vehicle as an RC-292/OE-254 mast support and a base for rapid set-up and take-down. When the mast is set up only high enough to communicate, such a bracket eliminates the use of guy lines for erecting it, and if the full mast is used, the bracket allows the crew to use only one set of guy lines. At least one, and probably two, of the guy lines can be secured quickly to the vehicle itself (opposite the bracket).

The battalion CP can put an auxiliary receiver (R-442) on the battalion command frequency to monitor whatever signals it can receive while in a hole.

On the battalion command net this system can be used with VINSON speech secure equipment, or it can be used in the clear if one or more stations have equipment problems. Although using the retrans units will not improve the security of communications, it should improve the security and survivability of the whole communications system.

Once a battalion is confident that such a system works, the RT-524 radios in its CP can be replaced

with RT-841 radios (RT-524s are VRC-46 sets, and RT-841s are PRC-77 sets). The low power of RT-524 sets is 8 watts while the maximum power of RT-841 sets is 2 watts. The RT-524 has four times the power (and twice the chance of enemy detection) of the RT-841. (I personally believe the RT-841 is more reliable than the RT-524.) If the CP uses RT-841 sets, all stations with RT-524s must be set in the new SQUELCH/OFF position.

The battalion signal officer may be able to further reduce the CP's electronic signature by replacing some of the vehicular long whip antennas (AS-1729) with locally fabricated short whip antennas and mounts from the PRC-77 radios (AT-892).

If the brigade commander, his 2IC, and his S-3 know the system, they can gain an extra entry point to a battalion commander, to his 2IC, and to his S-3 by changing to the battalion or brigade retrans frequency.

Figures 2 and 3 illustrate variations on the basic REBRO technique. When establishing a racetrack as in Figure 2, the farthest point on the circuit should ideally still allow uninterrupted communication. The retrans unit on the circuit can continue driving slowly around the track, or it can stop for short periods at

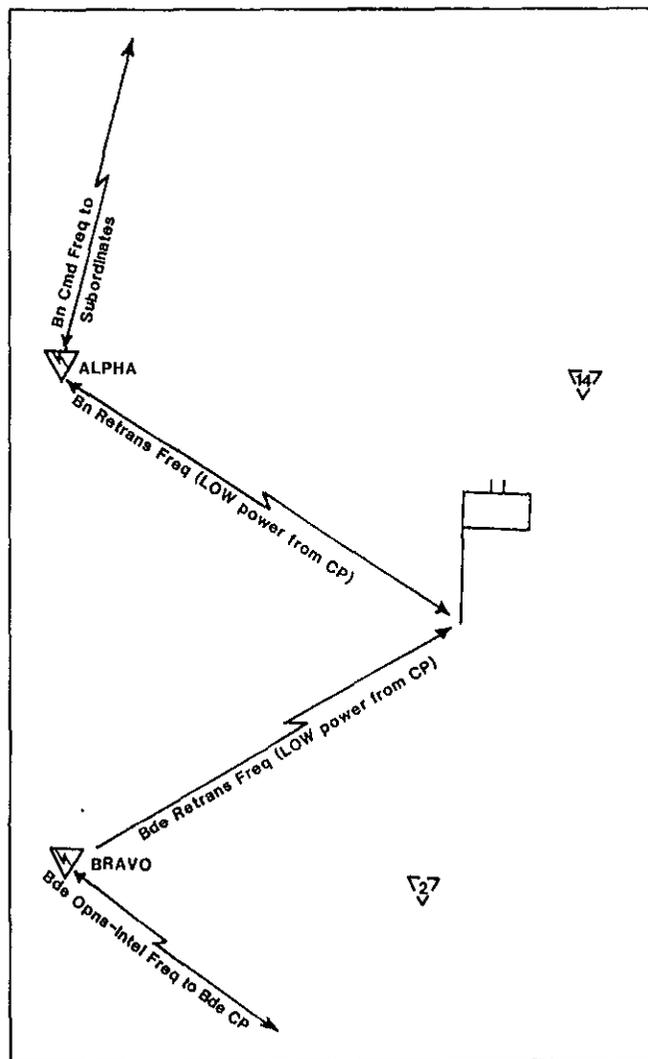


Figure 4. Retrans on two nets.

different locations that offer the best signal quality.

As an alternative, one vehicle can operate this way while the second one stays on high ground to ensure communications integrity. (This may require two retrans frequencies.)

A racetrack with the CP located outside the circuit (Figure 3) is probably a more secure technique, because the center of the circuit may draw fire if the enemy is able to confirm through photo or radar reconnaissance that what electronically appears to be a moving CP is really a single light vehicle. In this arrangement, one retrans unit travels the primary circuit while the second is halted and dormant on the alternate circuit.

MORE CONSIDERATIONS

Some additional considerations will help give REBRO a better chance of succeeding in continuous operations:

- By SOP, retrans units should be given position priority over everything in the battalion's sector or zone except short-range air defense weapons.

- By SOP, retrans units should have a maintenance priority equal to that of the commanders' vehicles. A failed radio means no retransmission, and immobility offers a retrans unit up to sacrificial destruction.

- Imagination and innovation, tempered by prudent experimentation, will soon lead to improvements in the basic system outlined here.

- The CP and both retrans units must train and practice together so that they can set up, take down, and displace smoothly with the least possible disruption of communication. The retrans units use a modified "Set-Move" drill to displace with minimum radio traffic among them, and the retrans units use crew drill techniques for set-up and take-down. All of these can be performed as a tactical exercise without troops (TEWT).

- Unit organization days are perfect times for a retrans unit crew drill competition and can highlight the crews' place in the organization.

- The AM/RTT (AN/GRC-142) should be used for all bulky periodic reports such as the commander's intelligence summaries, situation reports, logistics reports, and fire support target lists and reports. The AM/RTT should be an operator's tool and its crew should be kept busy. The AM/RTT vehicle should be offset from the CP and the two linked together with WD-1 and telephones to reduce the use of runners. The AM/RTT must use *only* a directional antenna from a masked position.

- The S-4 must have equal access to the AM/RTT for his reports or he will find FM too convenient to ignore. He is, after all, as mission-oriented as anyone else.

- Commanders must personally discipline their nets. A 45-second break between the multiple 30-second

transmissions of a lengthy message invites other stations to interfere unless they all know through experience that everyone else will give them the same courtesy. An enlisted radio operator will find it difficult to control or discipline a net in which most of the other stations are operated by officers, and this is an unfair position to put an RTO in.

- The retrans crews must receive high priority for the delivery of hot meals and mail. Since it will seldom be possible to bring them in for maintenance or rest, they merit a good degree of attention while deployed.

- During lulls and battle preparations, when retrans units are most likely to be stationary for relatively longer periods, they should conduct as complete a PMCS (preventive maintenance checks and services) as possible and should be visited by a contact team that is capable of detecting probable future mechanical failure. Retrans crews should try to see that at least two of the crewmen get as much sleep as possible during these periods.

- Each retrans unit should carry a spare RT-524 with cables and a VINSON secure set so it can relay messages if the retransmission control box (C-2299) fails. The retrans unit's basic on-board load should also include a spare vehicle engine alternator and the tools required to change it while deployed on site.

OTHER METHODS

In conjunction with REBRO, other methods can be used to help secure and keep communications, including the following:

- Radios should be used only to give orders or render reports. Detailed coordination or explanation on FM voice radio will get troops killed and CPs destroyed. Routine formatted reports should go by messenger or AM/RTT. FM radios between battalion and brigade should be used only for time-sensitive information that either affects the fight or results from it.

- Transmissions must be kept short—between 30 and 45 seconds with breaks of 45 to 60 seconds of silence between transmissions. The proword "Message Follows" should be used to alert the intended recipient to be prepared to copy, and the proword "Break" should be used at the end of each 30-to-45-second transmission until the message is completed (proword "Message Ends—Out").

- Operational terms should be used. FC 71-6 is a good start, but Appendix L can be easily expanded so long as all the terms and codewords are fully understood throughout a division. Long lists of operational terms become second nature if they are used habitually in daily face-to-face and telephone conversations. Brevity on the telephone should also be practiced in garrison.

- Operators should avoid radio checks and should not ask recipients if they are prepared to copy or if

they have a good copy. Two well-spaced squelch breaks can be used to "Roger" a transmission.

- Every omnidirectional antenna should be masked as much as possible, with something high and solid between it and the enemy.

- Vehicular radio operators should all use headsets and low volume settings. Headsets improve the quality of reception and focus the operator's attention while low volume settings reduce feedback (shriek or squeal) and create a better working environment for other personnel.

- Radio headsets and handsets should be disconnected during periods of imposed radio-listening silence. This is a good opportunity to clean the connector terminals and replace missing "O" rings.

- Three or four self-authentication sets should be written on the call-sign/frequency board so that they are easily available. Authentication should be practiced using CEOI extracts on the telephone in garrison.

- The retrans units should displace using one of two criteria: the length of time in a given location or the number and length of transmissions from a given location. Retrans units should move after two to four hours (but never after a fixed period) when things are relatively quiet and more frequently when there is more traffic. During periods of silence, they may stay in one location longer than four hours. Alternatively, in periods of high radio usage, retrans units should be moved after 10 or 12 transmissions of 30 to 35 seconds each.

This REBRO technique can be used on only one FM frequency, a limitation imposed by the number of retrans units in a battalion and by the need to alternate between retrans units, especially during battle. One alternative method is to use both retrans units simultaneously on two different frequencies or nets (command and administrative-logistical, for example, or command and operations-intelligence, or battalion command and brigade command). Although such a refinement is possible, everything always has to work properly; it therefore places a premium on maintenance, site selection, and frequency management.

Once the basic REBRO configuration has proved reliable, one retrans can be used on the battalion command net and the second on the brigade operations-intelligence net (Figure 4). There are two reasons for this: First, the brigade commander is normally forward in a position where he can use his vehicular radio to talk directly to the battalion commander on his vehicular radio (assuming that both commanders fight the battle from observation posts and not from CPs or tactical operations centers). Second, because the command nets are for commanders and S-3s, the high volume traffic net between CPs is most likely to be the operations-intelligence net and not the command net. (The retrans units may operate on the move while displacing to alternate sites; signal

quality may suffer marginally.)

If the battalion and brigade ZICs take the AM/RTT equipment from the S-4s, this equipment can be used for the high volume battalion-to-brigade formatted report traffic. Using the AM/RTT for lengthy, periodic formatted reports has worked well in some brigades in Europe.

The REBRO technique does not offer much help for the fire support officer (FSO) unless he can maintain FM communication directly with the direct support battalion or battery fire direction centers (FDCs) from his forward position. This may be possible because there are four entry points for his traffic—the battalion FDC and three battery FDCs—plus the FDCs of reinforcing units in some cases. Until additional equipment is available, the FSO may be limited to monitoring in the CP and may have to send his vehicle some distance from the CP to transmit to artillery units, or remote using his wheeled vehicle and AN/GRA-39, unless his section fabricates directional antennas (see FM 24-18, Chapter 3).

This is a harsh judgment that artillerymen won't like (nor should they), but the cold facts are that once the REBRO system is established it makes no sense to give the game away by coordinating fire support on an omnidirectional antenna using high power, especially since a nuclear-capable unit's fire control net is probably a higher priority target than any maneuver battalion's command net.

A final note to commanders, staff officers, and radio operators: REBRO requires patience if it is to function properly and provide good communications and greater survivability. The technical characteristics of the retrans equipment will cause some delay in radio transmissions, so it is unrealistic to expect an immediate response unless the retrans is bypassed by direct communications (commander-to-commander from their OPs). Commanders, S-3s, and signal officers will have to pay more attention to training their retrans crews in troubleshooting, field expedient maintenance, and land navigation. This is a time-consuming redirection of resources, and progress in the effort won't be as fast as may be desired.

REBRO can meet the demands of electronically intensive contemporary combat operations and give commanders increased survivability and better working conditions in their CPs. The quality of its function depends fully on the quality of its preparation, but it is something we have and can use now. We don't have to wait for the development of some future device that will remote the antenna away from the radio and the operator.

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